Introduction

This thesis consists of four self-contained papers. The first paper is in the field of development economics, while paper two, three and four are in the field of behavioral economics using laboratory experiments.

Chapter 1: Studying the short and long run effects of the colonial rule on Java

In the last decades, a research focus in development economics has been on the long run consequences of the colonial rule on economic outcomes. Scholars like Engerman and Sokoloff (2000) and Acemoglu, Johnson and Robinson (2001, 2002) have shown how specific patterns of historical exploitation have adverse effects on the long term economic development of a country. This has been especially the case in colonies where the economic system was based on the extraction of natural resources, as in large parts of Africa, Latin America and Southeast Asia. Here, norms of corrupt practices and the capture of resources often stayed in place after the end of the colonial era and were transmitted and practiced by the elites of the newly independent countries. Even today, a substantial part of the difference in economic wealth and political rights can be explained by the historical regime (Acemoglu et al. 2005).

A completely different strand of literature focuses on the differing labor market outcomes for men and women. Many empirical contributions have found that the decision to participate in the labor market for women depends on the gender balance in society. For example, the draft of male soldiers during World War II in the United States led to an increase in the share of women participating in the formal labor market that also persisted after the end of the war. The mechanism also works in the opposite direction. The theoretical argument is that in traditional societies, the sex ratio affects the likelihood of getting married and as a consequence also labor market outcomes. If there are relatively few women, they have an advantage to bargain over household outcomes and can increase their consumption and leisure (Becker 1991). Evidence for this hypothesis has been found among immigration to the United States in the first half of the 20th century. Here, in most ethnic groups the number of men exceeded the number of women. This increased the chances of women to get married and at the same time they had higher levels of leisure (Angrist 2002).

In **paper one** (together with Ola Olsson and Michele Valsecchi) we combine the two strands of literature and analyze the economic effects of the Dutch colonial rule on Java, Indonesia, with a special focus on female labor market outcomes. In the study, we focus on the period from 1830 to 1870 when the so called Cultivation System was in place. During this time, large parts of the population were forced to grow export crops for the colonial power. Sugar and coffee were by far the most important crops cultivated and at the peak of the Cultivation System, revenues of these cultivations stood for over 30 percent of the government budget of the Netherlands (Fasseur 1992). The cultivation of both crops was a severe burden for the native population and lead to hardship. Especially the cultivation of sugar required a lot of heavy physical labor that was carried out mainly by male workers. In sugar cultivating districts, the sex ratio (males/females) became female biased as a consequence, whereas it stayed largely balanced in coffee growing areas. At the same time, major investments in road and railway infrastructure were undertaken by the colonial rulers. This enables us to distinguish two different channels of increased labor market opportunities for women. First, the decrease in the male to female ratio decreased women's household bargaining power in the short run by decreasing their likelihood of marriage and forced them to participate in the labor market. This can lead to an increase in the labor supply of women in the short, but also in the long run due to an emancipation of women and a change in culture and norms. Second, the infrastructure improvements promoted the industrialization of the adjacent areas and lead to an increase in the (female) labor demand outside of the agricultural sector. While we find evidence for the labor supply channel in the short run at the end of the colonial era on Java, this effect seems to have dissipated in the long run. Here, we find that historical infrastructure investments are associated with increased labor market opportunities for both men and women in line with the labor demand channel.

Chapter 2, 3 and 4: The crucial role of information in human decision making

Paper two, three and four have in common that they analyze how individuals access information when making decisions. Further, they also use the same empirical approach, namely the setting of a laboratory experiment. Laboratory experiments have been criticized for various reasons, one of them being the uncertain external validity of the results. However, an important advantage of laboratory experiments is the control of the conditions under which the decisions are made (Falk and Fehr 2003). This is especially important in the studies at hand, since we want to guarantee that individuals only base their decisions provided to them by the experimenters.

Paper two and four analyze situations where individuals can decide to access information or not that is potentially important to them. In contrast, paper three focuses on whether groups are better in using a given set of information when making an environmental investment decision.

According to standard economic theory, rational actors should seek and access information, if it has the potential to improve their decision-making and is freely available. This is also what we see in many daily situations, where people behave in line with this prediction. Since humans are intrinsically curious, it has been found that in some cases individuals are even willing to pay for information that obviously cannot improve their decisions (Loewenstein 1994; Powdthavee and Riyanto 2015). At the same time, there exist situations where people intentionally forgo information even if it might be highly relevant for their future.

For example, a high rate of individuals that had taken a test for HIV did not return to pick up the result of the test and therefore avoid the risk to learn about an infection (Sullivan et al. 2004). Another example shows that managers that were confronted with arguments that were not in line with decisions they had taken previously were likely to neglect this new information (Jonas et al. 2001; Scherer et al. 2013). These are just two examples of a broad range of situations where individuals ignore costless (or low cost) information and that have been studied by psychologists and economists (for a review, see Golman et al. 2017 and Hertwig and Engel 2016).

