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Spousal Trust Alignment and Intra-Household Cooperation

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Abstract: We implement a binary trust game between 211 married couples from low-income households in urban India. In a separate experiment, these spouses randomly received either only a joint savings device (control) or, additionally, a device for individual usage (treatment). Combining data from both experiments, we examine how the impact of the strategically usable savings device varies by spouses' trust and trustworthiness, particularly, by their alignment. We find that wives also receiving the individual device reported significantly higher savings only when spouses' decisions in the trust game were aligned. When decisions were misaligned, the coefficient turned negative. The results suggest that, under positive alignment (wives justifiably trusting their husbands), higher savings were achieved through wives' increased involvement in household decisions. Conversely, in couples where wives (justifiably) mistrust their husbands, they used the private device to hide money to realize higher savings. Our findings encourage household-based interventions to consider spouses' (mis)perceptions about intra-household cooperation.

Keywords: Spousal Trust, Household Decision Making, Semi-Cooperative Household Model, Trust Game, Saving Interventions, Concealment Behavior

JEL codes: D1, D8, D91, J12, O12

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1 Introduction

The majority of the world resides in multi-person households, where decisions are the product of a, more or less, collectively shaped process (United Nations, 2022)[1]. Experiments designed to analyze human behavior, however, have long focused on isolated individuals or artificially created groups that differ substantially from the group we observe in a household: Households are neither artificially created nor randomly chosen groups, but emerge endogeneously. They are also continuous and do not stop existing after the completion of the experiment. Moreover, household members are linked by affective relationships and subject to a very specific norm set. Precisely due to these characteristics, a rigorous examination of decision making within the household is a crucial and challenging task that has recently received increasing attention in the field of economics and beyond (Munro, 2018).

From the intra-household experiments conducted so far, we know that household members, especially spouses, tend to strategically make use of information asymmetries. For instance, household members choose to endure losses in order to protect information about or restrict access to experimental payoffs or real-world resources from their spouse (e.g., Boltz et al., 2019; Jakiela and Ozier, 2016; Ashraf et al., 2014; Castilla and Walker, 2013; Malapit, 2012). This deliberate concealment of information or resources may sometimes improve the situation of a certain spouse (often the wife) when faced with bargaining power disadvantages or restrictive social norms (e.g. Riley, 2024; Castilla, 2019; Jakiela and Ozier, 2016; Schaner, 2015; Baland et al., 2011; Anderson and Baland, 2002). However, these behaviors may coincide with inefficient outcomes like not choosing the household-maximizing strategy in experimental or real-word settings (e.g. Mani, 2020; Fiala and He, 2017; Munro et al., 2014; Ashraf, 2009; Udry, 1996). Decision making, therefore, seems neither unitary or purely cooperative nor is it entirely uncooperative (e.g., Doss and Quisumbing, 2020; Fiala and He, 2017), but rather subject to substantial strategic considerations.

Recent insights provide suggestive evidence that spouses' assumptions about each others' behavior within the household - in other words, the basis of any strategic considerations - are often inaccurate. For instance, husbands drastically discount information received by their wife although making use of it could significantly increase their experimental earnings (Conlon et al., 2021). Moreover, several studies document considerable discrepancies in spouses' reports about the identity of the

[1]Averaged across countries, almost 90% of the world lives in households with at least two members. Even in the country with the largest proportion of single-person households (41%, Latvia), more than half of the population lives in multi-person households (United Nations, 2022).

household head or the process of decision making within the household (e.g., Ambler et al., 2022; Annan et al., 2021; Bussolo et al., 2021; Ambler et al., 2018). This misalignment of perception and behavior presents a risk for the effectiveness of any policy intervention that allows for - or even relies on - a strategic usage (e.g., deliberately concealing information).

Against this background, we utilize data from a randomized controlled trial (RCT) and a lab-in-the-field experiment to consider trust and trustworthiness between spouses as sources of heterogeneity in the effectiveness of a strategically usable saving device. Trust is usually understood as the *belief* in or *expectation* of another individual's trustworthiness (e.g., Yamagishi and Yamagishi, 1994; Rotter, 1980). Trustworthiness is largely conceptualized as an expression of individuals' *reciprocity* (e.g., Ostrom and Walker, 2003; Fehr and Gächter, 2000). Thus, we argue that trust and trustworthiness between spouses, and in particular their alignment or misalignment, are indicative of misperceived behaviors inside the household and, consequently, represent important determinants of strategic cooperation.

We outline a simple theoretical model conceptualizing this argument and test it empirically in the context of a saving promotion intervention that allows for strategic intra-household behaviors among low-income slum dwellers in urban India. 211 married couples were randomly assigned to either a control group, receiving a shared saving device (a lockbox with two keys), or a treatment group, where the wife and husband each received, in addition to the shared device, an individually usable saving device (a zip-purse). Spousal trust and trustworthiness were quantified experimentally by a simplified, binary trust game conducted in a separate lab-in-the-field experiment. We investigate whether the effect and usage of the intervention (also receiving the private saving device) on the wife's savings vary by spousal trust alignment.

Overall, we find no significant treatment effects of the private saving device on participants' saving balances. The results do, however, reveal statistically significant treatment effects if splitting participants into distinct subgroups according to the dimensions of spousal trust: Wives receiving both the joint and individual saving device reported significantly higher savings (more than twice as much) when spouses' decisions in the trust game were aligned (p-value$<$0.01). When decisions were not aligned, the effect coefficient turned negative.

We find suggestive evidence of two very different usages of the individual saving device, depending on the type of spousal trust and trustworthiness alignment: The results suggest that, under positive alignment (wives justifiably trusting their husbands), higher savings were achieved through wives' increased involvement in household (financial) decisions. Conversely, in couples where wives (justifiably) mistrust their

husbands, they used the private device to hide money to realize higher savings. Our findings remain robust to estimating complier average causal effects accounting for actual usage instead of mere treatment assignment and to controlling for alternative heterogeneity variables, including different proxies for female bargaining power.

This is the first study to explicitly - theoretically and empirically - examine spousal trust and trustworthiness as factors of intra-household cooperation in general and of the effectiveness of household-based (saving) interventions in particular. To that end, we draw attention to a new factor, which can further improve our understanding of decision making within the household and operate independently of economic bargaining power dynamics. From a policy perspective, the results of our study call for the consideration of spouses' (mis-)perceptions about intra-household cooperation when designing and evaluating household-based interventions - especially those with a strategic usage.

Our paper contributes to the line of research that uses behavioral and experimental games to acquire insights into household decision making by proposing a novel explanation for observed inefficiencies (e.g., Conlon et al., 2021; Castilla, 2019; Fiala, 2017; Castilla, 2015; Hoel, 2015; Iversen et al., 2011; Ashraf, 2009). Relatedly, we contribute to the literature about the effectiveness of different types of saving interventions, including those aimed at improving female empowerment (e.g., Aggarwal et al., 2023; Steinert et al., 2022; Schilbach, 2019; Schaner, 2015; Karlan et al., 2014; Anderson and Baland, 2002). Theoretically, our paper adds to the literature on household decision-making models, with a particular focus on semi-cooperative models, where cooperation can be continuous and therefore partial (e.g., Malapit, 2012; Fletschner, 2009; Lundberg and Pollak, 2003; Konrad and Lommerud, 2000; Carter and Katz, 1997). Finally, to date, our study rates among the largest experimental elicitations of spousal trust and trustworthiness in a country of the Global South and, as such, offers a substantial contribution to the literature on measuring trust and trustworthiness (Kleinert et al., 2020; Cochard et al., 2016; Castilla, 2015; Kebede et al., 2014; Munro et al., 2014; Chao and Kohler, 2007; Berg et al., 1995).

The remainder of the paper is organized as follows. Section 2 introduces the theoretical framework by expanding the semi-cooperative model by Malapit (2012) to incorporate spousal trust and trustworthiness. Section 3 describes the study design - including the RCT to evaluate the saving intervention and the lab-in-the-field experiment to quantify spousal trust and trustworthiness - and lays out the empirical strategy. Section 4 presents the results and robustness checks. Section 5 discusses the broader significance and policy implications.

2 Theoretical considerations

We suggest that a simple semi-cooperative household model can be employed to illustrate the role of spousal trust and trustworthiness (and their alignment) as sources of heterogeneity in intra-household cooperation. To demonstrate this, we expand an existing model by Malapit (2012) to incorporate spousal trust and trustworthiness.

2.1 The basic model by Malapit (2012)

In the model by Malapit (2012), cooperation is conceptualized as the share of the wife's/husband's own financial resources they wish to contribute to a common pool. Thus, cooperation is continuous and can vary at the individual level. Individual resources not contributed can be allocated independently, while contributed resources (including the resulting gains from cooperation) are pooled and allocated according to spouses' relative bargaining power, among others. This formal inclusion of bargaining power further allows us to illustrate how spousal trust and trustworthiness can act as alternative, possibly even counterbalancing factors that can help us better understand cooperation and efficiency in household decisions.

The specific application context of the model are household savings, as also in Malapit (2012). Given the empirically well-demonstrated prevalence of concealment behaviors in this regard (partial savings pooling), which can be seen as a proxy for the desired degree of cooperation, this context seems appropriate to motivate a semi-cooperative household model (Anderson and Baland, 2002; Ashraf, 2009; Schaner, 2015; Schaner, 2017). Moreover, the phenomenon of partial savings pooling aligns well with the subsequent empirical investigation of this paper.

Malapit (2012) models a two-person household with husband h and wife w who earn or receive a certain amount of individual financial resources Y_h and Y_w, but are connected through household public goods. These public goods may be, for instance, sanitation, children's well-being, or, in this model, precautionary savings for emergencies (e.g., theft, an accident, or a weather shock). The public good can be supplied through spouses contributing a certain proportion ($0 \leq \theta_i \leq 1$) of their individual financial resources to a public pool, here, a joint pool of precautionary savings. Financial resources not contributed are discretionary, at each spouse's individual disposal.

Cooperation, i.e. spouses' contributions to the joint savings pool, is assumed to yield certain additional gains, $G(\theta_h Y_h, \theta_w Y_w)$. Malapit (2012) emphasizes that the gains from cooperation through spousal contributions to the joint savings pool can go

beyond material benefits from saving itself, and also include non-material benefits from cooperation, such as love, caring and its reciprocation.[2]

The gains from cooperation are distributed between spouses according to an exogeneously determined sharing rule ($0 \leq \mu \leq 1$; μ being the husband's share, $1-\mu$ being the wife's share). The sharing rule can be interpreted to represent spouses' relative bargaining power, as it captures the result of some unspecified decision-making process over how the pooled savings are used and how each spouses' preferences are reflected therein.

Malapit (2012) introduces another exogeneously determined parameter, ($0 \leq \boldsymbol{\delta}_i \leq 1$), which is specific to each spouse, i.e., δ_h, δ_w. Just like bargaining power, this parameter acts as a weight on each spouse's gains from cooperation. However, it also acts as a (counter)weight on their discretionary income, $1-\delta_i$. Thus, Malapit (2012) (p.587) introduces this parameter as '*spouses' preference for cooperation benefits relative to discretionary income*'.

In this paper, we further specify this parameter's conceptualization and propose that spousal trust and trustworthiness could assume such a role, i.e., acting as weights on spouses' gains from cooperation relative to their gains from discretionary income. For now, δ_i will act as a placeholder in the formalization of the model until we elaborate on the role of spousal trust and trustworthiness relations in more detail below.

Following the considerations above, the husband's and the wife's individual payoffs are given by (Malapit (2012, p.587-588))

$$\begin{aligned} \text{Husband: } \pi_h &= \delta_h \mu G(\theta_h Y_h, \theta_w Y_w) + (1-\delta_h)(1-\theta_h) Y_h \\ &= \delta_h \mu A(\theta_h Y_h)^{\alpha} (\theta_w Y_w)^{\beta} + (1-\delta_h)(1-\theta_h) Y_h \end{aligned} \tag{1}$$

$$\begin{aligned} \text{Wife: } \pi_w &= \delta_w (1-\mu) G(\theta_h Y_h, \theta_w Y_w) + (1-\delta_w)(1-\theta_w) Y_w \\ &= \delta_w (1-\mu) A(\theta_h Y_h)^{\alpha} (\theta_w Y_w)^{\beta} + (1-\delta_w)(1-\theta_w) Y_w, \end{aligned} \tag{2}$$

whereas $\delta_h \mu A(\theta_h Y_h)^{\alpha} (\theta_w Y_w)^{\beta}$ and $\delta_w (1-\mu) A(\theta_h Y_h)^{\alpha} (\theta_w Y_w)^{\beta}$ denote the payoffs from contributing to the pooled savings for the husband and wife, respectively, while $(1-\delta_h)(1-\theta_h) Y_h$ and $(1-\delta_w)(1-\theta_w) Y_w$ yield the payoffs from the non-contributed, discretionary financial resources for the husband and wife, respectively. Malapit (2012) defines the function $G(\theta_h Y_h, \theta_w Y_w) = A(\theta_h Y_h)^{\alpha} (\theta_w Y_w)^{\beta}$ such that the

[2] To reap these gains of cooperation, both spouses are required to contribute ($G(\theta_h Y_h, \theta_w Y_w) \geq 0$), i.e., the case where only one person contributes is considered as non-cooperation ($G(\theta_h Y_h, 0) = G(0, \theta_w Y_w) = 0$).

gains from cooperation have decreasing returns to scale and positive, but diminishing returns to spousal contributions, i.e. for the benefit elasticities α and β, she ascertains $0 < \alpha, \beta < 1$ and $\alpha + \beta < 1$. The parameter A is a positive constant and can capture other factors that affect the net benefits of joint savings, for instance the availability of physical/social infrastructure or local financial institutions (Malapit, 2012, p.588).

Maximizing π_h and π_w, respectively, under the budget restriction, $\theta_i \leq 1$, and simultaneously solving the first order conditions, produces a stable Cournot-Nash Equlibrium. The resulting equilibrium contribution shares,

$$\text{Husband: } \theta_h^* = \frac{1}{Y_h}\left[A\left(\frac{\delta_h \alpha \mu}{1-\delta_h}\right)^{1-\beta}\left(\frac{\delta_w \beta (1-\mu)}{1-\delta_w}\right)^{\beta}\right]^{\frac{1}{1-\alpha-\beta}} \tag{3}$$

$$\text{Wife: } \theta_w^* = \frac{1}{Y_w}\left[A\left(\frac{\delta_w \beta (1-\mu)}{1-\delta_w}\right)^{1-\alpha}\left(\frac{\delta_h \alpha \mu}{1-\delta_h}\right)^{\alpha}\right]^{\frac{1}{1-\alpha-\beta}}, \tag{4}$$

represent the mutually best option for each spouse's contribution, given the other spouse's optimal contribution (see Appendix A for the graphic representation by Malapit (2012), p.588, and the authors' derivations).

Hence, the following four factors influence spouses' optimal contribution shares: (i) husband's and wife's individual financial resources (Y_i), (ii) their relative bargaining power (μ), (iii) the potential gains from cooperation driven by the exogeneously determined constants α, β and A, and (iv) the individual weights on cooperative gains relative to discretionary savings (δ_i).

The equilibrium contribution shares in Equations 3 and 4 above are the desired shares that husband and wife would ideally choose to contribute to the common pool, given the other person's ideal share. However, spouses may in fact *not* be free to choose their preferred share to contribute to the joint savings pool. Instead, there may be limited autonomy in financial household decisions for a certain spouse, induced e.g., by social norms, such that the other, deciding, spouse actually determines his/her spouse's contribution share.

