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Greedy and selfish? Differences in fairness preferences of prospective lawyers and managers**

The question of whether lawyers and managers behave selfishly or fairly has inspired discussion for a long time. Empirical evidence, however, is sparse. Using data from an experiment with 359 law and business administration students, we investigate this question empirically and provide first evidence. Our results suggest that law students and business students behave reciprocally, but the degree of reciprocity is higher for lawyers. Surprisingly, it is not university education that makes business students more selfish: candidates seem to undergo a self-selection process before they begin their studies.

Key words: **experiment, fairness, gift-exchange, preferences, reciprocity**
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1. Introduction

Lawyers and managers suffer from bad reputations. At least the public perceives these professionals as greedy and selfish (GfK, 2008, 2010). A negative attitude toward managers, business people and economists is not surprising, as they have been strongly criticized for high bonus payments, fraud, and of course the financial crisis. What is surprising, however, are statements about lawyers who are said to prefer winning cases over serving justice. Seventy-four percent agreed with this statement according to a public poll published by the American Bar Association. At the same time, only about forty percent agreed with the statement that “[m]ost lawyers try to serve the public interests as well” (Rothenberg, 2009, p. 411).

Although economists follow a longstanding tradition in that they see individual behavior driven by self-interest and greed (Fehr & Gächter, 2000, p. 159), lawyers are professionally concerned with justice. Thus, lawyers – in contrast to managers – might see themselves as moral authorities, and their behavior might be motivated by fairness concerns instead of selfishness. One such fairness norm – probably the most important type of social preference (Dohmen, Falk, Huffman, & Sunde, 2009) – is reciprocity.

An individual behaves reciprocally if he¹ “responds to actions he perceives to be kind in a kind manner, and to actions he perceives to be hostile in a hostile manner” (Fehr & Schmidt, 2006, p. 620). Recent empirical investigations (Andresen & Göbel, 2009; Pundt, Martins, & Nerdinger, 2010) support the view that reciprocity has a significant impact on behavior in various economic domains such as the labor market. We demonstrate that law and business administration students do not behave completely selfishly. Instead, students of both groups exhibit social preferences – but to different degrees.

To test whether prospective lawyers and managers differ in their behavior toward others or whether these professions are equally selfish, we conduct a laboratory experiment with law students and business administration students in a labor market setting. More specifically, in a bilateral gift-exchange game, we examine to what extent individuals in the role of workers reciprocate “fair” wages with high efforts. Since a positive relationship between wage and effort can be interpreted as a preference for reciprocity² (e.g., Falk & Fischbacher, 2006), a subject following this path is labeled *homo reciprocans*. While the term *homo reciprocans* may basically refer to both, positive reciprocity (the willingness to return favors) and negative reciprocity (the willingness to punish unkind behavior), the game under study allows to analyze positive reciprocity only. Since recent survey evidence (Dohmen et al., 2009) suggests that both constructs refer to fundamentally different traits, our design does not allow drawing any

¹ Throughout the paper, we have chosen the male personal pronoun as opposed to he/she or (s)he in order to improve legibility.

² In fact, different types of social preferences can explain subjects’ behavior in the gift exchange game including reciprocity and inequity aversion. Contrary to papers such as Charness and Haruvy (2002), our experimental design is not intended to discriminate between the various models.

conclusions going beyond the positive domain. A subject choosing a minimum effort irrespective of the wage is labeled *homo economicus*. We analyze potential determinants of these player types, homo reciprocans and homo economicus, using simple probit regressions. In an extensive robustness section, we also provide an alternative approach addressing a less strict measure for social preferences.

We find the following: Firstly, prospective lawyers and managers deviate from the standard self-interested homo economicus model and show unambiguous reciprocal behavioral patterns. Secondly, both groups differ systematically and sizably in the probability to be classified as homo reciprocans type. Law students behave more reciprocally than business students. The robustness of this finding, however, depends on how reciprocity is addressed. Thirdly, we explain these differences in reciprocity by self-selection: prospective students select themselves for either business administration or law depending on their preferences for reciprocity. More reciprocal students choose to study law. Our findings contribute to the discussion on different behaviors across occupational groups. We highlight two aspects: the existence of differences across groups and an explanation for these differences.

The remainder of the paper is organized as follows. In Section 2, we discuss the background of our study and related literature, in Section 3, we present our empirical framework with the experimental setup and the empirical strategy, in Section 4 we display our results, in Section 5 we discuss the implications of the results, and in Section 6 we briefly conclude the paper.

2. Background

While research on differences on motivation and behavior is still scarce regarding several occupational groups (e.g., such as physicians (Hennig-Schmidt & Wiesen, 2014)), the question whether economists are different from non-economists seems to be sufficiently clarified (Camerer, 2003; Carter & Irons, 1991; Frank, Gilovich, & Regan, 1993; Kirchgässner, 2005). Results are surprisingly robust. Economists are driven to a higher degree by self-interest than individuals from other disciplines. Experiments show that economists are more likely to free-ride in public goods experiments than others (Marwell & Ames, 1981); they offer significantly more and demand less in ultimatum games (Carter & Irons, 1991); they are more likely to defect in prisoners' dilemma games (Frank, Gilovich, & Regan, 1993) and in solidarity games (Selten & Ockenfels, 1998); they are more likely to accept bribes (Frank & Schulze, 2000); and they lie more (Lundquist, Ellingsen, Gribbe, & Johannesson, 2009). Results of survey data are consistent with experimental findings in providing evidence that economists hold different values and views of the world. Frey, Pommerehne, and Gygi (1993) and Haucap and Just (2010), for example, reveal that economists more often consider a traditional price procedure fair compared to students from other fields. Surprisingly, none of the studies has focused on business administration students, a group of individuals which is not necessarily identical to economics students, but similarly large and influential. Furthermore, none of the previous studies have examined differences in reciprocal inclinations, although the behavioral relevance seems to be indisputable (Dohmen et al., 2009). We fill this gap

by studying prospective managers' fairness preferences using an incentivized gift-exchange experiment.

