Do Ex-Offenders Face Discrimination in the Labor Market? Because of Expected Inferior Reciprocity?

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Abstract

The disadvantage of previously convicted applicants, an often overlooked social group, at the labor market represents an important and complex issue. Despite plausibility, a proper proof of discrimination with typically available data is extremely difficult. In this paper we systematically investigate whether and how previously convicted applicants suffer from distrust in their search for a job and in wage payment when employed. As a general result, we can show that trust plays a critical role in motivating employers’ hiring and wage determination behavior. Thus, previously convicted applicants have significantly lower opportunities to be employed and to receive an appropriate wage. Besides conviction applicants’ citizenship plays a mayor role. Moreover, we proof that employers’ decisions are not only driven by an expected inferior reciprocity but also by pure taste of discrimination or mere avoidance of interaction.

JEL-Classification: C91, M51, J00, J71

Keywords: Discrimination, labor markets, firm employment decisions, demographic economics, individual behavior

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1 Introduction

The treatment of previously convicted ex-offenders in the labor market is an ubiquitous and complex but hardly tangible phenomenon. At present, about 12 million ex-felons are at least potentially available in the U.S. labor market which represent 4 to 8% of civilian labor force (Uggen and Manza, 2002). Moreover, 9% of all men (3% of all adults) will serve some time in state or federal prison (Bonczar, 2003; Bureau of Statistics, 1997). In addition, about 500,000 prison inmates are released per year (Lynch and Sabol, 2001). The sheer volume of individuals moving into and out of prison can dramatically alter the conditions of supply and demand in local labor markets, especially in urban and city areas as well as in bordering communities (Western, Kling, and Weiman, 2001; Rose and Clear, 1998; Sabol and Lynch, 1998). These facts show that previously convicted represent an important social group that is, by contrast, often overlooked. Hence, its security of livelihood and prospect of economic improvement has sociological as well as economic significance - not only for the affected social group itself but for the whole society.

Getting a job allows to continue the life course and become integrated into a variety of social roles (e.g., head of a family). A spotty employment record and low-wage jobs make individuals unattractive partners on the marriage market and hinders them to make a strong financial contribution to maintaining a household and raising children. Moreover, lost earnings would otherwise be a source of taxes, be used to support families, and generally contribute to the level of activity in the whole economy. Hence, to reduce enormous social costs, it appears to be relevant that feasible and effective social and economic policies to tackle crime and prospects of previously convicted will be pursued and undertaken. However, the effectiveness of such policies depends on our explicit knowledge about the determinants of ex-offenders’ labor market performance.

The negative effect of conviction on employment opportunities and, primarily, on earnings has been confirmed by many studies and across data gathering methods. Analyzing survey data Western (2004) shows that men who have been incarcerated have significantly lower employment rates and annual earnings than men who have never been incarcerated. In fact, they are forced to enter the secondary labor market there facing part-time or temporary work, high job turn over, low-wages, no wage growth, no health or pension benefits, no long term commitments, or job security. Holzer, Raphael, and Stoll (2002) found that over 60% of employers indicate that they would ‘probably not’ or ‘definitely not’ be willing to hire an applicant with a criminal record. This aversion is considerably stronger than the aversion of employers to hire applicants from other commonly stigmatized groups of workers (e.g., welfare recipients). Western and Beckett (1999), and Freeman (1992) demonstrate that
incarceration is associated with a small but persistent decrease in weeks worked after release. Using employment data Freeman (1992) finds that ex-offenders face a 15 to 30% reduction in employment probability compared to a control group. Lott (1990) detects very large negative effects of prison sentence length on employment and earnings, especially for high income individuals. Evidence from administrative records points to the same way: Looking at total earnings from 1983-1991 Kling (1999) and Needels (1996) show that an additional year of incarceration reduces total earnings by about 12%. Moreover, Grogger (1995) finds employment rates to be 4% lower in the group of previously convicted. Taken together, these findings clearly indicate that chances for a secure (re-)employment with stable and appropriate income are comparably low for former criminal offenders, especially for young males who represent the majority of released prison inmates.

While the aggregate effects of conviction on economic inequality are possibly very large, causal inference about the effect of imprisonment on labor market performance is a difficult scientific problem. An important question is whether the presented strong negative correlations reflect causation; that is, whether being arrested actually causes the arrestee’s employment opportunities and earnings to fall. What kind of underlying causes can be diagnosed for this evidence of disadvantages? First, ex-offenders suffer from the stigma of criminal conviction. Conviction delivers an observable signal that is usually correlated with productivity or reliability to infer an expected inferior behavior of previously convicted applicants (Pager, 2003; Boshier and Johnson, 1974; Buikhuisen and Dijksterhuis, 1971; Schwartz and Skolnick, 1962). Second, their status makes them less employable, as employers fear the legal liabilities that could potentially be created by hiring ex-offenders. Federal or state law forbids the hiring of convicted felons or ex-offenders into some sectors, such as interstate transport, finance, and child care or patient care. More broadly, employers seem to fear legal liability where ex-offenders have to deal directly with customers or handle property that belongs to others (Holzer, Raphael, and Stoll, 2001). Third, vacant jobs are often assigned through social networks where previously convicted people do not take part (Granovetter, 1995; Sullivan, 1989). Previous ties to these networks break off while imprisoned and new contacts are frequently established between prison inmates which are more likely to lead to criminal acts after release and seriously impede a successful reintegration into stable social structures (Venkatesh, 2000; Sanchez-Jankowski, 1991). Fourth, in order to explain lower labor market opportunities for former prison inmates many authors argue that during the period of imprisonment their social capital is eroded which is reflected in a lack of real and expected productivity. While imprisoned, possibilities to acquire new skills and expertise are limited. Competencies, as far as they are already existing, can only be strengthened or improved inadequately (Western et al., 2001; Waldfoogel, 1994a,b). It rather appears that
the probability for acquired skills to wear off is very high. The time spend in a penitentiary also seems to aggravate mental and physical disease patterns which already appeared before imprisoned (HOLZER et al., 2002). Consequently, during job-seeking and wage determination ex-offenders usually compete against other, not previously convicted applicants who in general are not effected by the named disadvantages.