In **paper two**, I analyze the influence of additional information on the effectiveness of ethically certified goods on the purchasing decision of consumers. In the first part of the paper, this information is provided at no cost to consumers, but the way they can access it differs. To one group of consumers it is displayed automatically whereas another group has to make an active choice in order to see the information. The research question is whether consumers in this latter group ignore the additional information in a systematic manner and if it influences their product choice between the certified and uncertified alternative. The underlying mechanism for ignoring the information might be that individuals would feel obliged to buy an ethically certified good in case they learn that it includes a relatively high contribution to the primary producer of the good. If they instead ignored the information about the effectiveness, they might buy a non-certified good without feeling uncomfortable of not behaving pro-socially. Such behavior to ignore information about the consequences of one's actions consciously has been found in a variety of settings (see for example. Dana et al. 2007 and Kajackaite 2015) and has been explained by self-image concerns of individuals or the desire to comply with social norms. The contribution of this paper is to apply previous findings in the theoretical and empirical literature to the market of ethically certified products, such as the Fairtrade certificate. The main finding is that individuals do not ignore costless information about the effectiveness of these certificates in a systematic manner. Thus, providing such information on the packaging could make consumers' decisions between ethically certified and non-certified products more well-founded.

In the second part of the paper, the price sensitivity of consumers for information is analyzed. Once a small cost for information is introduced, the share of consumers who chooses to access it decreases drastically. More importantly, also the market share of the certified product decreases when the cost is introduced compared to consumers that continued to have free access to it. Thus, even though consumers are willing to make use of additional information of ethical certificates in their purchasing decisions in case it is for free, costly effort might be an obstacle. For example, the opportunity cost of accessing additional information on a webpage might be already too high for consumers.

In **paper three** (together with Magnus Hennlock, Åsa Löfgren and Conny Wollbrant) we analyze whether investment decisions differ between individuals and groups under two different environmental policy instruments. When policy makers want to reach certain environmental goals, such as limiting the emissions of a certain pollutant, economists in general favor price instruments (such as emission permits or taxes) over performance standard instruments (such as a ban of pollution levels above a certain threshold). Price instruments allow firms to adjust their level of production and pollution in such a way, that firms, for which the emission reduction is relatively cheap, reduce their emissions to a larger extent compared to firms that have relatively high costs of emission reduction. If the price for pollution is set correctly, it guarantees an efficient level of production (Baumol 1972). However, optimizing the level of pollution (and production) under a price instrument can be more demanding for firms than simply adjusting pollution levels to prescribed performance standards.

Against this background, Hennlock et al. (2017) asked industry managers to make an investment decision to reduce emissions of a hypothetical firm under different policy instruments, namely two price instruments and a performance standard. The authors found that with a price instrument in place, most managers minimized the average cost of emission abatement and thus deviated from the prescription of standard economic theory to minimize the marginal cost of emission abatement. In contrast, managers that made the investment decision under the performance standard were more likely to make choices in line with standard economic theory. In the third chapter of the thesis, we analyze if this pattern persists when the same investment decision is made by groups of three individuals instead of one person alone. The background for comparing group to individual decision making is that previous research both in economics and psychology shows that groups can outperform individuals when specific conditions are fulfilled (see e.g. Charness and Sutter 2012; Laughlin et al. 2002). The most important condition for groups to outperform individuals is that one group member that has the knowledge to solve the task is able to convince the other group members and demonstrate the correct solution (Laughlin and Ellis 1986). In our setting, we find that group decisions do not differ significantly from individual investment decisions, neither under the price instrument nor under the performance standard. Even though groups are more likely to have at least one member that has the microeconomic knowledge to apply a choice rule in line with economic theory under the price instrument, this does not lead to a change in the average investment decisions made by groups.

Paper four (together with Lisa Bruttel, Werner Güth and Ralph Hertwig) again analyzes a situation where individuals might choose to ignore costless information. We chose the setting of a finitely repeated prisoners' dilemma game to analyze whether strategic ignorance can facilitate cooperation. In our experiment, the number of rounds played of the game is determined by a random draw and lies between seven and seventeen rounds. Before the start of the first round, participants are asked whether they want to know the exact length of the game. There are two potential reasons for players to not get informed about the exact end of the game. First, by not accessing the information (and knowing that the counterpart is informed about this fact) a player can signal cooperative intentions even before the game has started. Second, not knowing the exact end of game can prevent the breakdown of cooperation in the last round of the game, the so-called endgame effect. We find that on average, around 20 percent of participants choose to stay ignorant about the exact length of the game. When both players were uninformed about the horizon, the cooperation rate was higher in the first and the very last round of the game compared to a situation where both players chose to get informed. However, the higher cooperation at the beginning and the end of the game did not result in higher average payoffs for ignorant players, since the cooperation rate was lower in the middle of the game compared to pairs of players that were informed about the length of the game.

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