



Discussion Paper



Do husbands and wives pool their incomes? A couple experiment

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Harriet Taylor Mill-Institut für Ökonomie und Geschlechterforschung
Discussion Paper 28, 12/2015

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**Do husbands and wives pool their incomes?
A couple experiment**

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Abstract

In this paper, we propose a simple and direct test of income pooling within couples, and provide a typology of who pools resources and who does not. For this purpose, we performed a five-round experiment with 95 established real-life couples in Germany. In each round, the couples received the same total amount of money, but the relative allocation to the spouses differed while they had to agree on an irreversible private goods consumption pattern. Our first finding is that the consumption choices depend on the spouses' relative resources for the majority of the sample. Though this suggests a rejection of income pooling at the mean, an unneglectable share of the couples do indeed pool their resources. Our second finding is that the pooling behaviour is negatively related with the heterogeneity of the spouses' socio-economic characteristics. In particular, traditional couples with distinct work division between the spouses are significantly less likely to treat their individual resources symmetrically. Our third finding is that conventional variables used to approximate income pooling are only loosely related to the behaviour observed in our experiment.

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Keywords

Family economics, Intra-household decision making, Consumption choices, Couple experiment

JEL Codes

C71, C91, C92, D12, D13, J16

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1 Introduction

Income pooling within the family is one of the key assumptions, not only of traditional household economics but also of many tax-welfare systems. It eases the analysis in commonly-used models of household decision making, e.g. the unitary model. Likewise, it facilitates the design of public taxes and transfers since in many countries “marital spouses are assumed to form an earnings and consumption community, in which each one shares in the earnings of the other by one half” (BVerfGE 1983).¹

In this paper, we challenge the assumption of income pooling in an experiment with real-life couples. Our micro-study is original in exploring the heterogeneity of pooling from pure observation as opposed to drawing conclusions from aggregated consumption data or structural model estimation. We use a very broad definition where income is classified as pooled if each euro that enters the household is treated equally, no matter to whom it is handed. A pooling couple should hence spend the same proportion of each euro on a given good (private or common) independently of the recipient. In compliance with our definition, a household’s money and consumption arrangements do not necessarily have to foresee a fair or equal split between household members (as in the Constitutional Court’s presumption above). For income pooling to hold, consumption decisions simply have to be independent of who receives a payment.

The existing evidence on income pooling falls into four categories, broadly speaking. Structural econometric models for specific subgroups of households were the first to challenge the unitary decision-making model of the family and provided indirect evidence against the pooling hypothesis (see for example Thomas 1990, Browning et al. 1994, Browning and Chiappori 1998, Phipps and Burton 1998). With the analyses of a quasi-natural experiment in the UK by Lundberg et al. (1997), Hotchkiss (2005), Ward-Batts (2008) and, most recently, Fisher (2014) another small series of studies has then been published on the intra-family consumption consequences when re-allocating resources from fathers to mothers. Thirdly, some papers use proxy variables, such as whether personal expenditures would be affected by relative individual income (Bonke and Uldall-Poulsen 2007, Bonke and Browning 2010, Amuedo-Dorantes et al. 2011), or whether separate versus common bank accounts are used (Ludwig-Mayerhofer et al. 2006), to conclude on the practice of resource pooling within couples. Finally, a number of field experiments have been carried out in developing countries that varied the resources given to individual household members. However, for developed countries, these rejections of income pooling rely on calculations at the mean, or on the use of proxy variables. We thus still know very little about the heterogeneity of couples’ and households’ pooling behaviour.

Our paper fills this gap by providing experimental evidence from real couples’ behaviour in Germany. We present an experiment with established couples (married and unmarried) to investigate how they make consumption decisions under a given resource allocation and how these decisions alter with a varying allocation between partners. Although the external validity of results gained from experiments is often considered rather limited, we see much scope for our application of a framed field experiment as a convenient and flexible method to observe the behaviour of established couples, rather than student participants, as usual in experimental

¹ Statement of the German Federal Constitutional Court to legitimate joint taxation of married couples in Germany.

procedures. The participating couples are put into a range of situations similar to their real lives. Hence, we gain a deeper insight into questions which are difficult and very costly to be answered by survey data or a large field experiment.

The paper starts with an overview of the household economics literature. After a review of studies that discuss the income pooling assumption from both the theoretical and empirical perspective, we sketch the few existing experimental studies on established couples' (as opposed to student participants') behaviour. We then present our experimental approach to test the assumption of income pooling within established couples. This includes a description of the experimental design and the characteristics of the participants. From the experiment we derive a direct test of income pooling. Our subsequent analyses provide insights into the groups of poolers and non-poolers of income and the ambiguities encountered by traditional measures of income pooling used in the literature, including an alternative collective-model based test. The paper concludes with a discussion of the limitations of the experiment and the external validity of our results.

2 Literature review

2.1 Evidence on income pooling

The question of whether the family pools its monetary resources has received careful attention in the economic literature, although answering this question is not an easy task. Existing micro-data sets do not provide direct evidence on income pooling since consumption patterns are usually aggregated at the family level. However, different empirical approaches have been developed in order to test the income pooling hypothesis on the basis of the information available in household survey data. First generation tests draw conclusions from structural household models, exploiting between-couples' heterogeneity in spouses' labour supply (Apps and Rees 1988, and Chiappori 1988), household income structure (Thomas 1990, Phipps and Burton 1998), family aggregate expenditures (Browning and Chiappori 1998), or expenditures of an assignable good (Browning et al. 1994).

A refinement has been provided by Bonke and Uldall-Poulsen (2007) and Bonke and Browning (2010) who used a specific question in the Danish Expenditure Survey – regarding individual expenditures for specific private goods – to reject income pooling within the household. Also based on Danish survey responses, Amuedo-Dorantes et al. (2011) found that the higher the wage of unskilled female workers in the region of residence, which serves as their proxy for the price of commercial domestic services, the more couples are likely to share their income completely. Kalugina et al. (2009) concluded from the reported individual wealth level of each spouse in a Russian survey that the female share of intra-household resource allocation is positively correlated with the level of her own budget. Most recently, Bertocchietal et al. (2014) related the responsibility for economic and financial decision making in Italian households to the spouses relative ages, education levels and incomes. Further evidence includes tests based on survey information of money arrangements between spouses and/or their spending intentions (Chen and Woolley 2001, Ludwig-Mayerhofer et al. 2006).

In those tests however, as also pointed out by Attanasio and Lechene (2002), individual incomes often reflect choices which are not independent of the outcome being investigated (as e.g. the consumption-leisure decision). Differences in relative incomes may not be exogenous, and thus, rejections of income pooling may arise

from mere misspecification of the model. What is needed in order to test the pooling of resources by household members is an exogenous source of variation in elements which might affect choices indirectly, but not through preferences or by shifting the household budget constraint. Hence, a natural experiment is needed. A government transfer policy, which redistributes resources within the household, is an example of such exogenous variation. Lundberg et al. (1997) exploited an exogenous variation provided by the 1979 reform of the child benefit in the United Kingdom. By use of aggregate data, including income and number of children, they found income pooling to be rejected on consumption demand outcomes. As Hotchkiss (2005) observed a relative spending increase of women's relative to men's clothing even among childless couples who had not been affected by the reform, she concluded that neither bargaining nor income pooling can be ruled. Based on a micro-economic analysis of the same data, Ward-Batts (2008) finally showed that the increase of spending for women's clothing was significantly higher among couples with children than among childless couples. This last result reanimates the rejection of the income pooling hypothesis and so does a more recent paper by Fisher (2014) who studies the consumption effects of the 2003 Child Tax Credit in the UK. Just as the earlier child benefit reform, this policy shifted resources from the main earner to the main carer within a household and resulted in higher consumption shares for children's toys and music instruments but lower travel and gambling expenditures.

