

# **Title: Efficiency-Equality Trade-off within French and German Couples – A Comparative Experimental Study**

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**English Abstract:**

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**French Abstract:**

Nous présentons les résultats d'une expérience visant à mesurer les préférences sociales au sein des couples dans une série de choix où l'inégalité des gains individuels peut être réduite en échange d'une diminution de la somme des gains du ménage. Nous mesurons les normes sociales correspondant à cet arbitrage efficacité-équité sous la forme des croyances sur le comportement des pairs et réalisons une comparaison entre la France et l'Allemagne. Nous montrons notamment que les ménages allemands sont plus averses aux inégalités de revenus et donc moins enclins à maximiser le revenu total du ménage que les français. L'usage d'une technique statistique de décomposition révèle que moins de la moitié de cette différence est expliquée par les différences dans la composition des deux échantillons, alors que plus de la moitié de la différence franco-allemande initiale reste inexpliquée. Les croyances diffèrent significativement du comportement observé dans les deux pays. Les allemands surestiment le choix de maximisation du revenu total du ménage alors que les français le sous-estiment.

# Efficiency-Equality Trade-off within French and German Couples – A Comparative Experimental Study

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## Abstract

We present the results of an experiment measuring social preferences within couples in a context where intra-household pay-off inequality can be reduced at the cost of diminishing household income. We measure social norms regarding this efficiency-equality trade-off by reported beliefs about the behavior of peers, and we implement a cross-country comparison between France and Germany. In particular, we show that German households are more income-inequality averse and thus less income-maximizing than French households. Decomposition reveals that diverging sample compositions in the two countries drive less than half of the difference, while over half of the initial French/German difference remains unexplained. Beliefs differ significantly from observed behavior in both countries. Income-maximizing choices are overestimated in the German sample and underestimated in the French.

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## I. Introduction

There is common agreement that culture shapes many areas of economic life. The interaction of family members in particular is at least as much affected by existing family and gender norms as by the economic and institutional environment. However, studying the impact of differences in norms requires disentangling them from any interactions related to economic factors and institutions.

France and Germany happen to be very close neighbors, both being Western European countries with comparable cultural traits and a very similar degree of economic and social development. However they are characterized by fundamental differences concerning family norms and gender roles. This makes them a particularly interesting case to investigate. Observing individual and household decisions in France and Germany and controlling for differences in sample characteristics thus enables us to investigate the importance of differences that stem from norms and culture. Fertility in France is at a persistently higher level than in Germany (presently 2.01 versus 1.38, EUROSTAT 2013). After the birth of a child, most French women remain closely connected to the labor market whereas many German mothers reduce their employment hours in order to take care of their (even smaller number of) children. According to EUROSTAT [2013] only 36% of employed women work part time in France, compared to 66% in Germany. Given also the smaller gender pay gap in the French labor market, intra-household income differences tend to be lower in France than in Germany.

Regarding institutions, family policy is somewhat different in the two countries. The supply of subsidized child-care for children less than three years old has been increasing in recent years in Germany, but public institutions provide far more facilities for external child-care in France (BMFSFJ 2008 and OECD 2011a). Regarding values, cross-cultural comparison faces much greater complexity. A widely accepted cultural categorization developed for the professional sphere<sup>1</sup> asserts that French society presents rather ‘feminine’ traits where (emotional) gender roles overlap (HOFSTEDE et al., 2010). German society, on the contrary, is said to be more masculine, i.e. material success has higher priority and gender roles appear more differentiated. Since these differences can give further rise to income inequalities within German couples compared to French couples, they may also be the cause of different norms concerning equality among spouses. Furthermore the Hofstede categorization includes the dimensions of power distance and individualism. French society scores particularly high on power distance, a trait that specifies that the less powerful members of a society accept and expect power to be distributed unequally. Power distance might thus lead families to more readily accept inequalities among their members. French society further presents a relatively high score concerning individualism. Though highly individualistic societies also consider the immediate family to be part of their immediate responsibility, high individualism might lead to a pessimistic belief concerning the

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<sup>1</sup> Hofstede’s original work was based on a factor analysis examining a world-wide survey of employee values at IBM in the 1960s and 1970s, but since then has been extended to a wider range of participants.

willingness of other members of the society to help or share. To illustrate the consequences of these opposing cultural backgrounds, we present an experiment designed to measure social preferences within the family using a simple allocation task that implies an intra-household equality-efficiency trade-off.

Many econometric studies measure cross-country variations of income inequality aversion using survey data. Among these, CLARK and SENIK [2010] discovered larger inequality aversion in France than in Germany. However, cross-cultural experiments based on actual behavior are scarce.<sup>2</sup> A specificity of our approach is that we focus on *intra-household* income inequality tolerance, which may be of importance in understanding the gender-biased arrangements within families. In our design, reducing intra-household inequality has a household cost that hinders maximization of household income. In this respect, our analysis is also related to the experimental literature that aims at experimentally testing the efficiency of household decision-making. For example IVERSEN et al. [2006] used a field experiment to analyze a social dilemma game between couples in rural UGANDA and PETERS et al. [2004] performed laboratory experiments where the participants were involved in a public good game with varying counterparts. The latter study found that family members contribute more to the public good when grouped together than when playing with strangers. COCHARD et al. [2014] obtained similar results when analyzing cooperation within couples: spouses' internal cooperation in a Prisoner's dilemma was higher than when paired with strangers. However, cooperation within the couple is still not at its maximum. MUNRO et al. [2008] provided a test of Pareto efficiency which is closest to ours, as the participants choose between sub-optimal and efficient allocations. However, the results are affected by risk aversion since risk and efficiency aspects are mixed in the experiment. The authors cannot directly compare individual and joint decisions either: both choices have different payment schemes. Like ASHRAF [2009], CARLSSON et al. [2009], KEBEDE et al. [2013], MANI [2008] and ROBINSON [2008], they found inefficiency in couples' decisions, whereas BOBONIS [2009] did not reject the efficiency assumption. Further, as shown by BEBLO and BENINGER [2012], even in a predetermined cooperation setting, intra-household distribution of resources depends strongly on each spouse's contribution to the household budget, although pooling is positively related to total household income. This result indicates selfish behavior of the spouses, potentially explaining inefficient decision-making in couples.

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<sup>2</sup> OOSTERBEEK et al. [2004] conducted a meta-analysis of 37 papers on the ultimatum game run in different countries and found a higher mean reject in France. However, the difference between France and Germany is not tested.