An alternative explanation is that the presented negative associations arise simply due to unobserved characteristics of employers and workers that are correlated with labor market outcomes. One reason for personnel managers’ reluctance to hire ex-offenders might consist of the deficit in trustworthiness of previously convicted people, implicitly indicated by the criminal record. HOLZER et al. (2002) have argued that from the viewpoint of employers, a criminal history record may signal an untrustworthy or otherwise problematic employee. Employers may avoid such workers due to a perceived increased propensity to break rules, steal, or harm customers. To make investments in skills and training, employers must trust their workers to stay with the firm and repay the investment. Likewise, workers must trust managers to provide job security and a career ladder, particularly early on if primary sector wages are lower than those offered in the open labor market. AKERLOF (1981) has described this ethic of mutual obligation as a partial gift exchange, where hard work and loyalty are exchanged for job security and high wages. Hence, trust and reciprocity display constitutive mechanisms in every bilateral employer-employee relationship\(^1\).

Despite high plausibility, a statistically correct proof of discriminating trusting behavior or of inferior expectations concerning ex-offenders’ reciprocity is hard to find with data usually available. Examining income panel data and administrative records WALDFOGEL (1994a) explored the causes of the conviction effect and how it varies with characteristics of the offense and offender, in particular whether the offender was in a position of trust prior to conviction. He finds that conviction particularly stigmatizes those who used the trust granted him or her in a responsible or official capacity to violate the law.

This paper goes one step further. Conducting a controlled laboratory experiment with students taking a hiring and wage payment (trusting) decision in the role of employers and real prison inmates acting as applicants (employees) - giving their profiles to the employers - we are able to shed more light on employers’ motives and expectations within the hiring process and wage determination. We investigate whether previously convicted are disadvantaged in employment seeking and income level compared to a not convicted and otherwise identical control group. Moreover, we elaborate the question if existent discrimination behavior can

\(^1\)Contracts between employers and employees are nearly always incomplete, i.e. the employer is neither able to agree ex-ante on the employee’s actions by contract nor to observe and pay or sanction all associated actions.
be explained by existing theories on discrimination. Do employers in fact possess lower expectations concerning employees’ trustworthiness or do they intentionally display distrust toward ex-offenders independent of an underlying (or existing) belief on trustworthiness?

Our results give substantial support for a disadvantage of ex-offenders. Previously convicted applicants are discriminated not only within employment decisions but also through getting significantly lower wage payments. Hence, they have substantially lower chances of being employed and of receiving an adequate wage compared to not previously convicted applicants. In addition, we find that associated beliefs play an important role in interactions with ex-offenders. However, a substantial amount of participants penalizes ex-inmates independent of their expectations considering reciprocity. Moreover, some subjects minimize the probability for an actual interaction with ex-offenders, although, once confronted with a previously convicted employee, they do not behave in a discriminating way.

The remainder of the paper is organized as follows. In the next section, we introduce our experimental study. We will explain why we have chosen an experiment to answer our research questions. Our treatment variables and some methodological challenges will be discussed. Furthermore, we present our experimental design and the procedure we applied when we conducted the study. Finally, we formulate a working hypothesis. Section three displays our results and discusses them according to our initial motivation. The last section sums up and concludes.

2 An experimental approach

In this section we introduce and describe our experimental setup. We discuss the advantages of conducting a laboratory experiment to find an appropriate answer to our initial research questions. Secondly, selected treatment variables are explained. We furthermore address some methodological specifications concerning causal inference. After that, we illustrate our experimental design and explain the experimental procedure in detail. In the last part, based on previous studies and the strategies provided in our experiment, we state a directed working hypothesis.

2.1 Why a laboratory experiment?

Evidence on employment and wages, gained so far from polls and labor market data, appears to be partly inconsistent and is subject to several methodological problems. In many cases, important factors confounded with a treatment are not observed and recorded. Differentiated statements about the intensity of correlation between conviction, re-employment, and income level as well as about it’s causes are very vulnerable. Previously convicted peoples’ economic
activity often falls within a gray area that escapes detection by the criminal justice system and social insurance agencies. Their housing and patterns of household attachment often place them out of the reach of traditional social survey methods and thus complicates the access to data scientifically utilizable. Furthermore, the risk that personnel managers’ verbal comments and decision data collected in previous studies are biased because of selection, framing, or social desirability effects exists. The questionnaire approach used in many earlier studies seemed biased to the problem since respondents confronted with hypothetical situations might be particularly prone to answer in what they considered a socially acceptable manner.

