Trust and gender:
Comparing experimental and survey evidence
from rural Sumatra

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Abbreviations

AIC	Akaike Information Criterion
GR	Game Rupiah
IDR	Indonesian Rupiah
GSS	General Social Survey
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
PCA	Principle component analysis
POC	Palm oil company
USD	United States Dollar
VIF	Variance inflated factors
WVS	World Value Survey

Abstract

In previous studies on generalised trust, experimental and survey-based measurement attempts oftentimes resulted in inconsistent outcomes. In order to find the sources of these inconsistencies, I compare what determines the answers on trust attitudes in a survey and a trustful behaviour in trust experiments among Indonesian smallholder farmers. I find the two measures to be not significantly correlated. Surveyed attitudinal trust is merely explained by age, whereas experimental trusting behaviour is partly determined by insurance status and market access. This gives an insight into the divergent nature of the two measures: Making an actual investment decision is strategically determined and implies a voluntary vulnerability ―answering a question does not. Claiming to be trusting and really behave trustful are two different things. In that way, experimental trust behaviour seems to be a more relevant indicator of individual engagement in economic activities. Further, observed gender differences in both trust attitudes and behaviour could partly be ascribed to study design features: Trustworthiness behaviour of both women and men significantly decreased with the presence of an instructor of the opposite sex, and attitudinal trust of women is only lower compared to men when the interviewer was female. Therefore, controlling for study design features is particularly important to obtain less distorted results.

1 Introduction

People encounter trust considerations in everyday life in various situations. A person might be mistrustful towards political arguments and promises, confides vulnerable secrets to a close friend, or automatically entrusts her life in road traffic on the belief that everyone complies with right of way. Also economic activities, such as forming business partnerships or monitoring employees, possess a great deal of trust. To share the same norms and values and to have a mutual understanding of partnership facilitates cooperation among individuals and groups. That is defined as the social capital of a society or community (OECD, 2001). To trust that cooperative behaviour will not be exploited by others is a central topic of social capital since it is related to a community's economic performance: Macroeconomists associate higher levels of trust to higher economic growth rates because lower transaction and monitoring costs increase efficiency (e.g. Knack and Keefer, 1995; Fukuyama, 1995; Zak and Knack, 1998; Camerer, 2003; Suchanek, 2015). From a micro perspective, trust implies a lower risk perception of defaulting partnerships and investment. Hence, measuring a person's level of trust shall give a reference to her willingness to engage in economic activities.[1]

Culture and tradition, nurture and personal experiences among many other factors can define and change individual trust and trustworthiness preferences. As women and men experience asymmetric treatment in socialisation, education and economic opportunities, gender plays an important role in analysing social preferences. Several studies observe gender differences in both trusting and trustworthiness behaviour and attitudes, may they be innately or socially acquired. Gneezy et al. (2009) highlight that policies targeting female (economic) empowerment need to correctly understand underlying mechanisms of gendered inclinations.[2] However, findings on gender effects are very mixed and go in both directions. A majority of the literature ascribes

[1] Though not extensively studied yet, the determinants of trust have been indicated to be the same on macro and micro level (Uslaner, 2002; Uslaner, 2008).

[2] On the one hand, if women were intrinsically less trusting than men regarding their economic decisions, they are less prone to realise profitable activities that are associated with a certain risk. Generally, this issue may be overcome through trust-building that approaches secure contracts and insurances, and could be directed in particular to women, e.g. favourable microfinance opportunities. On the other hand, if women were educated to be less trusting than men through culture, disadvantaging and unfair treatment, the solution lies in social and political empowerment to raise overall gender equality.

gendered behaviour to intrinsic characteristics (for example, women's behaviour is more emotionally reasoned, and men feel more confident in risky situations, see meta-analyses by Croson and Gneezy, 2009, and Charness and Gneezy, 2011). By contrast, Gneezy et al. (2009) suggest an *acquirement* of gendered preferences through socialisation.[3]

The conception of trust itself is complex and difficult to quantify. Three main facets are identified, i.e. generalised, personalised and institution-based trust (McKnight and Chervany, 2001). In this thesis, I investigate generalised trust as one important element across social, political and economic spheres (Stolle, 2002). Many previous studies focus on one facet but do not incorporate potential linkages of all three facets. In order to obtain less distorted results, I therefore augment the analysis of generalised trust by measures of personalised and institution-based trust. In the social capital literature, generalised trust is measured using survey-based and experimental approaches. However, different strategies lead to different results and conclusions. Asking a survey participant about her general trust towards *people* obtains different answers than asking about her general trust towards *strangers* (e.g. Glaeser et al., 2000; Gächter et al., 2004). Experimentally measured trust levels largely depend on several experimental design features, like endowment size, gender and ethnicity of the experimental partner, and appearance of enumerators (Glaeser et al., 2000; Scharlemann et al., 2001; Johansson-Stenman et al., 2005; Johnson and Mislin, 2011). Women are even more sensitive to changes in experimental conditions than men (Croson and Gneezy, 2009). And oftentimes, survey-based and experimental trust results do not match (e.g. Danielson and Holm, 2007; Glaeser et al., 2000; Johnson and Mislin, 2011).

The above stated give reason to ask *why* the survey-based and experimental measures of trust lack a significant correlation and what the underlying causes of gender differences are. Therefore, one objective of this thesis is to examine the determinants of both trust attitudes and trusting behaviour. On the one hand, a two-person trust experiment (also called investment experiment) has been conducted in over ninety rural Indonesian villages. It allows to analyse generalised trusting behaviour of one person—the trustor—and trustworthy behaviour of another person—the paired

[3] Gneezy et al. (2009) experimentally observe women of a matrilineal society to choose a competitive environment more often than men, whereas the opposite is true within a patriarchal society.

trustee. On the other hand, survey data was collected including common generalised trust and fairness questions as used by World Value Survey (WVS) and General Social Survey (GSS). I thereby intend to answer the question which measure should be preferred for estimating generalised trust that is related to a person's engagement in economic activities.

The second objective is the evaluation of gender differences in trust and trustworthiness outcomes. For that reason, behaviour in the experiment, a range of trust questions, previous experiences in entrusting money as well as socioeconomic data are analysed in their gendered differences. Further, it is necessary to investigate whether observed (gender) differences occur due to actual differences in trust preferences, or merely due to varying study designs. In this way, a potentially influential study design feature, that is gender of the experimental instructor and survey interviewer, is selected as design control variable in the following analysis.

The study was conducted in Jambi Province, central Sumatra in Indonesia. Ordinary least squares (OLS) regression results show that trust behaviour is not correlated with any of the employed survey measures of trust. Using probit regressions on the probability to answer in favour of the question whether most people can be trusted, I observe indeed different determinants than for a trustful behaviour in the experiment. Survey trust increases with age and is lower within spontaneous migration villages compared to indigenous and transmigration villages. Opposed to that, experimental trust is higher if the participant possesses insurance and if she is living in a village with a relatively greater market access. Regarding gender differences, I find robust evidence that women send less in the experiment than men. However, reciprocal behaviour changes with a study design feature—the instructor's gender. Participants behave more trustworthy when being instructed by an enumerator of the opposite sex. Also survey measures of generalised trust and fairness perception reveal instructor-specific gender differences. On average, invested trust pays out for the participants of the experiment. However, reciprocal behaviour follows a negative-conditional relationship where higher amounts sent are reciprocated with proportionally lower amounts returned.

The thesis is structured as follows: Section 2 defines the main facets of trust and explains how trustworthiness is analysed in this thesis. Literature on measures of

trust in general as well as trust-related gender differences in specific are briefly reviewed in order to develop verifiable hypotheses for the empirical analysis. Section 3 explains the methodological approach by describing the study's experimental and survey design as well as the empirical strategy. In Section 4, the empirical section, descriptive statistics on trust and gender are analysed. It further examines the relationships of the variables of interest in linear and dichotomous regression models. The final section summarises and concludes the main findings.

2 Background

2.1 Defining trust

> *"Trust [has] close to as many definitions as [do] the very vague terms 'love' and 'like.' Hence, trust is by nature hard to narrow down to one specific definition because of the richness of meanings the term conveys in everyday usage."*
>
> — McKnight and Chervany, 2001, pp. 29-30.

In general, trust is defined as a voluntary vulnerability or an intention to depend on others, with feelings of relative confidence or certainty, in a risky aspect of one's life (McKnight and Chervany, 2001). Therewith, trust implies a risky situation, which means that without assessing a certain risk towards an action there would be no need to evaluate trust—there would be objective certainty. Risk and trust are interrelated. For the purpose of this thesis I follow the conceptual division of facets of trust described by McKnight and Chervany (2001) and Uslaner (2002).

McKnight and Chervany roughly differentiate between generalised, personalised and institution-based trust. Generalised trust is the consistent propensity that a person is generally willing to depend on other people, not person- or situation-specific. Uslaner relates it to faith in strangers rather than people of one's own circle. They make a distinction to personalised trust which is a more fragile construct responding to interactions with people of one's social network, e.g. family or fellow members of a voluntary association (see also Stolle, 2002). Therewith, personalised trust refers to another person as the object of trust, but not a particular situation (McKnight and

Chervany).[4] The third main facet, i.e. institution-based trust, is not person-specific but comprehends the belief in protective structures to be conducive to situational success, e.g. legal regulations and law enforcing institutions.

Using a practical syllogism, Suchanek (2015) theoretically describes the basic function of generalised trust by unfolding its aim, problem, and solution. The aim of trust is cooperation for mutual benefit. The problems are dilemma structures occurring through individual's freedom to act honouring or abusive with the trust placed in it, based on willingness and ability. The solution lies *within* trust investments in case it is reasonable and rewarded. Thus, generalised trust is an important aspect in social, political and economic spheres. It facilitates tolerance and acceptance in diverse societies, enables to join citizens' initiatives or political groups more easily, and substitutes monitoring institutions (Stolle, 2002). Generalised trust goes beyond personalised settings of friendship and acquaintance. It proves to be one significant predictor in economic growth models even when controlling for favourable institutions, like property rights protection, contract enforceability and low corruption (Zak and Knack, 2001).

Generalised, personalised and institution-based trust constructs are interlinked. However, findings on the role of institutional trust are heterogeneous. Rothstein and Stolle (2008) argue that dysfunctional institutions result in lower levels of generalised trust. Similarly, McKnight and Chervany (2001) suggest that trust in institutions can positively affect personalised trust behaviour, since functioning regulations affect the trustee's freedom to act in favour of the trustor. For example, one's trust in an honouring behaviour of a potential business partner is higher in the face of functioning contract enforcement. On the contrary, there are some findings of the opposite direction: Lower trust in institutions result in higher levels of experimentally measured trust in a study by Johansson-Stenman et al. (2009). Possibly, in places where institutions are not properly working, the community may establish a social trustful network for justice supervision in replacement. Finally, Uslaner (2002) finds no institutional foundations of generalised trust on both micro and macro level. The overall evidence is mixed. Also, the causal direction is unclear:

[4] For the *generalised trust* concept, McKnight and Chervany (2001) use the term 'dispositional trust' and Uslaner (2002) uses 'moralistic trust'. The *personalised trust* concept is called 'interpersonal trust' by McKnight and Chervany and 'experience-based trust' by Uslaner. *Institution-based trust* and 'institutional trust' are further used synonymously.

Do institutions affect generalised trust or does generalised trust affect institutions (Stolle, 2002; Rothstein and Stolle, 2008)? Accounting for only one facet of trust may distort the results, as each facet has different (and interlinked) determinants. A person's generalised trust, for example, may be either influenced by her negative personal experiences with trusting others. Or, it may result from experiences with unreliable institutions. Therefore, as I investigate generalised trust, it seems particularly important to include measures of institutional and personalised trust into the analysis.

2.2 Measuring trust

Methodological approaches to measure generalised trust comprise survey-based and experimental designs (attitudinal and behavioural measures). The most commonly used survey question in the trust literature is: *Generally speaking, do you think most people can be trusted or that you need to be very careful in dealing with people?* (henceforth referred to as *Trust Question*). It is included in various surveys, such as the WVS, GSS and other cross-country and national surveys. Uslaner (2002) provides evidence that the *Trust Question* reflects the concept of generalised trust. Though the nature of this question is intended to measure generalised trust, it can also be problematic as it leaves ample scope for interpretations of the referred group of *people* (Glaeser et al., 2000). Recently, a question about generalised trust towards *strangers* suggests to be a better predictor of experimental trust behaviour since the formulation is "more precise and meaningful than completely general, nonspecific questions regarding trust" (Glaeser et al., 2000: p. 827).[5]

Consideration and intention of *fair behaviour* are important factors of trust building in social interdependencies (Van den Bos et al., 1998; for a review see Tyler and Lind, 1992). An experimental study by Van den Bos et al. investigate how people decide to trust in a given authority not to exploit them in case its trustworthiness is claimed to be unknown. They find that the fairness information on a procedure by that authority is a decisive substitute of trust in the authority when evaluating satisfaction with the outcome of that procedure. Recalling the practical syllogism of

[5] For example, Glaeser et al. (2000) and Naef and Schupp (2009) observe a stronger correlation of trusting behaviour and trust in *strangers* than *people*. On the contrary, Ashraf et al. (2006) finds no such correlation.

trust, this line of reasoning suggests a useful supplement of trust investments (the solution): Higher fairness perception offers a second channel to overcome social dilemma structures (the problem) to achieve cooperation for mutual benefit (the aim). In fact, in addition to the *Trust Question*, a generalised fairness question is employed in international surveys (e.g. WVS, GSS) and other trust studies (e.g. Glaeser et al. 2000; Gächter et al., 2004; Naef and Schupp, 2009): *Generally speaking, do you think people would try to take advantage of you if they got the chance, or that people are fair?* (henceforth referred to as *Fairness Question*).