The rest of the paper is organized as follows. Section II describes the intra-household allocation task and the theoretical predictions. Experimental procedures are presented in section III. Couples' decisions and beliefs are analyzed respectively in section IV and V. Section VI concludes.

## II. Task and Predictions

The task (see Table I) consists of five consecutive rounds concerning a payoff allocation between spouses. For rounds 1 and 2, income maximization implies self-sacrifice. Both spouses respond to this task but only one of the two is later randomly selected as decision-maker and one randomly selected round is paid out. No interaction between the spouses is allowed. Each round consists of selecting either an equal allocation to both partners (option A: 200 units for the couple split equally) or a higher joint payoff for both partners where inequality between partners varies across rounds (option B: 300 units for the couple).

**Table I. — INTRA-HOUSEHOLD ALLOCATION TASK**

round	Option A		Option B	
	share for self	share for other	share for self	share for other
1	100	100	0	300
2	100	100	75	225
3	100	100	150	150
4	100	100	225	75
5	100	100	300	0

Decisions in this task are closely related to established models of household behavior (for an overview see e.g. CHIAPPORI and DONNI, 2009). Efficient models (whether 'unitary', issued from cooperative game theory, or 'collective') predict the maximization of household income. Non-cooperative models predict similar results to a game played amongst strangers where joint income is not necessarily maximized. Behavior would depend on social preferences amongst spouses. Hence, our task allows the classification of participants based on their revealed preferences for either joint income maximization, own income maximization or partner's income maximization. Participants that prefer option A for the extreme rounds and option B for the middle rounds can be further classified as having some concern for equality. It has to be noted of course that participants had the possibility to choose the higher but unequal earnings in option B and then pool and divide them equally with their partners after the experiment. That is to say, inequality aversion did not necessarily prevent them from choosing B and the number of those choosing option A is only a lower bound estimate of the number of inequality-averse participants (for a more detailed discussion of this see COCHARD et al., 2014). We hence expect a bias towards joint-income maximizing choices.

Participants were also asked to predict the average behavior of all participating men and women from their country. These questions consisted of the same five rounds presented above and participants were asked to indicate how many participants out of 100 they believed to have chosen either option A or option B. We use beliefs about behavior from other participants as an indicator of the perceived social norms in either country.

### III. Experiment

#### III.1 Participants

The experiments were held in May and June 2010 in two medium-sized cities in France and Germany (Toulouse and Mannheim). In both locations, established, mixed-sex couples were invited to participate in an economic study, promoted through newspaper reports and flyers. Only couples living together for at least one year were eligible to participate.

**Table II. — CHARACTERISTICS OF FRENCH AND GERMAN PARTICIPANTS**

	France		Germany	
	Mean	St.dev.	Mean	St.dev.
Age female	35.3	11.8	39.5	15.4
Age male	36.4	11.6	41.3	15.9
Duration of relationship (years)	9.6	11.3	12.7	13.7
Dummy married	.45		.52	
Number of children	.70	.94	.44	.80
Dummy university degree female	.70		.32	
Dummy university degree male	.71		.47	
Dummy monthly household net income >3,000€	.61		.36	
Dummy female higher income bracket than male	.20		.25	
Dummy male higher income bracket than female	.36		.49	
Dummy female works more than male	.19		.24	
Number of couples	69		87	

A total of 156 observations were involved (France: 69, Germany: 87), i.e. 312 participants. In France, the average age for men was 36 and for women 35. In Germany, the average age for men was 41 and for women 39. In France, 45% of participating couples were married, with an average relationship duration of 10 years, while 52% of German couples were married, with an average relationship duration of 13 years. 70% of the French, but only 40% of the German participants had a university degree. This rather large deviation may unsettle at first glance but it is qualified by very different vocational training systems in the two countries. In fact the majority of German employees hold a

vocational training certificate which ranges somewhat between secondary and tertiary education. Given these numbers, our samples are clearly biased towards highly skilled participants, an unsurprising fact given the voluntary nature of our study. Covering an age range from 20 to above 80 years our samples, however, display larger heterogeneity than the typical student samples and are closer to a typical population sample (further details see Appendix table).<sup>3</sup>

### **III.2 Procedures**

In Germany, the experiment was conducted by paper and pencil, with sessions involving 11 to 15 couples. In France, the experiment was computerized, and limited to six couples per session. The same task had been previously investigated in France with a paper and pencil protocol producing qualitatively very similar results (see COCHARD et al., 2014). The different presentation of tasks does therefore not seem to impose a treatment variation. The remaining experimental procedures were identical in the two locations. Instructions and presentations of the choice task were translated into German based on the French original used in COCHARD et al. [2014]. Payoffs from the experiment were converted into euros in both locations according to an exchange rate specified at the beginning of the experiment (10 units = 1 euro in Germany and 20 units = 1 euro in France).

During the study participants could not communicate with others, either with their spouses or other participants. Spouses were physically separated and placed such that they could not communicate during the study. From the beginning of the study it was stressed that decisions were individual, private and anonymous with respect to the experimenters, other participants and their spouse. Final earnings were determined by one randomly selected choice from either the man or the woman. To ensure that subjects did not receive feedback on their partner's decision through observed payments, this experiment was part of a larger study (other tasks not described in this paper). Global earnings did not allow participants to deduce the actions of their partner. For more details on the experimental design see the Appendix.