Another common issue conductors of field experiments on discrimination (e.g., audit studies) are confronted with unknown heterogeneity of the labor supply side. Among others, employers might vary in sex, age, race, branch, income, personality, values, actual mood, and, even more complexing, in variables unobservable for the researcher that might guide their behavior in the very moment of decision. Consequently, it is very difficult to involve a homogeneous and comparable group of employers. This issue is often disregarded. Bringing students to the laboratory enables to investigate a very homogeneous subject pool in the role of employers. Typically, students have low and comparable opportunity costs. Moreover, although there might be some quantitative differences compared to actual employers qualitative effects are expected to be similar\(^2\).

In general, experiments have become an essential mean to circumvent issues arising in field experiments and questionnaire studies and to find behavioral regularities under controlled conditions to explain labor market phenomena. Going into the laboratory permits to strictly monitor exogenous variables as well as to control endogenous parameters. As long as the relevant underlying conditions remain substantially unchanged experimental data allow causal inferences (see Falk and Fehr, 2003).

In this paper we examine whether trust and reciprocity considerations are core determinants of employers’ hiring and wage payments attitudes toward previously convicted applicants and employers. By the experimental implementation of a straightforward trust-reciprocity mechanism we can reduce employers’ and employees’ interaction to a situation where one party simply decides on how much to trust and the other side on how much to reciprocate. Consequently, we can endogenously control the corresponding strategy sets and spaces what allows us to formulate a clear prediction and to draw valid conclusions.

A further advantage of our experiment is the possibility to strictly select and control our treatment variables and execute truly exogenous ceteris paribus changes. Implemented

\(^2\)For a review of this topic see Liyanarachchi (2007). Moreover, comparing managers’ and students’ trusting behavior Fehr and List (2003) found no fundamental differences among both groups. Cooper, Kagel, Lo, and Gu (1999) showed that in a repeated game behavioral differences between managers and students decrease over time.
treatment variables are explained in the next subsection.

2.2 Selected treatment variables

Treatments were implemented as follows: Employers received 16 short curricula vitae (profiles) containing real information about applicants (see figure 1).

<table>
<thead>
<tr>
<th>Age</th>
<th>24 or 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Male or female</td>
</tr>
<tr>
<td>Citizenship</td>
<td>German or Turkish</td>
</tr>
<tr>
<td>Civil status</td>
<td>Single</td>
</tr>
<tr>
<td>Education</td>
<td>Secondary modern school qualification</td>
</tr>
<tr>
<td>Occupational qualifications</td>
<td>Completed apprenticeship</td>
</tr>
<tr>
<td>Additional professional skills</td>
<td>PC-skills, industrial arts, Basic skills in English, driving license</td>
</tr>
<tr>
<td>Notes</td>
<td>Engaged in learned profession and (no entry) or Previously convicted, conviction due to property crime or Previously convicted, conviction due to violent crime (no sexual offense)</td>
</tr>
</tbody>
</table>

Figure 1: Employees’ profile given to employers containing treatment characteristics.

On the left hand side of the profile characteristics are shown, on the right hand side the according parameter values are illustrated. As treatment variables we implemented ‘age’ (AGE), ‘sex’ (SEX), ‘citizenship’ (CIT), and ‘status’ (STAT, being part of ‘notes’). These treatment variables were carefully chosen in cooperation with representatives of the federal ministry of justice of North-Rhine Westphalia (Germany). Combining the different parameter values of each treatment variable - 24 or 31 (AGE), male or female (SEX), German or Turkish (CITIZENSHIP), no entry or previously convicted, conviction due to property crime or previously convicted, conviction due to violent crime (STATUS) - 16 typical and realistic application profiles are emerged representing the target group of previously convicted applicants and an otherwise identical control group\(^3\). The characteristics ‘civil status’, ‘education’, ‘occupational qualification’, and ‘additional professional skills’ obtained in all 16 profiles only one value and were kept constantly. We did this to give as much realistic information as possible to the subjects and to reduce possible demand effects.

2.3 Methodological challenges and causal inference

Being convicted is not a pure randomly assigned treatment. Typically economists model crime as an economic choice by rational agents. It is not determined by mental illness or bad

\(^3\)Turkish prison inmates did not take part in the study. Thus, out of 24 possible types of applicants, only 16 were placed in order to reduce complexity for students.
attitudes, but it is made on the basis of a maximization problem in which agents have to compare costs and benefits of legal and illegal activities taking into account the probability of being arrested and punished and the expected returns from crime (Becker, 1968). Unlike sex or race, which are (mostly) randomly assigned by nature to all social classes, previously convicted persons represent a highly self-selected group\textsuperscript{4}. To become a criminal convict requires - may it be voluntarily or not - a prior act of criminal activity. Hence, conviction to some extent delivers a signal of actual productivity or trustworthiness.

However, contributions by many authors have proven that becoming involved in criminal activity is highly correlated with socio economic factors like family or neighborhood background (see for an overview Buonanno, 2003). Independent factors as single, young mother, teenage and unwanted pregnancy, low mother’s education, low household income, received level of education, and neighborhood (peer effects) can negatively influence the probability for an individual to get in conflict with law. The high interdependence of these environmental factors does not foster rational choices. Furthermore, crime is partly a function of policy choice which exogenously determines detection probability and degree of punishment. In general, through the interplay of these factors disadvantaged young and unskilled men, living in suburban or high-poverty or high-crime areas, face the highest risk to fall into crime.