A notable exception to the robust results on self-interested behavior of economists is provided by Rubinstein (2006). Even if he shows that economics students are more pronounced profit-maximizers when it comes to the trade-off between profit maximization and worker layoff, he also states that the framing of the decision situation matters. Taking this result into account, we not only specify a labor market setting for our experiment, but also apply various treatments to rule out that one particular specification drives our results.

All papers cited above compare the behavior of economics students with one or two control groups. These control groups vary more or less randomly. Some studies explicitly compare economists with sociologists (Laband & Beil, 1999; Isaac, McClue, & Plott, 1985), psychologists (James, Sorka, & Benjafield, 2001), astronomers (Frank, Gilovich, & Regan, 1993), nurses (Cadsby & Maynes, 1998), or biologists and psychologists (Yezer, Goldfarb, & Poppen, 1996). The major motivation for the control groups was either data availability or the idea of finding strong differences. Cadsby and Maynes (1998), for example, chose nurses as control group to economists since they are usually associated with altruism and care-giving. More often, though, the control group consists only of students from very different fields (Cipriani, Lubian, & Zago, 2009; Franck & Schulze, 2000; Haucap & Just, 2010; López-Pérez & Spiegelman, 2012), and therewith not allow to draw specific implications for differences in occupations or across field of study. Frey and Meier (2003) and Rubinstein (2006) are the only ones who consider lawyers in their control group, at least among other individuals. However, no previous study explicitly focuses on differences between law and business administration students.

To sum up, to the best of our knowledge, there have been no research efforts yet contrasting the behavior of prospective managers with that of prospective lawyers in terms of social preferences in a labor market context. However, this setting is especially important to examine because incentives are a major instrument for influencing behavior and these incentives have different impacts depending on individual preferences (Fehr & Schmidt, 1999). Furthermore, focusing on lawyers' and managers' behavior in the labor market is interesting for two reasons. Firstly, from an employee's perspective, both groups often work in similar occupations and thus – usually automatically – are provided with similar incentives, regardless of these incentives' capacity to foster desired behaviors and outcomes in the same way. Secondly, from an employer's perspective, lawyers and managers are often concerned with leadership and thus deal with motivating employees. Depending on the professionals' fairness preferences, labor market outcomes such as wage bargaining might differ.

Besides analyzing whether differences between the two groups exist, our study also contributes to the discussion on explaining differences in behavior across prospective occupational groups. Given that we observe differences across fields of study, the literature provides two opposing explanations: self-selection and learning. The self-selection hypothesis states differences between people before they start studying. There is some empirical evidence that students indeed select themselves to study economics because they have selfish preferences (Frey, Pommerehne, & Gygi, 1993; Frey

& Meier, 2003, 2005; Bauman & Rose, 2011; Frank & Schulze, 2000). This leads Carter and Irons to argue that “economists are born, not made” (Carter & Iron, 1991, p. 174). In contrast, the learning hypothesis emphasizes the effect of learning and education (Haucap & Just, 2010; Wang, Malhotra, & Murnighan 2011; López-Pérez & Spiegelman, 2012). According to this hypothesis, students adapt their behavior over time to the models and theories they study. Thus, teaching students in business administration and economics should make them think and behave more selfishly, whereas lawyers are expected to behave according to fairness norms. To test the explanatory power of the selection and the learning hypothesis for law and business administration students, we use the given variation in our sample regarding past study experience by distinguishing between freshmen and seniors, therewith applying a standard approach from the economics literature (e.g., Frank & Schulze, 2000 or Frey & Meyer, 2005).

After completing studies at university, we expect adults’ social preferences to be highly stable over time, which allows drawing inferences from our study among students to potential decision behavior of managers and lawyers in the labor market (at least the years directly following the completion of their studies). This assumption seems to be justified given at least three pieces of evidence, suggesting behavior to be driven by environmental as well as genetic factors: Firstly, psychologists emphasize the role of socialization to explain variance in individual behavior. Differential stability of personality traits is considered to be relatively strong among all age groups. While psychologists mostly agree that personality becomes increasingly stable in adulthood (e.g., Lucas & Donnellan, 2011), some even suggest personality traits to become fixed at a certain age (e.g. by 30, see Costa & McCrae, 1988). Secondly, recent research in neuroscience emphasizes the role of genetics in explaining variance in behavior. It suggests that social preferences are partly hardwired. For example, genes have been proven to contribute to individual differences in cooperative behavior in experimental trust (Cesarini, Dawes, Fowler, Johannesson, Lichtenstein, & Wallace, 2008), dictator (Cesarini, Dawes, Johannesson, Lichtenstein, & Wallace, 2009) and public good games (Mertins, Schote, & Meyer, 2013). Thirdly, even if we yet do not fully believe that inclinations are stable by the end of a course of study, they should at least be predictive for behavior at the time of career entry, on which we focus.

3. Empirical framework

To reveal different behavioral patterns between prospective lawyers and managers, our empirical analysis proceeds in two steps. Firstly, we conduct a gift-exchange experiment to gather data, which we use to reveal two types of behavior, homo economicus and homo reciprocans. Secondly, we run simple probit regressions to figure out whether these types differ systematically across field of study and whether these differences are due to learning or self-selection.

3.1 Experimental setup

Although the public perceives lawyers and managers as behaving selfishly, empirically it is an open question whether they differ regarding their fairness preferences. As there

has been no systematic attempt to compare reciprocal inclinations between the two groups, we take up this challenge by using an economic experiment. A carefully designed experiment in which individuals are rewarded depending on their decisions has several advantages. Firstly, behaving “fairly” (i.e., considering others’ well-being) clearly conflicts with one’s own monetary interest. If people decide to behave like a homo reciprocans in a one-shot game, they forgo money. Thus, fair decision-making is costly. Secondly, we add control variables for factors that previously had been of importance or are likely to be significant behavioral determinants. Thirdly, an experiment enables us to compare the assumptions of the homo economicus and homo reciprocans models with actual individual behavior.