An alternative approach to test for income pooling is to use the outcome of field experiments, mainly carried out in developing countries. The general idea is to divide the population into two groups of households, which both receive additional income, but only in one group this is transferred directly to the wife. In observing the differential behaviour of the control and the treated group, one can draw conclusions on the incidence of the income structure for expenditures. Applying a difference-in-difference estimation to Mexican panel data, Attanasio and Lechene (2002) find that household expenditures depend on who receives the money in the family, rejecting therefore the hypothesis that the family pools its incomes. However, such experiments may often not be replicated in industrialized countries for legal reasons. Despite this rather unambiguous empirical evidence, the theoretical perspective on whether family members pool their incomes produces more ambiguous responses, depending on the specific household economics model considered. In the unitary model, household decisions are analysed under the assumption that the household forms a single decision unit maximizing an aggregated family welfare function. Consequently, the unitary representation supposes the total pooling of all household incomes. Furthermore, as early as in Samuelson (1956), it was recognized that treating a family as a single consumer implies strong assumptions on the properties of the demand function, e.g. the compensated price responses on the demand function should be symmetric (Slutsky symmetry). Many empirical applications to household data are indeed rejecting these restrictions (Deaton 1990, Browning and Meghir 1991, Banks et al. 1997, Browning and Chiappori 1998). Although the unitary model is regarded with much scepticism, it remains very popular for policy simulation purposes, as it allows accounting for a real-world budget set. However, since the couple is considered a single decision taker in the unitary model, no conclusions on any resulting intra-household allocation and the individual welfare of an evaluated reform can thus be drawn. This might be of great political interest, as some transfers, for example those for children, are often handed to mothers, on the belief that additional resources to mothers help to improve the children's welfare better than giving them to fathers. This concern is supported by possibly hidden monetary flows between spouses, or from parents to children to compensate caring, altruistic

and non-paid household activities, as explained by Grossbard-Shechtman (1984) and Grossbard (2014).

In contrast to the unitary representation, bargaining models of the household consider the family members as individual decision-makers and income pooling is not imposed. Non-unitary models can be divided in two categories, depending on whether household decisions are supposed to be efficient. The fully cooperative approach, resulting in Pareto-efficient decisions, was first developed on the base of game theory (Manser and Brown 1980, McElroy and Horney 1981). The household decision depends on the definition of the rules of the game (Nash-bargaining) and the specified threat point, itself possibly determined by the solution of a non-cooperative game (Lundberg and Pollak 1993, Chen and Woolley 2001). Apps and Rees (1988) and Chiappori (1988, 1992) introduce the collective model framework, where household behavior results in Pareto-efficient outcomes too, though the rules are not pre-defined. This model provides a straightforward test of income pooling. It consists in testing whether the sharing rule, i.e. the equation describing the intra-household allocations of the resources depends significantly on individual income-related variables. Empirical studies frequently find a positive answer to this test (see for example Browning and Chiappori 1998, Beninger et al. 2007). However, these tests are based on cross-section data. We can thus address the same concerns as above.

The second category of non-unitary models is based on two types of non-cooperative games, generally leading to inefficient equilibrium outcomes. In the first type each individual is supposed to be responsible for a 'separate sphere' of joint consumption (Lundberg and Pollak 1993), i.e. each spouse specializes in a distinct task. Income pooling is therefore excluded. In the second type, each individual voluntarily contributes to public goods (Chen and Woolley 2001, Lechene and Preston 2011, Browning et al. 2010). In this case, local income pooling may occur when the decision for the public good does not depend on who is contributing to it. D'Aspremont and Dos Santos (2009) conciliate both cooperative and non-cooperative approaches in proposing a more general model including both extremes as special cases. In addition, the model allows a range of intermediate cases. This model has not been empirically tested yet, partly due to the lack of suitable information in the available data sets.

To sum up, the existing empirical tests of the income pooling assumption for developed countries do not provide conclusive evidence, since they are based on non-exogenous changes of the family income structure mainly. Notable exceptions are the studies by Lundberg et al. (1997), Hotchkiss (2005), Ward-Batts (2008) and Fisher (2014) which benefit from the quasi-experimental design of UK reforms. However, apart from studying possibly out-dated 1970s behaviour of families (except Fisher who uses the 2003 child tax credit reform), these papers provide evidence for couples eligible for child benefit only while Fisher's findings are further limited to low income families. The most promising way to guarantee the necessary ceteris-paribus environment AND a wide applicability of the results would hence be to run an experiment with random assignment of non-labour income to different decision-makers in a representative set of households and compare their resulting spending decisions.

2.2 Related evidence from previous couple experiments

To date, the literature provides only few such experimental studies on couples' behaviour. They fall into the categories of field and laboratory experiments, as well as nuances in between, whereof the first have primarily been conducted in the developing and the latter in the industrialized world. Iversen et al. (2011) contributed to the field experiments by letting couples in rural Uganda participate in social dilemma games. Their common observation was that the participating spouses often do not maximize surplus and thus largely fail to achieve efficiency. According to the authors, households perform better when women are managing the common pool although they contribute less to it. To our knowledge, only one field experiment has yet manipulated partner-specific transfers while holding prices and participants' characteristics constant (Robinson 2012). It suggests a strong link between the income recipient and the observable use of income. Unfortunately, this kind of evidence is hard to obtain for developed countries, and particularly for Germany, due to legal (and cost) reasons, while it would be inappropriate to draw conclusions on the family behaviour in industrialized countries based on these existing results.

Laboratory experiments, however, have been rather silent and not provided a clear-cut answer to the question of income pooling, yet. The focus has instead been on closely related issues, such as the degree of cooperation between partners, the role of information and the achievement of Pareto efficient outcomes. As one of the first, Peters et al. (2004) performed laboratory experiments with family members where the participants are involved in a public good game with changing counterparts. The authors find that participants contribute more to the public good when the group consists of family members than when playing with strangers. Cochard et al. (2014) generate similar results when analysing cooperation within couples: The spouses' internal cooperation in a Prisoner's dilemma is higher than when paired with strangers, though still not at its maximum. In Görges' (2014) experiment, women are more likely to cooperate with their partner rather than with an unfamiliar man in the sense of raising the partner's earnings by performing an unpaid task. Munro et al. (2008) provide an indirect test of income pooling and Pareto efficiency. Like Carlsson et al. (2013), Mani (2008) and Robinson (2012), they tend to find inefficiency in couples' decisions (spouses do not pool their incomes completely and particularly men discount their partner's payoffs). Ashraf (2009), and Bateman and Munro (2005) investigate public good contributions within families and couples. They find that couples are more risk averse and follow predictions of income pooling when making choices jointly compared to when they make choices individually.