Any causal statement about the effects of incarceration must consider the rival explanation that criminal offenders are highly self-selected and have few employment prospects regardless of incarceration (Caspi, Wright, Moffitt, and Silva, 1998; Moffitt, 1993; Sullivan, 1989). Why should ex-offenders get employment when they consciously chose to get in conflict with law? Is it not rational to not select them because their pre-market skills are likely to be inferior? To disentangle this causal inference issue we have to answer the counterfactual question: What employment (income) opportunities has a previously convicted applicant if he or she would not hold a criminal record? We address this issues as follows: First, we strictly limit the field of interaction to a bilateral trust-reciprocity exchange. Second, we keep certain characteristics constant that are negatively correlated with criminal activity - namely ‘civil status’, ‘education’, ‘occupational qualifications’, and ‘additional professional skills’. Only treatment variables’ parameter values were varied systematically. Thus, not previously convicted second movers hold exactly the same parameter values. Moreover, no additional information about other socio economic factors or physical/psychological conditions of applicants was delivered to the subjects. Third, subjects received all 16 profiles to directly retrieve information for their hiring decision.

The assignment of incarceration resembles a randomized experiment, in which the treat-

ment group (prisoners) were identical to the control group (non-prisoners) in all respects, except incarceration status. If applicants with conviction records differed only randomly from everyone else, we are able to infer from our data whether ex-offenders’ employment chances and income levels are inferior because of the lack of trust.

Our framework and the fact that we included real prison inmates on the one hand allows us to put subjects as much as possible into a real life context. On the other hand, planning our experiment we faced the issue that prison inmates were not easily accessible. Due to administrative and legal barriers, because of our specific requirements to their individual profiles, and due to the willingness to participate the number of potential participants was very small. Consequently we decided to apply an incentive compatible matching mechanism which allows us to re-match previously convicted applicants with different employers. In order to keep conditions constant we applied the same procedure to the control group. The corresponding matching mechanism is explained in detail in subsection 2.5.

2.4 Experimental design

The basic technical mechanism for our experimental design is provided by the Gift-Exchange-Game introduced by Fehr, Kirchsteiger, and Riedl (1998). At the first stage a player (a student) in the role of an employer chooses an arbitrary integer wage \( w \), with \( 0 \leq w \leq 100 \), which he wants to pay an assigned employee (either a previously convicted prison inmate or a control group member) in advance for her working effort. Subsequently, at the second stage, the player in the role of the employee, knowing the specified wage, decides how much effort she wants to contribute for that earned wage. Her arbitrary integer work effort \( e \), with \( 1 \leq e \leq 10 \), reduces her income, because the effort induces the costs \( c(e) \). Table 1 displays the cost function of the employee.

<table>
<thead>
<tr>
<th>Effort</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost(Effort)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 1: Employee’s cost function dependent on exerted effort.

Formally, employer’s payoff function is given by \( \pi_{employer} = 10 \cdot e - w \). Thus, employer’s income depends on the wage he pays the employee and the work effort the employee exerts. The more effort the employee puts into work, the higher is the employer’s income. Simultaneously, the lower the wage he pays the employee, the higher his income. Accordingly, employee’s income can be stated as \( \pi_{employee} = w - c(e) \). The income of the employee is the wage she receives from her employer minus the costs for the work effort she has to bear. The higher the employee’s wage, the higher is her income. Simultaneously, her income is higher the lower her chosen work effort is.
The wage payment in advance by the employer can be interpreted as his level of trust toward his employee, since she can independently determine her level of work effort afterward. The chosen work effort reflects her degree of reliability or reciprocity toward her employer. With perfect information, the standard subgame perfect equilibrium in this game yields $e^* = w^* = 0$. A rational employer will pay no positive wage, since he knows that a purely self-interested employee has no incentive to exert any effort. However, if both players coordinate their actions both parties can reach higher income levels compared to the game theoretical outcome.

### 2.5 Experimental procedure

Meeting the particular conditions of conducting an experiment with students, acting as employers, and prison inmates (and control group) being employees both stages of the game were technically and locally separated. Therefore, participants from the first and second stage acted delayed. In the following the experimental protocol is described in more detail\(^5\).

**Employers’ decisions (1\(^{st}\) stage)**

The first stage of the experiment was conducted with students of the University of Bonn. In each session 16 subjects acted in the role of employers within a generated application situation on a labor market including 16 employers and 16 applicants\(^6\). The computer-aided experiment was started after all participants had correctly answered a questionnaire of control questions about the experiment. Employers first received the 16 uniquely coded short curricula vitae with information about the 16 applicants who all applied at all the employers for a one period working project\(^7\). It should be stressed that employers (students) were explicitly told that applicants were real people who exactly possessed the characteristic traits as stated in their personal data sheet. Moreover, employees were selected in advance by the authors exactly according to these profiles.

After having checked accurately all obtained profiles subjects were asked to take three decisions: 1. Determination of a rank order, 2. Wage payment, 3. Belief on exerted effort. In the first step subjects were requested to set up a personal ranking order. Therefore, they had to assign each applicant a ranking position between 1 (highest rank) and 16 (lowest rank) on their computer screen, with rank 1 being the applicant they preferred most for employment and rank 16 being the least preferred applicant. This ranking order was set up simultaneously

\(^5\)For original instructions please see appendix A.