### **IV. Decisions**

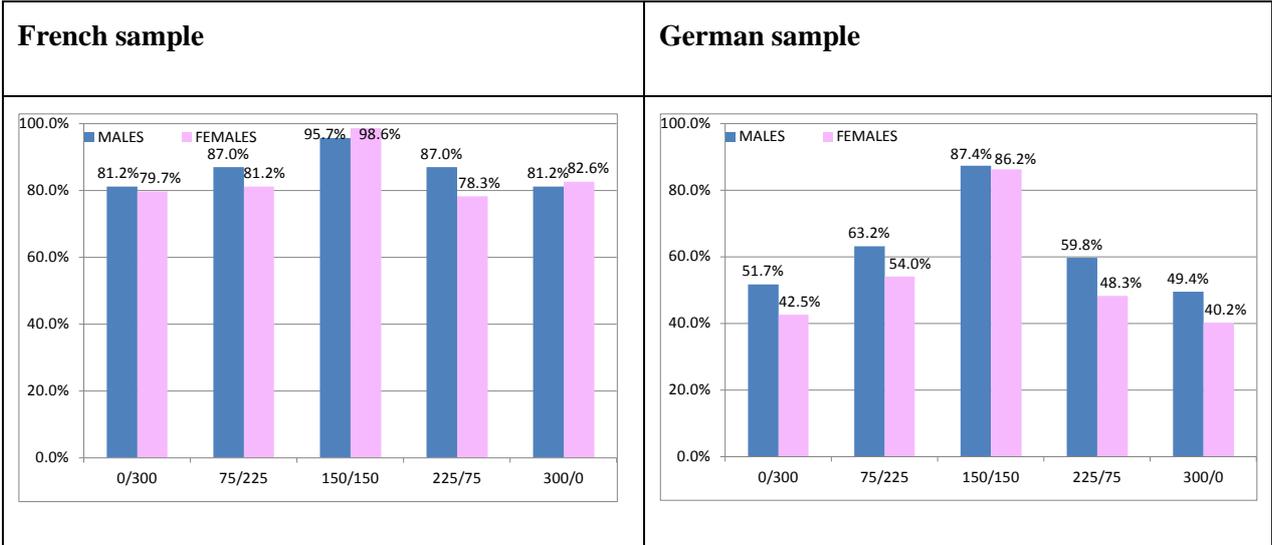
We first present the aggregate results of choosing the higher joint income option (option B) for each of the five rounds of the distribution task. Figure 1 illustrates the outcomes by gender for both countries. Results in France are very similar to earlier results obtained by COCHARD et al. [2014]. Approximately 74% of participants chose the efficient option for each of the five rounds. Decisions were symmetric concerning the inequality in option B. The difference compared with the German sample is

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<sup>3</sup> In the questionnaires, monthly incomes are given in brackets. In Germany individual and household income were asked in separate questions. In France, only individual net income was asked for. We thus performed a ML-estimation for the French data to generate a continuous income variable for the household income and compute the dummy “monthly household net income >3,000€”.

particularly noteworthy: choices were also symmetric concerning inequality in option B; however a much larger proportion of participants selected the equal outcome, i.e. option A. More specifically, for the extreme rounds less than 50% of participants selected option B, and for the two intermediate rounds only slightly more than half selected option B. In both countries, we observe that men selected the efficient option B generally more often than women. Although the gender difference tends to be more pronounced in Germany, it is not statistically significant in either sample.<sup>4</sup> The observed differences for round 3, where participants had to choose between a 100/100 or 150/150 allocation, might suggest that many more errors were made by the German sample (13% chose B versus 3% in France). However, these numbers have to be taken in relation to the number of participants taking any A options into account. Due to the lower ratio of participants in Germany that always chose B (39% in Germany versus 74% in France), the relative error rate diminishes to 21%, versus 17% in France. We nonetheless conducted robustness checks with the reduced sample of participants choosing B in round 3 in all remaining analyses but did not encounter any statistically significant differences.

**Figure 1. — Female and Male Decisions between Countries**



Note : These graphs illustrate the percentages of women and men in each country sample that opted for option B (higher total income but varying unequal shares between me/spouse) against option A (lower total income, equal shares). For example, in the first columns the participant receives 0 and the spouse receives 300 when choosing option B, instead of receiving 100 each when choosing option A.

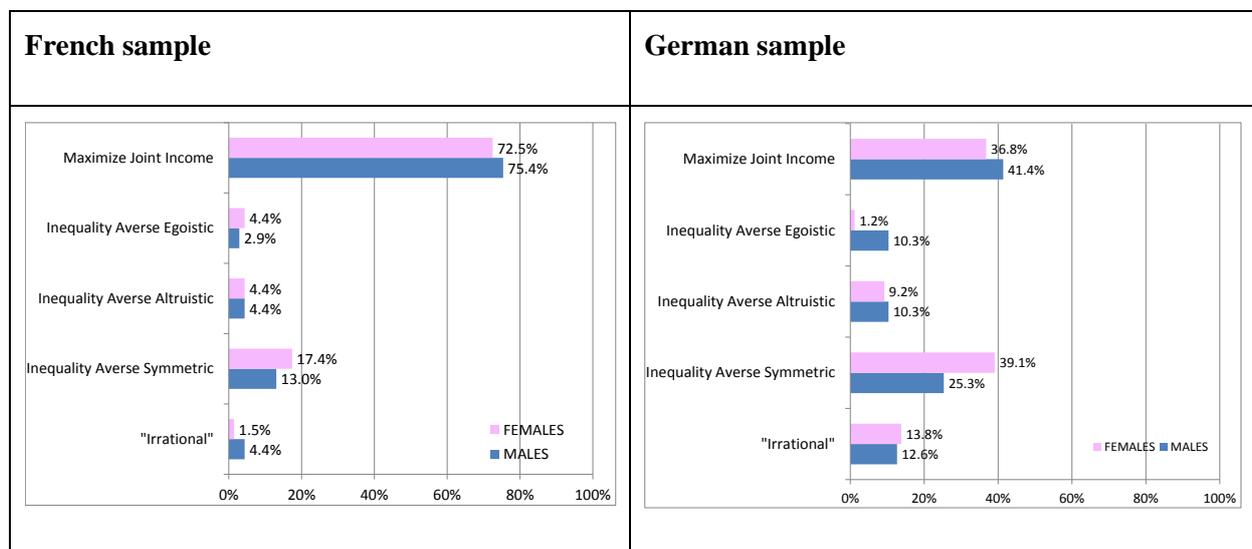
It should also be noted that due to the experimental exchange rate being twice as favourable in Germany compared to France, the absolute gains from choosing the maximizing option B were twice as high in Germany. Hence, if absolute gains from choosing the total income-maximizing option

<sup>4</sup> *p*-values of the 2-tailed Fisher-Yates test are: 1.000, 0.486, 0.619, 0.261 and 1.000; 0.288, 0.281, 1.000, 0.171 and 0.286 for rounds 1 to 5 in France and Germany.

increase its attractiveness, we would expect more participants to choose option B in Germany. This is obviously not the case.<sup>5</sup>

We can further use data from the decision task to classify participants into different categories. We present the distribution of these types for the French and German sample in Figure 2. Approximately 74% of participants in the French sample always chose B and can thus be classified as joint-income maximizers. Again the difference compared with the German sample is noteworthy. In the German sample less than 40% of participants can be classified as income maximizers. An almost equally large group can be classified as having some concern for inequality aversion.

**Figure 2. — Types of Decision Makers**



Note: Subjects who ‘Maximize joint income’ are those who always choose option B; ‘Inequality averse symmetric’ subjects are those who sometimes choose option A (100/100), but behave the same way whether self or spouse is disadvantaged by the inequality in option B; ‘Inequality averse egoistic’ subjects are more inequality averse for themselves than for their partner; ‘Inequality averse altruistic’ subjects are more inequality averse for their partner than for themselves. Participants who select option A in the third round when option B (150/150) would be more beneficial for both are classified as ‘Irrational’.