From this review we conclude that the existing couple experiments do not provide a conclusive answer to the income pooling assumption either, since the evidence is based on developing countries' contexts and/or related issues like cooperation and efficient decision-making in the couple only. Our experiment addresses the issue of income pooling directly, by assigning non-labour income to different decision-makers in the household, and compares the households' resulting spending decisions in a *ceteris-paribus* environment.

3 Our experiment

3.1 General information

Our experiment was conducted in Mannheim, a city with a little more than 300,000 inhabitants located in the South-West of Germany. With the aim of testing intra-household income pooling, the experiment was restricted to established real-life couples of mixed sexes, where the female and the male spouse² had to be living together for a period of at least one year at the time of the experiment (we made sure this condition held by matching partners' responses to a list of private questions). We were able to recruit 95 couples who fulfilled these criteria. Since it was conducted with non-standard subjects and combines the control of a standard laboratory experiment with the realism of a subject pool from the market of interest (in this case: couples), we classify our experiment as an artefactual field experiment, according to the classification of Harrison and List (2004).

A third of the participants stemmed from an existing pool of experimental candidates. For our purpose, only those living with a partner were re-contacted by email and asked to make an appointment where they could both participate. The sample was extended by clustered random sampling in the same way as the original recruitment was conducted, i.e. random distribution of flyers with a short announcement and contact information to private household mailboxes across selected neighbourhoods in the Mannheim city area. The final pool of participants consists of people with heterogeneous socio-demographic backgrounds representing the Mannheim population with respect to age, income level and employment status (as illustrated in Appendix Table A1). The deviation in the educational level is largest, as the experimental group has a substantially higher percentage of university or college graduates (40%) than can be found in the overall Mannheim population (13%). Despite the higher educational level, our sample reports a lower monthly income than the general population, since the university graduates are over-proportionately young. However, education is sufficiently heterogeneous in our sample to control for this bias in the analyses.

The experiment was set up as a paper-and-pencil experiment, in order to avoid technical barriers and guarantee equal opportunities, as the participants included people of all ages. The tasks were money-incentivized using an experimental currency, called "Taler" (with an exchange rate of 10 Talers = 1 euro). The compensation, rewarded individually and anonymously, was 30 euros on average, to be compared to a mean hourly wage rate of 13 euros – net of taxes and social security contributions – in West Germany. The whole procedure took about 90 minutes. Seven sessions were conducted with groups of 11 to 15 couples each. Each experimental session was divided into four parts, as lined out in more detail in the Appendix. In total, the experiment comprised 35 decisions. The participants were informed that one out of the 35 decisions would be selected at the end of the experiment to determine their individual compensation. Finally, we asked the participants to fill in a questionnaire. It covered a wide range of socio-economic characteristics of the spouses. In addition we asked for attitudes towards gender roles and equality issues as well as financial arrangements within the couple. As indicated above we used the questionnaire to verify whether the couple was really

² In the following we will refer to all couple partners as spouses, regardless of their formal marital status.

established and living together by cross-checking some of the answers given separately by both spouses.

In the following, we will focus exclusively on those parts of the experiment designed to test income pooling, denoted the *consumption choice tasks*.

3.2 Consumption choice tasks

In the consumption choice tasks each couple was allocated with four banknotes à 50 Talers, which they could spend on vouchers from three nearby department stores that offered distinct product portfolios of either fashion/sports (FS), cosmetics (C), or electronics (E). Joint decisions were taken in a five-round procedure. The spouses were sitting together and explicitly allowed to communicate with each other. In each of the five rounds, the couple received the same total amount of money, i.e. four banknotes, but the allocation between the spouses varied across rounds, with both spouses being allocated two banknotes in the first round but differing asymmetric allocations in the following rounds (see Table 2). That is, the total amount of money to the couple as a whole remained constant across rounds. While the participants were aware of the number of rounds to come, they were only informed about the individual resource allocations at the beginning of each round.

The exact wording of the task was: "This task consists of five rounds. In each round you will receive 200 Talers in 4 banknotes of 50 Talers each. You may cash these 4 banknotes in the department stores D, E and S. There is an envelope for each store. Please put your banknotes in the envelopes according to your consumption choices. Only one decision will be selected for your compensation. In case that the first round of this task is selected, you as a couple will be handed vouchers according to your consumption choices in round 1."³

Hence, the participants had to make their choices physically, by distributing the banknotes between three envelopes stamped with the respective shop logo. This way they revealed their preferred consumption goods bundles. A second feature of our design is that it tries to avoid redistribution between partners of their individually earned private experimental gains (once the official part is finished), a particular challenge of an experiment conducted with real-life couples. Letting the participants choose among vouchers from different department stores was a way to make the participants take decisions that are, almost, irreversible. By representing specific consumption bundles, or at least consumption possibilities, vouchers depict preferences and are more difficult to reallocate (than money).

Although the reader might be tempted to associate certain stores with stereotypical gender prescriptions, it was not our intention to match cliché female or male preferences but to provide a portfolio of sufficiently distinct consumption goods bundles. In addition, and prior to the joint consumption choice task, we asked the participants to take the same decision separately and individually, with four banknotes each and without being able to communicate or observe the partner's choices, in order to identify those couples where both spouses share exactly the same consumption preferences. Note, that for those couples, we are not able to disentangle whether a potentially unchanging consumption pattern across rounds is due to income pooling or due to the same individual preferences of both spouses.

As illustrated in Table 1, preferences between partners showed on average about one banknote deviation with respect to the electronics and the fashion-sports stores and

³ See the original slides in the Appendix.

a smaller deviation for cosmetics. Average choices of female and male participants did not deviate very much from another although there are notable differences in individual choices between partners.

Table 1: Consumption decisions

| Joint decisions | | | | | |
|---|----------------------------------|------|---|-----------|-------------|
| | Number of banknotes allocated to | | Average number of banknotes spent on... | | |
| Round | Female | Male | Fashion/Sports | Cosmetics | Electronics |
| 1 | 2 | 2 | 1.7 | 0.5 | 1.8 |
| 2 | 4 | 0 | 1.8 | 0.5 | 1.7 |
| 3 | 3 | 1 | 1.9 | 0.4 | 1.7 |
| 4 | 1 | 3 | 1.6 | 0.5 | 1.9 |
| 5 | 0 | 4 | 1.6 | 0.5 | 1.9 |
| Individual decisions | | | | | |
| Female | 4 | - | 1.8 | 0.6 | 1.6 |
| Male | - | 4 | 1.9 | 0.4 | 1.7 |
| Average within-couple difference in number of banknotes spent | | | 1.0*** | 0.6*** | 1.1*** |

*Note: N=95. The Table shows the allocation of four banknotes between spouses across rounds. To avoid order effects, the order of rounds 2 to 5 was inverted after half of the experimental sessions. *** indicates a statistically significant difference at the 5% level. The p-values from t-tests are all infinitesimal.*

4 Test of income pooling

According to our definition of income pooling each euro that enters the household should be treated equally, no matter to whom it is handed. That is, the consumption pattern should not change across the five rounds of differing allocation but constant sum of resources if the couple is pooling its income. Therefore, the revealed preferences in the consumption choice task with varying money allocation provide us with the means for a direct test of income pooling.