\(^6\)At the beginning of this stage employees are named ‘applicants’ because they are not yet assigned to a specific employer. Furthermore, they remain in a passive role.

\(^7\)Profiles were neutrally coded by a randomized combination of three letters. All 16 employers were equal to the applicants. Applicants received no additional information about employers. We assumed that applicants hold no specific preferences concerning where to apply.
by all employers on the market. By this personal ranking order the probability for an employer to actually hire a certain applicant later on in order to interact with her was influenced. In a second step, employers decided about the integer amount of wage \( w \), they would actually pay an applicant in case of employment. The employers again used the profiles of the 16 applicants to reach a decision within this step. Since they did not know, at this point in time, which applicant they would employ, they were asked to define a wage for each of the 16 applicants. Thus, every wage payment got potentially relevant. Finally, students were asked which integer amount of work effort \( e \) they expected the applicants to contribute for every wage payment.

After completion of the ranking, wage payment, and belief statements for every applicant, each employer had to draw a random number between 1 and 16. The random numbers were drawn one after another by the participants themselves without putting them back and in the order of their cabin numbers randomly determined at the beginning of the experiment. This random number was the indicator for the order of the employers’ turns to actually hire an applicant from the labor market. Thus, the number also influenced the probability for an employer to be able to engage the favored applicant. The employer who drew random number 1 was coupled with the applicant he preferred most and, hence, he was allowed to actually employ the applicant he ranked number 1. This matched and afterward employed applicant was from then on no longer available on the labor market for the remaining 15 employers. Hence, she was automatically deleted from the individual ranking orders of the other 15 employers. Consequently, 15 available applicants remained on the labor market. Then it was the turn of the employer who had drawn random number 2. The applicant who was now ranked highest among the remaining 15 applicants in his personal ranking order was assigned to him. She could have been the applicant, the employer had originally ranked first. In case the employer with random number 1 had already engaged her, the applicant ranked second was assigned to the employer with random number 2. Afterward it was the turn of the employer with random number 3 and so forth. This method was applied until all applicants were assigned to an employer. Thus, at the end of the session each applicant was actually assigned to an employer. This means within the first stage after every session there were 16 employer - employee pairs. After having drawn the random number and having fed it into a separate computer by the experimenters, employers were shown the corresponding code of the applicant’s profile on their screen and hence knew which applicant they had actually employed. The wage, determined earlier by the participant, was only paid, in each case, this certain applicant. Also, only the work effort of this applicant (later determined in the second stage of the experiment) was relevant for the income of the matched employer. After having completed a questionnaire, the experimental session was finished for the students. The
Participants received their payment immediately after the completion of the sequent second experimental stage.

**Employees’ decisions (2nd stage)**

Within this stage, the 16 employees (former applicants) were asked to choose in individual sessions a work effort they were willing to offer for a given wage. The experiment was, once again, not started before a comprehensive, mainly oral, introduction to the experimental setup took place and until all participants had answered a list of control questions about the experiment correctly. First of all, in order to reach a decision, the employees were told that 6 potential employers were assigned to them\(^8\). Additionally, every employee got to know the amount of wage, each of the 6 employers would pay her. The employees neither learned what wage any employer was willing to pay a different applicant nor whether the respective employer had preferred a different applicant. The employees were then asked to choose an arbitrary integer work effort \(e\). Finally, in order to calculate the employees’ actual income, one payoff-relevant employer was determined by drawing lots out of the pool of available employers. The employees received their payment immediately after their individual sessions. Prison inmates received as a payment a credit note on their in-house account in prison.

<table>
<thead>
<tr>
<th>Location</th>
<th>Stage</th>
<th>Session</th>
<th>Subjects</th>
<th>SEX</th>
<th>AGE</th>
<th>CIT</th>
<th>STAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Bonn</td>
<td>1</td>
<td>1-6</td>
<td>6x16=96</td>
<td>M=52/F=44</td>
<td>0</td>
<td>24.4</td>
<td>G</td>
</tr>
<tr>
<td>Individual sessions</td>
<td>2</td>
<td>7-8</td>
<td>1/1</td>
<td>M/F</td>
<td>24</td>
<td>G</td>
<td>N</td>
</tr>
<tr>
<td>Cologne</td>
<td>2</td>
<td>9-10</td>
<td>1/1</td>
<td>M/F</td>
<td>31</td>
<td>G</td>
<td>N</td>
</tr>
<tr>
<td>Individual sessions</td>
<td>2</td>
<td>11-12</td>
<td>1/1</td>
<td>M/F</td>
<td>24</td>
<td>T</td>
<td>N</td>
</tr>
<tr>
<td>Berlin</td>
<td>2</td>
<td>13-14</td>
<td>1/1</td>
<td>M/F</td>
<td>31</td>
<td>T</td>
<td>N</td>
</tr>
<tr>
<td>Penitentiary</td>
<td>2</td>
<td>15-16</td>
<td>1/1</td>
<td>F</td>
<td>24/31</td>
<td>G</td>
<td>P</td>
</tr>
<tr>
<td>Gelsenkirchen</td>
<td>2</td>
<td>17-18</td>
<td>1/1</td>
<td>F</td>
<td>24/31</td>
<td>G</td>
<td>V</td>
</tr>
<tr>
<td>Penitentiary</td>
<td>2</td>
<td>19-20</td>
<td>1/1</td>
<td>M</td>
<td>24/31</td>
<td>G</td>
<td>P</td>
</tr>
<tr>
<td>Bochum-Langendreer</td>
<td>2</td>
<td>21-22</td>
<td>1/1</td>
<td>M</td>
<td>24/31</td>
<td>G</td>
<td>V</td>
</tr>
</tbody>
</table>

Table 2: Experimental protocol. In the following we denote M=male, F=female, G=German, T=Turkish, N=no previous conviction, P=property crime, and V=violent crime.