Our experimental design meets all these requirements. Students play a standard version of the bilateral one-shot gift-exchange game in a labor market context (Charness, 2004; Fehr, Kirchsteiger, & Riedl, 1993; Fehr, Kirchler, Weichbold, & Gächter, 1998). It allows measurement of individual preferences that are seminal in many real-life settings. People can decide to what extent they want to reciprocate fair behavior by others. The game excludes the possibility that differences among subgroups are simply caused by different expectations about others’ behavior. Furthermore, we can rule out confounding effects such as reputation and repeated interactions or productivity differences. Because of these advantages, laboratory experiments are currently a frequently used method to examine a wide variety of issues such as topics in personnel economics (Harbring, 2005; Manthei & Mohnen, 2013; Mohnen & Pokorny, 2007), legal issues (Hoffman & Spitzer, 1985; Zeiler, 2010) such as corruption (Lambdsdorff & Frank, 2011), or the effects of contractual settings (Alewell & Niklisch, 2009; Irlenbusch, 2004).

Written instructions and the basic experimental design features are based on Charness (2004). The game is a two-player game involving a principal and an agent. Each principal gets an endowment of 120 chips. Initially, a principal specifies a wage, $w \in \{20, 40, 60, 80, 100\}$. Then, the paired agent reacts by choosing an effort level, $e \in \{0.1; 0.2; \dots; 1.0\}$. Each effort level is associated with costs $c(e)$. Table 1 shows the costs of the different effort levels. Costs increase in the effort levels. Finally, the combination of wage and effort determines outcomes according to the principals’ ($\pi = (120 - w) e$) and agents’ ($u = w - c(e)$) payoff functions.³

3 These functional forms were introduced by Fehr et al. (1998) and are still used in the literature (e.g., Charness et al., 2012). They were replicated here to allow comparison. Furthermore, these specifications are usually used to avoid behavior being polluted by loss aversion (Fehr et al., 1998; Maximiano, Sloof, & Sonnemans, 2007). This is important in our setting since differences in loss aversion among lawyers and managers may wrongly point to differences in fairness preferences. The functional form, however, complicates the interpretation of wage and effort choices: high wages may either be chosen to increase positive reciprocal reactions or to increase the surplus; high efforts provide sometimes smaller gifts than low efforts since the marginal value of effort is lower at high wages than at low wages.

Table 1: Schedule of costs

| e | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| $c(e)$ | 0 | 1 | 2 | 4 | 6 | 8 | 10 | 12 | 15 | 18 |

To be able to identify distinct types of players (Altmann, Dohmen, & Wibral, 2008; Fischbacher, Gächter, & Fehr, 2001; Maximiano, Sloof, & Sonnemans, 2007), i.e. selfish and reciprocal ones, we use the strategy vector method (Selten, 1967) to elicit agents' choices. All subjects had to indicate their contingent effort decision for each possible wage offer. In addition, all participants decided in both roles – principal and agent. At the end of the game, a random draw decided which role is payoff-relevant. Since monetary incentives are a constituent of experimental practice (e.g., Friedman & Sunder, 1993; Kagel & Roth, 1995; Read, 2005; Smith, 1976), participants in our experiment were paid at the end of the game depending on their decisions.

As discussed before, Rubinstein (2006) shows that results across fields of study depend on the presentation of the decision situation. To avoid specific treatment effects, we implemented different variants of the experiment in addition to the standard version. Firstly, in treatment priming, we applied a homo economicus priming task before the participants played the gift-exchange game. Participants solved a word-search task intended to induce own-payoff maximizing behavior by unconsciously activating associations with the homo economicus stereotype (for a similar approach, see Rigdon, Ishii, Watabe, & Kitayama, 2009, and Drouvelis, Metcalfe, & Powdthavee, 2010). Subjects were asked to find the following words (among other neutral words): calculate, money, maximize, benefit, goal-oriented, rational, and profit (Mertins & Warning, 2013). Secondly, in the treatment comprehension task, subjects were asked to provide the game-theoretic solution to the game intuitively before actual decision-making took place (Oxoby & McLeish, 2004). Thirdly, in the no payment treatment, subjects played for simple points only (no class points, no credit toward the exam) and not for money (Kruse & Thomson, 2001).⁴ All participants in this treatment were fully aware that their decisions were hypothetical. Finally, we consider all combinations of the different treatments.

In addition to the general advantages of experimental setups (e.g., Falk & Heckman, 2009 for an excellent review on advantages and limitations of laboratory social science experiments), our design has several particular strengths. Firstly, we avoid selection effects in our experiments (e.g., Krawczyk, 2011). Subjects were not invited to come to the lab; instead, the experiment was part of the curriculum in all classes. Secondly, by using the strategy method (Selten, 1967), we can observe subjects' decisions over the whole strategy space, which includes reactions to wage offers which are rarely observed in “direct play” experiments. Thirdly, we put great effort into controlling

⁴ We exploited the fact that participation in the experiment was mandatory for students and replaced part of a lecture in one week of the semester; thus, paying subjects was not essential from a procedural point of view. Camerer (2003) also points out that there is no empirical reason to insist on monetary payments.

various potential confounds. In particular, we carefully controlled for individual understanding of the game as we intend to measure the preferences of two different groups of participants. One group, the business students, is probably more familiar with the idea of optimization. We therefore control general mathematical understanding and specific understanding of the game. Furthermore, we put all subjects in the situation of both types of decision-makers, employers and employees, although we are interested only in employees' behavior. In this way, we reduce the potential problem that law students behave less selfishly because they potentially do not know how to maximize their individual payoff in such a setting.

We conducted the paper-and-pencil experiment with a follow-up questionnaire during law lectures and during business lectures from January 2010 to January 2012 at two German universities. 409 students took part in the experiment⁵. Since our study draws upon differences between law and business students, we exclude 50 subjects from neighboring fields. This leaves us with 283 participants majoring in business administration and 76 participants majoring in law⁶. To capture various decision settings, we apply three different treatments in our experiment: no payment, priming, and comprehension task. Students were randomly allocated to treatments. We test the independence of treatment and law using a chi-square test ($p = 0.113$) and Fisher's exact test ($p = 0.119$) so that we assume not to have systematic selection effects. Neither rejects independence. None of the students participated more than once, and none of the subjects had previous experience in economic experiments. Each session lasted about 40 minutes, and the average payoff was 6.84 Euro⁷ (excluding the no payment treatment).