Hypothesis: Under the assumption of income pooling, the couple always agrees on the same consumption pattern (choice of vouchers in each round), regardless of the relative allocation of income.

To test this hypothesis we define indicators of consumption changes ic_n and income pooling ip_n based on the five rounds of the mutual consumption choice task for each couple n :

$$(1) \quad ic_n = \frac{1}{K-1} \sum_{l=1, l \neq k}^{K-1} \left(\frac{1}{2K} \sum_{k=1}^K \left(|c_{kFS}^{nc} - c_{IFS}^{nc}| + |c_{kC}^{nc} - c_{IC}^{nc}| + |c_{kE}^{nc} - c_{IE}^{nc}| \right) \right)$$

$$(2) \quad ip_n = \begin{cases} 1 & \text{if } ic_n = 0 \\ 0 & \text{otherwise.} \end{cases}$$

The indicator ic_n represents the average difference between a reference round l and the remaining four rounds k in the number of vouchers chosen for the different

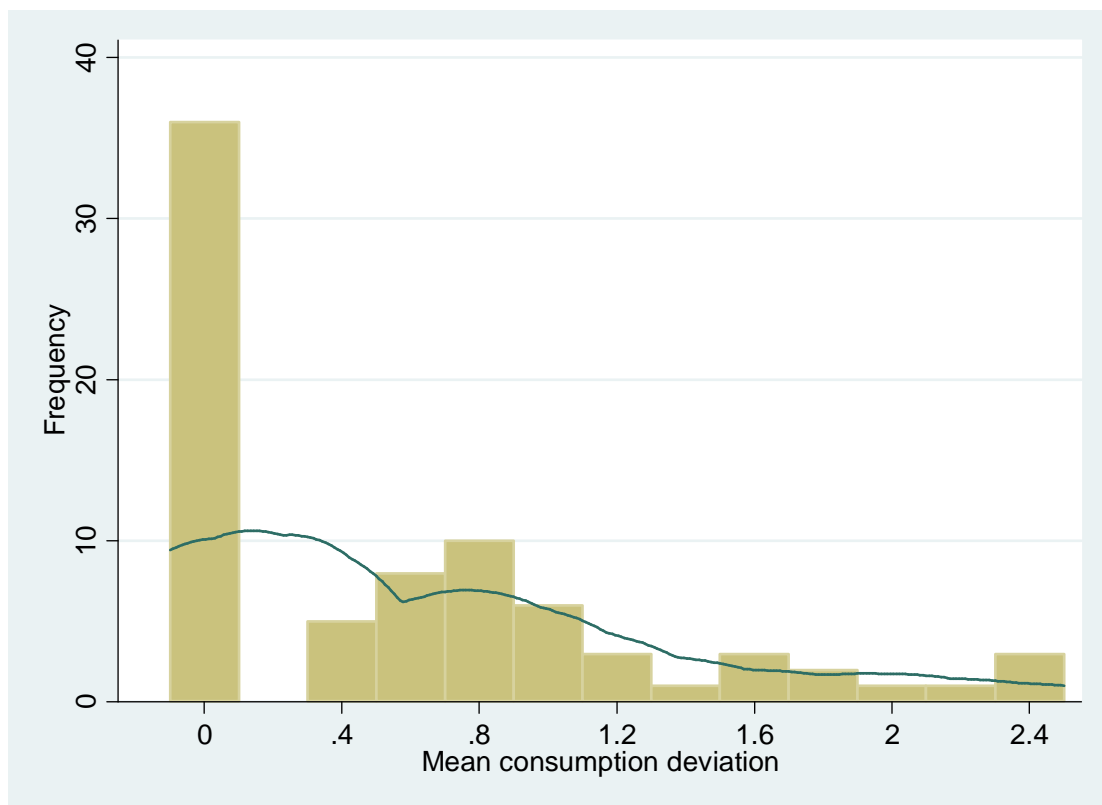
stores. To avoid bias due to an arbitrarily chosen reference allocation, ic_n is calculated as the mean of all deviations, taking each round as the reference once. Thus, ic_n varies theoretically from 0 to 4. If a couple's voucher choices remain unchanged regardless of the money allocation in the five rounds (i.e. $ic_n = 0$: the couple chooses the same number of vouchers for each store in each round), we diagnose the couple as income pooling ($ip_n = 1$). If the couple instead chooses different vouchers conditional on the money allocation (i.e. $ic_n > 0$), we declare it as a non-pooling ($ip_n = 0$).

As indicated above, we have to consider those couples among the pooling ones, in which both spouses reveal the same voucher preferences when asked separately. For these couples, we do not expect joint decisions to vary by money allocation,⁴ but are not able to distinguish true income pooling from an artefact produced by identical individual preferences of the spouses. We observe this pattern for a non-negligible number of 16 couples. Among those 16 couples, five are still varying their consumption patterns across rounds (though only marginally and unsystematically, i.e. $ic_n \leq .2$). Hence, the remaining eleven couples would be counted as pooling according to our definition, though we do not know their behaviour in situations where preferences do not match.

Retaining only the unambiguous cases leaves us with 79 couples, among them 36 unquestionable poolers, according to our definition (see column of zero deviation in Graph 1). The remaining 43 couples choose consumption patterns that vary with the individual money allocation by approximately one voucher on average. To our knowledge, Graph 1 is the first illustration of a directly observed distribution of income pooling in the literature.

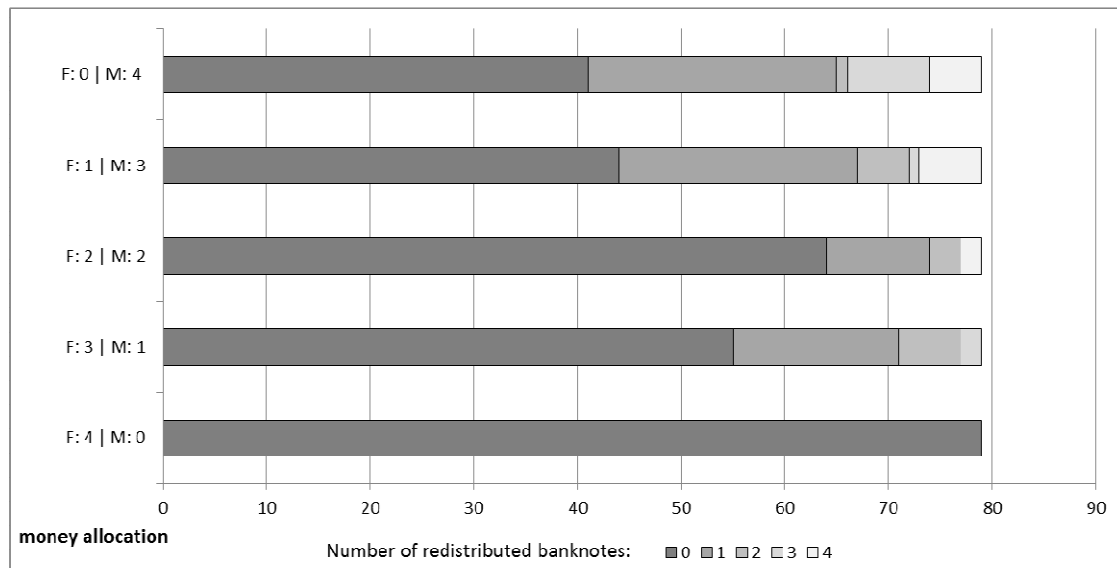
⁴ Though preferences might still not be identical with respect to specific consumption goods offered in a given department store (such as e.g. a lady's epilator versus an electric shaver).