Limited autonomy may, in some societies, affect the husband (as e.g., observed by Anderson and Baland (2002) in Kenya) and, in others, the wife (as e.g., observed by Ashraf (2009) in the Philippines). In India, the context of this study, it is most often the wife who is limited in her autonomy in household decisions, given predominantly patriarchal social norms about each spouse's role inside the household and in society as a whole (e.g., Jayachandran, 2015). Also, (economic) bargaining power is usually distributed in the husband's favor, considering the persisting large

gender gap in labor force participation and a high prevalence of domestic violence inside the household (ILO, World Bank, 2023; World Health Organization, 2021), as well as legal constraints in inheritance and divorce laws. Thus, in what follows, we will focus on the case where the *wife* (i) is faced with limited autonomy and (ii) bargaining power dynamics are distributed to the husband's advantage.

Under such circumstances, it is likely that the wife's *desired* (ideal) contribution to the common pool is lower than the share *demanded* by her husband under limited autonomy of the wife. This situation creates incentives for the wife to conceal parts of her income, savings, or other financial resources in order to reach her actually desired (lower) contribution share (Malapit, 2012, pp.590 ff.).[3] These theoretical incentives align well with the empirically documented phenomenon of income hiding, which is also observed in the Indian context (e.g. Castilla, 2019; Munro et al., 2014).

2.2 Conceptualization and incorporation of spousal trust

In the general literature, trust is mainly understood as the belief in or expectation of another individual's trustworthiness (e.g., Rotter, 1980; Yamagishi and Yamagishi, 1994), while trustworthiness is largely conceptualized as an expression of individuals' reciprocity (e.g., Ostrom and Walker, 2003; Fehr and Gächter, 2000). In the specific context of marital trust dynamics relevant to intra-household financial decision-making, trustworthiness could be interpreted in terms of the reciprocity of the marital relationship through the degree to which one spouse takes the other's preferences into account when making decisions about joint financial resources. Spousal trust would coherently be defined as a spouse's belief or expectation regarding whether such a reciprocation of their marital relationship is likely in the other spouse. Essentially, spousal (trust and) trustworthiness might therefore be understood as (beliefs about) the degree to which one spouse's preferences regarding how to spend joint financial resources are considered in the *other spouse*'s preference set[4].

As introduced in Equation 2 above in the form of the parameter δ_w, we suggest that spousal trust relations could affect a spouse's desired contribution share through assigning a weight to the relative gains from cooperation. In the identified context

[3]Malapit (2012) introduces an extension of the above model, which nicely illustrates this situation (pp.590 ff.). We do not further elaborate on this extension here because the simple version is sufficient to demonstrate the potential role of spousal trust, assuming that we are in a situation where the wife's autonomy is limited and bargaining power relations are distributed to her disadvantage. Comparative statics for incorporating spousal trust and trustworthiness as additional parameters remain in the same direction, also in the model with limited autonomy.

[4]Note that these definitions present a distinct concept from bargaining power in the model by Malapit (2012).

of the wife's limited autonomy and bargaining power, we propose that two types of spousal trust and trustworthiness relations are particularly relevant for the weight the wife assigns to the gains from cooperation relative to discretionary savings:[5]

1. **The wife's trust towards her husband:** We may expect a wife with a relatively high level of trust in her partner to place a higher weight on the gains from joint savings (relative to discretionary savings) than a spouse with a lower level of trust (all else equal) for two reasons. First, according to the definitions above, she believes that her spouse's preferences are to a higher degree considerate of her own preferences, thus she expects relatively more material gains from pooled savings. Second, she may also have a higher preference for the non-material benefits from cooperation, such as love and care as indicators of a successful marital relationship.

2. **The husband's trustworthiness towards his wife:** The husband's trustworthiness may affect the relative weight assigned by the wife to the gains from joint savings through reducing or increasing her *actual* (material) benefits from cooperation. According to the definitions above, a husband with a higher level of trustworthiness would to a larger extent take his wife and her needs into consideration when spending pooled resources, thus positively affecting her relative value for cooperation benefits. The non-material valuation may again also play a role.

The comparative statics of δ_w, derived from Equation 4, illustrate how the wife's trust and husband's trustworthiness could act as relative weights on the gains from cooperation of the wife and through this channel influence her desired contribution share (and ultimately, hiding incentives)[6]:

$$\frac{\partial \theta_w^*}{\partial \delta_w} = \zeta \left(\frac{1-\alpha}{1-\alpha-\beta} \right) \left(\frac{(\delta_w)^{\frac{\beta}{1-\alpha-\beta}}}{(1-\delta_w)^{\frac{2-2\alpha-\beta}{1-\alpha-\beta}}} \right) > 0 \tag{5}$$

[5]Generally, also the husband's equilibrium contribution share might be affected by levels of spousal trust and trustworthiness. However, (i) we do not focus on this perspective here because of the focus of the paper being the wife's cooperation/contribution share and (ii) we argue that it is more likely that the behavior of the weaker spouse, in terms of autonomy and bargaining power, is influenced by spousal trust and trustworthiness, which is here, the wife. Since the husband is much more autonomous in deciding his (and the wife's) contribution share and moreover regarding how to spend the common pool savings, his behavior seems much less likely to be influenced by the definitions of spousal trust and trustworthiness introduced above.

[6]ζ is a positive constant and equals: $\frac{1}{Y_w}\left[A\left(\beta(1-\mu)\right)^{1-\alpha}\left(\frac{\delta_h \alpha \mu}{1-\delta_h}\right)^{\alpha} \right]^{\frac{1}{1-\alpha-\beta}}$. For the derivation of the comparative statics, see Appendix A.

Employing δ_w as a placeholder for the suggested effects of spousal trust and trustworthiness, the derivative $\frac{\partial \theta_w^*}{\partial \delta_w}$ reveals that an increase in the wife's trust or the husband's trustworthiness would result in an increase in the wife's equilibrium contribution share θ_w^*. This result reflects the outlined theoretical expectations. Further specifying the placeholder δ_w, the wife's trust and the husband's trustworthiness could each act as individual weights on the relative benefits from cooperation, such that, in combination, they would enter the payoff function in Equation 4 as follows,

$$\delta_w(T_w, TW_h) = T_w \times TW_h, \tag{6}$$

whereas $0 \leq T_w \leq 1$ denotes the wife's trust and $0 \leq TW_h \leq 1$ denotes the husband's trustworthiness. In this multiplicative form, the weight placed by the wife on the gains from pooled savings (relative to discretionary savings) depends equally on the wife's trust and the husband's trustworthiness.[7] Naturally, in this form, if both T_w and TW_h are low, the equilibrium contribution share of the wife would be lower than when both trust and trustworthiness indicators are at a high level, all else equal. Also, the wife's equilibrium contribution share would be identical for e.g., (i) $T_w = 0.2$ and $TW_h = 0.8$ and (ii) $T_w = 0.8$ and $TW_h = 0.2$ (all else equal), since both, T_w and TW_h would enter the payoff function equally and could therefore offset each other's effects.

The considerations above assume that spousal trust and trustworthiness relations are known to spouses. This would make the distinction between the two concepts obsolete, given that one is an expectation of the other (trust is an expectation of trustworthiness, see above). Evidently, this assumption is at least partly implausible:[8] Specifically, while the wife may be aware of the degree of trust she holds in her husband, her husband's true level of trustworthiness remains unknown to her, at least to some extent. Thus, in deciding on her desired contribution share to the common pool, it is a more realistic scenario that the wife will draw on her level of trust in her husband as an approximation of her husband's true trustworthiness. If so, an incorrect guess about her husband's trustworthiness would, according to the considerations above, either lead to the wife's desired share of cooperation being too high (if she overestimates her husband's trustworthiness) or too low (if she underestimates her husband's trustworthiness) (Equations 5 and 6). Such a situation

[7] Other functional forms are possible here, with different weights for different spousal trust and trustworthiness indicators.

[8] See also, for instance, the recent body of empirical literature about spousal disagreement in separately conducted household surveys (e.g., Ambler et al., 2018; Annan et al., 2021; Bussolo et al., 2021; Ambler et al., 2022).

would then lead to efficiency losses as the wife's level of uncooperative behaviors is either too high (i.e., too frequent concealment of financial resources from her husband) or too low (i.e., insufficient concealment).

The theoretical approach outlined above introduced spousal trust and trustworthiness relations as new determinants of the empirically widely observed intra-household decision making frictions. More precisely, trust and trustworthiness relations may act as additional factors of heterogeneity in intra-household cooperation, operating distinctly for given bargaining power distributions. Importantly, trust and trustworthiness may be the source of a new type of inefficiency as a result of their misalignment among spouses, which has so far not yet been explored.

3 Study Design

This section presents the design for an empirical investigation of the role of spousal trust and trustworthiness, and, particularly, their alignment, for intra-household cooperation among married couples in urban India. Following the theoretical model introduced above, we would expect there to be heterogeneity by spousal trust and trustworthiness in the impact of an intervention, the usage and effectiveness of which vary by the degree of cooperation among spouses. The experimental design laid out in the next pages introduces a savings intervention, which meets these criteria. The study is set up as a randomized controlled trial (RCT) - aimed at evaluating said intervention - in combination with a trust game, conducted between 211 spouses in the state of Maharashtra.

3.1 Setting

The study took place in slum communities surrounding the cities of Pune and Pimpri-Chinchwad in India's second most populated state Maharashtra.

Despite improvements in recent years, resulting in a Gender Equality Index close to the world average (UNDP, 2021), gender discrimination remains a prevalent issue in India. It manifests itself, for instance, through a large and persisting gender gap in labor force participation (ILO, World Bank, 2023), generally worse health outcomes for women, a high prevalence of spousal violence, and a low child sex ratio of 894 females per 1,000 males (World Bank, 2017; International Institute for Population Sciences, 2018; World Health Organization, 2021). Gender roles, thus, seem to continue to play an important part in households' internal decision-making processes (e.g., Jayachandran, 2015).

Financial inclusion in India, in terms of bank account ownership, amounts to almost 80%, stagnating since 2017 (World Bank, Global Findex Database, 2021). Account usage, however, is rather low, as, for instance, the vast majority of the country's banked population still pays their utility bills in cash (World Bank, Global Findex Database, 2021) and inactivity, measured in the number of withdrawals or deposits, is widespread (Demirguc-Kunt et al., 2018). These figures emphasize a potentially high demand for additional, alternative saving devices.

3.2 Sample

Our sample consists of 211 female (91%) and male (9%) slum dwellers. Their spouses were involved in the study through the intervention roll-out and the trust game, but interviews were conducted only with the main study participant (i.e., either the wife or the husband of a household, in almost all cases, the wife). The sample was randomly selected as a sub-sample from a larger RCT (N=1525), initially designed to evaluate the overall impact of a portable, private saving device (Steinert et al., 2022). In this sub-sample, the trust game was conducted as an additional component.

Participants were eligible if they (1) were aged 18 years or older, and (2) indicated having some income at least once per week or on a monthly basis, either through permanent employment, casual work, remittances or governmental cash transfers (Steinert et al., 2022). Given the aim of this study, the randomly selected sub-sample employed in this paper was subject to a third eligibility criteria, namely (3) being in a marital relationship. No monetary incentives were provided to participants.

3.3 The intervention

Developed by Steinert et al. (2022), the intervention was initially designed to reduce temptation spending and encourage saving.

The central component of the intervention, named 'Aaj bachat kara, udya khush raha' (Marathi for 'Save today, be happy tomorrow'), is a portable saving commitment device, precisely, a zip purse (see Figure B1 in the Appendix). Spouses in treatment group households were each given a zip purse. Following the literature on saving commitment devices, participants were encouraged to take the purse with them whenever they leave the house. In this way, it was intended to serve as a saving reminder, psychological liability, and temporary savings storage at the exact moment at which spending decisions are made, functioning via feelings of guilt and failure whenever violating this commitment (Soman and Cheema, 2011).

The study includes an 'active control' as a standard of care, namely a stationary

commitment device, which was received by all study households. Only treatment group households additionally received the zip purse. The stationary saving device is a metal box, which can be opened and closed with a padlock to which both spouses received a key (see Figure B2 in the Appendix). Such lockboxes have been shown to effectively promote savings in the presence of limited accessibility to a formal saving infrastructure (e.g. Karlan et al., 2014; Aggarwal et al., 2020).

Moreover, all study households received a detailed introduction of the corresponding saving device(s). Specifically, during the distribution of the devices, facilitators explained their use and purpose, and further helped spouses to formulate a savings goal, a detailed visualized savings plan with daily or weekly targets, and a timeline to reach the savings goal (Steinert et al., 2022).

Thus, the initial idea of the intervention - the purse in combination with the lockbox - was to encourage savings in the household, motivated through the zip purse, temporarily stored in the purse itself or in the lockbox, before then being transferred to e.g., a permanent savings account. Since the lockbox can be accessed by both spouses, the above specified usage would require and encourage coordination and cooperation between spouses to achieve savings increases. However, there is another way how the intervention may increase savings: The zip purse by itself is owned and used by each spouse individually. Therefore, the purse could also serve as a temporary *private* savings storage, facilitating the (temporary) concealment of disposable cash from the other spouse. We argue that the specific usage of both devices is sensitive to spousal trust dynamics and explore this hypothesis in our empirical analysis.

3.4 RCT design and timeline

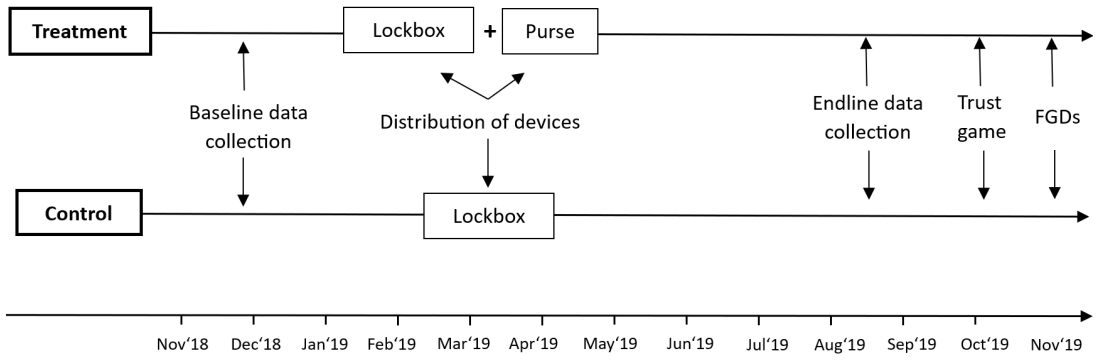

Fig. 1. Study timeline

Study households were randomly assigned to either the treatment group (N=96), receiving both, the lockbox and the private, portable saving device, or the control

group (N=115), only receiving the lockbox. The initial randomization of the larger RCT as well as of the random subsample employed in this paper were performed with Stata, stratified by sex of the participant and baseline savings. Neither participants nor program implementers were blinded due to feasibility constraints. Thus, the active control group receiving the lockbox did not only account for the standard of care, but also helped to limit risks of performance or expectancy biases (Steinert et al., 2022). Data was collected at baseline (November 2018 to January 2019) and endline (August to October 2019) while the saving devices were delivered to treatment and control group households between February and April 2019. The trust game was conducted after households had been visited for the endline data collection (see details below and Section 4 for a discussion of potential endogeneity concerns.)

3.5 Data collection procedures

The data collection was conducted using standardized questionnaires, available in English and Marathi, that were administered on tablets to improve data quality and reduce respondent fatigue. Data was collected by a team of enumerators who had been recruited from local communities and were fluent in Marathi. They received a five-day training, which covered interview techniques, research ethics and ensured that enumerators became familiar with the survey instruments (Steinert et al., 2022).