While *Trust Question* and *Fairness Question* can be considered rather abstract attitudinal questions, measuring trust is worth being complemented by behavioural approaches (Putnam, 1995; Glaeser, 2000). In 1995, Berg, Dickhaut and McCabe introduced the trust game which has been replicated in this version many times.[6] It is a simple behavioural experiment to elicit individual trust preferences. To play the game, participants are randomly and anonymously paired; one assigned to be the *sender* (trustor), the other one the *receiver* (trustee). Both are provided an equal initial endowment.[7] The sender has to decide if and how much of her endowment she would like to send to the receiver. To induce socially efficient behaviour, the receiver obtains a multiple of the amount sent. In a next step she can decide if and how much of her total sum she would like to return to the sender. *Trust Behaviour* is measured with the sender's decision, *Trustworthiness Behaviour* with the receiver's decision. The higher the amounts sent and returned, the higher the levels of trust and trustworthiness, respectively. Conventional economics predicts not to send or return anything (Nash equilibrium). As a matter of fact, empirical evidence disproves this prediction. The substantial amount of replications of the experiment finds that around 50 per cent of the initial endowment is sent, and around 50 per cent of the amount received is returned (Levitt and List, 2007).[8] Critiques on the trust experiment argue that it actually measures risk preferences instead of trust, or a propensity to gamble

[6] A binary version of the trust game was already introduced in 1990 by Kreps with only two choices for the sender, namely to send all or nothing.
[7] Some replications provide only the sender an endowment.
[8] Cardenas and Carpenter (2008) present an overview of results in trust experiment studies.

rather than an inclination to mitigate uncertainty in informal contracts (e.g. Karlan, 2005; Johansson-Stenman et al., 2005; Schechter, 2007).[9]

Some reviews find positive correlations of amounts sent in the experiment and levels of trust measured by the *Trust Question* (Cardenas and Carpenter, 2008; Johnson and Mislin, 2012). Other studies observe no remarkable correlation between survey and experimental measures of trust (Danielson and Holm, 2007)—but rather a correlation between the survey and the experimental measure of trustworthiness (Glaeser et al., 2000; Johnson and Mislin, 2011).

As opposed to the survey questions, cross-study comparisons of the experimental trust measure are somewhat debated due to the influence of varying experimental conditions. For example, Johansson-Stenman et al. (2005) find significant differences in shares sent in a trust experiment with a changing size of initial endowments provided. Meta-analyses of the trust experiment support that its results depend greatly on the experimental implementation itself (Johnson and Mislin, 2011; Croson and Gneezy, 2009). This stresses the importance to control for study design features. A behavioural measure of trust could be at least as valuable as a theoretical question in order to indicate actual economic engagement of a person—after all, what people say and what they do may be different things. Therefore, I simultaneously investigate behavioural and attitudinal measures of trust using three outcome variables: *Trust Behaviour*, *Trust Question* and *Fairness Question*. This method can answer the question whether the determinants of both methodological approaches are the same.

2.3 Trustworthiness and inequity aversion

A person is defined to be trustworthy if she is worthy of the trust placed in her, which means that she will not exploit the vulnerability of the trustor (Barney and Hanson, 1994). An internalised norm of trustworthiness corresponds to the norm of trust (Greig and Bohnet, 2008). For example, it seems reasonable that a generally low expected trustworthiness in a community induces lower levels of trust. Looking

[9] As mentioned in subsection 2.1, the definition of trust I use for the purpose of this thesis necessarily implies risk. In general, the purpose of trust studies in economics is mainly to indicate individual's inclination to engage in economic activities. Therefore, this careful differentiation might be less relevant for final implications

at the other way around, the degree of a person's trustworthiness may be influenced by the trust placed in her (i.e. feeling obligated to reciprocate or wish to reward the voluntary vulnerability of the trustor). Some researchers stress the importance of trustworthiness in social capital even more than the importance of trust.[10] Survey measures of trustworthiness are rarely used in the literature. Glaeser et al. (2000) and Gächter et al. (2004) use a survey-based statement "I am trustworthy" graduated on a six-point scale to measure self-indicated trustworthiness. Comparing the answers to *Trustworthiness Behaviour* shown in the experiment (that is receivers' decision to return), Glaeser et al. find no significant relationship between the two measures of trustworthiness (likewise, Gächter et al. find no significant correlation between survey-based trustworthiness and contribution behaviour in a one-shot public goods game). They conclude that self-indicated attitudes can "rarely be taken at face value" (p. 833). In the study at hand, I therefore account for trustworthiness only by experimental *Trustworthiness Behaviour*.

In numerous studies of the trust experiment, the amount returned is substantially larger than zero.[11] To explain why receivers in a trust experiment return anything at all, two alternative explanations have been offered (Camerer and Fehr, 2004). One alternative argues with receiver's 'inequity aversion'. It is proposed that a receiver has preferences of both higher pay-outs for herself but also for a more equal distribution. Inequity aversion is then defined as receiver's preference to avoid inequitable pay-outs between herself and the paired sender (following Fehr and Schmidt, 1999). The second alternative captures receiver's preference of 'reciprocity', which is the relationship between trust and trustworthiness. The receiver is not only interested in her own pay-out, but wishes to reward kindness and revenge meanness in behavioural experiments (following Rabin, 1993). Thus, reciprocity models propose responsive preferences of the receiver towards trusting actions and vulnerability of the sender. In developed countries, researchers found

[10] Karlan (2005) compares participants' behaviour in the trust experiment to their behaviour in a group lending programme. He finds experimentally more trustworthy participants to be less likely to default their loan and to voluntarily save more. However, experimentally more trusting participants exhibit lower voluntary savings and are more likely to drop out of the programme due to default or discipline. Chaudhri and Ghangadharan (2007) conduct a trust experiment with participants making both sender and receiver decisions. They conclude that if a participant behaves trustworthy she also behaves trusting, however, the other way around is not necessarily the case.

[11] For an overview, see e.g. Levitt and List (2007), Cardenas and Carpenter (2008), Croson and Gneezy (2009).

evidence of a 'positive-conditional reciprocity', that is, higher trust is rewarded with higher trustworthiness. In contrast to that, there is evidence for a 'balanced reciprocity' in developing countries, i.e. around the same amount that was *sent* will also be returned. A balanced reciprocity is less socially efficient and induces less trust than a positive-conditional reciprocity (Cardenas and Carpenter, 2008). Inequity averse and reciprocal preferences can be combined into one model as employed by Charness and Rabin (2000) and Falk and Fischbacher (2006). While I focus on trustworthiness (and thereby on reciprocity) in this thesis, I also capture inequity aversion to properly evaluate receiver's behaviour. In the following, I explain how I measure the two outcome variables *Trustworthiness Behaviour* and *Inequity Aversion*.

Receiver's behaviour is always interpreted in relation to the trust placed in her by the sender, which previous literature defined as either the amount sent (Greig and Bohnet, 2008) or most commonly the amount received (which is a multiple of the amount sent, employed by e.g. Glaeser et al., 2000; Ashraf et al., 2006) or even the amount received plus receiver's initial endowment (Buchan et al., 2008). Let *S* be the amount sent, *mS* denotes the amount received using the multiplier *m* times *S*, *I* denote the initial endowment and, thus, *mS+I* is receiver's total endowment comprising the amount she received in the experiment plus her initial endowment. With *R* being the amount returned and $z = \{S,\ mS,\ mS + I\}$, trustworthiness is defined as R/z. In the experiment at hand, $m = 3$. All three definitions of z imply advantages. Since m differs across replications of the experiment, it can be advantageous for cross-study comparisons to use the single amount sent as reference.[12] With different stake sizes, however, incentives, risk or temptation may influence receivers' behaviour and the amount referred to shall rather be the whole amount received. Then again, including the initial endowment avoids preclusion of trustworthiness observations due to zero amounts sent ($R/0 = \{\}$). In this way, on the one hand, it seems natural for a participant to react to the amount of money received (mS) during the experimental process rather than adjust behaviour to only a fraction of it (S). Thus, I measure *Trustworthiness Behaviour* by the amount returned over the amount received ($R/3S$). As reciprocity is the relationship between trust and trustworthiness, it is defined by

[12] Johnson and Mislin (2011) find significant differences in trustworthy behaviour depending on the experimenter's choice for the multiplier *m*.

$\partial(R/3S) \,/\, \partial 3S$ (following Greig and Bohnet, 2008). A positive-conditional reciprocity follows the definition $r = \partial(R/3S) \,/\, \partial 3S > 0$ and $\bar{x} = R/3S > 1$, whereas a balanced reciprocity is defined by $r = \partial(R/3S) \,/\, \partial 3S = 0$ and $\bar{x} = R/3S = 1$, with r being the correlation coefficient of trust and trustworthiness and $\bar{x}$ the sample mean of trustworthiness.[13] On the other hand, receivers are allowed to include their own initial endowment I into the amount they wish to return in the present experiment. It is also very likely that they further consider the amount *kept* by the sender into a distributional decision-making. Hence, I measure *Inequity Aversion* by comparing final pay-outs of the paired senders and receivers, which includes all stakes. Thereby, the total amount the receiver has at hand is $3S + I$. The amount the sender has kept is denoted by *K*, with $K = I - S$. The distribution of final pay-outs is calculated as follows:

$$Inequity\ Aversion: E = (K + R) - (I + 3S - R) \qquad (1)$$

with $E = 0$ resulting in equal pay-outs and indicating most inequity-averse preferences, $E > 0$ allocating the larger share to the sender, and $E < 0$ allocating the larger share to the receiver herself.

Investigating reciprocity as well as the determinants of the outcome variable *Trustworthiness Behaviour* allows to draw implications for social efficiency. Additionally, inequity-averse decisions in the experiment can show how fair the receivers behave.

2.4 Gender differences

An unambiguous gendered tendency is not established for both trusting and trustworthy behaviour. Besides, only few studies investigate the impact of gender on survey trust outcome (Glaeser et al., 2000, find men to believe slightly but significantly more often than women that most people can be trusted; Gächter et al., 2004, observe no gender differences in responding to *Trust Question* and *Fairness Question*). A majority of trust experiments observe men to behave more trusting, i.e.

[13] Formulas are applied from Greig and Bohnet (2008). However, they used the amount sent *S* instead of the amount received *3S* in their calculations.

men send higher shares than women.[14] Also in general aspects of life, men are found to behave more risk-taking (e.g. Byrnes et al., 1999). Chaudhuri and Gangadharan (2007) develop a model of risk aversion and find that lower amounts sent by females in a trust experiment can be ascribed to a higher risk aversion. Yet another study proposes that men interpret the experiment more strategically whereas women feel a higher obligation to send and return money in the experiment (Buchan et al., 2008). Similarly, previous study results on trustworthy behaviour are somewhat divided. However, slightly more evidence finds women to behave more trustworthy than men, i.e. return more in the experiment (Croson and Gneezy, 2009). Investigating inequity-averse behaviour, Andreoni and Vesterlund (2001) and Fehr et al. (2006) observe women to decide more egalitarian than men in distribution games. A neuroscientific study by Riedl et al. (2010) finds trustworthiness evaluations of internet offers to stimulate different regions of the brain of females and males, where women recruited more limbic structures than men. It implies that women evaluate the decision more emotionally than men.

The general conclusion of a meta-analysis on gendered preferences by Croson and Gneezy (2009) is that women show a larger responsiveness to changes in experimental conditions than men. That introduces a different possible explanation of observed gender differences, which are situational influences during trust measurements. A range of evidence suggests that attributes of the experimental partner affected levels of trust and trustworthiness (in case the design allows or intends diminishing levels of anonymity). Amounts entrusted and reciprocated differ with experimental partners of a different nation, ethnic group or even with and without a smiling face (Glaeser et al., 2000; Scharlemann et al., 2001; Eckel and Wilson, 2003). Scharlemann et al. (2001) investigate whether knowing the experimental partner's gender influences shares sent or returned: They find both women and men to behave more trusting when paired with the opposite sex. Opposed to that, Buchan et al. (2008) did neither observe differences in amounts sent dependent on the receiver's gender, nor in ratios returned dependent on the sender's gender. Controlling for experimental partner's attributes, such as gender and origin, is also prompting the issue of controlling for enumerators' attributes who the

[14] See meta-analyses on trust experiment studies by Croson and Gneezy (2009) and Charness and Gneezy (2011), and on risk aversion Eckel and Grossman (2008).

participants encountered directly and were personally instructed by. They as well may influence experimental behaviour and survey answering through appearance, sympathy, explanatory ability etc. (Johansson-Stenman et al., 2009). This issue seems particularly interesting in a personal rather than computerised study setting that is usually applied when collecting non-student data.

The diverse and complex findings encourage further research on the underlying causes of gendered behavioural differences, particularly if they have political implications. Analysing the four outcome variables *Trust Behaviour*, *Trustworthiness Behaviour* and surveyed *Trust Question* and *Fairness Question*, gender of the participant is one major determinant of interest, especially because it is often neglected in the survey-trust literature. Furthermore, I introduce a simple instructor control variable, i.e. instructor's gender, to test situational influences on gender-specific behaviour and responding in the present study. This can give an idea of how much variation between female and male participants is actually explained by one study design feature.

2.5 Hypotheses

I analyse four sets of hypotheses throughout this paper. The facet of generalised trust is the main focus in the first set. Generalised trust is measured by a behavioural experiment as well as survey questions. Thereby, the survey questions account for the various facets of trust: A set of attitudinal questions including generalised trust towards people and generalised fairness perception is employed. In order to assess generalised trust attitudes towards slightly more specified groups of people, I apply similar questions recently used in the WVS catalogue and employed by Ashraf et al. (2006); i.e. questions about generalised trust towards people of the respondent's own religion, her own country, and towards strangers. In line with the majority of the literature body, little correlation is expected between experimental *Trust Behaviour* and *Trust Question* or *Fairness Question*. However, I do expect *Trust Behaviour* to be correlated with surveyed trust towards *strangers* due to the more precise formulation of the question, like Glaeser et al. (2000) and Naef and Schupp (2009) concluded. That leads to the following first set of hypotheses:

H1a: Experimental trust (i.e. *Trust Behaviour*) is not significantly correlated with self-indicated trust measured by attitudinal generalised trust towards *people* (i.e. *Trust Question*). Similarly, experimental trust is not significantly correlated with self-indicated generalised fairness perception (i.e. *Fairness Question*).
H1b: Experimental trust is significantly correlated with attitudinal generalised trust towards *strangers*.

The second set of hypotheses deals with gender differences in generalised trust. Following Croson and Gneezy (2009), Eckel and Grossman (2008) and Charness and Gneezy (2011), the hypotheses 2a and 2b are proposed.

H2a: On average, men behave more trusting than women, i.e. send more in the trust experiment.
H2b: On average, men believe more often than women that most people can be trusted and that most people are fair.

The gendered differences observed by Scharlemann et al. (2001) depending on the experimental partner's gender are being mirrored to the experimental instructor's gender. The background is that the instructors may have a non-negligible influence on participants' decisions. The anonymous pairing reveals no attributes of the experimental partner, as explained below. However, the participants are in direct contact with the experimental instructor (and survey interviewer) which is expected to have a similar effect on their behaviour and responding. Thus, hypotheses 3a and 3b are proposed.