During the experiment the monetary unit ‘points’ was used. At the end, all achieved points were converted into € with an exchange rate of 1 point = 0.10 € and the amount was paid the participants. Both employers and employees could have achieved a deficit. In case a participant had reached a deficit, he had to balance it out of his endowment\(^9\). To sum up, table 2 shows the reasoned and organizational protocol of the decision experiment.

The first stage - the employers’ decisions - was conducted with students in the Laboratory for Experimental Economics at the University of Bonn. 16 subjects of all different

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\(^8\)The number of potential employers for an employee derives from the number of experimental session carried out in the first stage. At the end of every session, each employer had been assigned one applicant.

\(^9\)Participants received an initial endowment of 10 € which included the payment for the treatment of a comprehensive questionnaire.
branches of study, of both sexes, and between 20 and 30 years old took part in each of the six sessions. Altogether, decision data of 96 subjects (52 male, 44 female) were available at the end of this stage. Subsequently, four experimental sessions were conducted each in the penitentiary Gelsenkirchen (women) and in the penitentiary Bochum-Langendreer (men). In each individual session one prison inmate of different age (24 or 31 years) and crime-profiles (previously convicted because of property crime or previously convicted because of violent crime), participated. Also part of the second stage was the data ascertainment of the control group consisting of four German probands who did not have a criminal record as well as four Turkish citizens living in Germany who also did not have a criminal record in Cologne and Berlin. All of them had comparable demographic characteristics to the prison inmates.

2.6 Working Hypothesis

As illustrated, Pager (2003), Waldfogel (1994a), Boshier and Johnson (1974), and Buikhuisen and Dijkstra (1971) have argued that criminal conviction signals convicts’ untrustworthiness evoking lower employment prospects and income level for ex-inmates. According to statistical discrimination theory (Aigner and Cain, 1977; Arrow, 1973; Phelps, 1972), we conjecture an ample quantity of subjects to choose a belief-adapted payoff-maximizing strategy. Furthermore, following Holzer et al. (2002), Becker (1968), and Schwartz and Skolnick (1962), subjects might simply dislike stigmatized previously convicted applicants. Thus, independently of expected effort (if subjects consider it at all) utility is maximized by discriminating ex-offenders. Since both arguments point into the same direction implying limited income for previously convicted employees (applicants) and negative hiring preferences of employers we can state our working hypothesis by:

**Hypothesis:** Previously convicted are less trusted (paid lower wages) and less preferred for employment (assigned minor ranks). They are either expected to be less trustworthy compared to the control group (inferior belief) or simply disliked because of stigmatization, independent of (an existing) underlying belief.

Our hypothesis is approved given that all other information about ex-offenders is kept constant in the experiment. Furthermore, according to our hypothesis we expect a decrease of the discrimination degree from hiring decision and wage payments to stated beliefs on trustworthiness.

---

10In the following we use the terms ‘previously convicted’, ‘prison inmate’, ‘ex-offenders’ etc. as synonyms. The prison inmates who took part in our study were about to be released from prison within 3 month. They all planned to apply for jobs after release.
3 Results

In the following we will first analyze hiring decisions, then transferred wages and at last focus on employers’ expectations of exerted effort. The employees’ decisions will not be examined separately\textsuperscript{11}. Table 3 gives an overview on average ranks, wages, and expected efforts for not previously convicted and previously convicted applicants.

<table>
<thead>
<tr>
<th>Column (I)</th>
<th>Column (II)</th>
<th>Column (III)</th>
<th>Column (IV)</th>
<th>Column (V)</th>
<th>Column (VI)</th>
<th>Column (VII)</th>
<th>Column (VIII)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEX</td>
<td>M</td>
<td>5.5 (2.1)</td>
<td>12.2 (1.8)</td>
<td>31.8 (22.5)</td>
<td>22.1 (19.5)</td>
<td>4.66 (2.62)</td>
<td>3.23 (2.24)</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>4.8 (1.9)</td>
<td>11.5 (1.8)</td>
<td>32.7 (22.8)</td>
<td>22.3 (19.3)</td>
<td>4.90 (2.68)</td>
<td>3.39 (2.32)</td>
</tr>
<tr>
<td>AGE</td>
<td>24</td>
<td>4.7 (2.3)</td>
<td>11.7 (1.9)</td>
<td>32.0 (22.3)</td>
<td>22.0 (19.2)</td>
<td>4.82 (2.66)</td>
<td>3.29 (2.24)</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>5.6 (2.1)</td>
<td>12.0 (1.7)</td>
<td>32.5 (23.4)</td>
<td>22.4 (19.5)</td>
<td>4.74 (2.67)</td>
<td>3.33 (2.30)</td>
</tr>
<tr>
<td>CIT</td>
<td>G</td>
<td>4.3 (2.0)</td>
<td></td>
<td>33.1 (22.7)</td>
<td></td>
<td>4.90 (2.66)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T</td>
<td>6.0 (2.1)</td>
<td></td>
<td>32.3 (22.6)</td>
<td></td>
<td>4.66 (2.64)</td>
<td></td>
</tr>
<tr>
<td>STAT</td>
<td>P</td>
<td>11.2 (2.1)</td>
<td>22.4 (19.7)</td>
<td>3.33 (2.32)</td>
<td>3.33 (2.32)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>V</td>
<td>12.5 (2.9)</td>
<td>22.0 (19.7)</td>
<td>3.29 (2.36)</td>
<td>3.29 (2.36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5.1 (1.5)</td>
<td>11.9 (1.5)</td>
<td>32.2 (22.6)</td>
<td>22.2 (19.3)</td>
<td>4.78 (2.62)</td>
<td>3.31 (2.25)</td>
</tr>
</tbody>
</table>