3.2 *Econometric design*

To derive our dependent binary variable, player type, we classify students according to their behavior as agents (employees) using the sequence of their effort choices (e.g., Maximiano, Sloof, & Sonnemans, 2007).⁸ Two distinct player types arise: the homo economicus (who behaves completely selfishly) chooses the minimum effort level regardless of the offered wage; the homo reciprocans⁹ chooses monotonically

⁵ In Mertins and Warning (2013), we use a small subsample of participants of this study and include further participants from other fields to analyze gender differences in the effect of a homo economicus prime on subsequent behavior. In this paper, field of study controls for differences between business and economics students and participants from all other fields.

⁶ Actually, some law students also study law and business. This, however, enhances the strength of our results.

⁷ In this classroom experiment, we did not pay a show-up fee because participation was part of the curriculum for all participants.

⁸ We refrain from using subjects' wage choices to classify player behavior because the interpretation of employers' choices is not clear-cut.

⁹ Various theories have been proposed to explain reciprocal behavior such as the guilt-envy theory by Fehr and Schmidt (1999), the ERC theory by Bolton and Ockenfels (2000) or intention-based models of reciprocity (Rabin, 1993; Dufwenberg & Kirchsteiger, 2004; Falk & Fischbacher, 2006).

increasing effort levels for increasing wages. For the econometric analysis, we label our dependent variable *homo reciprocans*, which takes the value 1 if the player behaves reciprocally and 0 if the participant behaves selfishly.

The aim of our multivariate analysis is twofold. Firstly, we are interested in behavioral differences between law and business students; thus, our first main explanatory variable is law. *Law* is a dummy variable that takes 1 if the student is studying law and 0 if the student is studying business administration. Legal education in Germany is different from its American or British counterpart in that formal economic training is not part of the law curriculum and it is not usual to study economics as an undergraduate and then study law as a graduate student.¹⁰ Thus, we can assume that law students in Germany are not exposed to noteworthy economic instruction. Our group of business students includes some economics students for which we control in a regression.

Secondly, we are interested in separating the effect of self-selection and the effect of learning through university education; thus, we consider the dummy variable *freshman*, which takes 1 if the student has not completed the second year of university (Frank & Schulze, 2000). We have taken two years as break point, as students learn mainly basic skills in the first two years, which do not entirely shape the students' thinking and hence their behavior. If freshman students behave less selfishly than senior students, we would conclude that university education indoctrinates students toward selfishness (Haucap & Just, 2010; Bauman & Rose, 2011). If freshmen students' behavior does not differ from senior students' behavior, then university education does not shape behavior, and students select themselves to the fields of study.

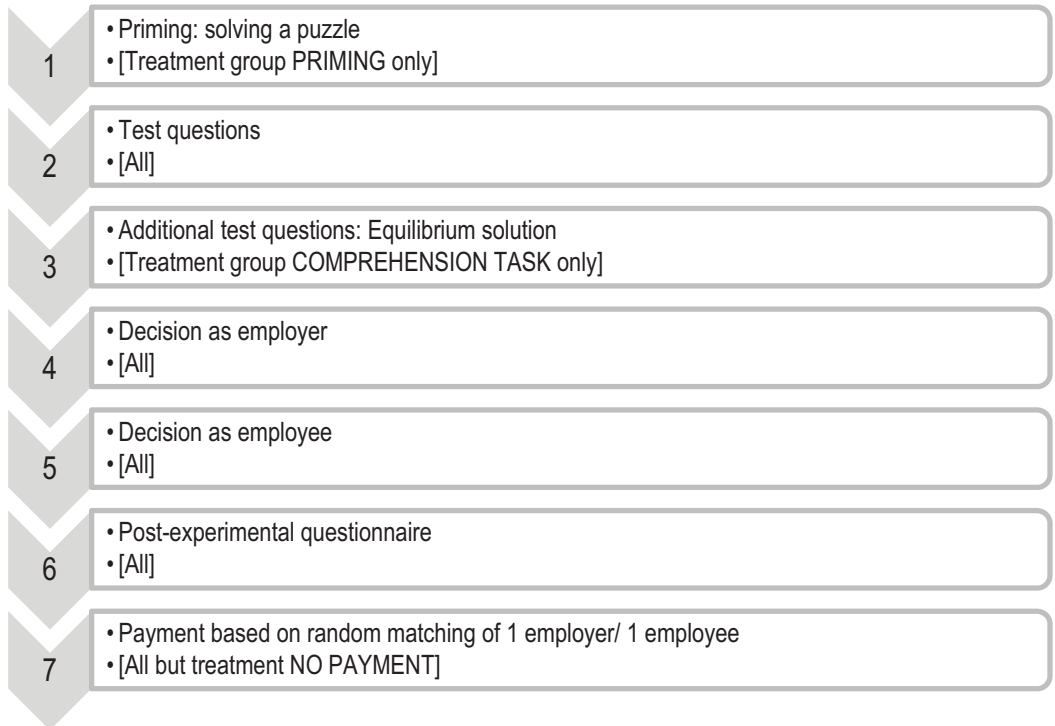
We include a number of control variables to account for individual differences between students (Haucap & Just, 2010; Dohmen et al., 2009). The most important one is mathematical skills. We argue that fully understanding the gift-exchange game depends on these skills. If students do not understand the strategies in the game, they probably cannot maximize the payoff – even if they want to. This may be particularly true for law students who are less inclined to mathematics (Macey, 1998). In extension to previous studies aiming to explain differences between economists and others, we consider the final high school grade in mathematics (math skills) as an indicator to rule out this issue for student behavior.