H3a: Participants behave more trusting in the experiment when instructed by an enumerator of the opposite sex.
H3b: Participants respond more positive in *Trust Question* and *Fairness Question* when interviewed by an enumerator of the opposite sex.

The final set of hypotheses concerns reciprocal and inequity-averse behaviour. Ensuing from Greig and Bohnet's (2008) findings in a developing country, a balanced reciprocity is expected to also apply for Jambi Province. Furthermore, gender differences in trustworthy behaviour are expected to be consistent with the slight majority of previous literature: Women behave more trustworthy and egalitarian than men.

H4a: Overall, the same amount that was sent will also be returned by the receiver, implying balanced reciprocity.

H4b: On average, women behave more trustworthy than men, i.e. return more relative to the amount received in the trust experiment.

H4c: On average, women behave more inequity-averse than men, i.e. they distribute the final pay-outs more egalitarian between themselves and the experimental partner.

3 Methodology

3.1 Sampling and representativeness

The research was conducted in 93 randomly selected villages from 25 districts in five regencies of Jambi Province, Sumatra (i.e. Sarolangun, Batanhari, Bungo, Tebo, and Muara Jambi) between September and December 2012. The sample consists of smallholder farmers, who constitute the very majority of the rural population in developing countries. Using a non-student subject pool as population sample promises to be more insightful for relevant policy implications based on significant differences observed in study results between students and non-students (Gächter et al., 2003; Carpenter et al. 2004; Danielson and Holm, 2007). To support research activities, six local students were selected and trained extensively prior to data collection. Three of them were female and three male, and instructive and interviewing tasks were alternated.

As a first step, the research project was introduced to the *kepala desa* (village head) or his/her *sekretaris desa* (secretary) and they were asked for permission to conduct the project. In each of the selected villages, a random walk was conducted to get about ten respondents per village who were invited to participate in the experiment and a following questionnaire. In doing so, two village neighbourhoods (*RT*) were randomly selected with each five respondents for the sample. From every fifth house walked by, the household head or spouse was invited to participate. They are typically responsible for the household's financial decisions and thus are of major interest in assessing generalised trust attitudes in the context of economic activities. The research project was introduced and explained the same way as to the village head. Unfortunately, self-selection bias cannot be ruled out given the possibility to

reject the invitation.[15] Furthermore, in case of absence it was unfeasible to revisit later due to organisational time constraints (participants were usually invited for the same afternoon or evening). Therefore, farmers that chose not to participate or were not at home were replaced by another individual.

Table 1 compares the sample population to the population of Jambi Province and Indonesia with respect to five characteristics (sex ratio, education, household size, motorbikes and cars). First, a noticeable difference in the sex ratio (i.e. males over females) between the sample population and the Indonesian and Jambi Province average is observable. It is probably caused by the fact that data collection was conducted jointly with another research group who intended to select only household heads, which were male in most cases. Excluding the 303 joint observations leaves a sex ratio of 116.2 which is much closer to the Jambi Province and Indonesian population. Second, the educational level of the sample is very similar to the population of Jambi Province, and slightly higher than the Indonesian average.

Table 1: Representativeness of the sample

Characteristics	Our sample (917 obs.)	Jambi Province	Indonesia
Sex ratio	168.1	105.5 [a]	101.4 [a]
Average education in years	8.1	8.0 [b]	7.5 [c]
Average household size (# persons)	4.6	4.0 [d]	4.0 [d]
Household asset: motorbike (in per cent)	92.6	77.7 [e]	66.8 [e]
Household asset: car (in per cent)	6.5	8.5 [e]	8.6 [e]

[a] BPS Statistik Indonesia, 2010; [b] BPS Statistik Indonesia, 2012; [c] Human Development Report, 2014; [d] BPS Statistik Indonesia, 2013; [e] Demographic and Health Surveys ICF International, 2012.

Third, the sample average amount of persons living in one household is 0.6 higher than for both Jambi Province and Indonesian averages. A distinction of the villages into three types (indigenous villages, spontaneous migration villages from Java, and transmigration villages) is insightful to identify the main drivers of the larger household sizes.[16] Looking at the respective sample averages of the three village

[15] Greater concerns on self-selection bias have been raised about impersonal invitations, for example, via posters or flyers since participation is voluntary (Holm and Danielsson, 2005; Johansson-Stenman, 2009). However, also randomly selected households may reject invitations, thus preselect most distrustful individuals and underrepresent them in the study.

[16] In previous decades, Sumatra has been subject to a government-led relocation program. Whole new villages of people of different ethnicities and from different parts of Indonesia were created to combat

types, transmigration villages (4.3) and spontaneous migration villages (4.1) are closer to the total population than the indigenous villages (4.8). Latter constitute the biggest share in the sample population which explains the relatively large average household size. Lastly, the possession of motorbikes and cars has a similar tendency as the populations to be represented. However, motorbikes are more prevalent within the sample, and cars are slightly less. Again, the characteristics show mostly significant mean differences with respect to the village types: An average of 6.0 (88.9) per cent of indigenous villagers own a car (motorbike), compared to transmigration and spontaneous migration villagers' average of 2.5 (98.1) and 10.8 (98.0) per cent, respectively.

3.2 Experimental design

The whole group of invited participants gathered in the *kantor desa* (village office). The name and intentions of the experiment were not disclosed. This would possibly have affected participants' behaviour in the experiment, as they could act according to an implied expectation fulfilment, for example, to send or return more to please the experimenter. Therefore, also the questionnaires were filled out only after experiments were conducted.[17] The pay-out was framed as a show-up fee to appreciate respondents' time as well as an incentive to make a thoughtful decision. As it has been the case in other experimental studies (e.g. English, 2011), cash pay-outs raised ethical concerns in Muslim countries, where experiments and monetary incentives are oftentimes perceived as gambling. Therefore, 'Game Rupiah' (hereinafter GR) were used picturing the same value as Indonesian Rupiah.[18] At the end of the session, participants received a pay-out in form of *pulsa* (mobile phone

poverty on overpopulated islands (mainly Java) and at the same time foster palm oil and rubber plantation. The so-called transmigration villages differ from spontaneous migration villages in their governmental support (provision of 2-4 hectare of land per household and cropping facilitation).

[17] The survey contained questions about trust; therefore the experiment was conducted before filling the survey to not hint on the experiment's purpose. The survey questions have always been asked in the same order as well, which means that the regression models cannot control for order effects (that could potentially be relevant for the trust-related questions). Although it seems unreasonable that a person answering the *Trust Question* in some way influences the answer to the *Fairness Question*, it cannot be controlled for a potential bias from order effects in the models.

[18] Cameron (1999) examines an ultimatum game conducted in Yogyakarta (Central Java, Indonesia) and finds significant differences in shares offered depending on whether the participating students play a real-money game or a hypothetical game, but only in a second round of these games. In the present experiment, there is only one round, as well as there are 'Game Rupiah' notes used to create a more real monetary incentive compared to an entirely verbal instruction.

credit).[19] Since almost every household owned a mobile phone (94.3 per cent), pulsa was assessed to be a frequently purchased product that participants valued and that respected cultural sensitivity at the same time. Participants not possessing a mobile phone earned a pulsa voucher that they would be able to sell on.

A general introduction was given to the group in Bahasa Indonesia to explain the experimental procedures and pay-out options. To ensure everyone understood the experiment, four possible example decisions were demonstrated, and remaining questions were addressed. The order of these examples varied across the villages.[20] Everyone got a second explanation of the experiment individually and one by one in a separate room read out by the enumerator immediately before making their decision. All participants were explicitly advised to keep their decisions secret and not discuss it in the group until the end of the session. The group of waiting participants was supervised by one enumerator throughout the entire course of the experiment to guarantee that information did not circulate.

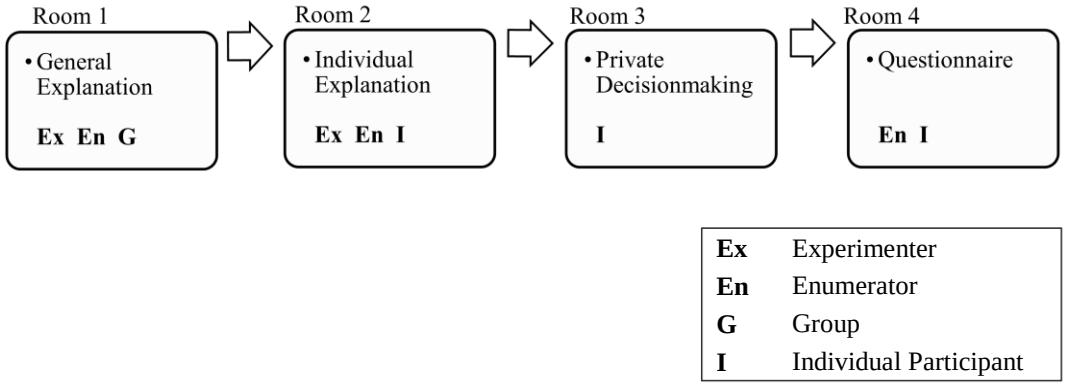
The experiment proceeded as follows: Farmers were randomly and anonymously assigned to be either sender or receiver. Both players were endowed with 20,000 GR (equivalent to 2.08 USD by the time of conduction).[21] In a local context, that translates into one good meal in a restaurant. In a first stage, the sender was invited to send any share of her endowment to the receiver, reminded that it will be tripled by the experimenter and that the receiver would have the opportunity to return any share of her total endowment under a double blind experiment procedure. In a second stage, the receiver was first handed out her initial endowment and further the tripled amount sent by the sender. She was then invited to return any share of the total amount back to the sender.

Participants were asked to make their decision in private in a third room by distributing the share they want to keep and the share they want to send into two marked envelopes. Appendix A.1 provides detailed instructions which the enumerators had to read out to the participants during the individual explanation of

[19] The winnings were rounded up to 5,000-steps due to restricted pulsa transfer options.
[20] Despite a potential influence on participants' decision, Johansson-Stenman et al. (2009) also included example decisions to assure a better understanding.
[21] Each player was endowed with five game money notes: 1*10,000 GR, 1*5,000 GR, 2*2,000 GR and 1*1,000 GR. Thereby, every amount in 1,000-steps was possible for the sender to send, and for the receiver to return.

the game. A short questionnaire on basic socioeconomic conditions and trust-related questions followed the experiment in a separate room with only one Indonesian interviewer to ensure the highest degree of anonymity possible.[22] Figure 1 depicts the experimental setting.

Figure 1: Experimental setting



The experiment aims at measuring generalised trust, since the senders find themselves in an uncertain situation not towards a specific person, but a randomly selected participant from the village sample. In these settings, it is likely that the participants are related to other participants which may affect their game behaviour. I control for a relationship measure in the models, as explained in the following subsection.

3.3 Survey and empirical strategy

In the questionnaire following the experiment, self-indicated measures of trust were collected, as well as trust-related control variables and socioeconomic characteristics. This subsection explains the model and major variables of interest. The complete exit survey and a detailed description of all variables are given in Appendix A.2 and A.3.

To understand the relationship between experimental and survey-based measures of trust and their determinants, I employ OLS and probit techniques to estimate the following equations:

[22] Considering the variance of education, a self-completion of the survey was unfeasible.

$$Trust\ Behaviour_i = \alpha_1 + \beta_1' SURVEYTRUST_i + \gamma_1 Female_i + \delta_1' HH_i + \theta_1' VILL_j + \varepsilon_1 \quad (2)$$

$$Trustworthiness\ Behaviour_i = \alpha_2 + \beta_2' SURVEYTRUST_i + \gamma_2 Female_i + \delta_2' HH_i + \theta_2' VILL_j + \mu_2' Trust + \varepsilon_2 \quad (3)$$

$$Trust\ Question_i = \alpha_3 + \beta_3' SURVEYTRUST_i + \gamma_3 Female_i + \delta_3' HH_i + \theta_3' VILL_j + \varepsilon_3 \quad (4)$$

$$Fairness\ Question_i = \alpha_4 + \beta_4' SURVEYTRUST_i + \gamma_4 Female_i + \delta_4' HH_i + \theta_4' VILL_j + \varepsilon_4, \quad (5)$$

where $Trust\ Behaviour_i$ is the amount sent in the experiment and $Trustworthiness\ Behaviour_i$ is the amount returned divided by the amount received by individual i. $Trust\ Question_i$ is a dummy variable capturing if individual i agrees that most people can be trusted rather than one has to be very careful in dealing with people. Finally, $Fairness\ Question_i$ is a dummy variable that captures if individual i agrees that most people are fair rather than one believes that people would take advantage if they got the chance. To better analyse if experimental trust and trustworthiness can be explained by survey-based trust measures, I include $SURVEYTRUST_i$ to the right-hand side of the equations (1) and (2). This is a vector of variables that captures generalised trust (i.e. *Trust Question*, *Fairness Question* and trust in strangers, see Table 2) as well as a measure of personalised and institution-based trust. To further investigate the relationship among the survey-based trust measures, $SURVEYTRUST_i$ will also be included in equations (3) and (4).[23] Moreover, to examine the difference between female and male participants I include $Female_i$ which is 0 if the participant is male and 1 if she is female. The vector of variables HH_i represents a set of individual and household control variables (such as education and household size). Likewise, $VILL_j$ is a vector of village control variables (such as village's migration type). The α are the constants and ε are the corresponding error terms. The remainder of this subsection explains single variables in detail.

McAllister (1995) argues that emotional bonds between individuals influence their trust behaviour. Accordingly, Buchan and Croson (2004) observe less trust and trustworthy behaviour with increasing social distance in the US and China. Despite the random selection of participants, their familiarity among each other was a

[23] With respect to multicollinearity issues, a prior calculation of correlation coefficients of all trust-related measures will allow or prohibit an inclusion into one model (see subsection 4.1).

reasonable presumption since the villages were relatively small and mostly remote. In view of that, the experimental setting calls for a control for affective foundations: Respondents indicated their relationships towards the other participants they encountered in the general explanation part of the experiment. Further, they have been asked if they would tell this person a secret about family matters: The variable *Confiding Secrets* is an arithmetic mean computing the individual's average indication over all participants of the same village round and represents the measure of personalised trust. *Relationships* and *Confiding Secrets* are positively correlated (r=0.294 with p=0.000) which gives some support that *Confiding Secrets* is an appropriate proxy for affective foundations. Accounting for institutional trust, respondents have been asked to indicate their level of trust on a five-point scale towards the Jambi government, the Jakarta government, and the local police to help them when they needed them. The index *Trust in Institutions* adds up the three ordinal-scaled indications and normalises the sum to a value between 0 and 1. Table 2 lists the measures of trust and trustworthiness applied in this study.