<sup>5</sup> We considered whether the utility function induces greater inequality aversion simply due to higher stakes. However, none of the standard utility functions has this property: Let  $(x, y)$  be a distribution of income between me  $(x)$  and my partner  $(y)$ . Let  $U(x, y)$  be my utility function over payoffs. In our experiment, subjects have to choose between an equal option  $(w/2, w/2)$  and an unequal but income maximizing option  $(tx, (1-t)x)$ , with  $t$  between 0 and 1 and  $x > w$ . Let  $\lambda > 0$  be the exchange rate in euros (amount of euros per experimental point, larger in Germany). We have to investigate whether the sign of  $\Delta U(\lambda) = U(\lambda tx, \lambda(1-t)x) - U(\lambda w/2, \lambda w/2)$  changes with  $\lambda$ , reflecting the fact that the choice between the equal option and the income maximizing option is affected by the exchange rate. This is neither the case with the FEHR-SCHMIDT (1999) inequality aversion model:

$$U(x,y) = x - \alpha(y-x) \text{ if } y \geq x, \text{ and } = x - \beta(x-y) \text{ if } x \geq y, \text{ with } 0 \leq \beta \leq \alpha \text{ and } \beta < 1$$

nor the CHARNESS and RABIN (2002) model, which can be written as:

$$U(x,y) = (1-\rho)x + \rho[d \cdot \min(x,y) + (1-d)(x+y)], \text{ with } 0 \leq \rho \leq 1 \text{ and } 0 \leq d \leq 1$$

nor the BOLTON-OCKENFELS (2000) inequality aversion utility function:

$$U(x,y) = ax - (b/2) \cdot [x/(x+y) - 1/2]^2, \text{ where } a \geq 0, b > 0$$

nor the COX-FRIEDMAN-GJERSTAD (2007) (or ANDREONI-MILLER, 2002) model, which is strictly concave in  $(x, y)$ .

The asymmetry in preferences between countries is also reflected in the outcomes on the couples' level. When we look at both spouses' choices, we find that in 59% of French couples both spouses maximize household income. In the German sample, both spouses maximize joint income in only 22% of the cases. By contrast, for 26% of the German couples both partners act in a manner demonstrating inequality aversion.

In order to assess the importance of various socio-economic variables for the individual efficiency-equality trade-off decision we apply a multivariate logistic regression analysis of the propensity to choose option B for each country sample and each round separately. In Table II we chose to present the estimation results of the two regressions for the first round (I receive 0, my partner receives 300) since we consider it the most crucial in terms of inequality disfavoring the individual herself. Regressions for rounds 2, 4 and 5 show slightly different results, but F-tests are not significant. Moreover, decisions are symmetric (choosing Option B in round 1 and in round 5) for the majority of the participants. The detailed regression results are provided in the Appendix. Overall, the estimates show that the preference for option B is explained by very different factors in the two countries.

Among the German participants we see that more highly educated participants with children are more likely to choose efficiency over equity, whereas among French participants the preference for efficiency is related to income level and unequal incomes within the household. Other characteristics do not seem to be statistically related to the choices made.

**Table III. — LOGISTIC REGRESSION ON CHOOSING OPTION B IN ROUND 1 BY FRENCH AND GERMAN PARTICIPANTS**

	France		Germany	
	Coef.	St. err.	Coef.	St. err.
Dummy female	-.139	.465	-.322	.332
Age	-.055	.042	-.020	.022
Duration of relationship	.001	.048	-.026	.029
Dummy married	.192	.653	-.410	.435
Number of children	.202	.402	<b>.673</b>	<b>.298</b>
Dummy university degree male	.585	.516	<b>.861</b>	<b>.366</b>
Dummy monthly household net income >3,000€	<b>1.21</b>	<b>.567</b>	-.133	.390
Dummy female has higher income bracket than male	.141	.779	.155	.479
Dummy male has higher income bracket than female	<b>-1.01</b>	<b>.600</b>	-.389	.419
Dummy female works more than male	-.375	.698	-.013	.453
Constant	<b>2.71</b>	<b>1.43</b>	.946	.731
Number of observations	138		174	
Log Likelihood	-60.3		-108.6	
Pseudo R-squared	.1155		.0973	

Note: Coefficient estimates at the 10% significance level are in bold type. Estimations based on Probit or OLS regression equations yield very similar results.

Both the descriptive statistics presented above (Figure 1) and the regression results regarding the participants' decisions reveal marked differences in behavior in both France and Germany. This may in part be due to differing mean characteristics between the French and the German samples. We were able to control for these differences by the use of the decomposition technique initiated by OAXACA [1973] and BLINDER [1973]. Here the expected difference between French and German choices is rewritten as the sum of two terms. The first term reflects that share of the choice deviation which arises from differences in the average characteristics between both samples. The second term is the portion due to differences in the estimated coefficients, i.e. it represents that part of the observed mean difference between choices in France and Germany that may be due to systematically differing preferences in both countries. For this purpose, we introduced the counterfactual variable  $E_{\hat{\beta}_{DE}}(choice_{FR} | X_{FR})$  which gives the imputed choices of the German participants in the hypothetical case that they had the same average characteristics as the French sample:

$$\begin{aligned}
& E\hat{\beta}_{DE}(choice_{DE} | X_{DE}) - E\hat{\beta}_{FR}(choice_{FR} | X_{FR}) \\
&= (E\hat{\beta}_{DE}(choice_{DE} | X_{DE}) - E\hat{\beta}_{DE}(choice_{FR} | X_{FR})) + (E\hat{\beta}_{DE}(choice_{FR} | X_{FR}) - E\hat{\beta}_{FR}(choice_{FR} | X_{FR})) \\
&= (E\hat{\beta}_{DE}(choice_{DE} | X_{DE}) - (choice_{FR} | X_{FR})) + ((E\hat{\beta}_{DE} - E\hat{\beta}_{FR})(choice_{FR} | X_{FR})).
\end{aligned}$$

When applying this equation to the estimated coefficients (see Table III) and average characteristics (see Section 3) of our data, we find that 30 to 48% of the mean differences in choices between French and German participants across rounds can be explained by differences in the observed characteristics of both participant samples (see Table IV). The remaining half to over two thirds are due to differences in estimated coefficients, depending on the specific round looked at.