Graph 1: Distribution of the indicator of consumption changes across rounds



Note: The bars show the empirical distribution of the indicator ic_n . The line represents the estimated kernel density.

Graph 2: Redistribution of banknotes across rounds



Note: In the reference allocation the woman receives 4 banknotes and the man receives 0 banknotes. For each alternative income allocation the graph indicates the number of banknotes distributed differently to the department store envelopes compared to the reference.

Graph 2 now details, for each money allocation, to which extent the couples' choices differ across rounds. As a reference allocation we choose that one where the woman receives all the money. Compared to the reference, we observe that the number of couples that does not change their decision is decreasing with increasing relative male income. E.g. for the symmetric allocation of two banknotes each, as many as 64 couples choose the same consumption pattern as in the reference situation. However, when the man receives all banknotes, only 41 couples take the same decision as if the woman were the sole recipient.

From Graphs 1 and 2, we can intuitively reject the hypothesis, that all couples pool their income. The eye-ball test is supported by statistical tests: In spite of the indicator's massive mass point at zero, the mean of ic_n proves significantly different from zero (the 95%-confidence interval being [.424, .730]). This leads us to reject the income pooling hypothesis ultimately. However, we would like to point out that this rejection masks a very diverse reality, as we observe a good third of the couples actually pooling their resources and up to half of them being eventual poolers. The test provides only an indication of couples' mean behaviour and does not allow us to discriminate between systematically differing population groups. In particular it hides the fact that the population is split between poolers and non-poolers.

5 Who are the poolers?

The experimental data enable us to take a closer look at these two groups now. Summary statistics on the main characteristics of the pooling and non-pooling subgroups are displayed in Table 2. Surprisingly at first glance, pooling couples appear less settled, i.e. more often unmarried and of younger age on average. As income pooling is a key postulation of the German tax-welfare system, e.g. with joint taxation of married couples, we may have presumed that it is the more likely to occur the more established and traditional a couple is (measured by the formal marital status, the duration of the relationship and traditional attitudes towards gender roles) and the more it actually benefits from joint taxation. As couples have larger tax gains the more unequal their revenues, income pooling should hence be related to work division in the household (measured by the difference in housework and employment hours and female participation in the labour market). An explanation of our contradicting observation may be that elder couples are more likely to have established their intra-family decision processes and spending habits already. This would lead them, more than inexperienced younger couples, to manage and operate in separate spheres in the sense of the above-mentioned model by Lundberg and Pollack (1993). They may thus be less willing to cooperate and re-negotiate the allocation of (extra) resources.

We further observe that the female labour market participation, as well as the woman's relative employment hours, is significantly higher among the poolers. Those couples, in which the spouses have identical individual preferences, report incomes well above the average, though the female spouses exhibit rather low labour market participation of about 60 percent – similar to the non-poolers. Also with respect to other characteristics, couples with identical preferences seem to be closer to non-pooling than to pooling ones. For this reason, we prefer to treat identical-preferences couples as a separate group, instead of merging them with pooling couples right from the outset.

Table 2: Summary statistics

| | Non-pooling couples | | Pooling couples with differing individual preferences | | Couples with identical individual preferences | |
|--------------------------------|---------------------|-----------|---|-----------|---|-----------|
| | Mean | Std. dev. | Mean | Std. dev. | Mean | Std. dev. |
| Age woman | 42.3 | 17.2 | 36.1 | 13.0 | 43.3 | 17.4 |
| Difference in ages | 2.44 | 4.18 | 1.47 | 4.57 | 1.12 | 3.24 |
| Years living together | 15.5 | 14.8 | 8.9 | 11.5 | 12.1 | 13.7 |
| Married | .63 | - | .36 | - | .56 | - |
| Children | .47 | - | .28 | - | .56 | - |
| University degree man | .33 | - | .58 | - | .56 | - |
| University degree woman | .21 | - | .44 | - | .25 | - |
| Labour market particip. woman | .63 | - | .86 | - | .62 | - |
| Difference in employment hours | 8.2 | 23.1 | 1.9 | 29.5 | 9.3 | 21.9 |
| Man has higher earnings | .49 | - | .50 | - | .44 | - |
| Woman does more housework | .47 | - | .36 | - | .56 | - |
| High household net income | .23 | - | .39 | - | .50 | - |
| N | 43 | | 36 | | 16 | |

Table 3 presents the estimation results of a logit regression of the dichotomous income pooling indicator iP_n on the aforementioned explanatory variables. We perform estimations using the full sample (columns on the right), including also those couples where both spouses exhibit the same preferences, and using the restricted sample of couples with distinct preferences only (columns on the left). The coefficient estimates are quite robust and draw a consistent picture of pooling couples: Whether a couple pools its resources proves negatively related to the spouses' difference in employment hours for both samples (and just above the 10 percent significance level for the married ones in the restricted sample). There is a positive association with household income and the education level (it does not matter whether we include the male or the female partner's education since both are highly correlated).

Table 3: Logit regression of the income pooling indicator

| | Restricted sample (excluding identical- preferences couples) | | Full sample (including couples with identical spousal preferences) | |
|-----------------------------------|--|---------------|--|---------------|
| | Coeff. | Std. error | Coeff. | Std. error |
| Age woman | .007 | .041 | -.019 | .032 |
| Difference in ages | -.043 | .065 | -.075 | .059 |
| Years living together | -.057 | .052 | -.013 | .041 |
| Married | -1.327 | .815 | -.956 | .680 |
| Children | .485 | .537 | .673 | .458 |
| University degree man | 1.042 | .572 | .910 | .531 |
| Labour market part. woman | .100 | .757 | .970 | .639 |
| Difference in employment hours | -.029 | .014 | -.026 | .012 |
| Man has higher earnings | -.909 | .637 | .268 | .537 |
| Woman does more housework | .189 | .597 | -.003 | .516 |
| High household net income | 1.654 | .784 | 1.09 | .611 |
| Constant | -.625 | 1.371 | -.250 | 1.147 |
| N | 79 | | 95 | |
| Log-Likelihood | -43.30 | | -53.33 | |
| Pseudo R-squared | .21 | | .20 | |

Note: Bold coefficients indicate a significance level of at least 10%.

Instead of observing income pooling to be more likely among settled couples, we find the reverse: More established couples, that are married, living together for a longer time and practicing traditional gender roles in the division of paid and unpaid work are in fact less likely to pool. At this point we would like to remind that the pay-offs of the experiment are individual and have to be considered as additional, unearned income. Spouses with lower incomes may behave more selfishly due to the scarcity of their own resources. On the contrary, it may be more likely for spouses of high-income couples to invest this extra money in a public good, which hence means pool their incomes.