In addition, we include a number of control variables known to influence behavior. To prevent socio-demographic background effects (Dohmen et al., 2009), we consider gender, whether the subject has siblings, and whether at least one parent has a higher educational degree as dummy variables. To capture the individual willingness to take risks, we include a variable measured on a 10-point Likert scale. The wording of the item was taken from the German Socio-Economic Panel. The lowest value indicates that a person is “not at all willing to take risks” while the highest value indicates that the individual is “very willing to take risks.” Finally, we

¹⁰ See Bauman and Rose (2011) for a similar argument concerning difference in university education between the U.S. and Switzerland. The Swiss legal education structure is similar to the German one.

account for the different experimental treatments intended to capture various decision situations: priming, comprehension task, no payment, and all combinations thereof. Figure 1 displays the sequence of events.

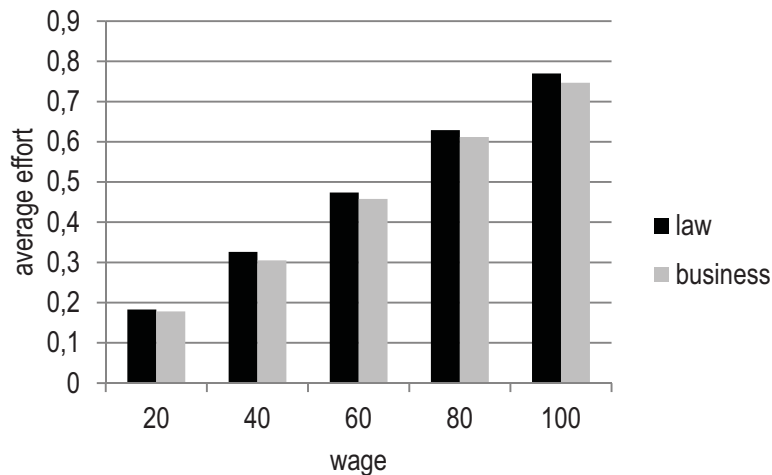
Figure 1: Experimental setup: sequence of events



4. Results

4.1 Descriptive results

Before classifying participants as homo economicus or homo reciprocans, we present the average effort levels for each wage offer for law and business students separately. Figure 2 displays these results. Firstly, both groups provide higher effort levels when they face higher wages. The wage-effort relationship increases monotonically. This is a standard result. Secondly, the average effort level of business students seems slightly lower than the average effort level of law students, but none of the differences is statistically significant. The two-sided t-tests for the equality of means in the groups of law students and business students indicate p-values above the critical level for all wage offers ($p = 0.8160$ for $w=20$, $p = 0.2828$ for $w=40$, $p = 0.5452$ for $w=60$, $p = 0.6030$ for $w=80$, and $p = 0.5541$ for $w=100$).

Figure 2: Average effort levels for given wage levels

From the observed individual effort levels, we classified participants into three groups. Among all students, we find about 81 percent are of homo reciprocans type, 12 percent are of homo economicus type, and 7 percent could not be classified accordingly (“*homo errans* type”).¹¹ Following Maximiano et al. (2007, p. 1036), we exclude homo errans-type players from our analysis.¹² Simple inspection of the data already suggests systematic differences between prospective lawyers and managers. While 96 percent of our law students behave like a homo reciprocans this is only true for 85 percent of the business students. A chi-square test confirms significance of the result and rejects the hypothesis that player type and field of study are independent ($p = 0.020$).¹³ To rule out the likelihood that ability and understanding of the game may affect the results, we incorporated 10 test tasks that are solved before starting the game. Law and business students do not differ significantly in solving these test tasks: About 80 percent of the business students and 75 percent of the law students solved at least 90 percent of the test tasks correctly ($p(\text{chi}) = 0.408$; $p(\text{Fisher's exact test}) = 0.410$). Table 2 presents the descriptive statistics for the entire sample as well as the group differences between homo reciprocans and homo economicus for the major explanatory variables.

¹¹ Note that the homo errans type includes – among various behavioral patterns – subjects motivated by altruistic giving. Those individuals exert the same positive amount of effort independent of the wage offer. However, the present sample is too small to analyze this fairness norm in more detail.

¹² Dropping those observations would be problematic only if classification as homo errans and field of study were not independent. However, a chi-square test confirms that player type and field of study are independent ($p = 0.456$), indicating that law students do not act significantly more often in a way inconsistent with standard behavioral theories than business students do.

¹³ The same result also holds when applying Fisher's exact test ($p = 0.023$).

Table 2: Average values of central explanatory variables in the homo reciprocans and homo economicus groups

| Variable | Total sample | | Homo reciprocans | | Homo economicus | |
|---------------------------------|--------------|--------|------------------|--------|-----------------|--------|
| | Obs | Mean | Obs | Mean | Obs | Mean |
| Law | 333 | 0.207 | 291 | 0.227 | 42 | 0.071 |
| Freshman | 333 | 0.700 | 291 | 0.701 | 42 | 0.690 |
| Final high school grade in math | 323 | 2.613 | 283 | 2.622 | 40 | 2.550 |
| Female | 333 | 0.616 | 291 | 0.615 | 42 | 0.619 |
| Siblings | 333 | 0.847 | 291 | 0.849 | 42 | 0.833 |
| Parents academics | 333 | 0.486 | 291 | 0.481 | 42 | 0.524 |
| Willingness to take risks | 329 | 5.751 | 288 | 5.830 | 41 | 5.195 |
| Trust | 333 | 54.054 | 291 | 56.907 | 42 | 34.286 |

Surprisingly, the differences between the reciprocal (homo reciprocans) and the selfish (homo economicus) group are relatively small. None of our variables of main interest, neither math skills nor the stage of study (freshman), varies significantly across the reciprocal group and the selfish group. However, as expected, the fraction of lawyers in the homo reciprocans group is significantly higher than the fraction of lawyers in the homo economicus group.

Finally, we have a closer look at the distribution of the player type across field of study and stage of study, i.e. the distribution of homo reciprocans across law vs. business and across freshman vs. non-freshman students. Table 3 reports the percentages of students for all four possible combinations of the dummy variables and thus gives us an initial idea whether studying law (resp. business administration) might be associated with fairness preferences.