HH_i comprises basic socioeconomic data i.e. age, education, household size and respondents' wealth. Further individual and possibly influential characteristics included in HH_i are insurance status, membership in voluntary associations, experiences of financial betrayal and having a contract with a palm oil company. Wealth status is estimated by employing a principal component analysis capturing various household assets and farm size. Insurances are a central concern of risk assessment in investment decisions. Participants have been asked whether they had health insurance covering financial declines in times of need (dummy variable with 1 indicating to possess insurance, 0 otherwise). Regarding the experimental results *Trust Behaviour* and *Trustworthiness Behaviour*, I scarcely expect their outcome to influence or to have influenced insurance status and thus will treat *Insurance* as an exogenous variable. Considering *Trust Question* and *Fairness Question*, however, the direction of causality of having insurance is unclear. On the one hand, generally distrustful and risk-averse people may be more likely to take out insurance; on the other hand, being covered by insurance can result in more risky behaviour (moral hazard). Therefore, reverse causality in those models may lead to ill conclusions of the actual relationship between survey-based trust and *Insurance*.

Table 2: Measures of trust and trustworthiness

Trust concept	Variable	Description	Definition
Generalised trust	*Trust Behaviour*	Experimental behaviour as sender	$0 \leq$ *Trust Behaviour* $\leq$ 20,000 GR (in 1000 GR-steps)
	Trust Question	Generally speaking, do you think most people can be trusted or that you need to be very careful in dealing with people?	0: need to be very careful 1: most people can be trusted
	Fairness Question	Generally speaking, do you think people would try to take advantage of you if they got the chance, or that people are fair?	0: people would try to take advantage 1: people are fair
	Trust in Muslims;* *Trust in Indonesians;* *Trust in Strangers*	Generally speaking, which of the following people do you feel you could trust not to cheat on you: a: members of your religion, b: citizens of your country, c: strangers?	For each a, b, c 0: don't trust 1: trust
Personalised trust	*Confiding Secrets*	Would you tell [*other participant's name*] a secret about family matters? ► Arithmetic mean over *x* indications about all other participants n_i of the same village round, i.e. $\frac{1}{x}\sum_{i=1}^{x} n_i$)	For each n_i 0: no 1: yes Index $0 \leq$ *Confiding Secrets* ≤ 1
Institution-based trust	*Trust in Institutions*	Overall, how much trust do you have in: a: the government of Jakarta, b: the government of Jambi, c: the local police to help you if you needed them? ► Aggregated index normalised to values between 0 and 1	For each a, b, c 1: distrust 2: some distrust 3: no trust, no distrust 4: some trust 5: trust Index $0 \leq$ *Trust in Institutions* ≤ 1
Trustworti-ness	*Trustworthiness Behaviour*	Experimental behaviour as responder (amount returned relative to amount received)	$0 \leq$ *Trustworthiness Behaviour* $\leq 7.\overline{6}$ **

* 99.9 per cent of respondents were Muslim.

** Since observations with zero amount sent had to be precluded from *Trustworthiness Behaviour* investigation, the lowest possible amount to respond to is 3,000 GR when 1,000 GR have been sent. Returning everything including the initial endowment of 20,000 GR results in the highest possible *Trustworthiness Behaviour*-value of 23,000 / 3,000 = $7.\overline{6}$.

Memberships in voluntary associations is incorporated into the model to account for individuals' social interactions and engagement. The literature offers mixed results on the correlation of this variable with a person's trust attitudes: Putnam (1993) suggested that participation and repeated interactions in voluntary organisations create social norms and raise trust. Social capital of norms and trust is further spread through overlapping networks, and interacting *within* organisations with former strangers will also raise trust in general towards *outsiders*. Gächter et al. (2004) finds a weakly but positive and significant connection of membership in voluntary organisations and indicated trusting behaviour. By contrast, other social capital theorists raise concerns on such mechanisms (e.g. Stolle, 2002). One may only infer a higher participation rate in voluntary organisations from innately more trusting people (Bjørnskov, 2006). Also, in voluntary associations one merely socialises with known others, or at least people with similar interests and world views (Uslaner, 2002). The regression analysis in Section 4 will investigate whether *Memberships* possesses explanatory power of generalised trust or not. Anyhow, due to potential reverse causality problems interpretation remains with caution. As it may be relevant to future risky financial decisions, the respondent also indicated whether she had been cheated out of some money in the past. *No Betrayal* is a dummy variable stating whether the respondent has ever been betrayed financially (1 for no such experience, 0 otherwise). It is expected that former betrayals negatively influence the level of trust and investment in the experiment.

Migration experiences, strength of relationships and integration among villagers, and productivity differences in cropping activities that indicate wealth may all somehow relate to differences in trust attitudes and investment decisions. Such attributes differ especially across indigenous, spontaneous migration and transmigration villages. For example, having a contractual arrangement with a palm oil company is significantly more prevalent among transmigration villages. A contract can imply both advantages and disadvantages for the farmer. On the one hand, improved seedlings provision, technical supervision and plantation management advice may associate positive and profitable experiences to a partnership (or the investment decision in the first place). On the other hand, relatively high set-up costs and resulting debts may evoke

negative associations.[24] Since positive and negative experiences could be reflected in investment behaviour, I control for the dummy having a *Contract with POC* (palm oil company) in the model. Equal caution as described before is advised for an individual signing a contract with a palm oil company: either an initially higher trust also represents a higher likelihood to sign a contract, or some positive experiences with signing a contract increases a person's trust in turn.

Finally, $VILL_j$ is a set of village-level factors. Villages' migration type dummies have been added as control variables to the models. In doing so, I examine influences on a person's trust attitudes by her migration circumstances that were not captured by individual and household characteristics. Thereby, *Transmigration Village* and *Spontaneous Migration Village* are being compared to indigenous villages. It is not straightforward whether higher levels of trust within indigenous villages should be expected due to a possibly closer social network, or if I observe higher levels of trust within migration villages because of more experiences in engaging with strangers. To the best of my knowledge, there is no explicit study on migration influences on individual trust. Furthermore, with the amount of palm oil companies operating close to the village (*POC close to village*), an exogenous variable controls for different levels of market access. Studies found both positive (Gatto, 2015) and negative relationships (Siziba and Bulte, 2012) between generalised trust and market integration. Further, a clear direction of causality has not been established yet. There is evidence on higher initial trust resulting in increased market participation (Tu and Bulte, 2010) as well as greater market integration to be conducive to trust development (Fischer, 2008).

The attempt to measure preferences and perceptions (like trust or trustworthiness) typically raises great concerns of omitted variable bias. Individual motivation, perception and attitudes may have a strong influence on the variables of interest which cannot be controlled for in the model. Besides, within a 10-week study a number of aspects forming the experimental environment may change—such as weather, executors' motivation and explanatory ability. Experiments were conducted district by district, thus, district fixed effects are able to capture district-specific attributes and potential variations over the period of conduction. For that reason, as

[24] Feintrenie et al. (2010) give an insight discussion on cropping oil palm from smallholder farmers' perspective in Bungo district, Jambi Province.

an alternative to $VILL_j$ I included district fixed effects to control more generally for unobserved heterogeneity at the district level.[25]

In total, the sample comprises 917 observations from 93 villages. Respondents were divided to be either sender or receiver, resulting in 490 observations for the experimental variable *Trust Behaviour* and 412 for *Trustworthiness Behaviour*.[26] Since everyone filled the questionnaire, surveyed variables comprise 917 observations.

4 Results

In this section I will verify if the above stated hypotheses hold. I begin by comparing the measures of trust in a pairwise correlation matrix. That will yield first results on the first set of hypotheses which look into correlations between experimental and survey-based measures of trust. To examine the second set of hypotheses on gender differences in trust, the following subchapter provides gendered mean differences of trust variables and socioeconomic characteristics. Afterwards, a regression analysis follows in order to capture the influence of gender and other socioeconomic characteristics on trust under controlled conditions. Thereby, also the third set of hypotheses which deals with the interaction effects of participants' and instructors' sex will be tested on *Trust Behaviour*, *Trustworthiness Behaviour*, *Trust Question* and *Fairness Question*. Investigating the fourth set of hypotheses on receivers' behaviour, I examine the relationship of trust and trustworthiness (i.e. reciprocity), average inequality aversion and the determinants of *Trustworthiness Behaviour*.

In doing so, I am enabled to investigate the three major objectives of this paper. For once, I can compare respective determinants of both experimental and survey-based measures of trust. Moreover, the empirical design incorporates the three major facets of trust (generalised, personalised, institutional) which allows a deeper insight into

[25] Instead of using district fixed effects I also considered village fixed effects. However, multicollinearity issues of village dummies, on the one hand, and better Akaike Information Criterion (AIC) values of district fixed effects compared to village fixed effects specifications, on the other hand, concluded to prefer district fixed effects.

[26] In case only an uneven number of participants showed up for the experiment as agreed and a replacement was unfeasible, the supernumerary participant was selected to the role of the sender and randomly assigned to one receiver. While having 427 receiver observations, for the investigation of *Trustworthiness Behaviour* 15 observations had to be precluded where paired senders sent a zero amount.

individual trust preferences. At the same time, gender-specific behaviour and attitudes are analysed individually and also by controlling for a study design feature, i.e. instructors' gender. To give a better overview, results are briefly summarised throughout this section.

4.1 Correlation of trust measures

In the following, I aim to give a tentative overview of the correlations among the various measures of trust and trustworthiness of this study. Table 3 presents the correlation coefficients. First of all, the experimental results *Trust Behaviour* and *Trustworthiness Behaviour* do not exhibit significant correlation with most of the survey-based measures of trust. Trustworthy behaviour in the experiment has a strong connection to the level of trust it responds to: Experimental *Trustworthiness Behaviour* is decreasing when *Trust Behaviour* is increasing (the higher the amount sent by the sender, the lower are the amounts returned by the paired receiver). It does not indicate a balanced or positive-conditional reciprocity. No survey measure of trust reveals a direct correlation with trustworthy behaviour in the experiment. In fact, *Trustworthiness Behaviour* is negatively correlated with all other trust-related measures with exception of institution-based trust, however, the correlations are never significant. In subsection 4.3.2, I will look at the relationship of trust and trustworthiness in closer detail, and examine whether *Trustworthiness Behaviour* has other determinants besides the amount the receiver is entrusted with.

Hypothesis 1a is supported by the data: I do not find a significant correlation between experimental *Trust Behaviour* and survey-measured preferences by neither *Trust Question* (whether most people can be trusted) nor *Fairness Question* (whether most people are fair). Recalling H1b which proposes a connection of *Trust Behaviour* and *Trust in Strangers*, I find no immediate proof. Interestingly, *Trust Behaviour* is significantly correlated with the indicated *Trust in Indonesians*. Indonesians are a socially closer description of people than strangers. Yet, it is not a precise description of the respondent's social network and thus not interpretable as personalised trust.

Table 3: Correlations of measures of trust

	Trust Behaviour	*Trustworthiness Behaviour*	*Trust Question*	*Fairness Question*	*Trust in Strangers*	*Trust in Muslims*	*Trust in Indonesians*	*Confiding Secrets*
Trustworthiness Behaviour	-0.383*** [0.000]							
Trust Question	0.045 [0.325]	-0.050 [0.310]						
Fairness Question	-0.013 [0.779]	-0.012 [0.807]	0.002 [0.944]					
Trust in Strangers	0.040 [0.381]	-0.050 [0.311]	0.033 [0.321]	0.172*** [0.000]				
Trust in Muslims	0.046 [0.310]	-0.030 [0.550]	0.048 [0.150]	0.196*** [0.000]	0.489*** [0.000]			
Trust in Indonesians	0.109** [0.016]	-0.038 [0.444]	-0.007 [0.829]	0.162*** [0.000]	0.675*** [0.000]	0.436*** [0.000]		
Confiding Secrets	-0.040 [0.382]	-0.051 [0.298]	0.050 [0.129]	0.010 [0.759]	0.027 [0.424]	0.149*** [0.000]	-0.094*** [0.008]	
Trust in Institutions (index)	0.011 [0.813]	0.054 [0.273]	-0.013 [0.704]	0.197*** [0.000]	0.081** [0.014]	0.066** [0.047]	0.095*** [0.004]	-0.001 [0.974]

Note: *P*-values in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Strangers are a supposedly too vaguely defined group of people or a negatively connoted term especially in remote areas with little contact to strangers.[27] As it seems odd that not trust towards strangers but towards Indonesians is positively correlated with *Trust Behaviour* in the experiment, I refer to Glaeser et al. 2000 who state that among a variety of trust questions it is not surprising to find *some* correlation even without a high predictive value of the employed measure. Another explanation regards the experimental design of this study. Participants were told that they would not know with whom they were paired in the experiment, but that it would be someone from the village round they encountered in the introduction part of the experimental session.[28] Therewith, trusting behaviour in the experiment is not completely random and generalised or directed to strangers, but graduated to general Indonesians. I therefore suggest that trusting behaviour in the present experiment is indeed a measure of generalised trust, however, on a socially closer level than complete strangers.

Further, the *Trust Question* is not significantly correlated with any of the other measures of trust. On the contrary, respondents who believe that most people are *fair* at the same time indicated to generally trust the specified groups of people that are *strangers*, *Muslims* and *Indonesians*. Moreover, the *Fairness Question* is positively and significantly correlated with *Trust in Institutions*. The correlations among the measures of trust towards the specified groups of people are also positive and significant. But why is the *Trust Question* not significantly correlated with questions of a similar nature? Perhaps the formulation of this question is too open for various individual interpretations to establish an overall tendency. Probit regressions in subsection 4.3.3 further investigate what determines to agree or disagree with the statement that, in general, most people can be trusted.

The aggregated index *Confiding Secrets* (the measure of personalised trust) is positively and significantly correlated with *Trust in Muslims* and *Trust in Indonesians*, two measures of generalised trust. I summarise these findings in Result 1.