Interviews were conducted with participants during home visits and lasted for about 30 to 45 minutes. The interviews were held only with one spouse, i.e. the main respondent of the larger RCT (in most cases the wife, see sample details above). Enumerators made substantial efforts to avoid that other household members would be present during the interview, for instance via the timing of the home visits, and aimed at creating a comfortable and private environment for participants. Informed consent forms were administered and obtained from the main respondent prior to the baseline interview during recruitment home visits and additionally from the spouse prior to the distribution of devices.

3.6 Elicitation of spousal trust

3.6.1 The trust game

To measure spousal trust and trustworthiness, a behavioral lab-in-the-field experiment was conducted with respondents and their spouses in additional home visits, after the household had been visited for the endline survey. Spousal trust and trustworthiness were quantified by a simplified binary trust game, in which spouses were randomly selected to act as the first and second mover, respectively (see Figure 2 below).

The first mover was asked to decide between two payout options, namely (A) relying on the spouse's decision to determine the final payout and accepting a potential loss in case the spouse will choose to default (proxy for trust), or (B) defining the final payout without relying on the spouse's decision and thus a priori accepting a lower final payout (proxy for mistrust). If the first mover opted for decision (A), the second mover determined the final payout by choosing (A) whether to cooperate (proxy for trustworthiness) and receive equal payouts or (B) whether to default and thereby maximize the individual payout (proxy for untrustworthiness).

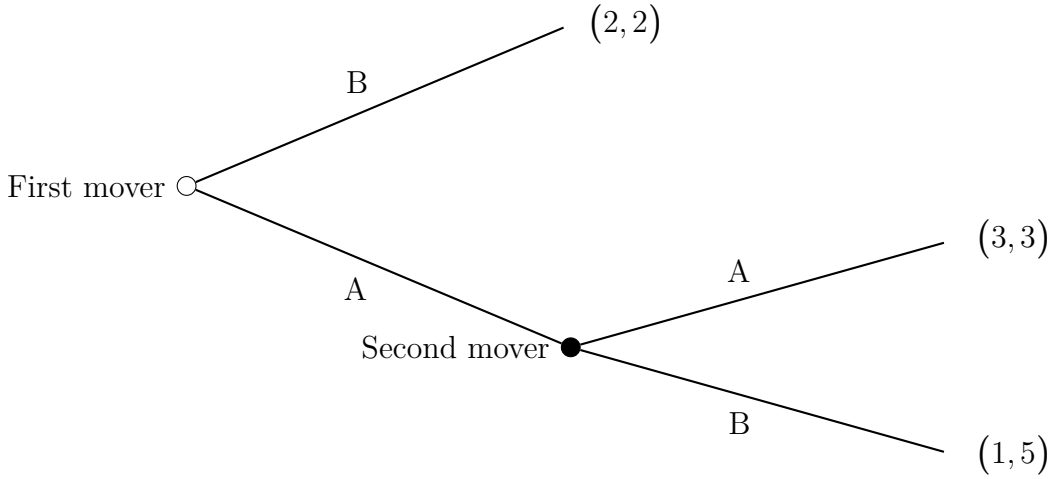

Fig. 2. Binary trust game

Since the trust game was a sequential game and was only played once, each spouse only made one choice (single-role game)[9]. Thus, for every spouse, the game yields one decision, either in terms of trust or trustworthiness, depending on whether the spouse was randomly selected to be the first or second mover, respectively. Given the aim of this paper and the vast majority of RCT participants being women (i.e., in 91% of cases, we collect information about the wife's savings), we only utilized the trust game data about the wife's trust and the husband's trustworthiness, i.e., data from those trust games where the wife was randomly chosen to be the first mover[10]. Choices were kept private such that both spouses made their decisions without knowledge about the other movers' choice.

Payouts were selected to reflect gender-specific preferences, namely embroidered handkerchiefs for female subjects and plain handkerchiefs for male subjects (see Figure

[9]We used this specific version of a trust game - a *single-role binary* trust game (as opposed to e.g., a double-role/continuous game) as a result of both, methodological reasons as well as a low complexity and high feasibility in the field, which are expected to maximize the accuracy of elicited choices.

[10]This was the case in 211 trust games, i.e., the sample employed in this paper. In another 149 trust games, the husband was the first mover.

B3 in the Appendix)[11]. The payout amounts varied in the number of handkerchiefs to be received in the different scenarios determined through spouses' choices and were chosen as such to maintain an incentive to maximize the own payout, i.e. by ensuring a sufficient gain in utility of receiving an additional handkerchief. Moreover, amounts were defined such that, to maximize her own payout, the first mover would opt for the trust option if she believed her spouse to be trustworthy with a probability of at least 50% (see Figure 2 for exact amounts).

Using *gender-specific* payouts was crucial to adequately measure individual trust and trustworthiness between spouses. Interchangeable payouts would be valued equally by both spouses and might thus motivate individuals to maximize payouts differently, e.g., according to a joint household payout. By using gender-specific payouts, we hope to capture the intended measures of trust and trustworthiness in the context of financial household decisions, conceptualized in the theoretical model: Spousal (trust) trustworthiness, defined as (the belief about) the degree to which one spouse's preferences regarding how to spend joint financial resources are considered by the other spouse. Finally, gender-specific (as opposed to interchangeable) payoffs may reduce potential reciprocal or reputational effects of conducting a trust game between non-anonymous, cohabiting players (Kleinert et al., 2020).

The team of enumerators that administered this study component was deliberately different from the one that conducted the main survey data collection. To internalize the rules and procedures of the trust game and to discuss potential difficulties during its conduction in the field, the team underwent an extensive three-day training. For the implementation of the trust game during home visits, we assigned two enumerators per household instead of one in order to ensure a clean implementation. This procedure also helped to assure the isolation of spouses from each other during their decision making processes and choice determination in the trust game as well as a detailed presentation of the choices and payouts.

3.6.2 Constructed variables

The data from the trust game was used to create two types of heterogeneity variables, which will be used in the empirical analysis:

1. **Individual choices in trust game:** This refers to the wife's and the husband's individual decisions to cooperate/deflect in the trust game (regardless of what the respective other mover chose). The corresponding variables indicate

[11] After an extensive consultation with the local team of enumerators, the embroidered/plain handkerchiefs were identified as the best option, given that it is very uncommon that men would use the embroidered handkerchiefs and vice versa.

the wife's trust and the husband's trustworthiness (each coded as 1 if a person cooperated, and as 0 if a person deflected).

2. **Alignment of choices in trust game:** We also account for whether the decision of one mover in the trust game was aligned with the other mover's decision. Thus, in our case, these variables capture whether the wife's choice to trust/not to trust her husband was indeed met with trustworthiness/untrustworthiness by her husband in the trust game. We created two variables to quantify the alignment of choices in the trust game: A binary variable, coded as 1 if choices were aligned and as 0 if they were misaligned, and a categorical variable that also specifies the type of alignment, i.e., whether the wife correctly trusted or correctly mistrusted her husband in the trust game.

3.7 Outcome and mechanism variables

The primary outcomes were participant's total savings balances in Indian Rupees (INR), which were the sum of a number of different subcategories of savings. These subcategories include bank account savings, savings in post offices or national savings centres, savings with relatives, savings kept at home, savings within a savings club, savings in mobile money accounts, lock box savings and zip purse savings (only treatment group). Savings in the lockbox and in the zip purse were measured by hand-counting money together with participants, who were not informed about the exact date and time of their endline interview. Amounts for the other categories of savings were obtained from detailed self-reported information of participants.

Apart from spouses' choices in the trust game, the survey contained additional information to examine the different mechanisms through which the intervention could have affected savings outcomes. This includes several survey instruments that aim to capture household power dynamics with regard to (financial) decision making as well as questions about whether and how participants used the zip purse. Finally, the survey captured detailed sociodemographic information, including household composition, age, education, caste, religion, employment and income, among others.

3.8 Ethical considerations

Ethical approval for this study was obtained through the University of Goettingen. As described above, the up to five-day-training of both, the survey research staff and the research team conducting the trust game in the field, covered the aspect of research ethics. This included for instance conscious behaviors in the slum communities and in participants' homes, the importance of participants' informed consent to taking

part in the study as well as creating a private and comfortable interview atmosphere and avoiding the presence of other household members during the interview.

3.9 Estimation strategy and econometric specification

Given a successful randomization of participants to the treatment group, the study design allows us to attribute the difference in outcomes between both groups solely to the treatment, i.e., the additional receipt of the private saving device (Intention-To-Treat, ITT, effect). Thus, given that trust is not affected by the treatment, we can examine treatment effects for heterogeneity in terms of spousal trust by regressing the outcome of interest on the treatment indicator, interacted with the respective heterogeneity variable for spousal trust.

We estimate the following main specification,

$$S_{i,t} = \gamma_0 + \gamma_1 S_{i,t-1} + \gamma_2 W'_{i,t-1} + \gamma_3 X'_{i,t-1} + \gamma_4 P_i + \gamma_5 T_i + \gamma_6 P_i \times T_i + \epsilon_{i,t}, \tag{7}$$

where $S_{i,t}$ is the total savings balance for participant i at endline and $S_{i,t-1}$ are lagged savings at baseline. $W'_{i,t-1}$ is a vector of stratification variables and $X'_{i,t-1}$ is a vector of baseline covariates. Stratification variables are participants' sex and quintile of baseline savings and baseline controls include participants' age, education, employment status, household size, household income, outstanding debt, saving club membership and an indicator variable about the difficulty of the conditions for the trust game implementation. P_i is the indicator variable for treatment assignment, which takes the value of 1 if the participant had additionally received the private saving device and the value of 0 if the participant had only received the shared saving device. T_i are the heterogeneity variables for spousal trust and trustworthiness relations introduced above, indicating individual choices as well as alignment of choices in the trust game. $\epsilon_{i,t}$ is the error term.

The main coefficient of interest is γ_6, i.e., the coefficient for the interaction term between the respective trust/trustworthiness variable and the treatment indicator. The coefficient corresponds to the difference in the ITT effects between the subgroups of spousal trust and trustworthiness.

Due to the typical right-skewness and non-normality of the saving and expenditure data, we employ a Generalized Least Squares model with a gamma family and a log-link using high-tail 2% winsorized saving and income data [12].

[12] As part of our robustness checks, we also report results for non-winzorized data and at other levels of winzorizing, among others.

4 Results

4.1 Trust game results

The results from the binary trust game are illustrated in Table 1 below. The table reports the wife's (first mover, i.e., proxy for trust) and husband's (second mover, i.e., proxy for trustworthiness) choices in the trust game for the 211 married couples in our sample. Overall, out of the 422 choices made in the trust games, slightly more than half of the players chose to cooperate (224 or 53.08%). Wives cooperated much less often than husbands, or, put differently, in our sample, wives' trust was on average substantially lower than husbands' trustworthiness (46.92% vs. 59.24%). Interestingly, in terms of choice alignment, a wife's choice (not) to trust was indeed met with her husband's (mis)trustworthiness only in around half of the cases (50.71%, sum of values printed in italic in Table 1), while in the other half of the trust games, choices were misaligned. A positive trust/trustworthiness alignment, i.e., the wife rightly trusting her husband, occurred slightly more often than a negative alignment, i.e., the wife rightly mistrusting her husband (28.44% vs. 22.27%).

Table 1 Trust game results

		Wife		
		Trusts	Doesn't trust	
Husband	Trustworthy	*28.44%*	30.81%	59.24%
	Not trustworthy	18.48%	*22.27%*	40.76%
		46.92%	53.08%	

Notes: The table reports the wives' (first mover, i.e., proxy for trust) and husbands' (second mover, i.e., proxy for trustworthiness) choices in the trust game, using data from the full sample of 211 trust games. Italic numbers indicate the proportions of aligned choices in the trust game, i.e., the wife correctly trusting or correctly mistrusting her husband.

Compared to other trust games so far conducted between spouses (Kleinert et al., 2020; Cochard et al., 2016; Castilla, 2015; Kebede et al., 2014; Munro et al., 2014; Chao and Kohler, 2007), our results are most comparable and most similar to the findings by Castilla (2015), who had also examined the Indian context. While the trust game by Castilla (2015) was continuous, cooperation in terms of the percentage of the endowment sent/returned was between 52% and 60%, which is a magnitude similar to the level of cooperation in our sample. Our findings also resemble those of Kebede et al. (2014)(Ethiopia) and Chao and Kohler (2007)(Malawi), who, like

us, found that wives' level of trust is substantially and statistically significantly lower than husbands'. The spousal trust games conducted in European countries generally found higher overall levels of trust and trustworthiness (e.g., Kleinert et al., 2020; Cochard et al., 2016). This result seems plausible in light of more pronounced patriarchal gender norms, stronger household bargaining power imbalances, and a high prevalence of arranged marriages in India. Nevertheless, absolute levels are still surprisingly low when taking into account that players are married couples. The low level of *alignment* of spouses' choices in our trust game further strengthens this impression.

4.2 Treatment heterogeneity by trust and trustworthiness

4.2.1 Baseline characteristics and randomization verification

Table 2 presents an overview of participants' baseline characteristics in each trialarm. Recall that these are characteristics of the main participant of the RCT component of this study, i.e., the spouse who was interviewed for outcome and explanatory variables at baseline and endline. More than 90% of participants were female, given the aim of the study, and the vast majority of the sample reported being Hindu (75%).

Study participants were exposed to a rather high degree of poverty at baseline, given that more than every third respondent indicated to be unemployed, 55% reported belonging to a backward caste or scheduled tribe, and a quarter of participants had not finalized any form of education. The average monthly income of study participants across the entire sample equals 9,591.71 INR, which is equivalent to approximately 116 USD. In contrast, with an average amount of 4,748.56 INR (approx. 57 USD) the baseline level of total savings was already quite high. Savings were largely kept in participants bank accounts, 31.97%, and at home, 27.11% (see Table B1 in the Appendix).

A joint orthogonality F-test to assess baseline balance across study arms provides suggestive evidence in favor of an effective randomization (F = 1.11, see Table 2 below). Two of the tested baseline characteristics, participants' outstanding debt and their educational attainment, differ significantly (p-value<0.1) between treatment and control group when comparing differences in means using t-tests. Both of these characteristics are controlled for in the econometric specification (see Equation 7).

Table 2 Baseline Balance

Variable	(1) Control (N=115)	(2) Treatment (N=96)	T-test Difference (1)-(2)
Female	0.913	0.917	-0.004
	(0.026)	(0.028)	
Age	34.557	32.917	1.640
	(1.073)	(1.077)	
Belongs to scheduled/backward caste or tribe	0.522	0.594	-0.072
	(0.047)	(0.050)	
Hindu	0.783	0.708	0.074
	(0.039)	(0.047)	
Household members	3.922	4.125	-0.203
	(0.193)	(0.170)	
Unemployed	0.365	0.427	-0.062
	(0.045)	(0.051)	
No education	0.243	0.219	0.025
	(0.040)	(0.042)	
Completed primary education	0.217	0.188	0.030
	(0.039)	(0.040)	
Completed secondary education	0.339	0.458	-0.119*
	(0.044)	(0.051)	
Completed tertiary education	0.200	0.135	0.065
	(0.037)	(0.035)	
Past-month income	8947.391	10363.542	-1416.150
	(843.204)	(1011.877)	
Outstanding debt	3595.191	1461.979	2133.212*
	(1008.888)	(572.146)	
Member of savings club	0.348	0.375	-0.027
	(0.045)	(0.050)	
Total saving balance	4587.913	4941.010	-353.097
	(619.388)	(915.855)	
Past-month money given to other hhmembers	635.304	869.271	-233.966
	(183.060)	(222.139)	
Past-month money received by hhmembers	3860.870	3589.583	271.286
	(482.910)	(409.507)	
Decision making involvement (index, 0-1)	0.733	0.665	0.068
	(0.034)	(0.043)	
Gender equality attitudes (index, 1-5)	3.596	3.569	0.028
	(0.061)	(0.069)	
F-test of joint significance (F-stat)			1.111
F-test, number of observations			211

Notes: Means and standard errors (in parentheses) displayed for treatment and control group. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

4.2.2 Heterogeneous impacts on savings

Figure 3 illustrates the distribution of participants' total savings (the primary outcome variable) at endline, both on average and by trialarm, not yet accounting for differences in terms of spousal trust and trustworthiness. As common for saving, income or expenditure measures, participants' total savings in our sample are non-normally distributed and skewed to the right. Moreover, 9% of participants did not report any savings at endline (at baseline, almost 17% did not report any savings).