Table 3: Distribution of player type

| Homo reciprocans (percentage) | | Field of study | |
|-------------------------------|--------------|----------------|----------|
| | | law | business |
| Stage of study | Freshman | 0.9783 | 0.8503 |
| | Non-freshman | 0.9130 | 0.8571 |

The percentage of reciprocal player type in business does not vary with stage of study: freshman and non-freshman students show very similar behavior. The opposite is true for law students: they do not become more reciprocal during their studies as could be expected, but they seem to become less reciprocal as they continue in their studies. These results give an initial hint that different students select themselves either into law or into business. Additionally, business students seem to be less reciprocal than law students – regardless of the stage of study.

4.2 Multivariate analysis

Our results on the different behavior of prospective lawyers and managers hold even in a multivariate analysis. As our dependent variable (*homo reciprocans*) is binary, we run three simple probit models (each of them in two specifications) with *law* as the main

explanatory variable. To deal with misspecification issues, we compute robust standard errors for parameter estimates using the Huber-White formula (Wooldridge, 2002, p. 496).

Our baseline specification M1a includes the *law* dummy variable and controls for the three different treatments (priming, comprehension task, no payment) and all combinations. The main specification (M2a) additionally considers the *freshman* dummy and mathematical skills. Specification (M3a) explicitly tests the difference between law students and business students in different stages of study. Here, we include three dummy variables which result from combining *law* and *freshman*: *business&freshman*, *business&non-freshman*, *law&non-freshman*. The dummy *law&freshman*, which takes the value 1 if the major is law and the student is freshman, serves as reference category. In the second set of specifications (labeled M1b, M2b, and M3b), all models also control for individual characteristics (Dohmen et al., 2009). Table 4 reports the results of our probit estimations. To provide information on effect size, the marginal effects – holding all other variables to their mean values – are displayed.

Table 4: Results of the probit regressions (marginal effects)

| | (M1a) | (M1b) | (M2a) | (M2b) | (M3a) | (M3b) |
|---------------------------------|---------------------|--------------------|---------------------|---------------------|---------------------|---------------------|
| Law | 0.1284*** (2.60) | 0.1114** (2.27) | 0.1478*** (2.85) | 0.1391*** (2.66) | | |
| Business & freshman | | | | | -0.1649** (2.53) | -0.1589** (2.41) |
| Law & freshman | | | | | | Reference |
| Law & non-freshman | | | | | -0.0306 (0.28) | -0.0294 (0.28) |
| Business & non-freshman | | | | | -0.1480** (2.18) | -0.1348** (1.97) |
| Freshman | | | -0.0126 (0.36) | -0.0190 (0.55) | | |
| Final high school grade in math | | | 0.0034 (0.20) | 0.0032 (0.19) | 0.0027 (0.16) | 0.0026 (0.16) |
| Female | | 0.0254 (0.74) | | 0.0152 (0.46) | | 0.0167 (0.50) |
| Siblings | | 0.0267 (0.60) | | 0.0372 (0.85) | | 0.0382 (0.88) |
| Parents academics | | -0.0284 (0.88) | | -0.0381 (1.22) | | -0.0374 (1.21) |
| Willingness to take risks | | 0.0185** (2.17) | | 0.0194** (2.28) | | 0.0194** (2.29) |
| Treatment controls | yes | yes | yes | yes | yes | yes |
| Observations | 333 | 329 | 323 | 320 | 323 | 320 |
| Pseudo R2 | 0.0834 | 0.1090 | 0.0995 | 0.1279 | 0.1001 | 0.1288 |
| Correctly predicted | 87.3874 | 87.5380 | 87.6161 | 86.8750 | 87.6161 | 86.8750 |

Notes: Dependent variable: dummy variable *homo reciprocans*; *** denotes significance at 1 percent, ** denotes significance at 5 percent, * denotes significance at 10 percent. Delta-method standard errors. Absolute z-values in parentheses. Additional controls in all models include the treatments comprehension task, priming, no payment as well as their combinations.

In four specifications (M1a, M1b, M2a, M2b) of models M1 and M2, our variable of main interest, *law*, is positive and statistically significant. The probability of behaving reciprocally is significantly higher for law students than it is for business administration students, and vice versa: business students behave with higher probability according to the homo economicus model than law students.

To figure out whether the observed effect stems from university education in the corresponding field (learning hypothesis) or from self-selection into the field (selection hypothesis), we look at the *freshman* dummy variables in models M2 and M3. As *freshman* does not exhibit any statistically significant effect in model M2 on the probability of behaving reciprocally, we conclude that stage of study per se does not draw student behavior to the homo reciprocans or the homo economicus type. Model M3 supports this finding explicitly: senior law students do not show a higher probability for being homo reciprocans than freshman law students do. However, freshman and non-freshman business students show a significantly lower probability to behave as homo reciprocans. Thus, studying law (business) does not seem to make people act more reciprocally (selfishly). The opposite seems true: people already inclined toward reciprocity (selfishness) tend to self-select themselves into the respective field of study. This is in line with previous results that confirm self-selection rather than indoctrination or learning (Frey & Meier, 2005).

Our results on differences across the groups of law students and business students do not change qualitatively when we control for individual characteristics. Primarily, since mathematical skills do not impact reciprocal behavior, our results are not a consequence of misunderstanding the game. Among the control variables, only attitude toward risk taking is statistically significant, i.e. students who are more willing to take risks show higher levels of reciprocity. This is in line with findings showing that trust, reciprocity, and the willingness to take risks are positively correlated (Altmann et al., 2008; Eckel & Wilson, 2004).¹⁴

4.3 Robustness of the results

This section tests whether our results are robust against a number of variations in the design of the analysis. As we have shown in Table 4, controlling for a number of different decision situations (treatments) does not change our main result. Our design also ensures that it is not misunderstanding the game that drives our findings as we control for mathematical skills. However, we run a number of supplementary tests to assess the robustness of our results which are presented in Table 5. As a starting point, we take our main model M2b. In robustness model R1, we restrict the sample to participants who have answered at least 90 percent of our test questions before the experiment correctly. Thus, we exclude students who did not un-

¹⁴ Basically, gift exchange involves risk, especially in one-shot interactions: by choosing a non-minimum wage, employers, on the one hand, take a risk by placing trust in employees to exert high effort levels. Employees, on the other hand, act as second-movers, thus their choices are not risky at all. Although player type classification is based on employees' behavior, using alternatively employers' choices would yield similar results in about 89 percent of all cases. This might explain our finding of risk and reciprocity being correlated.

derstand the game (almost) perfectly. This leaves us with 253 observations (instead of 320). The results remain the same. Our *law* variable is significant.