[27] *Orang asing* means both foreigner and unknown or stranger in Bahasa Indonesia.
[28] Johansson-Stenman et al. (2009) designed the experiment in a way that senders from one village were paired with receivers from another village to ensure a very general and anonymous situation.

Result 1: By means of correlation coefficients, I show that *Trust Behaviour* is neither significantly correlated with *Trust Question* and *Fairness Question* nor *Trust in Strangers*, which confirms H1a and disconfirms H1b. Yet, the facets of generalised, personalised and institution-based trust are interrelated, as it has been indicated by McKnight and Chervany (2001) and Stolle (2002). Therewith, the importance to account for all three facets in modelling trust attitudes and behaviour is stressed.

4.2 Gendered mean differences

In a second step, I now turn to the analysis of gender differences related to trust, the second set of hypotheses. I compare mean differences in experimental and survey-measures of trust as well as major socioeconomic characteristics. Table 4 lists mean values for the whole sample and broken down by gender. The average amount sent by all senders is 8,384 GR, which is roughly 42 per cent of the initial endowment and in line with other studies. The second set of hypotheses proposed, on the one hand, that men behave more trusting in the experiment than women (H2a), and on the other hand respond more positively to the *Trust Question* and *Fairness Question* (H2b).

Hypothesis 2a is confirmed by the data, which is in line with the majority of the literature body. Histograms of *Trust Behaviour* are given in Figure 2 for both women and men. The peaks on 5,000, 10,000 and 15,000 GR may be ascribed to the money notes provided (see footnote 21 in subsection 3.2). With 7,503 GR average amounts sent by females, the average for males 8,900 GR is significantly higher.

Figure 2: Amounts sent in the trust experiment by women and men

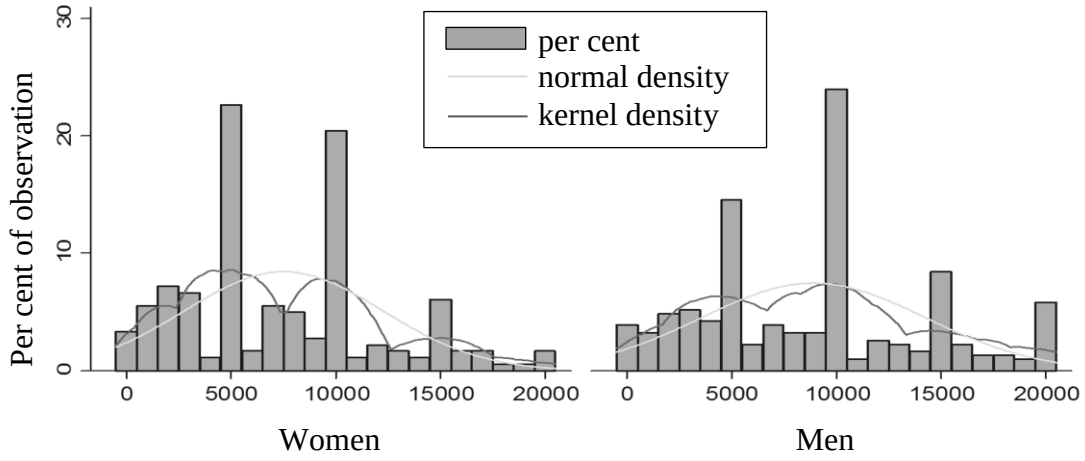


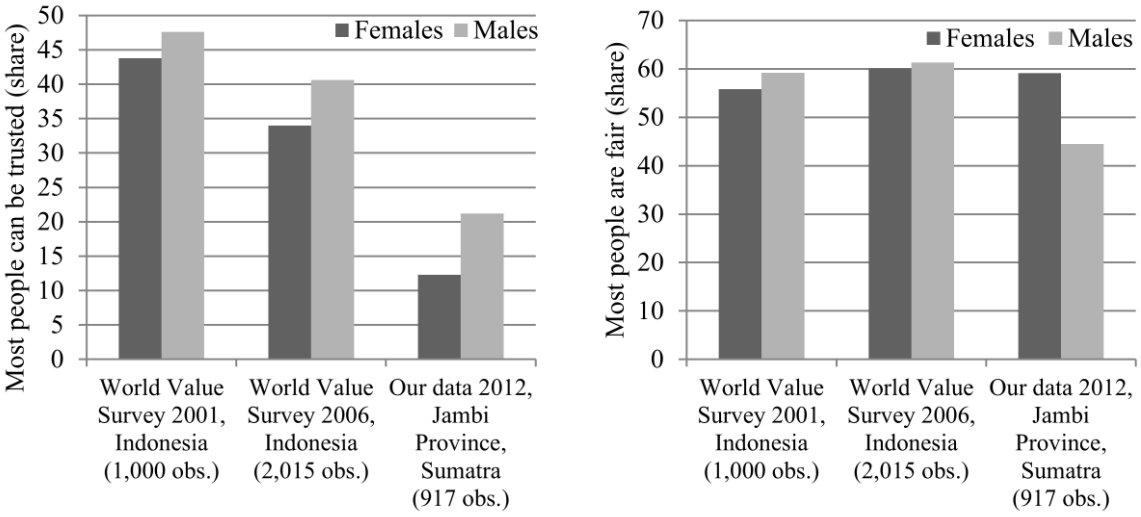
Table 4: Gendered mean differences

	All	Females (1)	Males (2)	*P*-value (1-2)
Experimental results:				
Trust Behaviour	8,384 [5,170]	7,503 [4,731]	8,900 [5,351]	0.007
Observations	490	181	309	
Amount Returned	17,176 [12,728]	16,242 [13,597]	17,741 [12,163]	0.064
Inequity Aversion	393.4 [23,406]	111.8 [23,314]	563.9 [23,504]	0.518
Observations	427	161	266	
Trustworthiness Beh.	0.867 [0.912]	0.839 [0.855]	0.885 [0.947]	0.486
Observations	412	157	255	
Survey results:				
Generalised trust				
Trust Question	0.180 [0.383]	0.125 [0.328]	0.213 [0.409]	0.001
Fairness Question	0.508 [0.496]	0.600 [0.486]	0.454 [0.494]	0.000
Trust in Strangers	0.189 [0.391]	0.190 [0.393]	0.188 [0.391]	0.933
Trust in Muslims	0.444 [0.497]	0.453 [0.499]	0.438 [0.497]	0.659
Trust in Indonesians	0.152 [0.359]	0.146 [0.354]	0.155 [0.362]	0.726
Personalised trust				
Confiding Secrets	0.051 [0.113]	0.055 [0.119]	0.048 [0.109]	0.285
Institutions-based trust				
Local Police	4.051 [1.149]	4.108 [1.145]	4.017 [1.151]	0.117
Jakarta Government	4.232 [1.176]	4.316 [1.096]	4.183 [1.220]	0.127
Jambi Government	4.546 [0.935]	4.550 [0.933]	4.544 [0.938]	0.649
Trust in Institutions	0.819 [0.216]	0.831 [0.206]	0.812 [0.221]	0.165
Observations	917	342	575	
Characteristics:				
Age	40.84 [12.26]	36.36 [10.29]	43.51 [12.56]	0.000
Education	8.141 [3.403]	7.917 [3.488]	8.274 [3.346]	0.140
Insurance	0.219 [0.413]	0.241 [0.427]	0.206 [0.404]	0.218
Oil Palm Farmer	0.207 [0.406]	0.222 [0.416]	0.198 [0.399]	0.387
Contract with POC	0.065 [0.247]	0.056 [0.229]	0.071 [0.258]	0.351
Relationships	2.401 [0.723]	2.533 [0.733]	2.322 [0.707]	0.000
Memberships	1.020 [1.320]	1.173 [1.384]	0.929 [1.273]	0.003
No Betrayal	0.715 [0.450]	0.646 [0.479]	0.755 [0.428]	0.000
Observations	917	342	575	

Note: Standard deviations are given in parentheses. To obtain *p*-values, Wilcoxon-Mann-Whitney test have been executed for experimental results, institution-based and personalised trust measures as well as *Age*, *Education*, *Relationships* and *Memberships*. All other variables show χ^2-test results. See Appendix A.3 for variable descriptions.

Hypothesis 2b cannot be fully confirmed by the research at hand. While, as expected, men do believe more often than women that most people can be trusted, the opposite is true for the *Fairness Question*: Women believe significantly more often than men that most people are fair. In total, generalised fairness perception is higher than generalised trust indicated in the survey. Figure 3 compares the results to Indonesian data from WVS waves 1999-2004 and 2005-2009.[29] In the earlier wave, a fifth of respondents were from the same study side, Jambi Province. The later wave included no regions of Sumatra. The WVS results on the *Trust Question* demonstrate a similar tendency as the data at hand, i.e. women respond less trusting than men. In total, only 17.7 per cent of 2012's survey respondents believe that most people can be trusted compared to 45.7 per cent (2001) and 37.5 per cent (2006) in the WVS waves. This could be a continuation of the upward time-trend already observed from 2001 to 2006. At the same time, the area coverage of all three samples is different and could explain varying observations, along with a different study design. Looking at the *Fairness Question*, the data presents a very different picture in gender differences: Males believe significantly more often that most people would take advantage of them if they got the chance.[30]

Figure 3: Gender differences in *Trust Question* and *Fairness Question*



[29] Indonesia has not been included in the recent WVS wave 2010-2014.

[30] WVS questions offer a third answering option besides agreement and disagreement, i.e. "don't know", which was not offered in the study at hand.

The fourth set of hypotheses considers receivers' behaviour. H4a proposes a balanced reciprocity, H4b that women behave more trustworthy than men, and H4c that women behave more egalitarian than men. First, Table 4 shows that the average *Amount Returned* is much higher than the average amount sent (given as *Trust Behaviour*). Therefore, H4a has to be rejected. Second, the *Amount Returned* is slightly higher among men. Yet, without the reference to the amount they received it is not very informative regarding a gendered difference. Looking at *Trustworthiness Behaviour*, the average amount returned relative to the amount received is only insignificantly smaller for females. Note that if a receiver returns everything she received, *Trustworthiness Behaviour* equals 1. If she returns half of what she received, *Trustworthiness Behaviour* equals 0.5. And if the receiver returns more than she received, i.e. also returns part of her initial endowment, *Trustworthiness Behaviour* is larger than 1. The average ratio of amount returned to amount received is therewith 0.867. Third, *Inequity Aversion* does not reveal a gender difference.

Trust in Muslims, *Trust in Indonesians* and *Trust in Strangers* are insignificantly different between gender groups, as well as institution-based trust and the measure for personalised trust (Table 4). Many basic characteristics reveal no differences either. Yet, males indicated closer *Relationships* towards the rest of the village group, on average. The difference in *Memberships* is supposedly due to the fact that the majority of women indicated to be a member of a local women's association. That is a very common institution in the villages and an equivalent for men does not exist per se. Therefore, the gender difference must not necessarily mean that women, on average, engage more in voluntary associations than men do. One characteristic draws attention: Women indicated to have experienced any form of financial betrayal much more often than men, especially by persons referred to as close ones (details not shown here). The subsequent regression analysis will investigate if such experiences, among others, influence experimental or survey trust and fairness perception. Furthermore, the gender effects can then be examined holding other characteristics constant.

One more test shall be mentioned as a side note: Though the participants have not been told with whom they were paired, they encountered the other participants of the experiment and may have been influenced by the gender composition of the round (a

woman's behaviour among mostly women might be different to among mostly men, and vice versa). Greig and Bohnet (2009), for example, find women's contribution in a public goods game lower within gender heterogeneous groups compared to all-female groups. However, I do not find significant differences in amounts sent or returned that are related to participant's own gender interacting with the gender composition of the group (not reported here). Result 2 summarises the findings of this subsection on the second and the fourth set of hypotheses:

Result 2: By simply comparing mean differences, women are found to send less than men in the experiment, respond less often in the survey that most people can be trusted and respond more often that most people are fair. That confirms H2a, and partly disconfirms H2b. Since the average amount returned is much higher than the average amount sent, H4a has to be rejected. H4b and H4c which propose that women behave more trustworthy and egalitarian than men, respectively, have to be rejected as well: The descriptive analysis does not find significant differences in receiver behaviour compared to men.

4.3 Regression analysis

To analyse *Trust Behaviour* (the amount sent in the experiment), typically OLS or Tobit regressions are employed. Using the data at hand, the results for equation (2) and (3) prove to be very similar for the two regression types; I will present OLS results in the following for *Trust Behaviour* and *Trustworthiness Behaviour*. Further, I employed probit regressions for the dichotomous outcome variables *Trust Question* and *Fairness Question*. OLS modelling assumes no heteroscedasticity of the residuals. A White's test shows that residuals of the regression model for *Trust Behaviour* are homogenous; however, the test reveals heteroscedasticity issues for the *Trustworthiness Behaviour* model. Consequently, I use robust standard errors clustered at the village level in all regression models to deal with unobserved heteroscedasticity. I check for multicollinearity of the variables using variance inflated factors (VIF). VIF of the variables in *Trust Behaviour* and *Trustworthiness Behaviour* regressions are fine (VIF<1.6). Within the regressions on *Trust Question* and *Fairness Question*, however, the two explanatory variables *Trust in Institutions* and *Age* show VIF higher than ten. I tested their exclusion from the models but did

not find distorting changes in results. Therefore, I decided to keep the original model.[31]

The regression analysis starts with the experimental results investigation. First, I look at *Trust Behaviour*, and in the following subsection on *Trustworthiness Behaviour*. Thereupon, I evaluate the results on attitudinal generalised trust and fairness perception measured in the survey.

4.3.1 Sender's behaviour: Trust

In this subsection, I investigate the determinants of the experimental outcome *Trust Behaviour*. Later on, this allows a comparison to the determinants of surveyed *Trust Question* and *Fairness Question* which helps to understand why the two measures of trust are not significantly correlated. Table 5 presents four regression specifications with the dependent variable *Trust Behaviour*. Specifications (1) and (3) include the vector of village control variables ($VILL_j$) while specifications (2) and (4) incorporate district fixed effects. Under controlled individual and village conditions, none of the survey-based measures of trust are related to experimental trusting behaviour. It further confirms H1a of no relationship between *Trust Question* and *Trust Behaviour*. At the same time, however, it disconfirms H1b of a positive and significant relationship between *Trust in Strangers* and *Trust Behaviour*, which is opposed to findings by e.g. Glaeser et al. (2000) and Gächter et al. (2004). Correlation results in Table 3 lead to two additional considerations. First, due to the correlation of *Fairness Question* with other trust-related measures, the specifications have been tested excluding *Fairness Question* from the right-hand side of the equation. Since coefficients and standard errors negligibly changed in magnitude and significance, the original model has been kept. Second, since H1b approaches trust towards strangers, it is further subject to the regression analysis. However, looking at Table 3, *Trust in Indonesians* unveils to be another variable of interest in explaining *Trust Behaviour*. As a consequence, see Appendix A.4 for an OLS regression replacing *Trust in Strangers* with *Trust in Indonesians*.