Mean savings at endline amount to 7,298 INR (approx. 88 USD), with the median being much lower at 3,400 INR. Thus, overall and on average, savings in the full sample increased substantially from the baseline mean of 4,749 INR (median: 2,000 INR). Distinguishing between the treatment group and the active control group reveals almost no differences, with the treatment group reporting only slightly, but insignificantly lower total savings.

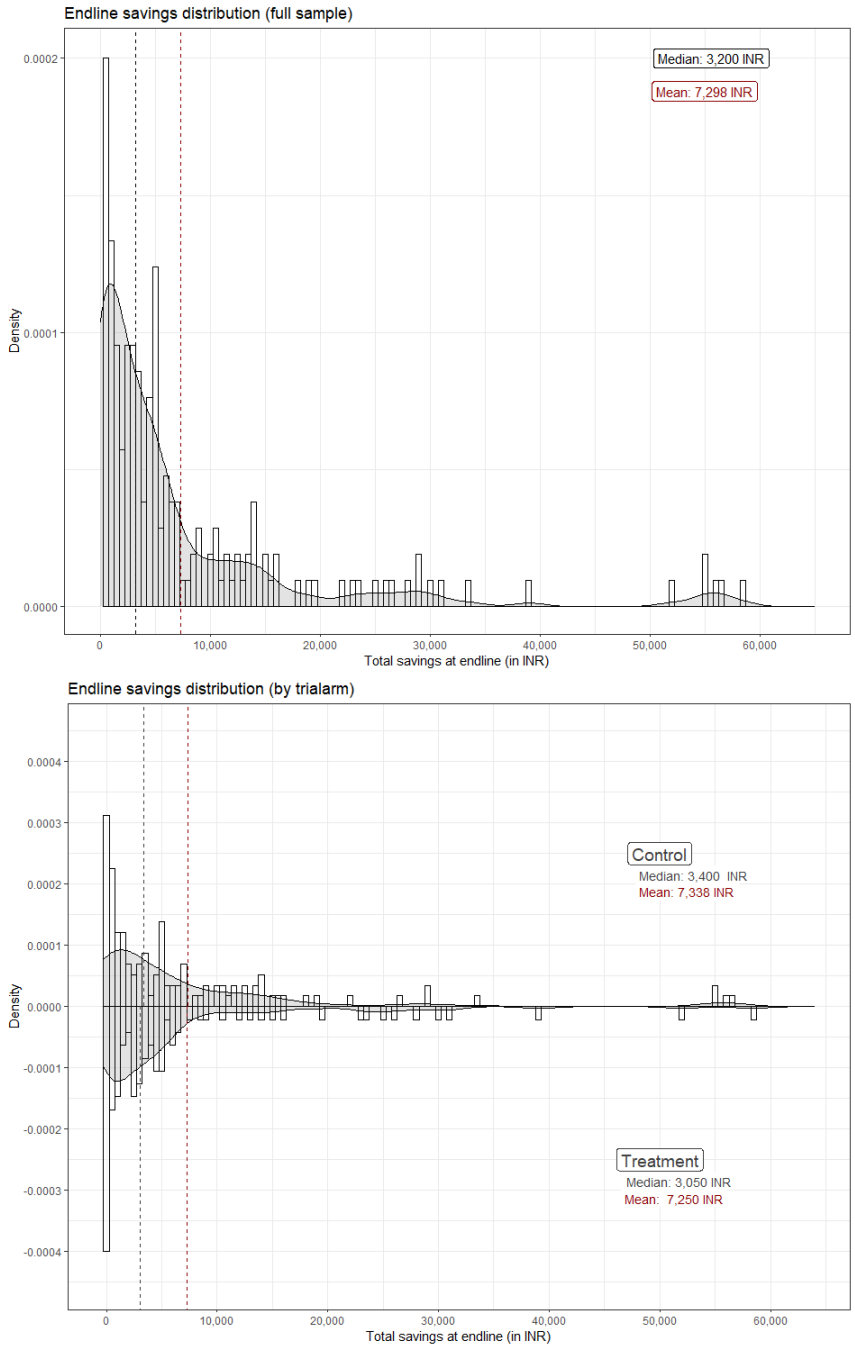

Fig. 3. Total savings at endline (Full sample: N=211, Control N=115, Treatment N=96)

Treatment effects of receiving the zip purse and their heterogeneity in terms of spousal trust and trustworthiness are illustrated in Table 3 and Figure 4, as estimated by means of Equation 7. All regressions results are based on GLM estimations (gamma family and log-link) to account for the right-skewness and non-normality of the savings data. The outcome variable is participants' total savings at endline (as summed up from the different, individually reported/counted subcategories of savings). The first four columns in Table 3 report results for the entire sample and columns 5 and 6 report results for female participants only (the vast majority of the sample and the core group of interest for this study).

Panel A shows average treatment (ITT) effects and reveals that there is no statistically significant or magnitude-wise meaningful impact of additionally receiving the zip purse on participants' total savings. This result is in line with Figure 3 above and remains robust when adding the different sets of stratification and control variables.

Panel B and Panel C report the results of the heterogeneity analysis, i.e., whether treatment effectiveness varies by spousal trust and trustworthiness dynamics (Equation 7). We first examine the wife's trust and husband's trustworthiness individually as heterogeneity variables (Panel B) before then also accounting for the alignment of spouses' choices in the trust game (Panel C). The results reveal a statistically significant heterogeneity by spouses' trust and trustworthiness dynamics, which we summarize in the following.

First, our results suggest that the additional receipt of the private saving device approximately doubled participants' endline savings in households where the wife trusts her husband in the trust game, relative to those households where she does not. This effect is statistically significant (p-value$<$0.05) and slightly more pronounced in magnitude among female participants (Panel B, columns 2 and 5). In terms of the husband's trustworthiness, we observe the opposite effect, though weaker in magnitude and statistical significance: In couples where the husband is *not* trustworthy, treatment group participants reported on average approximately 50% more endline savings relative to households where the husband is trustworthy according to his choice in the trust game (Panel B, column 4). This effect is not statistically significant at common levels. Again, among female participants, the effect is larger in magnitude (77% increase) and turns borderline statistically significant (p-value$<$0.1) (Panel B, column 6). In sum, an isolated analysis of spouses' trust and trustworthiness as sources of heterogeneity suggests that the wife's trust and the husband's trustworthiness play opposing roles for the effectiveness of the individual saving device in increasing the wife's savings - which, at a first glance, seems counter-intuitive.

Table 3 ITT effects on total savings by spousal trust

Outcome: Total saving balance	Full sample				Female sample	
	(1)	(2)	(3)	(4)	(5)	(6)
PANEL A: Average Treatment Effects (ITT)						
Treatment	-0.01	-0.06	-0.01	0.16	0.04	0.20
	(0.23)	(0.23)	(0.22)	(0.19)	(0.23)	(0.20)
Baseline savings		✓	✓	✓	✓	✓
Stratification variables			✓	✓	✓	✓
Additional controls				✓		✓
Loglikelihood	-2087.91	-2068.38	-2058.65	-2048.10	-1892.00	-1881.47
Observations	211	211	211	211	193	193
PANEL B: Treatment heterogeneity by individual choices in trust game						
Treatment	0.17	-0.34	0.16	0.48	-0.29	0.65**
	(0.19)	(0.29)	(0.19)	(0.31)	(0.31)	(0.33)
Wife trusts	-0.07	-0.51**			-0.63**	
	(0.21)	(0.24)			(0.25)	
Treatment × Wife trusts		0.97**			1.01**	
		(0.43)			(0.46)	
Husband trustworthy			-0.06	0.20		0.21
			(0.20)	(0.26)		(0.27)
Treatment × Husband trustworthy				-0.56		-0.77*
				(0.41)		(0.42)
Baseline savings	✓	✓	✓	✓	✓	✓
Stratification variables	✓	✓	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓	✓	✓
Loglikelihood	-2048.02	-2043.17	-2048.03	-2046.53	-1876.25	-1878.55
Observations	211	211	211	211	193	193
PANEL C: Treatment heterogeneity by alignment of choices in trust game						
Treatment	0.11	-0.54**	0.13	-0.53**	-0.50**	-0.48*
	(0.19)	(0.24)	(0.19)	(0.24)	(0.24)	(0.24)
Choice alignment (any)	0.26	-0.28			-0.38	
	(0.20)	(0.24)			(0.24)	
Treatment × Choice alignment (any)		1.25***			1.34***	
		(0.38)			(0.41)	
Wife rightly trusts			0.20	-0.46		-0.66**
			(0.27)	(0.30)		(0.28)
Wife rightly mistrusts			0.31	-0.13		-0.16
			(0.25)	(0.30)		(0.31)
Treatment × Wife rightly trusts				1.40***		1.48***
				(0.48)		(0.52)
Treatment × Wife rightly mistrusts				1.12**		1.35***
				(0.48)		(0.52)
Baseline savings	✓	✓	✓	✓	✓	✓
Stratification variables	✓	✓	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓	✓	✓
Loglikelihood	-2046.67	-2038.26	-2046.56	-2037.68	-1872.08	-1870.33
Observations	211	211	211	211	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Stratification variables include participant gender and baseline savings quintile. Additional controls include participant age, educational attainment, employment status, household size, income, outstanding debt, saving club membership, and an indicator variable about how easy it was to reach household members separately for the trust game implementation. See Tables B2, B3 and B4 for all coefficients, including controls. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In a second step, we, therefore, extend our heterogeneity analysis by examining spouses' trust/trustworthiness *conditional* on the respective other spouse's trust/trustworthiness. In other words, we investigate whether the *alignment* of trust and trustworthiness between wife and husband matters. To that end, our analysis reveals that in households where spouses' trust and trustworthiness are aligned, the zip purse substantially and significantly increased participants' savings, relative to households with misaligned trust/trustworthiness relations. Specifically, the coefficient estimate implies that treatment group participants residing in trust/trustworthiness-aligned households reported more than twice as much savings as their counterparts (coefficient: 1.25, p-value<0.01, Panel C, column 2).

Further, if we distinguish between the *type of alignment*, we find that this effect is driven by both a positive as well as a negative alignment: Relative to households with misaligned trust/trustworthiness relations, the zip purse more than doubled participants' savings in households (i) where the wife rightly trusts her husband and (ii) where she rightly mistrusts her husband (Panel C, column 4). The effect size is slightly larger for a positive alignment (coefficient: 1.40) than for a negative alignment (coefficient: 1.12), but both estimated effects are statistically significant at common levels (p-value<0.01 and p-value<0.05). Moreover, all of these effects are again more pronounced among wives (Panel C, columns 5 and 6).

Combining the findings from all components of the heterogeneity analysis allows us to better understand the opposing effects of the wife's trust and the husband's trustworthiness in Panel B. Specifically, the wife's trust seems to be the dominant driver of the positive-alignment effect in Panel C, while the husband's lack of trustworthiness is likely the dominating driver of the negative-alignment effect. The core results from Table 3 (Panel C, columns 5 and 6) are further illustrated in Figure 4 as marginal effects on female participants' total savings (semi-elasticities). In addition to the positive treatment effects among households with aligned trust/trustworthiness relations, the figure visualizes another important result: For households with misaligned trust/trustworthiness relations, the additional provision of the zip purse even had a negative, borderline statistically significant effect, i.e., it reduced savings.

Taken together, the heterogeneity analysis suggests that the alignment of spouses' trust and trustworthiness (or, their correct assessment) is crucial for the effectiveness of the saving intervention. Interestingly, we find that both positive and negative trust/trustworthiness alignment matter, which insinuates that there might be two distinct mechanisms at play through which the additional provision of the zip purse increased the wife's savings. The next section provides evidence on these potential mechanisms.

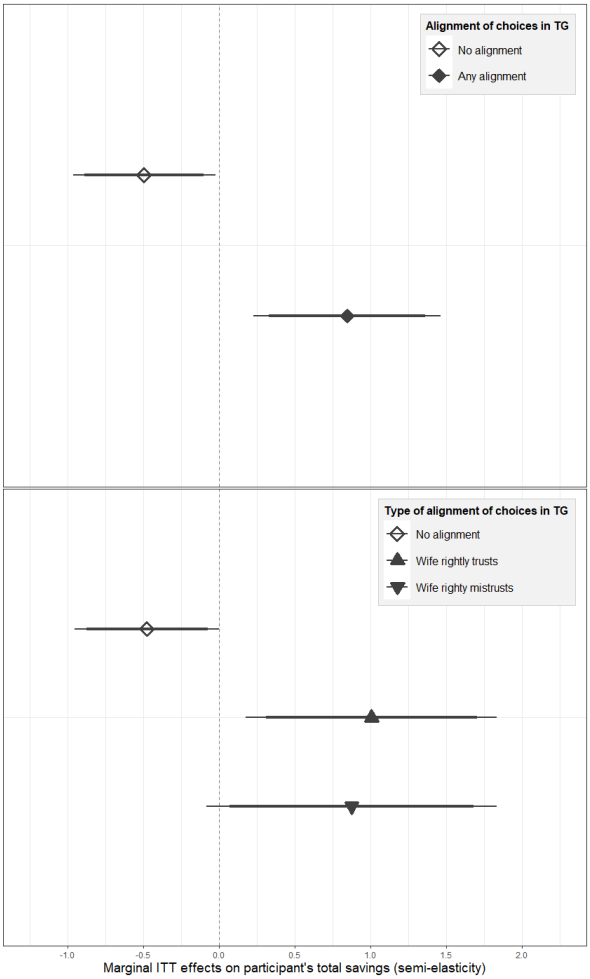

Fig. 4. Marginal ITT effects (semi-elasticity) on total savings by trust/trustworthiness alignment. *Notes:* For exact coefficients, see Table 3 (Panel C, columns 5 and 6).

4.3 Mechanisms

In order to understand how and why the additional provision of the zip purse may have resulted in saving increases or decreases for couples with different spousal trust/trustworthiness relations, we examine the following potential mechanisms:

1. Collaborative household decision making
2. Concealment of individual financial resources

4.3.1 Channel I: Collaborative household decision-making

As a first channel, we examine whether the zip purse may have increased the wife's savings through facilitating collaboration and coordination in household (financial) decision making. The rationale behind this channel suggests that the additional provision of the purse to both spouses may result in a more inclusive money management, also encouraging the wife's involvement in household decisions.

To examine this channel, we draw on a battery of variables to capture collaborative (financial) decision-making in the household. These variables use information about the transfer of money between household members (amount received and given in the past month), an index of the wife's autonomy/say in (financial) household decisions (involvement in decisions about money, unrestricted mobility), and an index of general attitudes about women's role in society (based on items by Glennerster et al., 2018). We use these variables as outcome variables in the main econometric specification (Equation 7 above), replacing total savings.

The results of this exercise are reported in Table 4 below. We conduct the channel analysis with female participants only since we are interested in understanding channels for the main result in Table 3.