**Table IV. — OAXACA-BLINDER DECOMPOSITION OF CHOICE DEVIATIONS BETWEEN FRENCH AND GERMAN PARTICIPANTS**

round	Share due to differing sample characteristics	Share due to differing coefficients
1	43.2%	56.8%
2	47.9%	52.1%
4	29.6%	70.4%
5	34.8%	65.2%

Note: Decomposition based on regression results of Table III and Appendix Table B.

For round 3, the share due to differing observable characteristics between the samples amounts to 98%, revealing that the larger fraction of “irrationally acting” German participants who chose option A in round 3 is almost completely explained by these differences. However, we have to note that in this round the French estimation results are based on a very small variation in the outcome variable.

We interpret this as the result of overall differences between our French and German samples that might be attributed to culture or other unobserved characteristics of the couple or the society. We can therefore conclude that preferences towards equity vs. efficiency differ, even when holding a standard set of observable characteristics constant. The conditional difference, however, is less prominent than observed at first glance. This is particularly true for choices that favor the partner’s outcome (in rounds 1 and 2).

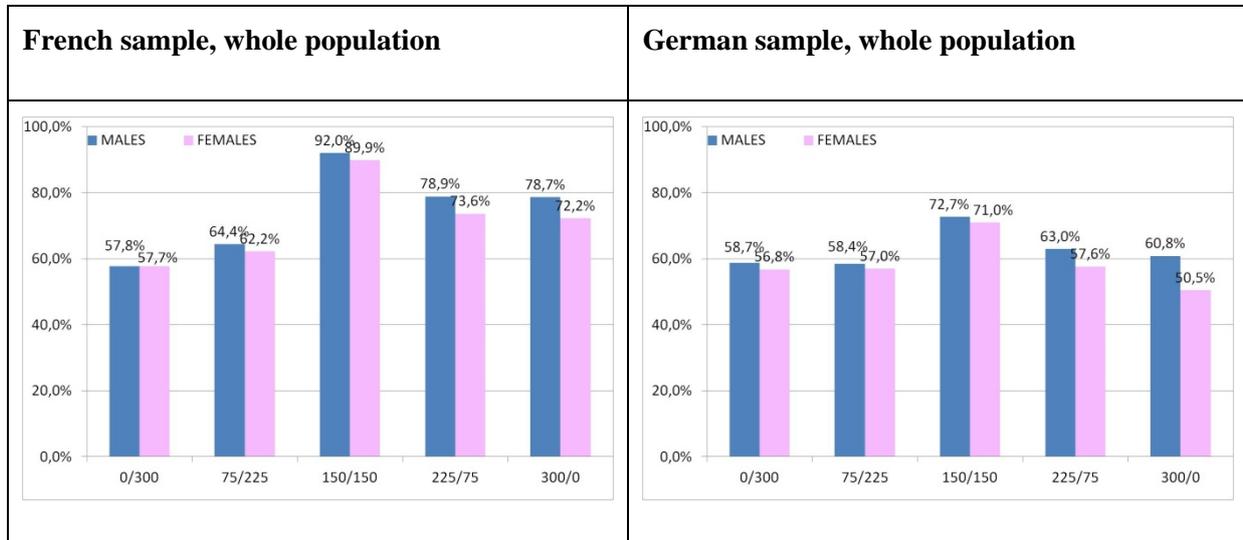
## V. Beliefs

In this section, we analyze beliefs by men and women concerning the average behavior of all participating men and women (from their country) in the study. We observe that beliefs differ significantly from observed behavior. Moreover the type of mistakes made differ across the two countries and gender.

From Figure 3 we see that gender differences in beliefs appear to be negligible for rounds 1, 2 and 3 in both countries, although men are always expected to be more prone to select the efficient option.

However, women are expected to be less selfish on average than men, in particular in Germany, as half of the German women, but 60% of the men, are expected to choose option B in round 5.

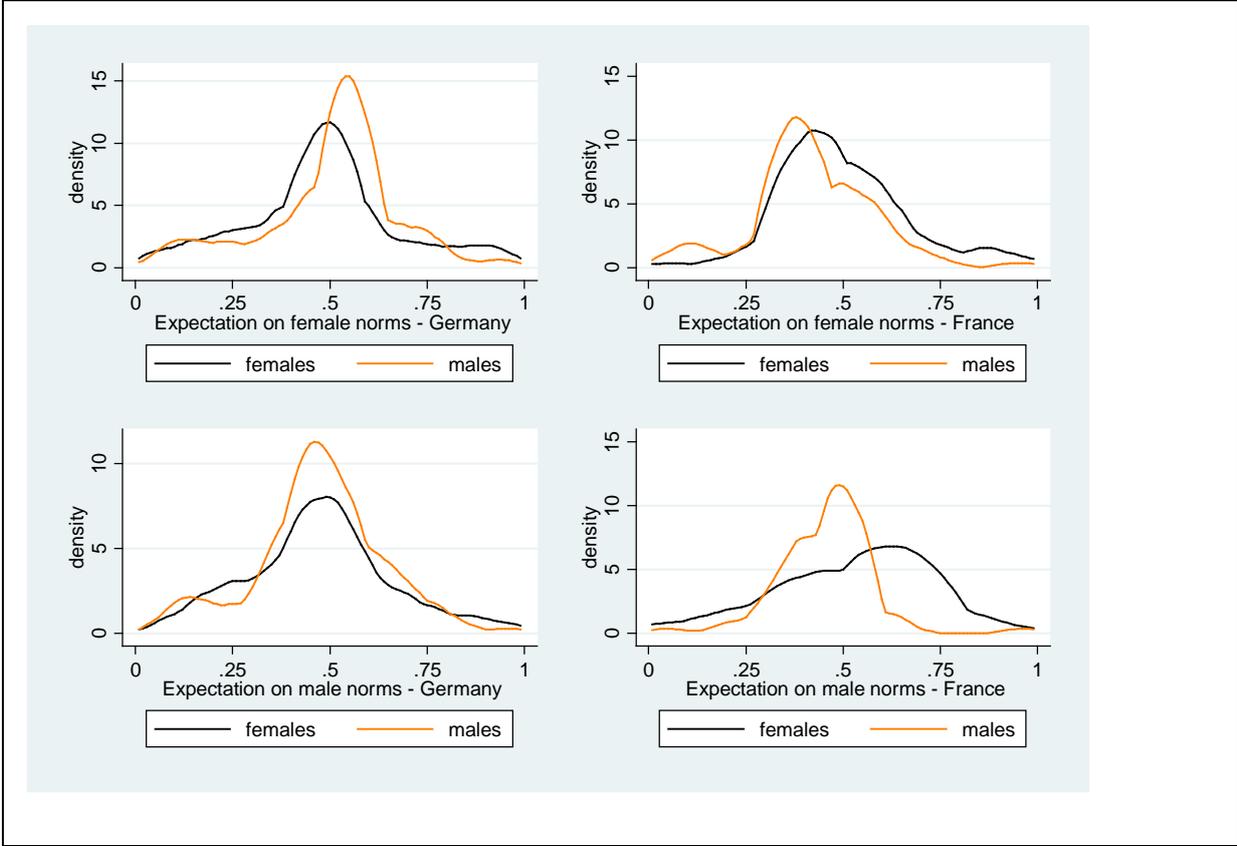
**Figure 3. — Beliefs about Female and Male Decisions in the Whole Population**



Note : These graphs illustrate the mean beliefs (in percentages) for women and men in each country sample for choosing option B. For example, French participants believe that 57.8% of men and 57.7% of women would choose option B in round 1.