In robustness model R2, we use the specific structure of our experiment to include a measure of trust. As explained in the experimental setup, students decided in both roles. As employers, they have chosen a wage level, and as employees, they have chosen effort levels. To build player types, we applied only the effort choices (see section 3.2). Now, we also consider the wage offer that Altmann, Dohmen, and Wibral (2008) suggests interpreting as a measure of trust. Indeed, the trust measure is significant and even explains a considerable amount of the variance. However, including wage does not change the sign of our *law* dummy variable.

Model R3 differs from the baseline model in that we differentiate among business administration students and economics students by adding a dummy variable *economics* that takes the value 1 for economics students and 0 for all other students. Again, *law* remains significant. Taken together, our results are robust against a number of robustness checks. Prospective lawyers behave reciprocally with higher probability than managers do. Of course, the effects of model M3 also remain robust, supporting the selection explanation.

Models R4a to R5b test the robustness of our results when applying an alternative measure for reciprocity, since effort levels in Figure 2 did not reveal differences across fields of study while the distribution of player types did. We use *effort* level as dependent variable, the corresponding *wage* as central independent variable and run simple linear regressions. An interaction term *wageXlaw* indicates differences between law and business students in the effort-wage relation. Model R4a considers only *wage* as independent variable, model R5a also includes the interaction between *wage* and *law*. Finally, models R4b and R5b additionally include the standard controls from model M2b. In all four model specifications, wage has a positive sign, indicating that higher wages go along with higher effort levels, reflecting the importance of social preferences in both groups. However, the interaction term *wageXlaw* in models M5a and M5b is not significant and therefore does not support the notion of different effort choices of law and business students.¹⁵ To sum up, our results are robust against inclusion of alternative control variables, sample restrictions, and various treatments, but not against an alternative measure of reciprocity.

¹⁵ The results of models R4a to R5b do qualitatively not change when participants classified as homo errans are included in the analysis.

Table 5: Robustness check

| | (R1) | (R2) | (R3) | (R4a) | (R4b) | (R5a) | (R5b) |
|---------------------------------|--------------------|---------------------|--------------------|----------------------|----------------------|----------------------|----------------------|
| Law | 0.7936** (2.26) | 0.8668** (2.32) | 0.8261** (2.46) | | 0.0188 (0.86) | -0.0075 (0.44) | -0.0068 (0.36) |
| Freshman | -0.0892 (0.41) | 0.0413 (0.18) | -0.1443 (0.68) | | -0.0128 (0.59) | | -0.0128 (0.59) |
| Final high school grade in math | 0.0045 (0.04) | -0.0036 (0.03) | 0.0156 (0.15) | | -0.0050 (0.49) | | -0.0050 (0.49) |
| Female | 0.0600 (0.27) | 0.1662 (0.76) | 0.0707 (0.35) | | 0.0282 (1.35) | | 0.0282 (1.35) |
| Siblings | 0.1901 (0.71) | 0.1150 (0.46) | 0.2232 (0.86) | | 0.0117 (0.44) | | 0.0117 (0.44) |
| Parents academics | -0.3731* (1.87) | -0.3151 (1.50) | -0.2334 (1.22) | | -0.0360* (1.81) | | -0.0360* (1.80) |
| Willingness to take risks | 0.1246** (2.09) | 0.0871 (1.50) | 0.1145** (2.19) | | 0.0140** (2.50) | | 0.0140** (2.50) |
| Trust | | 0.0341*** (4.52) | | | | | |
| Economics | | | -0.1896 (0.51) | | | | |
| Wage | | | | 0.0076*** (38.39) | 0.0076*** (37.64) | 0.0075*** (32.54) | 0.0075*** (31.87) |
| WageXlaw | | | | | | 0.0003 (0.73) | 0.0004 (1.00) |
| Constant | 0.3921 (0.66) | -1.3140** (2.19) | 0.5573 (1.01) | 0.0077 (0.94) | -0.0632 (1.20) | 0.0092 (0.96) | -0.0581 (1.11) |
| Observations | 253 | 320 | 320 | 1665 | 1600 | 1665 | 1600 |
| Number of participants | 253 | 320 | 320 | 333 | 320 | 333 | 320 |
| Pseudo R2 | 0.1232 | 0.2905 | 0.1286 | | | | |
| Correctly predicted | 85.3755 | 90.6250 | 87.1875 | | | | |
| R2 | | | | 0.5091 | 0.5347 | 0.5094 | 0.5349 |

Notes: R1 to R3 (probit, coefficients): Dependent variable: dummy variable *homo reciprocans*; robust standard errors; absolute z-values in parentheses. R4a to R5b (OLS): Dependent variable: effort; standard errors clustered at participant level; absolute t-values in parentheses. *** denotes significance at 1 percent, ** denotes significance at 5 percent, * denotes significance at 10 percent. Additional controls include the treatments comprehension task, priming, no payment as well as their combinations.

5. Discussion

Our experimental results show that law students and business students do not behave completely selfishly but reciprocally, whereas law students act more reciprocally than business students – at least when looking at *homo economicus* vs. *homo reciprocans* type. The econometric analysis suggests that these differences in behavioral patterns are due to self-selection rather than learning.

We considered two different player types, homo economicus and homo reciprocans, which we had identified by observing individuals' choices in simple preference revelation experiments. Fehr and Schmidt (2006, p. 680) claim that “[p]erhaps the impact of other-regarding preferences on material incentives is the most important reason why they should be taken seriously by social scientists.” As incentives are a central topic in labor market relations, we discuss our results in the labor market context as we think they have strongest impact there.