Table 4 Channel I: Collaborative household decision making

Outcome:	Past-month transfer from hhmember		Past-month transfer to hhmember		Female involvement in decisions (index)		Gender equality norms (index)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treatment	-0.22	-0.22	-0.63	-0.67	-0.17**	-0.17**	-0.18*	-0.19*
	(0.25)	(0.25)	(0.65)	(0.68)	(0.07)	(0.07)	(0.10)	(0.10)
Choice alignment (any)	-0.25		-0.47		-0.17**		-0.23**	
	(0.23)		(0.77)		(0.07)		(0.09)	
Treatment × Choice alignment (any)	0.40		1.60		0.27**		0.24	
	(0.35)		(1.12)		(0.11)		(0.15)	
Wife rightly trusts		-0.51*		-1.24		-0.19*		-0.18
		(0.27)		(1.03)		(0.11)		(0.11)
Wife rightly mistrusts		-0.08		0.23		-0.16*		-0.29**
		(0.26)		(0.97)		(0.08)		(0.12)
Treatment × Wife rightly trusts		0.75*		2.29*		0.31**		0.38**
		(0.40)		(1.21)		(0.14)		(0.17)
Treatment × Wife rightly mistrusts		0.03		0.58		0.20		-0.06
		(0.41)		(1.54)		(0.14)		(0.21)
Baseline savings	✓	✓	✓	✓	✓	✓	✓	✓
Stratification variables	✓	✓	✓	✓	✓	✓	✓	✓
Additional controls	✓	✓	✓	✓	✓	✓	✓	✓
Loglikelihood	-1773.22	-1771.76	-1300.61	-1294.16	-72.07	-71.75	-132.66	-126.58
Observations	193	193	193	193	192	192	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link (columns 1-4) and OLS regressions (columns 5-8). The employed sample is restricted to female trial participants only. Stratification variables include participant gender and baseline savings quintile. Additional controls include participant age, educational attainment, employment status, household size, income, outstanding debt, saving club membership, and an indicator variable about how easy it was to reach household members separately for the trust game implementation. See Table B5 for all coefficients, including controls. Robust standard errors in parentheses.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The findings reveal that, for all four channel variables, the provision of the zip purse had a statistically significant positive effect for women living in households with *positive* trust/trustworthiness alignment, i.e., households where the wife rightly trusts her husband in the trust game (columns 2, 4, 6, 8). Specifically, these women transfer and receive relatively larger amounts of money to/from another household

member (p-value<0.1), they report relatively higher autonomy/say in (financial) household decisions (p-value<0.05), and they more often hold views that value gender equality (p-value<0.05). In contrast, for the subgroup of households with *negative* trust/trustworthiness alignment, i.e., where the wife rightly mistrusts her husband in the trust game, we do not find any statistically significant effects for any of the channel variables (same columns). Consequently, unlike in Table 3, the interaction coefficient between the treatment indicator and the indicator variable for *either* type of trust/trustworthiness alignment is for most channel variables not statistically significant (columns 1, 3, 5, 7), because the heterogeneity exists only for *one type* of alignment.

In sum, the results in Table 4 provide suggestive (non-causal) evidence that a more collaborative money management, facilitated through the purse, was a channel for the saving increases in households with positive trust/trustworthiness alignment[13].

4.3.2 Channel II: Concealment of individual financial resources

As a second channel, we examine whether the zip purse may have increased the wife's savings through facilitating the concealment of money from her husband. The rationale behind this channel suggests that the additional provision of the purse to each spouse individually allowed the temporary concealment of disposable cash from the respective other spouse, before transferring it to e.g., a bank account.

To examine this channel, we draw on a variable that asks about the usage of the zip purse as a concealment device. The variable takes the value of 1 if the respondent agreed or strongly agreed with the statement 'This purse helps me to keep money for myself and not to give it to other people (my partner, children, friends, ...)', and 0 otherwise. Since we utilize information about the usage of the zip purse, this part of the channel analysis can only be conducted with observations from within the treatment group. Specifically, we analyze whether the correlation between using the purse as a hiding device and the amount of endline savings varied for different trust relations between spouses,

$$S_{i,t} = \lambda_0 + \lambda_1 S_{i,t-1} + \lambda_2 W'_{i,t-1} + \lambda_3 X'_{i,t-1} + \lambda_4 H_{i,t} + \lambda_5 T_i + \lambda_6 H_{i,t} \times T_i + \upsilon_{i,t}, \qquad (8)$$

[13]Some may argue that an increased female involvement in the household decision making process could also have negative side effects, e.g., by increasing conflict between household members. Thus, in Table B5 in Appendix B, we have, in columns 9 and 10, added an additional outcome variable, namely a variable about the frequency of intra-household conflict about money. The respective interaction coefficients are statistically insignificant for both types of trust/trustworthiness alignment and, thus, do not provide any evidence of conflict-inducing effects.

where $H_{i,t}$ is the variable indicating a hiding usage of the purse[14]. The main coefficient of interest is λ_6, i.e., the coefficient for the interaction term between the respective trust/trustworthiness variable and a hiding usage of the purse. The interaction coefficient measures differences in the effectiveness of a hiding usage of the purse by spousal trust/trustworthiness relations.

Table 5 Channel II: Concealment of individual financial resources

Outcome: Total savings balance	(1)	(2)	(3)
Hiding	0.51	-0.12	-0.12
	(0.36)	(0.47)	(0.46)
Choice alignment (any)		0.88*	
		(0.48)	
Hiding × Choice alignment (any)		0.35	
		(0.61)	
Wife rightly trusts			1.26**
			(0.62)
Wife rightly mistrusts			-0.04
			(0.47)
Hiding × Wife rightly trusts			-0.65
			(0.71)
Hiding × Wife rightly mistrusts			1.81***
			(0.69)
Baseline savings	✓	✓	✓
Stratification variables	✓	✓	✓
Additional controls	✓	✓	✓
Loglikelihood	-774.38	-768.46	-764.45
Observations	80	80	80

Notes: Regressions only use observations from within the treatment group and only from female trial participants. Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Stratification variables include participant gender and baseline savings quintile. Additional controls include participant age, educational attainment, employment status, household size, income, outstanding debt, saving club membership, and an indicator variable about how easy it was to reach household members separately for the trust game implementation. See Table B6 for all coefficients, including controls. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

[14]As in the main specification (Equation 7), $S_{i,t}$ is the total savings balance for participant i at endline and $S_{i,t-1}$ are lagged savings at baseline. $W'_{i,t-1}$ is a vector of stratification variables and $X'_{i,t-1}$ is a vector of baseline covariates. T_i are the heterogeneity variables for spousal trust/trustworthiness relations introduced above, indicating individual as well as alignment of choices in the trust game. $\upsilon_{i,t}$ is the error term.

Overall, approximately one out of two female participants (47.62%) in the treatment group agreed or fully agreed with the statement that the purse had helped them to keep money from other household members. The results of estimating Equation 8 are reported in Table 5 below (again for female participants only). They suggest that women who used the purse to conceal money from other household members reported substantially higher savings (almost three times as much), if they lived in households with a negative trust/trustworthiness alignment (column 3, p-value<0.01). In contrast, for women living in households with a positive trust/trustworthiness alignment, the interaction coefficient turns negative and statistically insignificant.

These results suggest that the concealment feature of the zip purse may have been an important channel for the saving increases among women who rightly anticipate and reciprocate their partner's lack of trustworthiness in the trust game. Generally, the results from Tables 4 and 5, in combination, provide evidence that the intervention was indeed used in very different, effective ways, depending on whether women reside in low-trust or high-trust aligned households.

4.4 Robustness

4.4.1 Endogeneity concerns

If using variables generated from the decisions in the trust game as heterogeneity variables in our empirical analysis, a successful identification strategy demands that trust game choices, elicited at endline, remain unaffected by the treatment, i.e. by the introduction of the portable, private saving device. We argue, both theoretically and empirically, that it is unlikely that there is a threat to identification in using the trust game choices as heterogeneity variables.

First, we suggest that the particular concept of spousal trust and trustworthiness we aim to measure here are rather rigid concepts that do not change easily over time. The conducted trust game in our study aims to measure trust or trustworthiness in terms of spousal household decision making, which we assume to reflect a history of daily repeated interactions in the household and which is, thus, unlikely to be affected by the additional provision of the zip-purse (note moreover the *active* control group, which also received an intervention, i.e., the savings box and the savings consultation).

Second, we empirically show that (i) endline values of trust game choices are balanced between treatment and control group (see Table B7 in the Appendix), (ii) the constructed trust/trustworthiness heterogeneity variables do not reveal any significant or meaningful treatment effects of having received the zip purse, and (iii) other

variables, which are likely related to trust/trustworthiness dynamics in the household, also do not reveal any significant or meaningful treatment effects (see Table B8 in the Appendix).

4.4.2 Complier Average Causal effects (device usage)

For an assessment of the robustness of the reported ITT results, we estimate Instrumental Variable regressions to retrieve Complier-Average-Causal-Effect (CACE) estimates for the heterogeneous treatment effects observed in Table 3 and Figure 4. To do so, we instrument self-reported usage of the private saving device with the treatment dummy, i.e. being assigned to receiving the zip purse (Steinert et al., 2022).

First stage results suggest that treatment assignment has a high relevance as an instrument for the actual usage of the purse. Second stage results show an overall pattern that is almost identical to the ITT estimates (see Table B9 in the Appendix). The only noteworthy difference between ITT and CACE estimates is the larger absolute magnitude of the latter effects, which is intuitively expected.

4.4.3 Outlier analyses and quantile regressions

We further assess the robustness of the main results with respect to the typical right-skewness of saving and expenditure data, which is also prevalent in this sample. To initially account for this phenomenon, we had conducted the main empirical analysis with high-tail 2% winsorized saving and income data, using a GLS model with a gamma distribution and a log-link. We now further conduct an outlier analysis, which re-estimates our main results using initial, unwinsorized data as well as trimmed and winsorized data at different levels (1%, 2%, 5%).

The outlier analysis reveals that our main findings remain largely robust when winsorizing and trimming at other levels or when using the original unmanipulated data (see Table B10 in Appendix B). However, the magnitude and statistical significance of coefficients suggest that our main results were driven rather by those women in the upper distribution in terms of savings. Quantile regressions confirm this indication: The respective interaction coefficients are positive throughout all the examined percentiles, but the estimates are only statistically significant at 80% and 90% of the distribution (see Table B11 in Appendix B).

4.4.4 Model extensions

First, we examine our findings for robustness by including competing heterogeneity variables to the main econometric specification. In light of existing literature on

household decision making, one may argue that an alternative explanation of our findings could run through taking into account female bargaining power. Specifically, it may be that our trust/trustworthiness measures in fact capture or are correlated with bargaining power and that low (high) bargaining power are what drives the findings of the negative (positive) trust alignment. To examine this competing explanation, we draw on different proxies of the wife's bargaining power as alternative heterogeneity variables, namely the three variables used to construct the index about the wife's say in household decisions (involvement in financial decisions, outings without informing the husband, outings without being escorted by the husband) as well as the index itself. Table B12 in Appendix B reports the findings of this analysis, revealing that our main results remain robust even after including these alternative heterogeneity variables. Apart from that, we observe a borderline statistically significant interaction effect between the treatment indicator and the indicator variable about female involvement in household decisions about money. Specifically, for those women that did not have any say in financial decisions, the purse seemed to have increased endline savings, all else equal (compare column 3). Overall, these results reinforce that the main findings and an effective use of the purse may indeed be driven by the alignment of trust/trustworthiness, rather than by bargaining power.

In a second model extension, we take into account that a noteworthy proportion of our sample reported having no savings at the time of the interview (almost 17% at baseline, 9% at endline). To assess the main findings for robustness, Table B13 in Appendix B repeats the core empirical analysis only for those individuals that did report positive savings at baseline. Our main results remain robust also in this subsample, suggesting that the observed effects are driven rather by those individuals that already held some amount of savings. This finding is especially relevant for the negative alignment channel, while the positive alignment channel also seems to be effective among women who did not hold any savings at baseline.

5 Conclusion

A proper understanding and modeling of economic decision-making processes within the household has proven to be a highly challenging task in economics research and beyond. This is partly due to the fact that the actual process of how decisions are made is essentially unobservable for researchers. This paper contributes to a recently growing line of research that resorts to behavioral and experimental games to acquire insights into household decision making: We take a closer look at trust and trustworthiness between Indian spouses, and particularly, their alignment, which

we interpret as a proxy for the accuracy of spouses' perceptions about cooperative household behaviors. Then, we examine whether and how the usage of a strategically usable saving intervention varies by alignment of choices in the trust game.

We find that the supplementary provision of an individual saving device was effective (i.e., increased savings) only in those households where decisions in the trust game were aligned. Interestingly, to achieve these increased savings, the device was used in very different ways, depending on whether the wife justifiably trusted or justifiably mistrusted her husband in the trust game. In low-trust-aligned households, wives were able to effectively use the device to hide money from their spouse and thus increase savings. Conversely, in high-trust-aligned households, the provision of the individual saving device seemed to have increased involvement of the wife in financial decision making processes within the household. Importantly, the core result of a positive treatment effect among (mis-)trust-aligned households remains robust even after adding different proxies for female bargaining power - suggesting that trust dynamics may operate distinctly from economic power dynamics.

We acknowledge that the empirical results are based on a rather small sample of 211 married couples from Pune, Maharastra, India. The reason for this was the time-consuming implementation of the trust game, which we therefore only conducted with a small subsample of the larger RCT study population (Steinert et al., 2022). The sample size of the trust game, however, is still among the largest compared to other trust games conducted between spouses so far (e.g., Kleinert et al., 2020; Cochard et al., 2016; Castilla, 2015; Kebede et al., 2014; Munro et al., 2014; Chao and Kohler, 2007). Moreover, while a larger trust game sample was not feasible, we observed hiding and concealment behaviors also as an important driver of a moderately positive treatment effect in the larger RCT sample (N=1525), suggesting that our findings may not just be a particularity of this smaller subsample.

Our findings propose several avenues for further research. First, it would be interesting and important to examine the here observed patterns in terms of efficiency. While not the main focus of the (empirical part of this) paper, efficiency was, if anything, explored through increases in the wife's savings amounts. Additional empirical evidence about how accumulated savings resulting from such interventions are actually used or what potential effects on other household economic outcomes, such as employment activities or children's outcomes, may look like would be particularly valuable. Second, given the broader aim of the research project, we primarily put the focus on the wife's savings and her potentially different usages of the intervention. However, hiding activities by the husband may be possible, but could not be explored here (92% of the main trial participants were female). While subsequent focus group

discussions (also done separately by gender) do not suggest any hiding of savings by the husbands, it would certainly be valuable to examine the husband side of such an intervention, also across different settings. Third, in light of the growing literature on discrepancies in spouses' reports about who acts as the household head or about the process of decision making, it would be interesting to see how trust and trustworthiness alignment relates to these observations and what drives them in the first place (e.g., Ambler et al., 2022; Annan et al., 2021; Bussolo et al., 2021; Ambler et al., 2018). Such a comparison would be especially worthwhile because these diverging reports have often been shown to correlate with economic outcomes and agency inside the household.

From a policy perspective, our results emphasize that household-based interventions are prone to spouses' (mis-)perceptions about each others' behaviors and that future intervention designs need to account for this. For instance, different sub-designs of the same basic intervention (e.g., individualized vs. cooperative) could be delivered to different types of households based on an initial screening. However, such targeted strategies may come at some risk of spousal violence (e.g., if husbands realize that interventions differ across neighboring households), so interventions need to also take this risk into account, if possible. Alternatively, interventions could be designed in a way that minimizes their vulnerability to such intra-household dynamics in the first place. Finally, and in line with the research avenues outlined above, a crucial step towards an improved design of household-based interventions is a better understanding of the initial drivers behind the misalignment of perception and behavior within the household.