Figure 4 shows even more differentiated gender- and country-specific patterns. The graphs show the distribution of an indicator of asymmetry in female and male expectations regarding female and male choices in rounds 1 and 2, relative to expectations for rounds 4 and 5. Specifically, the more the lines are skewed to the left, the more the participants are expected to be selfish. On the contrary, the more the lines are skewed to the right, the more the participants are expected to be altruistic. The figure reveals that in Germany, women are believed, particularly by men, to be more selfish, whereas in France, men are expected to be significantly more selfish on average by women than by themselves. Jarque-Bera tests show that the normality assumption is rejected at the 5% significance level for female expectations on female choices and male expectations on male choices in France, and male beliefs about female behavior in Germany. At the 10% level the normality assumption is also rejected for male beliefs regarding female behavior in France. For the remaining gender- and country-specific subgroups, we can accept statistically the hypothesis that participants believe in people behaving symmetrically. Hence, we measure significant differences in gender-specific beliefs across and within countries on individual preferences for equity vs. efficiency. This leads us to conclude that the social norms concerning these beliefs differ between men and women on the one hand, and France and Germany on the other.

**Figure 4. — Beliefs about Average Female and Male Payoff Shares**



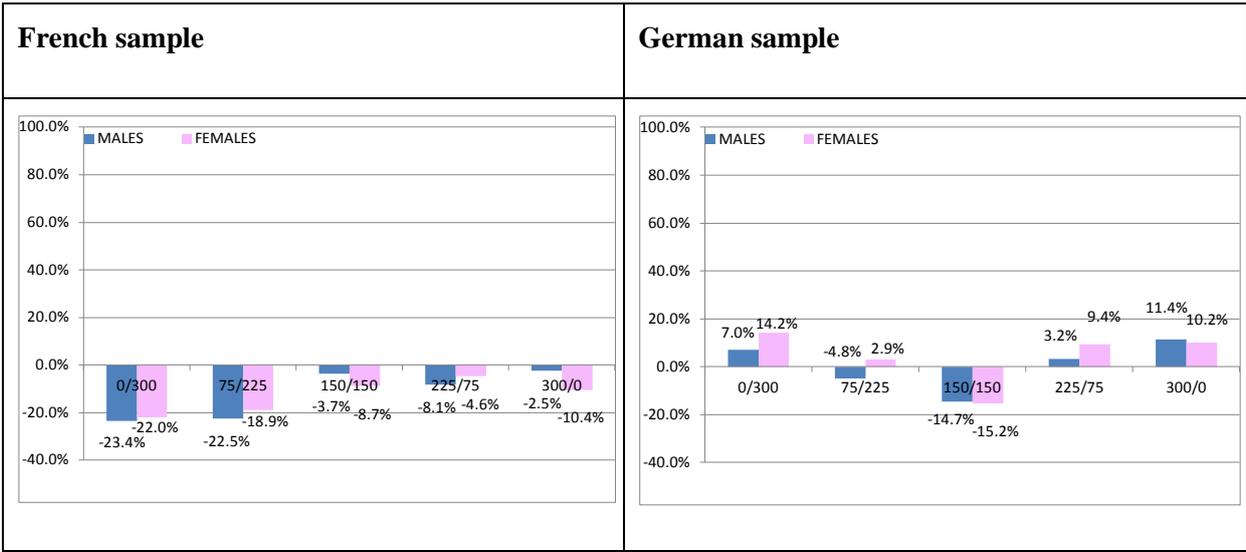
Note: The graphs show the kernel density functions of the indicator of asymmetry in mean female and male expectations about female and male choices in rounds 1 and 2, relative to expectations about female and male choices in rounds 4 and 5, separately for France and Germany. Example 1: Value 0 for female in the upper left graph means that all German women are expected by the women to choose option B in rounds 1 and 2, and option A in rounds 4 and 5 (women are expected by German women to have fully altruistic behaviour). Example 2: Value 1 for male in the upper right graph means that all French women are expected by French men to choose option A in rounds 1 and 2, and option B in rounds 4 and 5 (women are expected by French men to have totally selfish behaviour). Example 3: Value .5 means that the expectations are the same for rounds 1 and 2, and 4 and 5.

Beyond this, in France, people are expected to be *less* efficient, i.e. income-maximizing, than they actually are, whereas in Germany people are expected to be *more* efficient than they actually are (except for round 3), as illustrated by Figure 5, which shows, for each round and country sample, the differences between expected and actual behavior (i.e. subtracting Figure 1 from Figure 3). For example, in France altruistic behavior by men is underestimated by 23.4 percentage points (round 1), respectively 22.5 percentage points (round 2). The numbers for French women are similar, but somewhat smaller. In Germany, women’s altruism is overestimated by 14.2 percentage points, respectively 2.9 percentage points, while men behave more or less as expected when averaging over the first two rounds. Interestingly, errors in expectations tend to be symmetric in Germany, whereas

they tend to be asymmetric in France, reflecting the belief that French participants are selfish, although they actually have symmetric choices.

Beliefs concerning selfish choices by others can be linked to the observation that general trust in France is somewhat lower than in Germany (WORLD VALUES SURVEY [2011]; CAHUC and ALGAN [2007]; WILLINGER et al., [2003]).

**Figure 5. — Difference between Beliefs and Actual Behavior**



Note: These graphs illustrate the mean difference between beliefs and actual behavior for women and men in each round and country sample in opting for option B. For example, for France in round 1 (i.e. “I get 0/my spouse gets 300”), 81.2% of French male participants choose option B, though only 57.8% are expected to do so. Hence, altruistic behavior is underestimated by 23.4 percentage points.