Firstly, as both occupational groups do not behave completely selfishly but mainly reciprocally, all well-known general implications from previous research on homines reciprocans apply; for example, reciprocal types have more close friends and a higher degree of subjective well-being (Dohmen et al., 2009). However, even if studies find reciprocal behavior, we observe different degrees of reciprocal behavior across groups. To consider the different degrees of reciprocity adequately in practice, we have to identify variables that help us separate groups with different degrees of reciprocal behavior. We have suggested field of study as such a separating variable.

Secondly, in practice, different behavioral patterns between lawyers and managers would have an impact from two perspectives. Of course, lawyers and managers are employees who need to be motivated. However, they are also often in the position of employers, or, at least, group leaders, and have to motivate others. Our results suggest that, in either position, it matters whether a lawyer or a manager is dealing with motivational issues.

We start by discussing lawyers and managers as employees. Although we have shown that both behave reciprocally, we emphasized differences in the types (homo economicus vs. homo reciprocans) with lawyers being more reciprocal so that we have, in fact, different preferences across these groups. Heterogeneous agents – characterized by different preferences – have to be motivated differently (Fehr & Fischbacher, 2002). If groups of employees differ systematically in preferences across individuals, remuneration schemes should account for these differences. This statement is not very surprising. Usually, different remuneration schemes are applied across occupational groups. However, if we have different groups of individuals working in the same occupation, employers should think about motivating them differently.

Burke, Sims, Lazzara, & Salas (2007) stress the role of trust in leadership. From lawyers and managers as employers or in leadership positions, we may expect different behavioral patterns. Take wage bargaining as an example. A person who is more reciprocal tends to pay efficiency wages more often. Thus, lawyers can be expected to pay a wage above the market-clearing wage as a gift more often.¹⁶ In turn, it is likely that they expect employees to provide higher effort levels as a counter-gift.

¹⁶ To draw this conclusion, we implicitly assume that individuals classified as homo reciprocans behave less selfish in either role (employer or employee). This seems to be justified given that 88% of our participants behaved consistently when playing in different roles (i.e. chose the minimum wage when classified as homo economicus according to their second-mover behavior, and chose a non-minimum wage when classified as homo reciprocans). We refrain from interpreting subjects' behavior in the role of employers since we cannot reliably draw motivational inferences from them.

Finally, we have shown that different behavioral patterns result from self-selection rather than from university education since we did not observe differences between freshmen and seniors. Therefore, it is at least unlikely that education makes people behave more or less selfishly (or reciprocally). Quite apart from whether this explanation of self-selection is believed or not, our research may help to make behavioral predictions. We suggest academic major as an observable variable to proxy behavioral patterns.

Of course, skeptical readers might criticize our empirical strategy in general. One could ask whether results from laboratory experiments with students provide general insights, for example, for a real labor market context (e.g. DellaVigna, 2009). Indeed, comparable studies with different professionals in a real-world study are missing. However, many studies show that experimental results are transferable to real-world situations in various contexts. For example, the gift-exchange game has been run on non-student samples (Fehr et al., 1998) yielding results similar to those obtained using samples of students. Other studies have shown the relevance of social preferences for CEOs (Fehr & List, 2004), for professional financial traders (Smith, Suchanek, & Williams, 1988) and for the general population (Bellemare & Kröger, 2007; Dohmen et al., 2009). The latter found that amounts returned in an investment game, which is comparable to the effort exerted in a gift-exchange experiment, are lower in a student sample than in a more heterogeneous representative sample drawn from the public. These differences, however, disappeared when controlling for socio-demographic characteristics.

In addition, our experimental setup is conservative. In contrast to our one-shot game, people in real labor market situations interact repeatedly, are able to communicate, and to build up reputation. Furthermore, it may pay off in long-term relationships to mimic reciprocal inclinations in order to induce others to exert more effort and thereby to maximize the own monetary outcome. Thus, reciprocity should play an even larger role in repeated interactions. Consequently, we could expect to observe even more people to behave reciprocally – whether the differences between law and business people increase or decrease, however, remains an open empirical question.

Additional research on systematic differences in preferences of various occupational groups in more complicated laboratory experiments as well as in real-world experiments would be beneficial. Such a setup would ideally look at professionals instead of students, as public attitudes come from observations of professionals. The public may communicate only perceptions of successful lawyers and managers. However, to be successful in terms of public perception, people are probably more selfish than the average of the occupational group – whether lawyer or manager. And, of course, perhaps we observe another selection effect here that makes university education only a weak predictor of expected behavior of senior and very experienced lawyers and managers. Finally, we have shown that our results are only robust when examining player types as suggested in a number of studies (e.g., Maximiano et al., 2007). In the robustness section of this study, alternative approaches to detect reciprocity do not exhibit differences in social preferences between law and business students anymore. This finding – different results for different measures of social preferences – highlights the

need for comparing and validating different measures for social preferences in future research.

Nevertheless, our study provides predictions regarding the preferences of young professionals. Information on these preferences may be especially valuable for recruiting as firms put a lot of effort into selecting appropriate candidates. Employers try to find out whether potential employees have more or less reciprocal preferences and thus fit into a working team or pursue goals aligned with company culture.

6. Conclusion

Contrary to public perception, we show that prospective lawyers and managers do not behave completely selfishly, but that both follow reciprocal behavioral patterns. Nevertheless, they differ in the probability to behave as homo reciprocans. Law students behave reciprocally with higher probability than business students. We explain these differences in decision-making by self-selection rather than by learning during university education.

Although we find differences in reciprocity across groups, we remain skeptical about Stigler's (1992) claim: "The difference between a discipline that seeks to explain economic life (and, indeed, all rational behavior) and a discipline that seeks to achieve justice in regulating all aspects of human behavior is profound. This difference means that, basically, the economist and the lawyer live in different worlds and speak different languages" (Stigler, 1992, p. 463). Our findings do not support the view that law students and business students indeed live in different worlds – at least not in terms of their fairness preferences guiding their behavior. Both groups behave reciprocally, even if a lawyer's probability of behaving reciprocally is higher.

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