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Appendix A: Theoretical Appendix

Spouses' first order conditions/reaction functions

Maximize: $\pi_h = \delta_h \mu A(\theta_h Y_h)^{\alpha}(\theta_w Y_w)^{\beta} + (1-\delta_h)(1-\theta_h)Y_h$

Maximize: $\pi_w = \delta_w (1-\mu) A(\theta_h Y_h)^{\alpha}(\theta_w Y_w)^{\beta} + (1-\delta_w)(1-\theta_w)Y_w$

Derivation for the husband's case (correspondingly for the wife):

$$\frac{\partial \pi_h}{\partial \theta_h} = \alpha \theta_h^{\alpha-1} Y_h^{\alpha}(\theta_w Y_w)^{\beta}\delta_h \mu A - (1-\delta_h)Y_h = 0$$

$$\alpha \theta_h^{\alpha-1} Y_h^{\alpha}(\theta_w Y_w)^{\beta}\delta_h \mu A = (1-\delta_h)Y_h$$

$$\theta_h^{\alpha-1} = \frac{(1-\delta_h)Y_h}{\alpha Y_h^{\alpha}(\theta_w Y_w)^{\beta}\delta_h \mu A}$$

$$\theta_h^{\alpha-1} = \frac{(1-\delta_h)Y_h^{1-\alpha}}{\alpha(\theta_w Y_w)^{\beta}\delta_h \mu A}$$

$$\theta_h = \frac{1}{Y_h}\left(\frac{\delta_h}{1-\delta_h}\alpha \mu A(\theta_w Y_w)^{\beta}\right)^{\frac{1}{1-\alpha}}$$

Correspondingly, for the wife, we get: $\theta_w = \frac{1}{Y_w}\left(\frac{\delta_w}{1-\delta_w}\beta(1-\mu)A(\theta_h Y_h)^{\alpha}\right)^{\frac{1}{1-\beta}}$

Equilibrium contribution shares

Simultaneously solving the first-order conditions/reaction functions yields the Cournot-Nash equilibrium:

$$\theta_h = \frac{1}{Y_h}\left(\frac{\delta_h}{1-\delta_h}\alpha \mu A(\theta_w Y_w)^{\beta}\right)^{\frac{1}{1-\alpha}}$$

$$\theta_h^* = \frac{1}{Y_h}\left(\frac{\delta_h}{1-\delta_h}\alpha \mu A(Y_w \frac{1}{Y_w}(\frac{\delta_w}{1-\delta_w}\beta(1-\mu)A(\theta_h^* Y_h)^{\alpha})^{\frac{1}{1-\beta}})^{\beta}\right)^{\frac{1}{1-\alpha}}$$

$$\theta_h^{*\frac{(1-\alpha)(1-\beta)}{\alpha\beta}} = \frac{1}{Y_h}^{\frac{(1-\alpha)(1-\beta)}{\alpha\beta}}(\frac{\delta_h}{1-\delta_h}\alpha\mu A)^{\frac{1-\beta}{\alpha\beta}}(\frac{\delta_w}{1-\delta_w}\beta(1-\mu)A)^{\frac{1}{\alpha}}\theta_h^* Y_h$$

$$\theta_h^{*\frac{1-\alpha-\beta}{\alpha\beta}} = \frac{1}{Y_h}^{\frac{(1-\alpha)(1-\beta)}{\alpha\beta}}(\frac{\delta_h}{1-\delta_h}\alpha\mu A)^{\frac{1-\beta}{\alpha\beta}}(\frac{\delta_w}{1-\delta_w}\beta(1-\mu)A)^{\frac{1}{\alpha}} Y_h$$

$$\theta_h^* = \frac{1}{Y_h}(\frac{\delta_h}{1-\delta_h}\alpha\mu A)^{\frac{1-\beta}{1-\alpha-\beta}}(\frac{\delta_w}{1-\delta_w}\beta(1-\mu)A)^{\frac{\beta}{1-\alpha-\beta}}$$

$$\theta_h^* = \frac{1}{Y_h}\left[A\left(\frac{\delta_h \alpha \mu}{1-\delta_h}\right)^{1-\beta}\left(\frac{\delta_w \beta(1-\mu)}{1-\delta_w}\right)^{\beta}\right]^{\frac{1}{1-\alpha-\beta}}$$

Correspondingly, for the wife, we get: $\theta_w^* = \frac{1}{Y_w}\left[A\left(\frac{\delta_w\beta(1-\mu)}{1-\delta_w}\right)^{1-\alpha}\left(\frac{\delta_h\alpha\mu}{1-\delta_h}\right)^{\alpha}\right]^{\frac{1}{1-\alpha-\beta}}$

Graphical representation of Cournot-Nash equilibrium (intersection of both reaction functions), as in Malapit (2012):

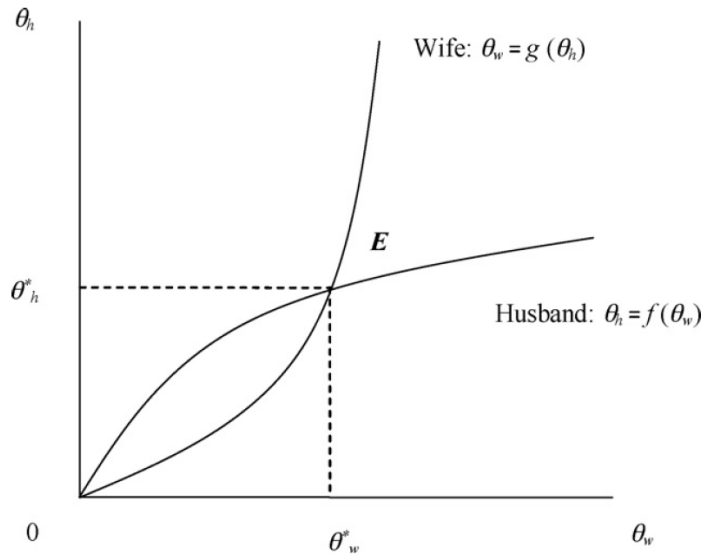

Fig. A1. Reaction functions as in Malapit (2012) (page 588)

Comparative statics of wife's preference for cooperation

Recall the wife's equilibrium share, which can be rewritten as follows:

$$\begin{aligned}\theta_w^* &= \frac{1}{Y_w}\left[A\left(\frac{\delta_w\beta(1-\mu)}{1-\delta_w}\right)^{1-\alpha}\left(\frac{\delta_h\alpha\mu}{1-\delta_h}\right)^{\alpha}\right]^{\frac{1}{1-\alpha-\beta}} \\ &= \frac{1}{Y_w}\left[A\left(\beta(1-\mu)\right)^{1-\alpha}\left(\frac{\delta_h\alpha\mu}{1-\delta_h}\right)^{\alpha}\right]^{\frac{1}{1-\alpha-\beta}}\left(\frac{\delta_w}{1-\delta_w}\right)^{\frac{1-\alpha}{1-\alpha-\beta}} \\ &= \zeta\left(\frac{\delta_w}{1-\delta_w}\right)^{\frac{1-\alpha}{1-\alpha-\beta}}, \text{where } \zeta > 0\end{aligned}$$

Then, for the comparative statics:

$$\begin{aligned}\frac{\partial\theta_w^*}{\partial\delta_w} &= \zeta\left(\frac{1-\alpha}{1-\alpha-\beta}\right)\left(\frac{\delta_w}{1-\delta_w}\right)^{\frac{\beta}{1-\alpha-\beta}}\frac{1}{(1-\delta_w)^2} \\ &= \zeta\left(\frac{1-\alpha}{1-\alpha-\beta}\right)\left(\frac{(\delta_w)^{\frac{\beta}{1-\alpha-\beta}}}{(1-\delta_w)^{\frac{2-2\alpha-\beta}{1-\alpha-\beta}}}\right) > 0\end{aligned}$$

Appendix B: Empirical Appendix

Tables

Table B1 Saving composition Baseline and Endline

	Baseline	Endline
Bank account savings	31.97%	26.44%
Savings at home	27.11%	11.65%
Post office savings	3.97%	4.61%
Club savings	18.38%	15.97%
Box savings	N.A.	30.89%

Notes: The table reports proportions of the different types of participants' savings. Three categories are not listed here because their proportion is either negligibly low or the vast majority of participants reported zero savings for this category. These categories are mobile money savings (no participant reported saving in mobile money), savings with relatives (only 10/8 participants reported any savings here at Baseline/Endline), and savings in the purse (Endline proportion only 0.63%).

Table B2 ITT effects on total savings by spousal trust, all coefficients (Panel A)

PANEL A: Average Treatment Effects (ITT)						
Outcome: Total saving balance	Full sample				Female sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-0.01	-0.06	-0.01	0.16	0.04	0.20
	(0.23)	(0.23)	(0.22)	(0.19)	(0.23)	(0.20)
BL total saving balance		0.00***	0.00**	0.00**	0.00	0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female			0.52	0.57	0.00	0.00
			(0.48)	(0.48)	(.)	(.)
BL savings quintile (w2)			0.23**	0.28***	0.33***	0.35***
			(0.11)	(0.11)	(0.12)	(0.11)
Age group				0.12		0.16
				(0.11)		(0.11)
Primary education				0.31		0.47*
				(0.28)		(0.28)
Secondary education				0.50*		0.58**
				(0.25)		(0.27)
Tertiary education				0.86***		0.81**
				(0.31)		(0.32)
Employment				-0.03		0.04
				(0.22)		(0.23)
Household members				-0.09**		-0.11**
				(0.04)		(0.05)
Past-month income (w2)				-0.00**		-0.00*
				(0.00)		(0.00)
Outstanding debt (w2)				0.00		0.00
				(0.00)		(0.00)
Saving club membership				0.11		0.11
				(0.19)		(0.19)
Difficulty of TG implementation				-0.19		0.07
				(0.52)		(0.55)
Constant	8.90***	8.59***	7.50***	7.12***	7.77***	7.13***
	(0.14)	(0.17)	(0.46)	(0.85)	(0.36)	(0.80)
Loglikelihood	-2087.91	-2068.38	-2058.65	-2048.10	-1892.00	-1881.47
Observations	211	211	211	211	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B3 ITT effects on total savings by spousal trust, all coefficients (Panel B)

PANEL B: Treatment heterogeneity by individual choices in trust game

Outcome: Total saving balance	Full sample				Female sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.17	-0.34	0.16	0.48	-0.29	0.65**
	(0.19)	(0.29)	(0.19)	(0.31)	(0.31)	(0.33)
Wife trusts	-0.07	-0.51**			-0.63**	
	(0.21)	(0.24)			(0.25)	
Treatment × Wife trusts		0.97**			1.01**	
		(0.43)			(0.46)	
Husband trustworthy			-0.06	0.20		0.21
			(0.20)	(0.26)		(0.27)
Treatment × Husband trustworthy				-0.56		-0.77*
				(0.41)		(0.42)
BL total saving balance	0.00*	0.00*	0.00**	0.00**	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	0.52	0.41	0.56	0.54	(.)	(.)
	(0.52)	(0.53)	(0.48)	(0.48)	(.)	(.)
BL savings quintile (w2)	0.28***	0.27***	0.28**	0.28**	0.34***	0.34***
	(0.11)	(0.10)	(0.11)	(0.11)	(0.10)	(0.11)
Age group	0.11	0.13	0.12	0.10	0.18	0.15
	(0.11)	(0.11)	(0.11)	(0.11)	(0.12)	(0.11)
Primary education	0.29	0.25	0.32	0.22	0.40	0.36
	(0.28)	(0.29)	(0.28)	(0.29)	(0.30)	(0.29)
Secondary education	0.48*	0.45*	0.50**	0.48*	0.55**	0.57**
	(0.26)	(0.26)	(0.26)	(0.26)	(0.28)	(0.28)
Tertiary education	0.83***	0.78**	0.88***	0.72**	0.67**	0.68**
	(0.31)	(0.31)	(0.32)	(0.33)	(0.32)	(0.34)
Employment	-0.01	-0.06	-0.01	0.03	0.04	0.12
	(0.22)	(0.22)	(0.21)	(0.22)	(0.23)	(0.22)
Household members	-0.09**	-0.08*	-0.09**	-0.10**	-0.09**	-0.12***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.04)
Past-month income (w2)	-0.00*	-0.00	-0.00**	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00	-0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	0.12	0.15	0.10	0.05	0.18	0.04
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
Difficulty of TG implementation	-0.15	-0.42	-0.15	-0.11	-0.08	0.23
	(0.51)	(0.54)	(0.51)	(0.49)	(0.59)	(0.49)
Constant	7.17***	7.63***	7.11***	7.06***	7.38***	6.96***
	(0.86)	(0.91)	(0.85)	(0.82)	(0.86)	(0.76)
Loglikelihood	-2048.02	-2043.17	-2048.03	-2046.53	-1876.25	-1878.55
Observations	211	211	211	211	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B4 ITT effects on total savings by spousal trust, all coefficients (Panel C)

PANEL C: Treatment heterogeneity by alignment of choices in trust game

Outcome: Total saving balance	Full sample				Female sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.11	-0.54**	0.13	-0.53**	-0.50**	-0.48*
	(0.19)	(0.24)	(0.19)	(0.24)	(0.24)	(0.24)
Choice alignment (any)	0.26	-0.28			-0.38	
	(0.20)	(0.24)			(0.24)	
Treatment × Choice alignment (any)		1.25***			1.34***	
		(0.38)			(0.41)	
Wife rightly trusts			0.20	-0.46		-0.66**
			(0.27)	(0.30)		(0.28)
Wife rightly mistrusts			0.31	-0.13		-0.16
			(0.25)	(0.30)		(0.31)
Treatment × Wife rightly trusts				1.40***		1.48***
				(0.48)		(0.52)
Treatment × Wife rightly mistrusts				1.12**		1.35***
				(0.48)		(0.52)
BL total saving balance	0.00**	0.00**	0.00*	0.00**	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	0.71	0.76	0.66	0.64	0.00	0.00
	(0.48)	(0.51)	(0.52)	(0.53)	(.)	(.)
BL savings quintile (w2)	0.27**	0.23**	0.28**	0.23**	0.29***	0.29***
	(0.11)	(0.10)	(0.11)	(0.10)	(0.10)	(0.10)
Age group	0.12	0.10	0.12	0.11	0.15	0.17
	(0.11)	(0.10)	(0.11)	(0.10)	(0.10)	(0.10)
Primary education	0.33	0.39	0.32	0.40	0.58**	0.60**
	(0.29)	(0.27)	(0.29)	(0.27)	(0.28)	(0.28)
Secondary education	0.49*	0.56**	0.48*	0.56**	0.70***	0.72***
	(0.25)	(0.24)	(0.26)	(0.24)	(0.26)	(0.27)
Tertiary education	0.90***	0.90***	0.91***	0.94***	0.82***	0.89***
	(0.31)	(0.30)	(0.32)	(0.31)	(0.31)	(0.32)
Employment	-0.09	-0.30	-0.07	-0.27	-0.24	-0.16
	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.23)
Household members	-0.09**	-0.07*	-0.09**	-0.07	-0.08*	-0.08*
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)
Past-month income (w2)	-0.00**	-0.00*	-0.00*	-0.00*	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	0.12	0.27	0.12	0.30	0.26	0.29
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)
Difficulty of TG implementation	-0.18	-0.10	-0.12	-0.04	0.20	0.41
	(0.49)	(0.45)	(0.50)	(0.46)	(0.47)	(0.46)
Constant	6.88***	7.10***	6.86***	7.09***	7.21***	6.87***
	(0.80)	(0.77)	(0.80)	(0.78)	(0.71)	(0.70)
Loglikelihood	-2046.67	-2038.26	-2046.56	-2037.68	-1872.08	-1870.33
Observations	211	211	211	211	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B5 Channel I: Cooperation/Coordination in financial dm, all coefficients