6 Investigating conventional indicators of income pooling

As discussed in the literature section, income pooling has been addressed in various studies, Contrary to our paper most of these rely on indirect tests. For developed countries (and with the exception of the papers drawing on the UK reforms), the methods used are of two types: (i) proxies from survey data and (ii) tests derived from household model estimation. The drawbacks of these approaches are that they may not capture all facets of couples' actual income pooling behaviour beyond the mean, and that they depend on model assumptions. In this section, we investigate whether these methods would draw an accurate picture by comparing our results from direct observation of income pooling with (i) the usual proxy variables and (ii) estimation results from a collective household model setting.

6.1 Proxy variables

Previous studies have used survey information on how individual spending intentions are related to individual resources allocation within the household (Bonke and Browning 2010), Amuedo-Dorantes et al. 2011). For instance, the Danish Expenditure Survey included a question on whether the respondent is willing to spend less money on own private consumption if he or she earns 1,000 Danish crowns less a month, and the spouse earns 1,000 crowns more – with a positive answer taken as evidence against income pooling. For a validation check we used an identical item, replacing 1,000 crowns by 100 euros, in our post-experimental questionnaire. This allowed us to compare stated behaviour and actual behaviour of the same person. Surprisingly, the proportion of men who answer positively to this question, relating their spending intentions to individual resources, is significantly higher among the members of a pooling couple (58%), where each euro is spend in the same way, than among non-poolers (37%), where euros are earmarked. Hence, stated and revealed preferences may well diverge when it comes to the distribution of actual money. Of course, the money transfers cannot be treated equivalently in the two data sources, because we have an increase in *unearned* income on the one hand, the experiment, and an increase in *earned* income on the other, the survey questionnaire. Nonetheless, we may tentatively conclude that answers in surveys to questions on income pooling may differ significantly from the participants' real behaviour when incentives are at place.

Some micro data surveys also include questions on the management and distribution of monetary resources within the households as a means of measuring the extent of resource pooling. Based on these kinds of questions, Ludwig-Mayerhofer et al. (2006) e.g. point out that inequality in the management and distribution of monetary resources between spouses is most pronounced where the difference in education and revenues is largest. In our experimental data, approximately half of the couples report to hold separate bank accounts independently of pooling in the experiment, while mutual savings seem to be more common among the non-poolers than the poolers (.58 vs .36). At the same time, pooling spouses are, on average, both more educated and have higher household income in our experiment. As a result, our data do not seem to confirm the links that are usually drawn between the financial arrangements within a couple and how the spouses actually treat additional money.

When we introduce these variables used to describe income pooling in the existing literature into our estimation, the predictive power of the model rises from 20 to 25 percent (compare Tables 3 and 4), but the coefficient estimates on the previous set of controls remain robust.

Table 4: Extended Logit regression of the income pooling indicator

| | Restricted sample (excluding identical- preferences couples) | | Full sample (including couples with identical spousal preferences) | |
|---|--|------------|--|------------|
| | Coeff. | Std. error | Coeff. | Std. error |
| Socio-economic characteristics (see variable list Table 3) | YES | | YES | |
| Income-related spending intentions | 1.02 | .662 | 1.15 | .601 |
| Separate money management | -.414 | .694 | -.929 | .625 |
| Mutual savings | -.223 | .734 | -.301 | .678 |
| Traditional gender role attitudes | -.528 | .389 | -.582 | .350 |
| N | 79 | | 95 | |
| Log-Likelihood | -41.40 | | - 49.52 | |
| Pseudo R-squared | .24 | | .25 | |

Note: Bold coefficients indicate a significance level of at least 10%.

In addition to the explanatory factors in Table 3, we consider (i) self-reported individual spending intentions in relation to individual resources and (ii) self-reported information on the couples' bank accounts and savings behaviour. Finally, we examine how (iii) self-reported agreement with traditional gender roles is related to pooling. The additional variables were constructed from information provided by the participants in the post-experimental questionnaire. As illustrated by the respective coefficient estimates in Table 4, income-related spending intentions are positively related to pooling behaviour – for both samples studied, but statistically significant only in the full sample. Financial management (measured as separate money management and mutual savings) and traditional gender role attitudes (measured as consent with the male breadwinner model), on the contrary, are not associated with pooling in a statistical sense. Hence, implications from survey data are rather loosely linked to those of our experimental data.

6.2 Structural collective-model estimation

It is a feature of our experimental design, that the consumption decisions taken by the participants are Pareto-efficient by construction (as participants were instructed to spend all banknotes). An appropriate representation of the participating couples' consumption choices may therefore be the often-used collective model, as e.g. formalized by Browning and Chiappori (1998):

$$(3) \quad \begin{aligned} \max_{c_f, c_m} U &= U_f(c_f) + \lambda U_m(c_m) \\ \text{s.t. } p'(c_f + c_m) &\leq B \end{aligned}$$

where λ is the male relative power. Prices p are set to one. B is the budget set (in our experiment equal to 200 Talers). By solving the maximization problem (3), we obtain a set of equations describing the individual female and male consumption choices, c_f and c_m which are not observed in the data usually. Browning and Chiappori (1998) propose to estimate the household consumption depending on the

spouses' individual incomes and thereby identify the resource allocation within the household.⁵

In our experiment, we asked for the individual consumption choices, c_{fs}, c_{ms} , to reveal individual preferences. We use this original information in order to find out to which part individual preferences and to which the spouses' relative incomes explain the couple's consumption decisions. We thus estimate the equation:

$$(4) \quad c = \alpha_0 + \alpha_f c_{fs} + \alpha_m c_{ms} + r(\alpha_r + \alpha_{rf} c_{fs} + \alpha_{rm} c_{ms}) + \alpha_s' s + \alpha_d' d,$$

where $\alpha = \begin{pmatrix} \alpha^{FS} \\ \alpha^C \\ \alpha^E \end{pmatrix}$ is the matrix of coefficient estimates. $c = \begin{pmatrix} c^{FS} \\ c^C \\ c^E \end{pmatrix}$ and $c_i = \begin{pmatrix} c_i^{FS} \\ c_i^C \\ c_i^E \end{pmatrix}$ are

the couple's and individuals' ($i = f, m$) expenditures for fashion, cosmetics and electronics – measured as the number of respective vouchers. r is the female relative allocation, s are socio-demographic variables and d are further distribution factors. Taking the partial derivative of Equation (4) with respect to r yields the following H_0 for income pooling:

$$(5) \quad \alpha_r + \alpha_{rf} c_{fs} + \alpha_{rm} c_{ms} = 0.$$

Model-based hypothesis: Within the collective model framework, income pooling implies that the partial derivatives of consumption with respect to relative income sum up to zero (Equation (5)), that is, the consumption decisions do not depend on the relative allocation of income.