[31] Excluding *Age*, *Education* turned significantly negative at the 10 per cent level in the *Fairness Question* specification. This is explainable as *Age* and *Education* are usually negatively correlated in a developing context with older age cohorts exhibiting less years of education than younger generations (r=-0.304 with p=0.000 in the present study).

Table 5: OLS regressions, dependent variable *Trust Behaviour*

	(1)	(2)	(3)	(4)
Survey trust:				
Trust Question	450.5	205.0	449.2	168.9
	(553.4)	(553.6)	(555.6)	(556.8)
Fairness Question	-64.71	-144.8	-70.70	-241.9
	(497.4)	(480.1)	(510.2)	(492.7)
Trust in Strangers	334.4	-1.796	330.8	-51.03
	(585.3)	(636.9)	(613.7)	(651.3)
Trust in Institutions (index)	290.7	478.1	294.1	502.8
	(1,222)	(1,315)	(1,225)	(1,308)
Confiding Secrets	-3,403	-2,421	-3,421	-2,763
	(2,202)	(2,334)	(2,228)	(2,362)
Household controls:				
Female Participant	-1,286**	-1,164**	-1,300*	-1,167*
	(558.3)	(579.7)	(674.2)	(682.3)
Female Instructor			24.26	544.1
			(754.2)	(729.4)
Female Participant × Female Instructor			26.75	-36.16
			(1,019)	(1,100)
Age	26.28	27.75	26.32	27.53
	(24.99)	(25.19)	(25.02)	(25.29)
Education	53.92	69.79	53.68	70.81
	(73.07)	(74.79)	(73.46)	(75.58)
Household Size	-66.52	24.03	-67.61	15.96
	(183.5)	(169.3)	(184.9)	(170.1)
Household Assets (PCA)	960.0	426.9	961.1	374.4
	(2,002)	(2,139)	(2,022)	(2,188)
Insurance	1,472***	1,525***	1,476***	1,554***
	(555.4)	(561.2)	(551.4)	(553.5)
Memberships	93.48	203.9	91.44	182.2
	(187.4)	(192.0)	(195.9)	(194.6)
No Betrayal	-254.6	-119.9	-250.1	-87.99
	(571.0)	(585.3)	(560.6)	(582.0)
Contract with POC	374.5	629.2	381.6	703.7
	(773.0)	(915.1)	(794.2)	(934.3)
Village controls:				
POC Close to Village	442.2*		442.7*	
	(227.3)		(228.0)	
Transmigration Village	-191.2		-190.7	
	(564.6)		(565.7)	
Spontaneous Migration Village	-944.0		-935.1	
	(609.1)		(642.6)	
Constant	5,329***	3,899*	6,609***	4,806**
	(1,728)	(2,040)	(1,853)	(2,140)
District fixed effects	No	Yes	No	Yes
Observations	490	490	412	412
Adjusted R-squared	0.022	0.030	0.017	0.027

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Clustered robust standard errors are given in parentheses.

Trust towards Indonesians shows to be positive and significant at the 5 per cent level after controlling for individual and village characteristics. However, it turns insignificant when including district fixed effects. This suggests that the district fixed effects are capturing some omitted variable(s) that otherwise lead to an upward bias in the results.

Age, education, household size and wealth do not significantly affect experimental trusting behaviour. However, having (health) insurance significantly increases the amount sent in the trust experiment by roughly 1,500 GR across all four regression specifications, holding everything else constant. It might suggest, on the one hand, that insurance encourages potentially risky behaviour. On the other hand, the decision to send more is strategically reasoned just as the purchase of an insurance, or insuring a potentially lower than expected income. Interestingly, experiences of financial betrayal do not affect *Trust Behaviour*. Neither does the membership in voluntary organisations. That is not supportive of Putnam's predictions of a higher engagement in voluntary groups to raise generalised trust (as mentioned in subsection 3.3). Having a contract with a palm oil company shows no effect either, which could mean that advantages and disadvantages balance out without a clear average impact. Living in transmigration or spontaneous migration villages compared to living in an indigenous village does not affect experimental trust. The amount of palm oil companies operating close to the village that the participant lives in, though, weakly increases *Trust Behaviour*: Ceteris paribus, on average, a higher market access proposes increased investment behaviour.

According to H2a, being a female sender is expected to have a negative and significant effect in explaining experimental trust. This proposition is supported by the results in specifications (1) and (2) of Table 5. *Female Participant* is negative and significant at the 5 per cent level with further individual characteristics and village conditions held constant. To gain further insights about the underlying channels of this effect I examine the interaction between the participant's gender and the instructor's gender. It might be the case that women or men feel a certain (lack of) social pressure if an instructor of the opposite sex is present. The interaction terms shown in specifications (3) and (4) refer to the base $Male\ participant \times male\ instructor$. Being female stays weakly significant and negative in explaining

experimental *Trust Behaviour*, confirming H2a. Women sent on average and ceteris paribus 1,300 GR less than men (precisely, with a male instructor and incorporating $VILL_j$). The decision on how much to send is not significantly influenced by the gender of the instructor. Thus, H3a proposing higher experimental trust in the face of an instructor of the opposite sex is rejected. I summarise the findings of this subsection in Result 3:

Result 3: Generalised attitudinal trust measured with various survey questions is not correlated with the behavioural level of trust measured by the experiment. Rather, *Trust Behaviour* in the trust experiment is positively influenced by insurance status and greater market access, two attributes generally conducive for an investment environment. Women send less in the trust experiment than men, which is in line with the majority of the literature body. The gender effect persists with the inclusion of several control variables, i.e. district fixed effects and gender of the instructor. Thus, either both sexes have innately different inclinations of trust and investment behaviour, or the underlying cause of a social acquirement lies within an omitted variable.

4.3.2 Receiver's behaviour: Trustworthiness and inequity aversion

In the trust experiment, the role of the receiver can somewhat be compared to the role of the dictator in a dictator game.[32] Receiver's decision on how much to return is an allocation consideration that is, on the one hand, influenced by her inequity aversion. On the other hand, the decision also considers the trusting actions and vulnerability of the sender that partly created the amount the receiver has at hand, which is not given in a common dictator game (Croson and Gneezy, 2009).[33] Therewith, receiver's responsive behaviour is analysed in terms of trustworthiness (or reciprocity, i.e. the relationship between trustworthiness and trust) and inequity aversion.

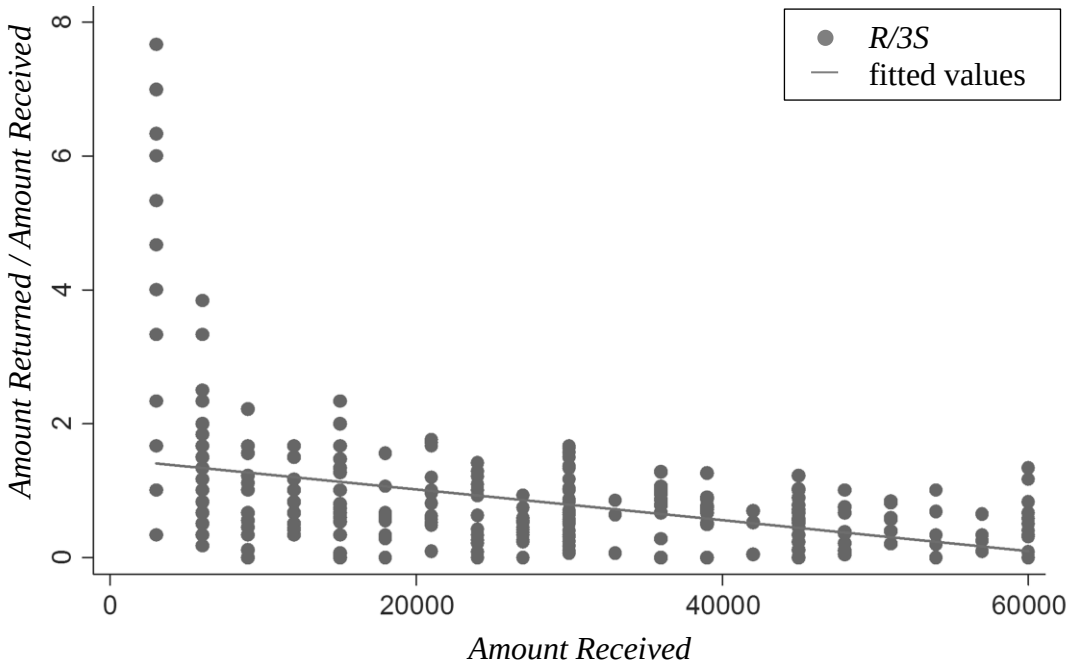
First, I examine trustworthiness. Figure 4 pictures the slope of reciprocity behaviour of 412 receiver observations. It shows that reciprocity has a negative value

[32] In a dictator game, only one player of a pair is endowed an amount which she has to divide between herself and the other player. The other player can only accept the decision. Again, the standard economic model predicts to not send anything; however, this is not the case for a considerable fraction of participants across various dictator game studies. For a review including gendered differences, see Croson and Gneezy (2009).

[33] One fifth of receivers returned more than they received.

represented by the downward sloping line of fitted values. In Tables 3 and 4, I already showed that average *Trustworthiness Behaviour* is $\bar{x} = 0.867$ (s.d.=0.912), and the correlation of *Trustworthiness Behaviour* and *Trust Behaviour* is $r = -0.383$ (p=0.000). Recall that a positive-conditional reciprocity is defined by $\bar{x} > 1$ and $r > 0$, and a balanced reciprocity by $\bar{x} = 1$ and $r = 0$. In the data at hand, however, $\bar{x} < 1$ and $r < 0$ which implies a *negative*-conditional reciprocity.

Figure 4: Negative-conditional reciprocity in Jambi Province



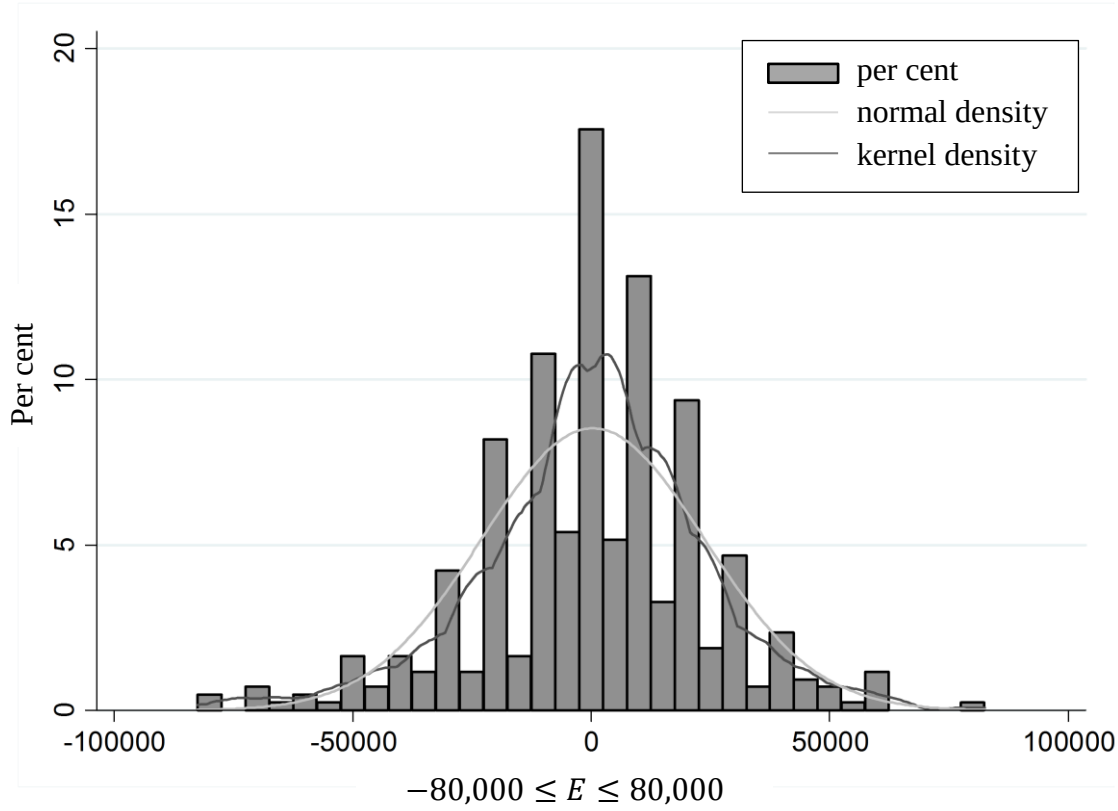
Thus, H4a proposing a balanced reciprocity has to be rejected.[34] Such a relationship could be explained by a preference described by Camerer (2003). He argues that repayment can be lower if temptation is high. The more money the receiver obtains, the higher is the temptation to keep it for oneself. Socially, negative-conditional reciprocity is in general most inefficient because higher trust is punished with relatively lower repayment. The negative and significant correlation holds across education groups (not shown here), which clears concerns about experimental understanding. Further, it holds for both females and males. Nevertheless, it is

[34] Even if I exclude *Trustworthiness Behaviour*-outliers, *r* remains negative and significant: Excluding extreme outliers outside *interquartile range*3* results in *r*=-0.321 (*p*=0.000). Excluding mild outliers outside *interquartile range*1.5* calculates *r*=-0.254 (*p*=0.000).

important to mention that trust paid out for everybody: Senders obtained an average pay-out of 28,686 GR, and receivers 28,293 GR. That is about 143 and 141 per cent of the initial endowment, respectively.

Second, I look at inequity-averse behaviour of the receivers. In Figure 5, the distribution of (in-)equality choices for all receivers (427 observations) is pictured using equation (1) of subsection 2.3. Notably, the median of the almost normal distribution is 0 (mean=393.4). Accordingly, the sample comprises just as much selfless- as selfish-prone receivers, plus 11.01 per cent of receivers that allocated equal pay-outs to their partners and themselves.[35] No differences in educational level or wealth are observed (not shown here).