Outcome:	Transfer fr. hhmember		Transfer to hhmember		HHDM involvement		Gender equality index		Conflict (money)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treatment	-0.22	-0.22	-0.63	-0.67	-0.17**	-0.17**	-0.18*	-0.19*	-0.05	-0.05
	(0.25)	(0.25)	(0.65)	(0.68)	(0.07)	(0.07)	(0.10)	(0.10)	(0.16)	(0.17)
Choice alignment (any)	-0.25		-0.47		-0.17**		-0.23**		0.12	
	(0.23)		(0.77)		(0.07)		(0.09)		(0.16)	
Treatment × Choice alignment (any)	0.40		1.60		0.27**		0.24		-0.01	
	(0.35)		(1.12)		(0.11)		(0.15)		(0.28)	
Wife rightly trusts		-0.51*		-1.24		-0.19*		-0.18		0.15
		(0.27)		(1.03)		(0.11)		(0.11)		(0.22)
Wife rightly mistrusts		-0.08		0.23		-0.16*		-0.29**		0.09
		(0.26)		(0.97)		(0.08)		(0.12)		(0.19)
Treatment × Wife rightly trusts		0.75*		2.29*		0.31**		0.38**		0.05
		(0.40)		(1.21)		(0.14)		(0.17)		(0.36)
Treatment × Wife rightly mistrusts		0.03		0.58		0.20		-0.06		-0.15
		(0.41)		(1.54)		(0.14)		(0.21)		(0.30)
BL money received by hhmembers past month	0.00**	0.00**								
	(0.00)	(0.00)								
BL money given to hhmembers past month			0.00	0.00						
			(0.00)	(0.00)						
BL Decision making involvement (index, 0-1)					0.28***	0.28***				
					(0.07)	(0.07)				
BL Gender equality attitudes (index, 1-5)							0.10	0.07		
							(0.07)	(0.07)		
BL Conflict (money)									0.30***	0.30***
									(0.09)	(0.09)
BL savings quintile (w2)	0.03	0.02	0.31	0.18	0.00	0.00	-0.00	-0.01	-0.14***	-0.14***
	(0.05)	(0.05)	(0.29)	(0.30)	(0.02)	(0.02)	(0.03)	(0.03)	(0.05)	(0.05)
Age group	-0.10	-0.11	0.29	0.16	-0.01	-0.00	-0.09**	-0.08*	0.17***	0.17**
	(0.09)	(0.09)	(0.25)	(0.27)	(0.03)	(0.03)	(0.04)	(0.04)	(0.07)	(0.07)
Primary education	0.00	0.01	0.53	0.60	-0.14	-0.14	0.08	0.10	0.41*	0.41*
	(0.26)	(0.26)	(0.59)	(0.63)	(0.10)	(0.10)	(0.14)	(0.14)	(0.22)	(0.22)
Secondary education	-0.08	-0.09	-0.63	-0.54	-0.03	-0.03	0.22*	0.24**	0.35*	0.35*
	(0.23)	(0.23)	(0.62)	(0.62)	(0.07)	(0.07)	(0.11)	(0.11)	(0.19)	(0.19)
Tertiary education	-0.09	-0.10	1.22	0.97	-0.06	-0.06	0.27*	0.26*	-0.05	-0.07
	(0.34)	(0.34)	(1.13)	(1.20)	(0.10)	(0.10)	(0.14)	(0.14)	(0.19)	(0.20)
Employment	0.26	0.28	-0.46	-0.43	-0.12*	-0.12*	-0.17**	-0.17**	-0.25*	-0.25*
	(0.20)	(0.20)	(0.43)	(0.41)	(0.06)	(0.06)	(0.08)	(0.08)	(0.15)	(0.15)
Household members	-0.12***	-0.12***	-0.02	-0.09	-0.01	-0.01	-0.03	-0.03	0.05	0.05
	(0.04)	(0.04)	(0.18)	(0.19)	(0.02)	(0.02)	(0.02)	(0.02)	(0.04)	(0.04)
Past-month income (w2)	0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00*	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00*	0.00*	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	-0.07	-0.07	-0.73	-0.31	0.07	0.07	0.16**	0.17**	0.02	0.02
	(0.20)	(0.20)	(0.51)	(0.58)	(0.06)	(0.06)	(0.08)	(0.08)	(0.16)	(0.16)
Difficulty of TG implementation	-0.50**	-0.50**	-0.52	-0.31	-0.11	-0.11	-0.17	-0.23*	0.42	0.40
	(0.20)	(0.20)	(0.79)	(0.76)	(0.08)	(0.09)	(0.12)	(0.12)	(0.30)	(0.31)
Constant	9.06***	9.08***	4.91***	5.56***	0.83***	0.84***	4.41***	4.59***	0.53	0.58
	(0.50)	(0.50)	(1.84)	(1.96)	(0.18)	(0.19)	(0.34)	(0.34)	(0.51)	(0.54)
Loglikelihood	-1773.22	-1771.76	-1300.61	-1294.16	-72.07	-71.75	-132.66	-126.58	-245.80	-245.41
Observations	193	193	193	193	192	192	193	193	193	193

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link (columns 1-4) and OLS regressions (columns 6-10). The employed sample is restricted to female trial participants only. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B6 Channel II: Concealment of individual financial resources, all coefficients

Outcome: Total savings balance	(1)	(2)	(3)
Hiding	0.51	-0.12	-0.12
	(0.36)	(0.47)	(0.46)
Choice alignment (any)		0.88*	
		(0.48)	
Hiding × Choice alignment (any)		0.35	
		(0.61)	
Wife rightly trusts			1.26**
			(0.62)
Wife rightly mistrusts			-0.04
			(0.47)
Hiding × Wife rightly trusts			-0.65
			(0.71)
Hiding × Wife rightly mistrusts			1.81***
			(0.69)
BL total saving balance	0.00	0.00**	0.00***
	(0.00)	(0.00)	(0.00)
BL savings quintile (w2)	0.20	0.17	0.03
	(0.17)	(0.16)	(0.14)
Age group	0.41**	0.30	0.34**
	(0.20)	(0.19)	(0.17)
Primary education	0.94	1.24**	1.38***
	(0.58)	(0.57)	(0.50)
Secondary education	0.61	0.89*	1.04**
	(0.50)	(0.47)	(0.45)
Tertiary education	-0.26	0.36	0.54
	(0.54)	(0.62)	(0.54)
Employment	0.78**	0.22	0.46
	(0.40)	(0.48)	(0.51)
Household members	-0.01	-0.01	-0.01
	(0.12)	(0.11)	(0.11)
Past-month income (w2)	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Saving club membership	0.73**	0.69**	0.65*
	(0.32)	(0.32)	(0.33)
Difficulty of TG implementation	0.93	0.75	1.01*
	(0.57)	(0.56)	(0.55)
Constant	4.85***	5.04***	4.92***
	(1.25)	(1.19)	(1.17)
Loglikelihood	-774.38	-768.46	-764.45
Observations	80	80	80

Notes: Regressions only use observations from within the treatment group and only from female trial participants. Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B7 Trust game balance by trialarm

Variable	(1) Control (N=115)	(2) Treatment (N=96)	T-test Difference (1)-(2)
Wife's trust	0.461	0.479	-0.018
	(0.047)	(0.051)	
Husband's trustworthiness	0.548	0.646	-0.098
	(0.047)	(0.049)	
Aligned choices in trust game	0.530	0.479	-0.051
	(0.047)	(0.051)	
F-test of joint significance (F-stat)			0.871
F-test, number of observations			211

Notes: Means and standard errors (in parentheses) displayed for treatment and control group. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.

Table B8 Trust game endogeneity (regressions)

Outcome:	(1) Wife's trust	(2) Husband's trustworthiness	(3) Choice alignment in TG	(4) Female financial involvement	(5) Conflict (money)	(6) Trouble (uninformed outings)	(7) Trouble (unescorted outings)
Treatment	0.09	0.49	-0.23	-0.25	-0.06	0.25	0.08
	(0.30)	(0.31)	(0.30)	(0.36)	(0.13)	(0.36)	(0.33)
BL Female financial involvement				0.51			
				(0.41)			
BL Conflict (money)					0.30***		
					(0.09)		
BL Trouble (uninformed outings)						1.73***	
						(0.41)	
BL Trouble (unescorted outings)							0.83**
							(0.38)
Female	-1.44**	-0.06	-1.34**	0.00	0.00	0.00	0.00
	(0.63)	(0.62)	(0.68)	(.)	(.)	(.)	(.)
BL savings quintile (w2)	-0.21*	0.07	-0.13	0.19	-0.14***	0.03	-0.04
	(0.12)	(0.12)	(0.11)	(0.14)	(0.05)	(0.14)	(0.12)
Age group	-0.01	0.06	0.11	0.12	0.18***	-0.07	0.18
	(0.17)	(0.19)	(0.16)	(0.23)	(0.07)	(0.22)	(0.19)
Primary education	-0.05	0.03	0.52	0.20	0.42*	0.78	0.77
	(0.49)	(0.48)	(0.49)	(0.66)	(0.23)	(0.59)	(0.57)
Secondary education	-0.29	0.27	0.20	-0.43	0.36*	0.05	0.38
	(0.44)	(0.46)	(0.44)	(0.56)	(0.19)	(0.52)	(0.50)
Tertiary education	0.29	0.56	0.17	-0.15	-0.05	0.16	0.35
	(0.51)	(0.54)	(0.51)	(0.61)	(0.18)	(0.70)	(0.61)
Employment	0.10	0.19	0.38	-0.21	-0.24*	0.89**	0.40
	(0.32)	(0.32)	(0.32)	(0.37)	(0.14)	(0.39)	(0.37)
Household members	-0.01	0.08	-0.02	-0.24***	0.05	0.01	0.11
	(0.08)	(0.08)	(0.08)	(0.09)	(0.04)	(0.10)	(0.09)
Past-month income (w2)	0.00**	0.00	0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	0.53	-0.84**	0.06	0.62	0.02	-0.46	0.03
	(0.32)	(0.33)	(0.32)	(0.40)	(0.16)	(0.40)	(0.36)
Difficulty of TG implementation	0.59	0.46	-0.24	-1.62*	0.41	1.02*	0.23
	(0.54)	(0.53)	(0.54)	(0.95)	(0.30)	(0.61)	(0.52)
Constant	0.81	-0.90	1.34	2.59*	0.60	-2.84**	-2.77**
	(1.21)	(1.30)	(1.38)	(1.56)	(0.49)	(1.27)	(1.18)
R^2					0.20		
Pseudo R^2	0.07	0.06	0.04	0.11		0.16	0.05
Observations	211	211	211	193	193	192	193

Notes: Estimated coefficients are from logit regressions (columns 1,2,3,5,6) and OLS regressions (column 4). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B9 Robustness: CACE

Outcome: Total saving balance	Full sample				Female sample	
CACE estimates (Purse usage = Treatment)	(1)	(2)	(3)	(4)	(5)	(6)
Used purse	795.71	-6172.19*	1012.68	-5981.71*	-5911.54	-5676.57
	(2306.62)	(3476.11)	(2333.70)	(3462.80)	(3602.99)	(3579.48)
Choice alignment (any)	1169.16	-2122.00			-2573.67	
	(1319.91)	(1839.59)			(1950.40)	
Used purse × Choice alignment (any)		12601.61***			12180.36**	
		(4892.16)			(5164.78)	
Wife rightly trusts			332.40	-2532.32		-3140.82
			(1445.15)	(1907.79)		(1960.87)
Wife rightly mistrusts			2131.62	-1612.35		-1947.50
			(1936.76)	(2387.65)		(2441.66)
Used purse × Wife rightly trusts				10890.34**		10908.87**
				(5001.51)		(5277.40)
Used purse × Wife rightly mistrusts				15599.55**		14997.16*
				(7311.74)		(7822.25)
BL total saving balance	0.56***	0.54***	0.54***	0.52***	0.37	0.37
	(0.21)	(0.19)	(0.21)	(0.19)	(0.25)	(0.25)
Female	4878.95**	4682.65**	4551.35*	4642.63**	0.00	0.00
	(2337.19)	(2332.36)	(2360.69)	(2198.97)	(.)	(.)
BL savings quintile (w2)	460.48	574.20	481.36	628.30	1307.08	1267.56
	(913.86)	(873.49)	(912.69)	(880.12)	(1047.75)	(1043.90)
Age group	1679.76*	1623.37*	1688.16*	1602.66*	1911.43**	1919.94**
	(866.06)	(846.31)	(867.07)	(839.22)	(901.82)	(892.79)
Primary education	3232.70	3411.04	3174.17	3351.62	3753.63	3712.36
	(2296.22)	(2203.95)	(2292.57)	(2184.51)	(2356.76)	(2348.34)
Secondary education	2624.49	2538.50	2574.81	2342.27	2773.13	2648.46
	(1976.80)	(1887.07)	(1984.56)	(1974.45)	(1967.16)	(2043.28)
Tertiary education	4650.45*	4356.28*	4777.38*	4542.22*	3900.15	4232.28
	(2530.22)	(2496.51)	(2560.77)	(2487.34)	(2641.39)	(2665.29)
Employment	-466.58	-1063.91	-399.05	-966.99	-609.61	-541.52
	(1425.26)	(1451.94)	(1429.76)	(1438.36)	(1466.22)	(1450.44)
Household members	-702.74**	-828.06**	-690.45**	-805.50**	-918.36**	-890.86**
	(338.76)	(355.32)	(335.22)	(342.36)	(416.10)	(397.04)
Past-month income (w2)	-0.08	-0.11	-0.07	-0.10	-0.10	-0.09
	(0.07)	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)
Outstanding debt (w2)	0.10	0.13	0.10	0.13	0.13	0.13
	(0.13)	(0.13)	(0.13)	(0.13)	(0.16)	(0.16)
Saving club membership	718.80	1342.33	648.89	1275.66	1266.55	1196.25
	(1640.67)	(1630.37)	(1635.25)	(1614.72)	(1667.55)	(1647.19)
Difficulty of TG implementation	-1823.37	-1435.59	-1572.48	-1023.29	-1059.36	-665.53
	(3312.31)	(3232.27)	(3111.66)	(2944.43)	(3385.72)	(3073.08)
Constant	-3700.36	-1570.12	-3792.73	-2066.38	940.40	398.77
	(5462.27)	(5525.49)	(5437.09)	(5128.21)	(5052.01)	(4774.90)
First Stage results:						
F-Statistic	128.54***	64.52***	125.80***	43.75***	64.68***	43.33***
		41.26***		31.89***	39.36***	28.16***
				11.83***		9.68***
Sanderson-Windmeijer χ^2	139.08***	57.90***	136.82***	58.41***	58.78***	59.84***
		131.13***		118.29***	122.12***	107.38***
				98.35***		92.14***
Centered R^2	0.201	0.226	0.204	0.240	0.179	0.189
Uncentered R^2	0.423	0.441	0.425	0.451	0.420	0.428
Loglikelihood	-2253.38	-2250.01	-2252.99	-2248.13	-2060.80	-2059.55
Observations	211	211	211	211	193	193

Notes: The table reports CACE estimates with self-reported usage of the purse instrumented by the treatment dummy. When multiple first stage statistics are reported, the first one is from the first-stage regression with Purse usage as the dependent variable and the second one from the first-stage with Purse usage × the corresponding trust indicator as the dependent variable. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B10 Robustness: Outlier analyses