As we observe each couple making five choices, one for each money allocation r ($r = 0, 0.25, 0.5, 0.75, 1$), we possess of a whole panel of consumption decisions with $N = 95$ (or 79 respectively, if we consider only those with differing spousal preferences) and $T = 5$. Furthermore, the consumption choice variable takes integer values between zero and four. We therefore choose a linear panel estimation procedure to estimate Equation (4).

⁵ The identification procedure relies on restrictive assumptions summed up in the so-called 'SR1' hypothesis, i.e. the matrix of compensated price responses is the sum of a symmetric matrix and a matrix of at most rank 1 (see Browning and Chiappori 1998 for details). Note that we are not able to test the validity of the model as suggested by Browning and Chiappori (test of the 'SR1' hypothesis) since our prices are set to one and we have only three consumption goods. However we can test the income pooling assumption accordingly, based on our estimation results.

Table 5: Estimation of couples' consumption choices

| | Fashion/Sports | | Cosmetics | | Electronics | |
|--|----------------|-----------|-------------|-----------|-------------|-----------|
| | Coeff. | Std. err. | Coeff. | Std. err. | Coeff. | Std. err. |
| Female ind. consumption (c_{fs}) | .470 | .039 | .577 | .035 | .514 | .033 |
| Male ind. consumption (c_{ms}) | .522 | .028 | .462 | .025 | .698 | .029 |
| Female relative allocation (r) | .202 | .140 | - | .063 | - | .089 |
| Fem. rel. alloc. x fem. ind. cons. ($r c_{fs}$) | .305 | .064 | .131 | .051 | .229 | .053 |
| Fem. rel. alloc. x male ind. cons. ($r c_{ms}$) | - | .030 | - | .032 | - | .034 |
| N | 395 | | 395 | | 395 | |
| R-squared | .619 | | .474 | | .667 | |

Note: 395 observations (79 couples x 5 rounds). Each of the three equations was estimated independently, with standard errors corrected for correlated panels. Additional control variables include age, education, income, employment hours and children. Bold coefficients indicate a significance level of at least 5%.

Estimation results are given in Table 5. They confirm a consistency between individuals' and couples' behaviour, as the couples' consumption choices are positively related to the spouses' respective individual preferences (see coefficient estimates in the first two rows). However, when we compare the marginal effects of c_{fs} and c_{ms} , i.e. $\alpha_f + r\alpha_{rf}$ vs. $\alpha_m + (1-r)\alpha_{rm}$, at an allocation of $r^0 = 0.5$ for instance (two banknotes for each spouse), women and men do not seem to affect couples' fashion choices differently (.622 vs. .638), but women have a significantly larger impact than men on the decisions for cosmetics (.643 vs. .536), whereas men's preferences affect electronics consumption choices more significantly (.628 vs .858).

The H_0 , i.e. the assumption of income pooling within the collective model, is clearly rejected for electronics and fashion expenditures ($\chi^2 = 1.45$ and $\chi^2 = 2.76$, respectively). For cosmetics expenditures the test statistic is at the margin of 5%-significance ($\chi^2 = 5.76$).

Hence, the econometric test embedded in a collective-model structure would lead to just the same conclusion as our direct test had done earlier on. It has to be noted, however, the experimental data at hand is much more detailed than any conventional micro data set could be – including information on individual as well as couple consumption decisions. In the absence of this information, we would have to impose rather restrictive assumptions such as $\alpha_f = \alpha_m = \alpha_{rf} = \alpha_{rm} = 0$, which may advance significant bias in the estimation results and test statistics. Not to mention that the main contributory feature of our experimental data is that we are not only able to identify income pooling as such but also characterize the pooling and the non-pooling couples.

7 Conclusions

In this paper, we exploit an experimental setting to develop a test of income pooling within couples. To the best of our knowledge, we are the first who provide direct evidence on this issue in a developed country. Our main result is that more than half of the participating couples in our experiment make consumption choices which do depend on the allocation of resources between the spouses. At first glance, this seems to be an unambiguous denial of household models, which represent the family as a single consumer, and a clear-cut rejection of the basic assumption underlying most tax-transfer systems, namely that the source and the recipient of any money unit entering the household have no impact on the household's decisions. At second glance, we note that couples with higher income and education levels were in fact more likely to take decisions independent of the given money allocation. Hence, though income pooling as a general assumption can be rejected, well-off couples share resources in our experiment eventually, while established and less well-off couples do not. In the vein of Browning et al. (2010) we may interpret these findings as an indication of a Nash equilibrium with local income pooling applying to the first group of well-educated. The partners of the second group seem to act in the separate spheres setting of Lundberg and Pollak (1993) rather. This notion is also supported by the distribution of the spouses' bargaining power which we study in a related paper (Beninger and Beblo 2015). There we observe that the joint decisions are a compromise of the spouses' individual preferences, and the arrangements across rounds depend on their relative incomes.

Compared to studies that use couples' survey responses on financial management and income-related consumption spending, our experimental evidence bears the advantage of being based on the participants' real actions – revealing their true preferences – instead of stated intentions. Compared to the quasi-experimental studies based on the UK child benefit reforms, that do look at real actions and provide direct evidence on the consequences of one transfer reallocation, our experiment bears the advantage of covering a wider range of couples, with and without children, whose reactions to four reallocation conditions of their total income we are able to distinguish. In addition to our direct test, we are able to reject the income pooling hypothesis when we impose the structure of a collective-model framework as well.

The topic and design of our experiment, although taking place in a controlled environment, are very close to situations in the participants' real lives. We investigated consumption choices made for additional unearned income, and the participants eventually received extra money depending on their decisions. Therefore, we may well have come close to capturing the true behaviour of the participating couples regarding their spending habits for additional unearned income. However, we would refrain from extending our conclusions to couples' behaviour on expenditures related to labour earnings.

Finally, we have to consider the fact that the participants of our experiment are rather selective with respect to their partnership satisfaction and their education level. In the questionnaire almost all participants report being highly or very highly satisfied with their relationship, whereas the distribution of similar variables in large survey data is far less concentrated (see e.g. Huinink et al. 2011). A certain satisfaction level may well be a precondition for joint participation in an experiment. However, in supposing that satisfaction within the couple is positively related with the spouses' cooperation and altruistic behaviour, the willingness to invest in a

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common good independent of the income structure may even be higher for this population than for a representative sample. Our selection of happy and highly educated couples, who are likely to cooperate and share more than the average, may then explain why we observe up to 50 percent of the sample treating their unearned income as pooled. We conclude that our results tend to over-estimate the true level of income pooling, hence reinforcing any evidence we presented *against* the general income pooling assumption.

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Appendix: Overview of the experimental design

1. Participants

Table A1: Comparison of the experimental sample with population census data

| | Participants | Mannheim population |
|---------------------------------|--------------|---------------------|
| Age group (in %) | | |
| 29 or younger | 37.37 | 31.55 |
| 30-39 | 16.84 | 13.62 |
| 40-49 | 13.16 | 17.15 |
| 50-59 | 12.63 | 13.07 |
| 60+ | 20.00 | 24.60 |
| Income (in €) | | |
| monthly gross income/person | 2,088 | 2,497 |
| monthly available income/person | 1,219 | 1,484 |
| Employment status (in %) | | |
| employed | 68.42 | 70.20 |
| unemployed | 3.16 | 6.30 |
| inactive | 28.42 | 21.20 |
| Educational level (in %) | | |
| completed apprenticeship | 36.56 | 55.70 |
| (university) graduates | 40.45 | 13.40 |
| N | 190 | 311,969 |

Sources for Mannheim population: Statistisches Landesamt Baden-Württemberg 2009, 2010.