Figure 5: Receiver's decision: inequality aversion



Finally, I investigate the determinants of *Trustworthiness Behaviour*. Table 6 presents OLS results. Specifications (1) and (3) include $VILL_j$, the vector of village control variables, whereas specifications (2) and (4) incorporate district fixed effects.

[35] In Figure 5, the bar at E=0 further comprises E=-2,000 and E=2,000 which adds up to 17.57 per cent.

Table 6: OLS regressions, dependent variable *Trustworthiness Behaviour*

	(1)	(2)	(3)	(4)
Amount Received (in 1000)	-0.024***	-0.024***	-0.024***	-0.025***
	(0.004)	(0.004)	(0.004)	(0.005)
Survey trust:				
Trust Question	-0.112	-0.077	-0.157	-0.113
	(0.092)	(0.089)	(0.098)	(0.090)
Fairness Question	0.000	0.023	0.043	0.071
	(0.108)	(0.111)	(0.106)	(0.102)
Trust in Strangers	-0.108	-0.077	-0.069	-0.048
	(0.082)	(0.092)	(0.077)	(0.088)
Trust in Institutions (index)	0.107	0.120	0.098	0.106
	(0.172)	(0.146)	(0.165)	(0.140)
Confiding Secrets	-0.578**	-0.623**	-0.567**	-0.592**
	(0.255)	(0.254)	(0.281)	(0.295)
Household controls:				
Female Participant	-0.070	-0.033	-0.280*	-2.72
	(0.118)	(0.126)	(0.168)	(0.165)
Female Instructor			-0.401***	-0.471***
			(0.146)	(0.146)
Female Participant × Female Instructor			0.496**	0.586***
			(0.205)	(0.208)
Age	0.004	0.004	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Education	-0.015	-0.017	-0.019	-0.020
	(0.015)	(0.015)	(0.015)	(0.015)
Household Size	0.029	0.016	0.034	0.023
	(0.020)	(0.022)	(0.021)	(0.022)
Household Assets (PCA)	0.772	0.798	0.787*	0.789
	(0.474)	(0.523)	(0.448)	(0.498)
Insurance	0.078	0.068	0.048	0.039
	(0.115)	(0.128)	(0.116)	(0.130)
Memberships	0.009	0.002	0.032	0.031
	(0.041)	(0.040)	(0.044)	(0.043)
No Betrayal	0.025	0.049	-0.034	-0.014
	(0.125)	(0.130)	(0.128)	(0.136)
Contract with POC	-0.202	-0.207	-0.157	-0.154
	(0.164)	(0.199)	(0.152)	(0.177)
Village controls:				
POC Close to Village	-0.056		-0.045	
	(0.035)		(0.035)	
Transmigration Village	0.073		0.029	
	(0.118)		(0.115)	
Spontaneous Migration Village	-0.182*		-0.234**	
	(0.101)		(0.109)	
Constant	1.190***	1.238***	1.468***	1.496***
	(0.292)	(0.293)	(0.392)	(0.396)
District fixed effects	No	Yes	No	Yes
Observations	412	412	412	412
Adjusted R-squared	0.150	0.136	0.168	0.161

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Clustered robust standard errors are given in parentheses.

Amount Received (in 1000) is significant and negative in explaining *Trustworthiness Behaviour* across all four specifications. With every 1000 GR more received, receiver's trustworthiness decreases ceteris paribus, on average, by 2.35 to 2.45 percentage points. Within the vector of variables of survey-based trust, the measure of personalised trust *Confiding Secrets* exhibits significant impact on *Trustworthiness Behaviour*. Possibly counterintuitively, the more a participant trusts the rest of the group on average, the less trustworthy she behaves. Participants behave particularly selfless towards more distant acquaintances, perhaps as a signal of inviting kindness or as somewhat cautious behaviour due to unfamiliarity. Generalised and institution-based trust attitudes do not affect receivers' trustworthiness in this study.

Participant's gender does not per se affect *Trustworthiness Behaviour* in specifications (1) and (2). Thus, H4b of women being more trustworthy in the experiment than men cannot be confirmed. However, the interaction terms in specifications (3) and (4) reveal differences in female and male behaviour depending on the instructor's sex. Both women and men exhibit a higher trustworthiness when they are being instructed by an enumerator of the same sex, compared to being instructed by a member of the opposite sex: On average and ceteris paribus, men are 40.1 percentage points less trustworthy when the instructing enumerator was female rather than male, and women are 9.5 percentage points less trustworthy when the instructing enumerator was male rather than female. As mentioned above, Croson and Gneezy (2009) conclude that women are more sensitive to changes in the study design than men. Here, interestingly, men have a stronger reaction to changes in this particular experimental design feature than women. Women with a female instructor also exhibit an 18.5 percentage point lower *Trustworthiness Behaviour* than men with a male instructor.[36]

Concerning individual and village variables, the wealth indicator *Household Assets (PCA)* shows a weakly significant influence on *Trustworthiness Behaviour* in specification (3). The more assets a household possesses, the more the participant returns in the trust experiment relative to the amount she received. However, even though it is quite robust in magnitude in all four specifications it is only significant in

[36] $Female\ participant(-0.280) + Female\ instructor(-0.401) + Female\ participant \times Female\ instructor(0.496) = 0.185.$

one. Lastly, a person living in a *Spontaneous Migration Village* behaves less trustworthy than a person living in an indigenous village or a *Transmigration Village*. Transmigrant villagers do not show trustworthiness levels different from indigenous villagers. The reason could be that villages created through spontaneous migration did not experience relocation-supportive provisions by the government as opposed to transmigration villages. Thus, potential trust building attributes, such as favourable economic facilitations in transmigration villages are not prevalent in spontaneous migration villages. Compared to indigenous villages, inhabitants of spontaneous migration villages might be less socially and regionally integrated and therefore less trustworthy towards the other village inhabitants. In Result 4, I summarise the findings on trustworthy and inequity-averse behaviour of the receivers:

Result 4: The sample comprises just as much selfish- as selfless-distributing receivers, and a ninth part of receivers that distribute the exact same amount to herself and the sender. On average, trust pays out, and both senders and receivers benefit from investment. Nevertheless, reciprocal behaviour follows a negative-conditional relationship which could be explained by a higher temptation to keep the money for oneself if a relatively high amount is received. The gender of the instructor proves to be important for both female and male trustworthiness. Instructions by a member of the same sex lead to significantly higher amounts returned relative to amounts received. These effects of opposite direction compensate one another and show an overall effect of no gender difference in observed trustworthiness. Lastly, residents of spontaneous migration villages behave less trustworthy than residents of indigenous and transmigrant villages.

4.3.3 Survey trust

In Table 3 in subsection 4.1 I found the experimental measure of generalised trust to be uncorrelated with the survey-measure of generalised trust. The following regression specifications analyse whether survey-based trust has different determinants than experimental trust. Thus, I employ a similar set of independent variables for *Trust Question* as in the previous OLS regressions on the trust experiment results. Regression analysis may also enlighten the unexpected sign for

gendered mean difference in the *Fairness Question* (why women exhibit less attitudinal trust, but a higher fairness perception than men, see Table 4).

Marginal effects from probit regressions are presented in Table 7. In specifications (1) and (3) it is controlled for village variables, and alternatively include specifications (2) and (4) district fixed effects. By controlling for individual and village characteristics, *Trust in Strangers* is weakly significant but has a positive marginal effect on both *Trust Question* and *Fairness Question*. However, it is not robust to the inclusion of district fixed effects. This suggests that some relevant district specific factors could be omitted and their omission leads to an upward bias in *Trust in Strangers*. The measure of personalised trust *Confiding Secrets* does not correlate with either of the two outcome variables. A higher indicated *Trust in Institutions* corresponds to a higher generalised fairness perception but is not significantly related to generalised survey trust. As suggested in subsection 2.2, fairness perception is a potential supplement of trust in order to achieve mutual benefit between cooperating parties. Therefore, investments in trustworthy institutions, for example, can increase or create a mutual benefit through increased fairness perception (but not through increased generalised attitudinal trust).

Table 7 presents the interaction effects of *Female Participant* and *Female Interviewer* while Appendix A.5 shows the impact of participant's gender without an interaction. The overall gender effects under controlled conditions in Appendix A.5 support the findings from subsection 4.2: Women believe significantly more often than men that one has to be careful in dealing with people rather than to trust most people. At the same time, though, they believe more often than men that most people are fair rather than they would take advantage of them if they got the chance. H3b expects participants to respond more positive to *Trust Question* and *Fairness Question* when interviewed by an interviewer of the opposite sex. Table 7 shows the difference between women and men when they are interviewed by a male and a female enumerator, respectively. With a male enumerator, women and men do not give different answers to both questions, on average. However, a female enumerator has significant influence on female participants in both questions: Women respond with less generalised trust and higher generalised fairness perception than men. Overall, H3b has to be rejected. Yet, I observe an effect from female instructors.

Table 7: Marginal effects from probit regressions on *Trust Question* & *Fairness Question*

	Trust Question		Fairness Question	
	(1)	(2)	(3)	(4)
Survey controls				
Trust Question			0.029	0.038
			(0.039)	(0.036)
Fairness Question	0.020	0.030		
	(0.026)	(0.024)		
Trust in Strangers	0.054*	0.044	0.100**	0.056
	(0.032)	(0.030)	(0.044)	(0.044)
Trust in Institutions (index)	-0.083	-0.075	0.349***	0.381***
	(0.051)	(0.053)	(0.078)	(0.075)
Confiding Secrets	0.158	0.135	-0.006	0.002
	(0.114)	(0.109)	(0.139)	(0.143)
Household controls				
Female:				
with *Male Interviewer*	-0.037	-0.060	0.038	0.036
	(0.030)	(0.037)	(0.056)	(0.056)
with *Female Interviewer*	-0.080**	-0.063*	0.150***	0.117**
	(0.038)	(0.038)	(0.046)	(0.048)
Age	0.003***	0.003**	-0.001	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)
Education	-0.007*	-0.006	-0.008	-0.008
	(0.004)	(0.004)	(0.006)	(0.005)
Household Size	-0.001	0.005	-0.005	-0.002
	(0.008)	(0.008)	(0.010)	(0.010)
Household Assets (PCA)	-0.010	-0.077	-0.105	-0.148
	(0.121)	(0.111)	(0.166)	(0.161)
Insurance	-0.052	-0.028	-0.044	-0.054
	(0.035)	(0.032)	(0.042)	(0.040)
Memberships	0.004	-0.007	0.083***	0.062***
	(0.011)	(0.011)	(0.015)	(0.015)
No Betrayal	0.022	0.021	0.145***	0.139***
	(0.031)	(0.029)	(0.038)	(0.038)
Contract with POC	0.043	0.001	0.086	0.094
	(0.048)	(0.048)	(0.071)	(0.066)
Village controls				
POC Close to Village	-0.006		0.009	
	(0.016)		(0.019)	
Transmigration Village	-0.048		0.019	
	(0.042)		(0.056)	
Spontaneous Migration Village	-0.084**		0.067	
	(0.041)		(0.057)	
District fixed effects	No	Yes	No	Yes
Observations	909	909	901	901
Pseudo-R^2 of probit	0.053	0.114	0.148	0.191

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Clustered robust standard errors are given in parentheses.

Being female and interviewed by a female enumerator reduces the probability of a positive trust response by 6.3 to 8.0 per cent, compared to being male and interviewed by female enumerator. On the other hand, the probability of a positive fairness response increases by 11.7 to 15.0 per cent for female participants who are interviewed by a female enumerator, compared to male participants interviewed by a female enumerator. Hence, the gender difference can be ascribed to the female interviewers; therewith, they trigger the unexpected gender difference between generalised attitudinal trust and fairness perception.

Age has a positive, robust influence on attitudinal generalised trust which has been found in various other trust studies (e.g. Putnam, 1995; Glaeser et al., 2000). However, age is uncorrelated with generalised fairness perception. *Memberships* in voluntary associations is highly significant in explaining *Fairness Question* but not relevant in explaining generalised survey trust. Further, never having experienced any form of financial betrayal significantly increases generalised fairness perception as well. Living in a spontaneous migration village not only decreased trustworthiness behaviour (see subsection 4.3.1), it also reduces generalised attitudinal trust significantly. The findings of this subsection are summarised in Result 5:

Result 5: Gender differences in survey responses are biased by the gender of the interviewer. While women and men do not respond differently when interviewed by a male enumerator, differences occur when being interviewed by a female enumerator. Survey trust has very different determinants than experimental trust which explains why the two measures do not show consistent results in most studies of trust. Older age cohorts believe more often that most people can be trusted, and the believe declines within spontaneous migration villages. Generalised fairness perception increases, on average, with a higher institution-based trust, engagement in voluntary associations and not having experienced financial betrayal.

One further issue is addressed at this point: Measuring trust attitudes and behaviour usually estimates only a small part of variance explained by the regressions (see also e.g. Glaeser et al., 2000; Gächter et al., 2004). In the *Trust Question* specifications, *Pseudo-*R^2 increased from five to eleven per cent with the inclusion of district fixed effects' unobserved variables. However, adjusted R^2 of *Trust Behaviour* remains below three per cent. Yet, adjusted R^2 of the *Fairness Question* specifications is

relatively high due to three strong explanatory variables in the regressions (i.e. *Trust in Institutions*, *Memberships*, *No Betrayal*). Similarly, since a large part of *Trustworthiness Behaviour* is explained by *Amount Received*, the adjusted R^2 is fairly high between 13 and 16 per cent in the respective specifications.

5 Conclusion

The story of economic development and social capital is a scientific puzzle with a few missing pieces. Certainly, social capital (i.e. the norms a society or community internalises) of an economy appears crucial for its growth and development. Generalised trust and trustworthiness are an important part of social capital which matter in economic contexts. For example, a person with higher generalised trust may have a higher inclination and willingness to engage in economic activities (like investments, building business partnerships etc.) because her perceived risk of failure or exploitation is lower. Understanding what drives generalised trust at the individual level is important to imply community-wide settled norms and values. But how to grasp these intangible values in order to empirically put them in an economic context?