**VI. Conclusion**

In summary, there is a substantial difference in French and German couples’ efficiency-equality trade-off decisions. While approximately three quarters of French participants always choose the income maximizing option for the couple instead of the equal share between spouses, this is the case for less than half of the German participants. However, aversion towards income inequality seems symmetric in both samples. When making the country samples more comparable by controlling for a standard set of socio-economic variables, at least 50% of the initial French/German difference remains unexplained. That is, although the groups vary significantly in terms of socio-economic characteristics and environments, up to one half and more of the observed heterogeneity across French and German couples seems to be driven by sample differences in distributional preferences and norms. Part of the variation in behavior may also be explained by differing prices and institutions, particularly in the labour or the marriage market, that have not been addressed by the included socio-economic variables.

Given that the included socio-economic variables are generally considered to characterize economic constraints, our results show that other characteristics of a country need to be considered. This is in line with research showing that cultural differences concerning gender roles and family arrangements can persist even when migrants are exposed to a new economic and institutional environment (e.g. ALESINA et al., 2013; GIULIANO, 2007). The fact that our data were collected in an experimental context, and that we have a large and heterogeneous subject pool with more than 300 non-student participants, leads us to extrapolate our findings, at least to the Toulouse and Mannheim regions.

Furthermore, beliefs differ significantly from observed behavior in both countries. In the German sample income-maximizing choices are overestimated, while in the French sample they are underestimated and people expect much more selfishness than actually exists. Consistent with the cultural categorization of French and German societies by HOFSTEDE et al. [2010] our results point at differing norms concerning equality among spouses in the two countries. French couples seem to more readily accept differences in earnings from the experimental task, a result that can be interpreted as being in line with the greater power distance observed for French society. In contrast, beliefs in France suggest that others are expected to act more selfishly. This can be interpreted as being in line with the higher value of individualism in France. Having shown that spouses' behavior can differ widely between two neighboring countries of reasonably similar economic and social background, we can therefore stress the importance of taking into account cross-cultural differences when considering the potential effects of policy measures.

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**Appendix:**

**Table A. — COMPARISON OF OUR SAMPLES WITH POPULATION CENSUS DATA**

	<b>France</b>			<b>Germany</b>	
	Population	Our sample		Population	Our sample
Age range (%)			Age range (%)		
15-29	22	39	<=29	32	37
30-39	16	32	30-39	14	17
40-49	17	12	40-49	17	13
50-59	16	9	50-59	13	13
>=60	29	8	>=60	25	20
Education (%)			Education (%)		
A-level or vocational training without A-level	40	30	Vocational training	56	37
Vocational training with A-level or university degree*	25	70	Academic degree	13	40
Employed (%)	64	77	Employed (%)	68	79

Note for France: Population aged 15 and above, Population Census, INSEE 2010. (\*) In France, vocational training with A-level and 1st degree academic degree are aggregated into the same indicator (“Diplôme du 1er cycle universitaire, BTS, DUT, ou équivalent, niveau BAC+2”).

Note for Germany: Statistisches Landesamt Baden-Württemberg 2009, 2010.

## Appendix:

**Table B. — ESTIMATION RESULTS – ROUNDS 2, 4 AND 5**

	France			Germany		
	Round 2	Round 4	Round 5	Round 2	Round 4	Round 5
Dummy female	<b>-.404</b>	<b>-.666</b>	.129	-.237	-.443	-.346
Age	-.010	-.030	-.030	-.011	<b>-.029</b>	<b>-.033</b>
Duration of relationship	.016	.017	-.045	-.007	.026	-.001
Dummy married	-.836	-.156	.349	<b>-.621</b>	<b>-.823</b>	-.448
Number of children	-.090	-.136	.119	<b>.599</b>	.140	<b>.572</b>
Dummy university degree male	<b>1.41</b>	<b>1.88</b>	.511	<b>1.29</b>	<b>.744</b>	<b>.874</b>
Dummy monthly household net income >3,000€	.212	-.344	<b>1.45</b>	-.424	-.151	-.230
Dummy female has higher income bracket than male	.244	.009	-.181	.458	-.060	-.381
Dummy male has higher income bracket than female	-.751	-.440	<b>-1.30</b>	-.564	-.312	-.138
Dummy female works more than male	1.43	.531	.009	-.218	.074	.148
Constant	1.78	<b>2.29</b>	<b>2.27</b>	.996	<b>1.53</b>	<b>1.11</b>
Number of observations		138			174	
Log Likelihood	-50.2	-52.0	-55.5	-105.6	-111.5	-109.7
Pseudo R-squared	0.1711	0.1852	0.1507	0.1053	0.0715	0.0832

Note: Coefficient estimates at the 10% significance level are in bold type.

Part 1: Instructions (translation) and screen shots from experiment in Toulouse

*Translation of text below:*

*You will make a number of decisions.*

*Each numbered line proposes two different distributions of FT (Franc Toulousain) between you and your partner.*

*For each line you have to choose one of the two options:*

*option A or option B*

*Consider for example the first line. In option A, each of you earns 100 FT. In option B, the man will earn 0 FT and the woman will earn 300 FT.*

*For each line you will therefore have to check one of the boxes. At the end of the study we will randomly select one of these lines. In addition we will randomly determine whether the decision of the man or the woman will be used for the final distribution of earnings.*

*[screen for the female version]*

**Résumé des instructions:**

**Vous allez effectuer une série de décisions.**

**Chaque ligne, numérotée, propose deux répartitions possibles de FT entre vous et votre partenaire.**

**Pour chaque ligne, vous devez choisir une des deux répartitions :**

**la répartition A ou la répartition B**

	Répartition A:		Répartition B:			
	 mon partenaire	 moi-même	 mon partenaire	 moi-même		
1 :	100 FT	A : <input type="radio"/>	100 FT	0 FT	B : <input type="radio"/>	300 FT
2 :	100 FT	A : <input type="radio"/>	200 FT	75 FT	B : <input type="radio"/>	225 FT
3 :	100 FT	A : <input type="radio"/>	100 FT	150 FT	B : <input type="radio"/>	150 FT

**Considérez par exemple la première ligne. Dans la répartition A, chacun obtient 100 FT. Dans la répartition B, l'homme obtient 0 FT et la femme obtient 300 FT.**

**Pour chaque ligne, vous devez donc cocher une case. A la fin de l'enquête, nous tirerons au sort une de ces lignes. Nous tirerons ensuite au sort qui de l'homme ou de la femme décidera de la répartition effective des gains.**

*[in the following we present the screens for the male version]*

## Situation 1

Choisissez pour chaque ligne une des deux répartitions.