Outcome: Total saving balance	Original	Winzor 1%	Winzor 2%	Winzor 5%	Trimmed 1%	Trimmed 2%	Trimmed 5%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.48*	-0.45*	-0.48*	-0.41*	-0.41	-0.41	-0.34
	(0.26)	(0.26)	(0.24)	(0.22)	(0.26)	(0.26)	(0.23)
Wife rightly trusts	-0.61**	-0.65**	-0.66**	-0.47*	-0.52*	-0.51*	-0.41
	(0.29)	(0.29)	(0.28)	(0.27)	(0.29)	(0.27)	(0.27)
Wife rightly mistrusts	-0.23	-0.27	-0.16	-0.08	-0.16	-0.29	-0.03
	(0.32)	(0.31)	(0.31)	(0.24)	(0.32)	(0.28)	(0.29)
Wife rightly trusts × Treatment	1.51***	1.53***	1.48***	1.12**	1.41***	1.37***	0.74*
	(0.55)	(0.52)	(0.52)	(0.49)	(0.53)	(0.51)	(0.41)
Wife rightly mistrusts × Treatment	1.45**	1.56***	1.35***	0.79*	1.34**	0.75*	0.67
	(0.56)	(0.56)	(0.52)	(0.41)	(0.56)	(0.43)	(0.43)
Age group	0.14	0.16	0.17	0.15	0.14	0.17	0.09
	(0.11)	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)
Primary education	0.57*	0.60**	0.60**	0.52**	0.55*	0.33	0.28
	(0.31)	(0.29)	(0.28)	(0.24)	(0.31)	(0.29)	(0.29)
Secondary education	0.79***	0.80***	0.72***	0.57**	0.77**	0.80***	0.37
	(0.30)	(0.28)	(0.27)	(0.23)	(0.30)	(0.29)	(0.27)
Tertiary education	1.00***	0.93***	0.89***	0.72***	0.81**	0.68**	0.69**
	(0.36)	(0.33)	(0.32)	(0.27)	(0.34)	(0.33)	(0.31)
Employment	-0.21	-0.24	-0.16	0.05	-0.15	-0.30	-0.19
	(0.24)	(0.23)	(0.23)	(0.21)	(0.24)	(0.23)	(0.20)
Household members	-0.10**	-0.08*	-0.08*	-0.07*	-0.09*	-0.06	-0.08*
	(0.05)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)
Saving club membership	0.31	0.38*	0.29	0.14	0.34	0.30	0.07
	(0.21)	(0.21)	(0.19)	(0.17)	(0.21)	(0.19)	(0.18)
Difficulty of TG implementation	0.55	0.53	0.41	0.45	0.58	1.09***	0.71**
	(0.44)	(0.45)	(0.46)	(0.36)	(0.43)	(0.32)	(0.33)
BL total saving balance	0.00***				-0.00	0.00	0.00
	(0.00)				(0.00)	(0.00)	(0.00)
BL savings quintile	0.41***				0.42***	0.35***	0.38***
	(0.09)				(0.10)	(0.10)	(0.09)
Past-month income	-0.00				-0.00*	-0.00*	-0.00
	(0.00)				(0.00)	(0.00)	(0.00)
Outstanding debt	0.00***				0.00***	-0.00***	-0.00**
	(0.00)				(0.00)	(0.00)	(0.00)
BL total saving balance (w1)		0.00***					
		(0.00)					
BL savings quintile (w1)		0.33***					
		(0.09)					
Past-month income (w1)		-0.00*					
		(0.00)					
Outstanding debt (w1)		0.00*					
		(0.00)					
BL total saving balance (w2)			0.00*				
			(0.00)				
BL savings quintile (w2)			0.29***				
			(0.10)				
Past-month income (w2)			-0.00				
			(0.00)				
Outstanding debt (w2)			0.00				
			(0.00)				
BL total saving balance (w5)				0.00			
				(0.00)			
BL savings quintile (w5)				0.32***			
				(0.10)			
Past-month income (w5)				-0.00			
				(0.00)			
Outstanding debt (w5)				0.00			
				(0.00)			
Constant	6.64***	6.74***	6.87***	6.54***	6.50***	6.17***	6.67***
	(0.73)	(0.70)	(0.70)	(0.65)	(0.72)	(0.63)	(0.59)
Loglikelihood	-1888.32	-1881.18	-1870.33	-1828.31	-1857.99	-1819.20	-1727.11
Observations	193	193	193	193	191	189	183

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Like the main results, the estimation uses the subsample of female participants. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B11 Robustness: Quantile regressions

Outcome: Total saving balance	10%	20%	40%	60%	80%	90%
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	-343.59	-396.45	-741.74	-1049.78	-982.71	-5302.12
	(879.78)	(822.15)	(1031.47)	(1350.76)	(3260.54)	(4685.80)
Wife rightly trusts	-534.13	-355.32	-300.69	-703.23	-5629.60	-2795.38
	(972.87)	(989.94)	(1268.78)	(1357.67)	(3773.74)	(5300.74)
Wife rightly mistrusts	-232.13	706.96	-250.06	-396.27	-2687.26	-6706.88
	(833.85)	(894.52)	(1026.59)	(1414.30)	(5924.97)	(5602.96)
Treatment × Wife rightly trusts	481.18	824.48	1031.15	2254.29	5840.46	14054.93*
	(1314.37)	(1362.40)	(1688.04)	(2165.90)	(6917.43)	(8408.30)
Treatment × Wife rightly mistrusts	327.80	36.19	1595.76	2607.17	18717.82**	29062.39**
	(1530.98)	(1454.48)	(1727.25)	(2582.72)	(8258.95)	(14621.67)
BL total saving balance	0.06	0.10	0.32	0.33	0.36	0.93***
	(0.09)	(0.11)	(0.21)	(0.25)	(0.72)	(0.14)
BL savings quintile (w2)	77.47	312.88	234.53	959.72	2325.34	845.58
	(359.16)	(330.14)	(603.67)	(1025.57)	(3189.78)	(1863.58)
Age group	224.83	516.14*	411.27	1284.75	1896.73	113.44
	(371.58)	(263.54)	(362.70)	(1110.28)	(1518.80)	(991.05)
Primary education	373.88	962.29	1367.79	1295.40	5227.47*	5792.63**
	(1135.79)	(944.85)	(946.15)	(2052.16)	(2839.21)	(2668.50)
Secondary education	523.43	1529.67*	1711.57*	1774.10	4650.20	5084.58
	(1080.53)	(879.81)	(969.84)	(2469.25)	(4797.90)	(4050.93)
Tertiary education	508.94	1538.27*	960.03	1562.81	8386.32**	7721.57
	(1144.43)	(838.40)	(998.13)	(2721.13)	(4051.79)	(4726.64)
Employment	472.41	199.91	-184.14	275.91	273.63	-5438.12**
	(617.22)	(571.63)	(643.78)	(1148.98)	(2249.50)	(2613.55)
Household members	-35.96	-183.48	-158.56	-156.54	-998.54**	-1037.34*
	(149.90)	(147.93)	(175.63)	(233.49)	(492.56)	(559.58)
Past-month income (w2)	0.02	0.01	-0.00	0.03	-0.13	-0.23*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.55)	(0.13)
Outstanding debt (w2)	-0.00	-0.01	-0.06	-0.02	0.50	0.96***
	(0.03)	(0.05)	(0.04)	(0.05)	(8.63)	(0.12)
Saving club membership	267.40	578.51	727.59	83.31	-546.78	3664.09
	(670.18)	(699.98)	(923.63)	(1212.43)	(3647.23)	(2326.40)
Difficulty of TG implementation	-104.21	190.78	1148.89	2356.59**	2321.79	174.22
	(725.79)	(746.42)	(820.61)	(1102.78)	(4806.36)	(6036.28)
Constant	-862.52	-2214.77	-1440.87	-4709.45	-2305.26	13312.62
	(1831.20)	(1510.90)	(2026.20)	(5013.32)	(12646.84)	(10107.94)
Observations	193	193	193	193	193	193

Notes: Estimated coefficients are ITT effects of quantile regressions at 10, 20, 40, 60, 80, and 90%. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B12 Robustness: Alternative heterogeneity

Outcome: Total saving balance	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment	-0.48*	0.94*	0.22	0.51	-0.16	0.08	-0.87*	0.40	-0.38
	(0.24)	(0.56)	(0.45)	(0.41)	(0.41)	(0.48)	(0.52)	(0.48)	(0.51)
Wife rightly trusts	-0.66**		-0.68***		-0.62**		-0.70**		-0.62**
	(0.28)		(0.26)		(0.29)		(0.29)		(0.29)
Wife rightly mistrusts	-0.16		-0.13		-0.21		-0.23		-0.14
	(0.31)		(0.28)		(0.29)		(0.30)		(0.33)
Wife rightly trusts × Treatment	1.48***		1.55***		1.41***		1.48***		1.38***
	(0.52)		(0.47)		(0.53)		(0.52)		(0.52)
Wife rightly mistrusts × Treatment	1.35***		1.32***		1.46***		1.52***		1.42**
	(0.52)		(0.51)		(0.54)		(0.56)		(0.57)
BL Female financial involvement		0.79***	0.85***						
		(0.31)	(0.30)						
BL Female financial involvement × Treatment		-0.88	-0.83*						
		(0.61)	(0.50)						
BL Uninformed outings				0.70**	0.69**				
				(0.30)	(0.31)				
BL Uninformed outings × Treatment				-0.36	-0.37				
				(0.48)	(0.45)				
BL Unescorted outings						-0.09	-0.21		
						(0.33)	(0.33)		
BL Unescorted outings × Treatment						0.15	0.48		
						(0.51)	(0.50)		
BL Female involvement in decisions (index)								0.51	0.45
								(0.37)	(0.41)
Treatment × BL Female involvement in decisions (index)								-0.27	-0.09
								(0.54)	(0.56)
BL total saving balance	0.00*	0.00	0.00**	0.00	0.00	0.00	0.00**	0.00	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
BL savings quintile (w2)	0.29***	0.35***	0.30***	0.36***	0.30***	0.34***	0.27**	0.35***	0.29***
	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Age group	0.17	0.10	0.10	0.19	0.19*	0.16	0.16	0.17	0.17
	(0.10)	(0.11)	(0.11)	(0.12)	(0.11)	(0.11)	(0.10)	(0.11)	(0.11)
Primary education	0.60**	0.41	0.51*	0.58**	0.69**	0.48*	0.63**	0.56*	0.69**
	(0.28)	(0.27)	(0.27)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)	(0.29)
Secondary education	0.72***	0.51*	0.65**	0.61**	0.74***	0.57**	0.70***	0.60**	0.72***
	(0.27)	(0.26)	(0.26)	(0.27)	(0.27)	(0.27)	(0.26)	(0.27)	(0.27)
Tertiary education	0.89***	0.84***	0.95***	0.75**	0.82**	0.81**	0.88***	0.74**	0.83***
	(0.32)	(0.30)	(0.31)	(0.31)	(0.32)	(0.32)	(0.32)	(0.31)	(0.32)
Employment	-0.16	-0.09	-0.29	-0.10	-0.29	0.04	-0.17	-0.04	-0.22
	(0.23)	(0.22)	(0.23)	(0.24)	(0.24)	(0.23)	(0.23)	(0.24)	(0.24)
Household members	-0.08*	-0.09**	-0.07	-0.11**	-0.09*	-0.11**	-0.08*	-0.11**	-0.09*
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Past-month income (w2)	-0.00	-0.00**	-0.00**	-0.00	-0.00	-0.00*	-0.00	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	0.29	0.02	0.20	0.05	0.23	0.12	0.31	0.06	0.23
	(0.19)	(0.19)	(0.19)	(0.19)	(0.20)	(0.19)	(0.19)	(0.19)	(0.20)
Difficulty of TG implementation	0.41	-0.10	0.25	-0.12	0.28	0.04	0.38	-0.06	0.33
	(0.46)	(0.57)	(0.47)	(0.56)	(0.46)	(0.53)	(0.46)	(0.56)	(0.47)
Constant	6.87***	6.89***	6.54***	6.77***	6.49***	7.22***	7.14***	6.92***	6.68***
	(0.70)	(0.78)	(0.70)	(0.83)	(0.75)	(0.83)	(0.75)	(0.85)	(0.77)
Log-Likelihood	-1870.33	-1877.12	-1865.48	-1866.89	-1855.73	-1881.37	-1869.56	-1869.87	-1858.71
Observations	193	193	193	192	192	193	193	192	192

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. The employed sample is restricted to female trial participants only. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B13 Robustness: Only positive savings

Outcome: Total saving balance	Full sample				Female sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.12	-0.53**	0.20	-0.48**	-0.46*	-0.39
	(0.20)	(0.24)	(0.20)	(0.24)	(0.24)	(0.24)
Choice alignment (any)	0.27	-0.35			-0.28	
	(0.21)	(0.26)			(0.26)	
Treatment × Choice alignment (any)		1.42***			1.13***	
		(0.37)			(0.38)	
Wife rightly trusts			-0.07	-0.70**		-0.58*
			(0.25)	(0.31)		(0.33)
Wife rightly mistrusts			0.55**	-0.15		-0.08
			(0.27)	(0.31)		(0.32)
Treatment × Wife rightly trusts				1.32***		0.89*
				(0.44)		(0.45)
Treatment × Wife rightly mistrusts				1.86***		1.75***
				(0.56)		(0.57)
BL total saving balance	0.00***	0.00***	0.00*	0.00**	0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female	1.79***	2.21***	1.58***	2.04***	0.00	0.00
	(0.58)	(0.45)	(0.60)	(0.46)	(.)	(.)
BL savings quintile (w2)	0.26**	0.21*	0.32***	0.28***	0.28**	0.33***
	(0.11)	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)
Age group	0.13	0.13	0.12	0.12	0.15	0.14
	(0.12)	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)
Primary education	0.48	0.59**	0.46	0.57**	0.57**	0.54*
	(0.29)	(0.27)	(0.29)	(0.27)	(0.28)	(0.28)
Secondary education	0.44*	0.65***	0.41	0.66**	0.56**	0.55**
	(0.26)	(0.25)	(0.26)	(0.26)	(0.25)	(0.27)
Tertiary education	0.74**	0.76**	0.78**	0.79**	0.78**	0.86***
	(0.33)	(0.31)	(0.33)	(0.32)	(0.32)	(0.32)
Employment	-0.21	-0.34	-0.08	-0.22	-0.25	-0.08
	(0.22)	(0.21)	(0.23)	(0.21)	(0.23)	(0.23)
Household members	-0.08*	-0.07*	-0.09*	-0.08*	-0.10**	-0.12**
	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)
Past-month income (w2)	-0.00*	-0.00*	-0.00*	-0.00*	-0.00*	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Outstanding debt (w2)	0.00	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Saving club membership	0.04	0.19	0.07	0.21	0.18	0.20
	(0.19)	(0.19)	(0.20)	(0.19)	(0.20)	(0.19)
Difficulty of TG implementation	0.03	0.28	0.38	0.76	0.26	0.84*
	(0.57)	(0.51)	(0.53)	(0.47)	(0.52)	(0.44)
Constant	5.61***	5.21***	5.30***	4.69***	7.34***	6.63***
	(1.10)	(0.93)	(1.08)	(0.86)	(0.78)	(0.68)
Loglikelihood	-1723.88	-1715.00	-1721.28	-1710.44	-1630.03	-1624.27
Observations	176	176	176	176	166	166

Notes: Estimated coefficients are ITT effects (of receiving the private saving device) of a General Least Squares Model with a gamma family and a log link. Only those observations which reported positive savings at baseline. Robust standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figures

Fig. B1. Zip purse (individual, portable saving device)

Fig. B2. Lock box (shared, stationary saving device)

Fig. B3. Trust game payouts