Measuring trust has been approached by asking about trust attitudes in large-scale surveys (e.g. World Value Survey) and by behavioural examination of participants in trust experiments (introduced by Berg et al., 1995). By investigating the determinants of the survey-based and the experimental measures, this thesis analyses if one measure can be preferred over the other. In doing so, a trust experiment and a survey including questions on trust attitudes are conducted in rural Jambi Province, central Sumatra in Indonesia, with smallholder farmers. On the one hand, the study offers some evidence that the decision in a trust experiment is economically reasoned: Possessing insurance and a greater market access increase the level of trust exhibited in the experiment. Insurance and market access are two attributes that generally contribute to a favourable investment environment. On the other hand, survey questions about trust are criticised to be rather abstract attitudinal measures (Putnam, 1995; Glaeser, 2000). In this regard, I find survey-measured trust attitudes to distinctively increase with age, but without offering an economic foundation. Furthermore, the two measures are not significantly correlated with each other.

Therefore, I find that experimental and survey-based trust elicit different facets of social preferences and seem to be complementary in nature. Future research on trust should be aware of this especially when dealing with the link between social capital and economic development. This study suggests that it is more plausible to proxy trust related to individual economic behaviour using the experimental measure instead of the self-indicated trust attitude.

Experimental results, however, have a concerning disadvantage: Results depend in large parts on the experimental design itself (Johansson-Stenman et al., 2005). Various experimental studies observe gender differences in trust (see meta-analysis by Croson and Gneezy, 2009), and implications are rashly drawn from their conclusions (such as women are more trustworthy than men, and more emotional in their trusting or investment decisions). Previous studies also provide evidence that the gender of the experimental partner and the enumerators in general influence trusting decisions of the participant (Scharlemann et al., 2001; Johansson-Stenman et al., 2009). Thus, I control for a determining feature in the study design in order to obtain less distorted results: the sex of the instructing and interviewing enumerator. Doing so results in no effect on individual trusting decisions; however, individual trustworthiness increases in the presence of an enumerator of the same sex. Besides that, I show that not only experimental decisions, but also survey responses are influenced by the design feature that is enumerator's gender: Answers of female participants to generalised trust and fairness questions only reveal differences from male answers when the enumerator is female as well. With a female interviewer, men indicate a higher generalised trust attitude than women, maybe due to a positive influence of attraction in the face-to-face interview.

Out of these findings I draw two major implications. First, experimental trust behaviour possesses a logical connection to engaging in economic activities regarding its economic determinants, as opposed to self-indicated trust attitudes. Second, when analysing experimental and survey results, I suggest to control for determining features of the study design in order to obtain reliable, replicable and comparable results which many studies are missing. Third, for future research it would be interesting to establish a relationship of additional economic determinants of trust behaviour, for example whether the participant has built business

partnerships in the past and how successful the cooperation was. In this study, questions about actual economic behaviour are not addressed, but they could strengthen the link of actual economic behaviour and experimental behaviour as well as giving more insights into gendered differences in trust behaviour. The role of favourable institutions can be further analysed to examine a practical implementation of trust building approaches (availability of and access to relevant institutions, like credits and savings institutions, experiences in contract enforcement etc.). In that way, appropriate measures of trust can contribute to detect practical trust building approaches that foster economic engagement at the individual level, and potentially relate to economic development at the community-level.

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Appendix

Appendix A.1: Sender and receiver instructions

1. You are a **Sender** in this game.	1. You are a **Receiver** in this game.
2. Your partner, the Receiver, is one of the people in the other room, but you don't know who it is.	2. Your partner, the Sender, is one of the people in the other room, but you don't know who it is.
3. Both of you have 20,000 in the beginning.	3. Both of you have 20,000 in the beginning.
4. You are now invited to send any share of the 20,000 to the receiver.	4. The Sender decided to send you [*x*]$ and kept [*y*]$ for herself.
5. So, you have to decide, how much money you want to keep for yourself, and how much money you want to send.	5. Because the amount sent was tripled, you receive *[x*3]*$ additionally to your 20,000.
6. Remember, the amount that you send will be tripled for the receiver.	6. Here are your 20,000 plus the *[x*3]*$ from the Sender. So now you have *[total]*$, and 2 envelopes.
7. Here are your 20,000 and 2 envelopes.	7. Now you can decide if you want to return money to the sender.
8. In the envelope with "Keep" you put the share you want to keep for yourself.	8. In the envelope with "Keep" you put the share you want to keep for yourself.
9. In the envelope with "Send" you put the share you want to send to the Receiver.	9. In the envelope with "Send" you put the share you want to return to the Sender.
10. Please make your decision in private, and then put the envelopes in the box.	10. Please make your decision in private, and then put the envelopes in the box.

Appendix A.2: Exit survey in English

0.1	Village Name		0.3	Respondent Name	
0.2	Village ID		0.4	Repondent ID	

1.01	Sex	**1 = male; 2 = female**	⌊__⌋
1.02	Age		⌊__⌋
1.03	Years of Education		⌊__⌋
1.04	HH-Size		⌊__⌋
1.05	Parents	Do you have children? **1=yes; 2=no**	⌊__⌋
1.06	Religion	**1=Islam; 2=Hindu; 3=Protestan; 4=Katolik; 5=Pantekosta; 6=Buddha; 7=Konghucu; 8=Other, specify:_____**	⌊__⌋
1.07	Main Crop	**1=Palm Oil; 2=Jungle Rubber; 3=Rubber Plant; 4=Others, specify:_____**	⌊__⌋
1.08	Daily working hours	How many hours do you work per day, on average? *(in hours)*	⌊__⌋
1.09	Working days per week	How many days do you work per week? *(in days)*	⌊__⌋
1.10	Contract	Do you have a contract with an Oil Palm Company? **1=yes; 2=no**	⌊__⌋
1.11	HH assets	Do you have the following assets in your household? □ **Air condition** □ **Cellphone** □ **Computer** □ **Generator** □ **Motorbike** □ **Car** □ **Truck**	
1.12	Insurance	Do you have a health insurance? **1=yes; 2=no**	⌊__⌋
1.13	Information	Are you using one of the following sources for information and news? □ **Newspaper** □ **News in television** □ **Internet café** □ **Radio** □ **Other, specify:_____**	

2. Are you a member of one of the following organizations/groups? **1= YES , 2 = NO**

2.01	Farmer Cooperative	⌊__⌋	2.06	Youth Group	⌊__⌋
2.02	Credit/ Saving Association	⌊__⌋	2.07	Sport Group	⌊__⌋
2.03	Village council/government	⌊__⌋	2.08	Political Group	⌊__⌋
2.04	Women's group	⌊__⌋	2.09	Environmental Group	⌊__⌋
2.05	Elderly Group	⌊__⌋	2.1	Other, specify:_____	⌊__⌋

3. Please specify the following for the other participants from the game.

				If Relation =4, skip the rest		
				a	b	c
	Name (The names will be filled in beforehand by enumerator)	ID	Relation **1=Family 2=Friend 3=Neighbor 4=Don't know him/ her**	Would you tell him/her a secret about family matters? **1=YES; 2=NO**	Received gift/ loan last 3 months? **1=YES; 2=NO**	Granted gift/loan last 3 months? **1=YES; 2=NO**
3.1			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.2			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.3			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.4			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.5			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.6			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.7			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.8			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋
3.9			⌊__⌋	⌊__⌋	⌊__⌋	⌊__⌋

4.1	Do people talk about the other people in the village, so that if a person does something from, the neighborhood will know about it? **1=yes; 2=no**	⌊__⌋
4.2	Generally speaking, which of the following people do you feel you could trust not to cheat you? *(Please mention everything that applies!)* **1= members of one's religion** **3=foreigners** **2=citizens of one's country** **4=if subject does not trust any of the above groups**	⌊__⌋ ⌊__⌋ ⌊__⌋
4.3	In general, do you think… **1 = most people can be trusted; or 2 = I have to be careful with people?**	⌊__⌋
4.4	In general, do you think… **1 = people would try to take advantage of you; or 2 = people are fair?**	⌊__⌋
4.5	Have you ever been betrayed with money by a …? **□ stranger** **□ close one** **□ never**	
4.6	In general, how much trust do you have in the local police to help you if you need them? **1=trust** **3=no trust, no distrust** **5=distrust** **2=little trust** **4=little distrust**	⌊__⌋
4.7	Overall, how much trust do you have in the Government of Jakarta? **1=trust** **3=no trust, no distrust** **5=distrust** **2=little trust** **4=little distrust**	⌊__⌋
4.8	Overall, how much trust do you have in the Government of Jambi? **1=trust** **3=no trust, no distrust** **5=distrust** **2=little trust** **4=little distrust**	⌊__⌋

Appendix A.3: Variable explanation

Variable name	Description	Answering options	Mean [s.d.]
Age	Respondent's age in years		40.843 [12.255]
Confiding Secrets	Indication "Would you tell her/him a secret about family matters?" about all other participants of the village round reported by respondent (arithmetic mean of all indications; $0 \leq$ *Confiding secrets* ≤ 1)	0 = no; 1 = yes	0.051 [0.114]
Contract with POC	Respondent has a contract with a palm oil company	0 = no; 1 = yes	0.065 [0.247]
Education	Respondent's years of schooling		8.141 [3.403]
Female	Respondent's gender	0 = male; 1 = female	0.373 [0.484]
Female Instructor	Gender of the instructor of the trust experiment	0 = male; 1 = female	0.383 [0.486]
Female Interviewer	Gender of the interviewer of the questionnaire	0 = male; 1 = female	0.617 [0.486]
Gender Composition	Share of males in each village round		0.373 [0.257]
Household Size	Number of household members the respondent lives with		4.580 [1.631]
Household Assets (PCA)	Variable constructed using principle component analysis of the following assets the respondent's household possesses: mobile phone, computer, air condition, motorbike, car, truck, generator		0.192 [0.109]
Insurance	Whether the respondent has a health insurance or not	0 = no; 1 = yes	0.219 [0.413]
Memberships	Number of voluntary associations the respondent is a member of		1.020 [1.320]
No Betrayal	Superordinate variable *Betrayed in the past*: 'Have you ever been betrayed in the past financially by a…?'	1 = stranger; 2 = acquaintance; 3 = close one; 4 = never	
	Sub-dummy *No betrayal*: 'Have you never been betrayed financially?'	0 = else; 1 = never	0.715 [0.450]
Oil Palm Farmer	Respondent's main crop is palm oil	0 = no; 1 = yes	0.207 [0.406]
Relationships	Relationship towards all other participants of the village round reported by respondent (arithmetic mean of all indications; $1 \leq$ *Relationships* ≤ 4)	1 = family; 2 = friend; 3 = neighbour; 4 = unknown	2.405 [0.726]
Trustworthiness Behaviour	*Amount Returned* / *Amount Received*		0.867 [0.912]

Appendix A.4: OLS regressions, dependent variable *Trust Behaviour*, including independent variable *Trust in Indonesians*

	(1)	(2)
Survey trust:		
Trust Question	450.3	159.8
	(551.3)	(553.3)
Fairness Question	-118.4	-276.3
	(509.7)	(489.5)
Trust in Indonesians	1,250**	851.6
	(619.8)	(723.2)
Trust in Institutions (index)	191.4	424.3
	(1,207)	(1,295)
Confiding Secrets	-2,909	-2,398
	(2,249)	(2,400)
Household controls:		
Female	-1,213**	-1,145*
	(559.8)	(582.6)
Female instructor	-19.28	486.0
	(565.42)	(531.2)
Age	27.26	28.05
	(25.36)	(25.45)
Education	57.48	72.93
	(72.17)	(74.18)
Household Size	-83.83	1.852
	(188.1)	(171.3)
Household Assets (PCA)	945.1	335.5
	(1,961)	(2,134)
Insurance	1,423**	1,513***
	(556.6)	(564.1)
Memberships	34.49	144.1
	(196.9)	(195.0)
No Betrayal	-290.7	-102.3
	(553.3)	(573.7)
Contract with POC	223.3	557.3
	(788.3)	(916.0)
Village controls:		
POC Close to Village	400.1*	
	(212.1)	
Transmigration Village	-178.0	
	(561.8)	
Spontaneous Migration Village	-1,018	
	(635.8)	
Constant	5,539***	3,688*
	(1,746)	(2,075)
District fixed effects	No	Yes
Observations	490	490
Adjusted R-squared	0.025	0.032

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Clustered robust standard errors are given in parentheses.

Appendix A.5: Marginal effects from probit regressions for *Trust Question* and *Fairness Question* without interaction of interviewer's gender

	Trust Question		Fairness Question	
	(1)	(2)	(3)	(4)
Survey controls				
Trust Question			0.013	0.036
			(0.041)	(0.036)
Fairness Question	0.009	0.030		
	(0.027)	(0.024)		
Trust in Strangers	0.045	0.044	0.135***	0.086**
	(0.031)	(0.030)	(0.040)	(0.041)
Trust in Institutions (index)	-0.081	-0.075	0.357***	0.393***
	(0.052)	(0.053)	(0.076)	(0.072)
Confiding Secrets	0.136	0.136	0.073	0.129
	(0.117)	(0.111)	(0.149)	(0.152)
Household controls				
Female	-0.068**	-0.063**	0.117***	0.097***
	(0.028)	(0.029)	(0.037)	(0.037)
Age	0.003***	0.003**	-0.001	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)
Education	-0.007	-0.006	-0.009*	-0.010*
	(0.004)	(0.004)	(0.005)	(0.005)
Household Size	-0.001	0.005	-0.005	-0.002
	(0.008)	(0.008)	(0.010)	(0.010)
Household Assets (PCA)	-0.023	-0.077	-0.083	-0.145
	(0.122)	(0.111)	(0.167)	(0.162)
Insurance	-0.047	-0.028	-0.059	-0.070*
	(0.036)	(0.033)	(0.041)	(0.040)
Memberships	-0.001	-0.006	0.102***	0.080***
	(0.011)	(0.011)	(0.014)	(0.014)
No Betrayal	0.035	0.021	0.114***	0.114***
	(0.032)	(0.030)	(0.040)	(0.038)
Contract with POC	0.047	0.000	0.075	0.085
	(0.047)	(0.048)	(0.068)	(0.065)
Village controls				
POC Close to Village	-0.004		0.008	
	(0.016)		(0.021)	
Transmigration Village	-0.042		-0.009	
	(0.040)		(0.059)	
Spontaneous Migration Village	-0.072*		0.029	
	(0.041)		(0.061)	
District fixed effects	No	Yes	No	Yes
Observations	909	909	901	901
Pseudo-R^2 of probit	0.048	0.114	0.127	0.167

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. Clustered robust standard errors are given in parentheses.

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Affirmation

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