	Répartition A:		Répartition B:			
						
1 :	100	A : <input type="radio"/>	100	0	B : <input type="radio"/>	300
2 :	100	A : <input type="radio"/>	100	75	B : <input type="radio"/>	225
3 :	100	A : <input type="radio"/>	100	150	B : <input type="radio"/>	150
4 :	100	A : <input type="radio"/>	100	225	B : <input type="radio"/>	75
5 :	100	A : <input type="radio"/>	100	300	B : <input type="radio"/>	0

Suite

*Translation of text below:*

What do you think other women/men participating in this study did? Given 100 women/men participating in this study, indicate for each line how many women/men chose option A. Option B will be automatically completed.

**Question 2 sur la situation 1**

Comment pensez-vous que les femmes participant à cette étude ont décidé? Pour 100 femmes participant à l'étude, indiquez pour chaque ligne, combien de femmes ont choisi la répartition A. La répartition B se complètera automatiquement.

Répartition A:  Son partenaire  La femme

Répartition B:  Son partenaire  La femme

1 :	100	A :	<input type="text" value="5"/>	100	0	B :	<input type="text" value="95"/>	300
2 :	100	A :	<input type="text" value="10"/>	100	75	B :	<input type="text" value="90"/>	225
3 :	100	A :	<input type="text" value="0"/>	100	150	B :	<input type="text" value="100"/>	150
4 :	100	A :	<input type="text" value="15"/>	100	225	B :	<input type="text" value="85"/>	75
5 :	100	A :	<input type="text" value="10"/>	100	300	B :	<input type="text" value="90"/>	0

Valider

**Question 3 sur la situation 1**

Comment pensez-vous que les hommes participant à cette étude ont décidé? Pour 100 hommes participant à l'étude, indiquez pour chaque ligne, combien d'hommes ont choisi la répartition A. La répartition B se complètera automatiquement.

Répartition A:  Sa partenaire  L'homme

Répartition B:  Sa partenaire  L'homme

1 :	100	A :	<input type="text"/>	100	0	B :	<input type="text"/>	300
2 :	100	A :	<input type="text"/>	100	75	B :	<input type="text"/>	225
3 :	100	A :	<input type="text"/>	100	150	B :	<input type="text"/>	150
4 :	100	A :	<input type="text"/>	100	225	B :	<input type="text"/>	75
5 :	100	A :	<input type="text"/>	100	300	B :	<input type="text"/>	0

Valider

## Part 2: Instructions (translation) and sheets from experiment in Mannheim

### Translation of text below:

*In this task you decide about the distribution of money between yourself and your partner by choosing either option A or option B. There are five lines. Please tick one of the options in each line.*

*Each woman and each man makes five decisions. At the end of the study we will select one of these decisions and you will receive the respective compensation.*

*[screen for the female version]*

## Aufgabe 1

In dieser ersten Aufgabe entscheiden Sie über die Aufteilung von Geld zwischen sich und Ihrem Partner, indem Sie entweder Option A oder Option B wählen. Es gibt fünf Zeilen. Bitte kreuzen Sie in jeder Zeile eine der Optionen an.

Jede Frau **und** jeder Mann trifft fünf Entscheidungen (eine pro Zeile). Aus allen Entscheidungen wird am Ende der Studie nur eine ausgewählt und Sie bekommen die dort angekreuzte Auszahlung.

	Option A:		Option B:				
							
	Mein Partner	Ich	Mein Partner	Ich			
1 :	100 Taler	A : <input type="checkbox"/>	100 Taler	B : <input type="checkbox"/>	0 Taler	B : <input type="checkbox"/>	300 Taler
2 :	100 Taler	A : <input type="checkbox"/>	100 Taler	B : <input type="checkbox"/>	75 Taler	B : <input type="checkbox"/>	225 Taler
3 :	100 Taler	A : <input type="checkbox"/>	100 Taler	B : <input type="checkbox"/>	150 Taler	B : <input type="checkbox"/>	150 Taler
4 :	100 Taler	A : <input type="checkbox"/>	100 Taler	B : <input type="checkbox"/>	225 Taler	B : <input type="checkbox"/>	75 Taler
5 :	100 Taler	A : <input type="checkbox"/>	100 Taler	B : <input type="checkbox"/>	300 Taler	B : <input type="checkbox"/>	0 Taler

Translation of text below:

What do you think other women/men participating in this study do? Given 100 women/men participating in this study, indicate for each line how many women/men choose option A.

## 2. Frage zu Aufgabe 1

Was meinen Sie, wie entscheiden die weiblichen Teilnehmer in dieser Studie insgesamt bei dieser Aufgabe? Tragen Sie in jeder Zeile ein, wie viele der 100 Teilnehmerinnen **Option A** wählen. Option B müssen Sie nicht ausfüllen.

	Option A:		Option B:	
	 Ihr Partner	 Die Frau	 Ihr Partner	 Die Frau
1:	100 Taler	A: <input type="text"/> 100 Taler	0 Taler	B: <input type="text"/> 300 Taler
2:	100 Taler	A: <input type="text"/> 100 Taler	75 Taler	B: <input type="text"/> 225 Taler
3:	100 Taler	A: <input type="text"/> 100 Taler	150 Taler	B: <input type="text"/> 150 Taler
4:	100 Taler	A: <input type="text"/> 100 Taler	225 Taler	B: <input type="text"/> 75 Taler
5:	100 Taler	A: <input type="text"/> 100 Taler	300 Taler	B: <input type="text"/> 0 Taler

## 3. Frage zu Aufgabe 1

Was meinen Sie, wie entscheiden die männlichen Teilnehmer in dieser Studie insgesamt bei dieser Aufgabe? Tragen Sie in jeder Zeile ein, wie viele der 100 Teilnehmer **Option A** wählen. Option B müssen Sie nicht ausfüllen.

	Option A:		Option B:	
	 Seine Partnerin	 Der Mann	 Seine Partnerin	 Der Mann
1:	100 Taler	A: <input type="text"/> 100 Taler	0 Taler	B: <input type="text"/> 300 Taler
2:	100 Taler	A: <input type="text"/> 100 Taler	75 Taler	B: <input type="text"/> 225 Taler
3:	100 Taler	A: <input type="text"/> 100 Taler	150 Taler	B: <input type="text"/> 150 Taler
4:	100 Taler	A: <input type="text"/> 100 Taler	225 Taler	B: <input type="text"/> 75 Taler
5:	100 Taler	A: <input type="text"/> 100 Taler	300 Taler	B: <input type="text"/> 0 Taler

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