2. Structure of the experiment

Each experimental session was divided into four parts, as summarized in Table A2. For the start, the spouses were seated apart and asked to make individual decisions without the possibility to communicate with each other, observe the partner's choices or any of the other participants. In this first part both spouses decided independently on money and time allocation between their partners and themselves, and they made a consumption decision by choosing vouchers. Finally, they were animated to reveal their individual wage rates in a second-price auction. The participants were asked for which price they would be willing to stay and do office work (i.e. sort, (un)fold and check letters) for ten more minutes at the end of the experiment. They were informed that the person who demands the lowest wage would win the auction and have to work at the second lowest wage for ten more minutes.

In the second part, the spouses were sitting together and decided couple-wise on money allocation, time allocation and which vouchers to consume. In both parts we exposed the spouses and the couples to several social dilemma situations to discriminate between individual income maximization, household income maximization, equality-efficiency concerns and income pooling. Tasks 1 and 2 were meant to assess the spouses' individual trade-offs between equality and efficiency

concerns, and learn who has egoistic preferences and who pursues mutual income maximization. Task 3 was aimed at investigating the individual preferences for consumption goods. Task 7, in conjunction with the Task 3, was designed as the direct income pooling test that we focus on in this paper.

Table A2: Structure of the whole experimental session

- I) Individual experimental tasks for each spouse (placed separately), including
 - 1) decisions on money allocation between partner and oneself
 - 2) decisions on time allocation between partner and oneself
 - 3) consumption decision (choice of vouchers)
 - 4) revelation of individual wage rate in a second-price auction.
 - II) Joint experimental tasks for couples (sitting together), including
 - 5) decisions on money allocation amongst them
 - 6) decisions on time allocation amongst them
 - 7) consumption decisions (choice of vouchers)
 - III) Post-experimental questionnaire
 - IV) Labour task: sort, (un)fold and check letters (time length depending on decisions made in parts I and II, by oneself and by partner)
-

After the joint experimental part, we asked the couples to separate again, take their original seats and fill in a questionnaire. After having completed the questionnaire, the participants received a note with their individual working time – as resulting from their own and their partner’s answers on the respective task and round drawn from all labour tasks. In part four of the experimental session the participants had to stay in the room and perform office work for as many minutes as indicated on their notes. As soon as their labour time ended they were allowed to leave the room and receive their compensation. Hence, the end of the session was defined individually for each participant.

3. Instructions and screen shots from the experiment

1) Individual consumption choice task

Translation of the German instructions:

In this task you can decide on shopping options by choosing between vouchers of three different department stores. You will receive 200 Talers in 4 banknotes of 50 Talers each. You may cash these 4 banknotes in the department stores D, E and S. There is an envelope for each store. Please put your banknotes in the envelopes according to your consumption choices.

Please do not seal the envelopes!

Only one decision will be selected for your compensation. In case that the woman's decision is selected, you as a couple will be handed vouchers according to the woman's consumption choices.

One example: If you wish to cash three notes at S, one at D and none at E, place three 50-Talers banknotes in the envelope for S, one note in the envelope for D and none in the envelope for E. In case this round is selected, as a couple you will receive three vouchers for S and one for D at the end of the study.

Aufgabe 3

In dieser Aufgabe entscheiden Sie über Einkaufsmöglichkeiten, indem Sie zwischen Gutscheinen von drei verschiedenen Geschäften wählen.

Sie erhalten 200 Taler in 4 Scheinen à 50 Taler. Diese 4 Scheine können Sie in den Geschäften Douglas, Engelhorn und Saturn einlösen. Für jedes dieser Geschäfte gibt es einen Umschlag. Bitte verteilen Sie die Scheine entsprechend Ihren Einkaufswünschen auf die Umschläge.

Bitte kleben Sie die Umschläge nicht zu!

Für die Auszahlung wird nur eine Entscheidung ausgewählt. Falls also die Entscheidung der Frau für diese Aufgabe ausgewählt wird, erhalten Sie als Paar tatsächlich Einkaufsgutscheine entsprechend den Einkaufswünschen der Frau.

Ein Beispiel: Wenn Sie drei Scheine bei Saturn, einen bei Douglas und keinen bei Engelhorn einlösen möchten, dann stecken Sie drei 50-Taler-Scheine in den Umschlag für Saturn, einen Schein in den Umschlag für Douglas und keinen Schein in den Umschlag für Engelhorn. Falls diese Runde ausgewählt wird, erhalten Sie am Ende der Studie als Paar tatsächlich drei Einkaufsgutscheine für Saturn und einen für Douglas.

2) Joint consumption choice task

Translation of the German instructions:

In this task you will take your decisions together. Again, you can decide on shopping options by choosing between vouchers of three known department stores.

This task consists of five rounds. In each round you will receive 200 Talers in 4 banknotes of 50 Talers each. You may cash these 4 banknotes in the department stores D, E and S. There is an envelope for each store. Please put your banknotes in the envelopes according to your consumption choices.

Only one decision will be selected for your compensation. In case that the first round of this task is selected, you as a couple will be handed vouchers according to your consumption choices in round 1.

One example: If you wish to cash three notes at S, one at D and none at E, just place three 50-Talers banknotes in the envelope for S, one note in the envelope for D and none in the envelope for E. In case this round is selected, as a couple you will receive three vouchers for S and one for D at the end of the study.

Aufgabe 6

In dieser Aufgabe treffen Sie nun Ihre Entscheidungen gemeinsam.

Wählen Sie wieder zwischen Einkaufsmöglichkeiten, indem Sie sich zwischen Gutscheinen von den schon bekannten drei Geschäften entscheiden.

Diese Aufgabe besteht aus fünf Runden. In jeder Runde erhalten Sie 200 Taler in 4 Scheinen à 50 Taler. Diese 4 Scheine können Sie in den Geschäften Douglas, Engelhorn und Saturn einlösen. Für jedes dieser Geschäfte gibt es einen Umschlag. Bitte verteilen Sie die Scheine entsprechend Ihren Einkaufswünschen auf die Umschläge.

Für die Auszahlung wird nur eine Entscheidung ausgewählt. Falls also Runde 1 dieser Aufgabe ausgewählt wird, erhalten Sie als Paar tatsächlich Einkaufsgutscheine entsprechend Ihren Einkaufswünschen in Runde 1.

Ein Beispiel: Wenn Sie in Runde 1 drei Scheine bei Saturn, einen bei Douglas und keinen bei Engelhorn einlösen möchten, dann stecken Sie drei 50-Taler-Scheine in den Umschlag für Saturn, einen Schein in den Umschlag für Douglas und keinen Schein in den Umschlag für Engelhorn. Falls diese Runde ausgewählt wird, erhalten Sie am Ende der Studie als Paar tatsächlich drei Einkaufsgutscheine für Saturn und einen für Douglas.

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