Table 3: Average mean ranks, wages, and beliefs (number in brackets denotes standard deviation).

Column (I) shows the treatment variables (characteristics) which are to analyze and column (II) the according parameter values. In columns (III) and (IV) as well as (V) and (VI) average ranks and wages for not previously convicted and previously convicted applicants are opposed to each other, for every value of all characteristics. Columns (VII) and (VIII) display employers’ average beliefs on exerted efforts given the wages that are actually paid to employees.

3.1 Hiring (rank order)

Firstly, average mean ranks, which employers assigned to not previously convicted and previously convicted applicants, are compared. Not previously convicted applicants were, on average, assigned a significantly higher rank (5.1) by employers than previously convicted applicants (11.9, \( p = 0.000 \), Wilcoxon signed rank test, one-sided, row (9), columns (III) and (IV), table 3). This means, employers clearly preferred not previously convicted applicants within the hiring decision. Figures 2 and 4 show average ranks for all profiles and the distribution of assigned ranks for both status conditions.

\textsuperscript{11}This paper focuses on the decision behavior of the employers (students). Employees’ decisions mostly served the plausible transmission of the decision situation and will not be specified separately here. Results - previously convicted turned out to be more trustworthy - can be found in appendix B.
In both figures a substantial leap from rank 8 (last rank to be assigned to a not previously convicted) to rank 9 (first rank to be assigned to a previously convicted applicant) can be determined. Hence, a considerable split into not previously convicted and previously convicted applicants can be observed in employers’ hiring preferences.

Since a well-defined and highly significant separation of not previously convicted and previously convicted is verifiable, both subgroups can be further analyzed separately in more detail\textsuperscript{12}.

Among not previously convicted applicants (column (III), table 3) participants significantly distinguished between German (4.3) and Turkish (6.0) applicants ($p = 0.000$, Wilcoxon signed rank test, two-sided, rows (5) and (6)). Moreover, females (4.8) were clearly preferred to male (5.5, $p < 0.006$, Wilcoxon signed rank test, two-sided, rows (1) and (2)). Applicants who were 24 years old (4.7) were significantly favored over elder applicants (5.6, $p < 0.003$, Wilcoxon signed rank test, two-sided, rows (3) and (4)).

Within the group of previously convicted applicants (column (IV), table 3) a significant discrimination between property crime (11.2) and violent crime (12.5) can be detected ($p < 0.002$, Wilcoxon signed rank test, two-sided, rows (7) and (8)). Analogously with not previously convicted applicants, employers significantly preferred female (11.5) to male applicants (12.2, $p = 0.000$, Wilcoxon signed rank test, two-sided, rows (1) and (2)). However, no substantial preference for 24-year-old (11.7) or 31-year-old applicants (12.0) can be observed ($p = 0.277$, Wilcoxon signed rank test, two-sided, rows (3) and (4)).

\textsuperscript{12}Our research question does not aim in the first instance the analysis whether for example women in general have lower employment chances but whether female prison inmates with a precise profile of previous conviction are disadvantaged in particular. Therefore, this separation of the data for the analysis makes sense.
The observed hiring scheme gets further support by a conjoint-measurement-analysis where a multi-attributive preference structure model characterizes the contribution of single parameter values \( a \) (e.g., M/F) to the perceived subjective total utility of a specified profile \( c \) (see for an overview BENNA, 1998; HAIR, ANDERSON, TATHAM, and BLACK, 1995; BACKHAUS, ERICHSON, PLINKE, and WEIBER, 1994; GREEN, TULL, and ALBAUM, 1988). It is assumed that the total utility of a profile is additively composed by the part-worth utilities of the profile’s characteristics’ parameter values. In our case, a typical preference structure model for all \( n = 96 \) subjects is to be estimated. The corresponding minimization problem is given by:

\[
\sum_{i=1}^{96} \sum_{c=1}^{C} (U_{ci} - \hat{U}_{ci})^2 = \sum_{i=1}^{96} \sum_{c=1}^{C} \left( U_{ci} - \left( \hat{\alpha}_{0i} + \sum_{a=1}^{A_{m-1}} \sum_{m=1}^{M} \hat{\alpha}_{aim} \cdot x_{acm} \right) \right)^2 \rightarrow \text{min!}
\]

with:

\( \hat{U}_{ci} = \) estimation of total utility value that a subject \( i \) assigns to profile \( p \)

\( \hat{\alpha}_{0i} = \) estimated basic utility

\( \hat{\alpha}_{aim} = \) estimated part-worth utility of parameter value \( a \) from characteristic \( m \)

for subject \( i \)

\( \hat{x}_{acm} = \begin{cases} 
1 & \text{if profile } p \text{ contains value } a \text{ in characteristic } m \\
0 & \text{otherwise}
\end{cases} \)

Applying an OLS-estimation algorithm the obtained part-worth utilities are identical with the arithmetic mean of the corresponding part-worth utilities gained from each subject. For each parameter value combination of the characteristics SEX, AGE, CIT, and STAT we can now determine subjects’ total utility for each profile. The total utility is also provided for profiles not originally part of our investigation (e.g., M31TV). Figure 3 displays the estimated total utility for all 24 possible application profiles.
The outcome of our analysis ascribes the characteristic STAT the highest importance (63.99%) within the ranking order decision with the parameter values ‘not previously convicted’, ‘property-’ and ‘violence crime’ being clearly distinguished. A Fisher-Pitman permutation test ($p < 0.004$, one-sided) clearly confirms estimated utility from not convicted applicants’ profiles (11.86) to be significantly higher than from previously convicted job seekers (4.28) and an explicit neglect of violent crime applicants against property delinquents (3.40 and 4.96, $p < 0.008$, two-sided). The characteristic CIT maintains a relative importance of 13.95%, with German applicants being considerably preferred to Turkish ones. Again, the test statistic shows this distinction to be substantial (7.67 and 5.95, $p = 0.000$, Fisher-Pitman permutation test, two-sided). Although, by comparison, the characteristics AGE and SEX (relative importance of 11.06% and 10.99%) do not strongly influence employers’ ranking order considering the entire group of applicants, employers in general have a higher utility from female compared to male (7.14 and 6.48) and from 24-year-old compared to 31-year-old applicants (7.08 and 6.54, both $p = 0.000$, Fisher-Pitman permutation test, two-sided).

There exists a nearly perfect correlation between the estimated and empirical ranking data (Pearson’s $r = 0.999$ and Kendall’s $\tau = 0.967$, each with $p = 0.000$). Consequently, from our data, highest chances of being employed have young female German applicants who are not previously convicted. Contrary, most disadvantaged are those convicted older candidates with Turkish citizenship.\textsuperscript{13}

\textsuperscript{13}A separated conjoint investigation for male and female subjects shows similar results.
3.2 Wage payment (trust behavior)

Secondly, in the next step we compare average wages the employers have paid not previously convicted and previously convicted employees (see table 3). Employees holding no conviction were on average paid a significantly higher wage (32.2 points) than previously convicted (22.2 points, \( p = 0.000 \), Wilcoxon signed rank test, one-sided, row (9), columns (V) and (VI), table 3). It is noteworthy that on average previously convicted receive wages considerably different from zero. Furthermore, the existing wage gap (-31.10%) confirms the findings of Waldfogel (1994a,b) who detected an income decrease of up to 28% for those convicted.

Figures 2 and 4 give an overview of average payed wages depending on a specific employee’s profile and a general view on the distribution of wages according to employees’ status.

![Figure 4: Distribution of assigned ranks and wages (wages are categorized according to ranges).](image)

From the figures it becomes clear that previously convicted employees receive considerably lower wages on average compared to not previously convicted ones and that most wages they are paid are settled in the low wage sector with a decreasing tendency. Thus, once again a clear gap between not previously convicted and previously convicted employees can be observed.

Our previous finding again allows us to separately analyze both subgroups. Among not previously convicted employees (column (V), table 3) participants substantially distinguished between German (33.1 points) and Turkish applicants (32.3 points, \( p < 0.001 \), Wilcoxon signed rank test, two-sided, rows (5) and (6)). Women (32.7 points) received slightly significantly higher wage payments compared to men (31.8 points, \( p < 0.074 \), Wilcoxon signed rank test, two-sided, rows (1) and (2)). Between the two age groups (24 and 31), no difference in the behavior of wage payment can be profen (32.0 and 32.5 points, \( p = 0.998 \), Wilcoxon signed rank test, two-sided, rows (3) and (4)).
Among the previously convicted employees (column (VI), table 3), no significant discrimination between property crime (22.4 points) and violence crime (22.0 points) can be detected ($p = 0.268$, Wilcoxon signed rank test, two-sided, rows (7) and (8)). Moreover, there is no sufficient evidence that female previously convicted (22.3 points) were significantly favored over male ones (22.1, $p = 0.630$, Wilcoxon signed rank test, two-sided, rows (1) and (2)). Furthermore, both age groups (24 and 31) received almost similar wage payments (22.0 and 22.4 points, $p = 0.173$, Wilcoxon signed rank test, two-sided, rows (3) and (4)).

Coefficients from a Tobit regression analysis underline the highly significant and negative impact of STAT and CIT on wage payment attitudes (see table 4).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Wage payment</th>
<th>Expected effort</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>All Males</td>
<td>Females</td>
</tr>
<tr>
<td>SEX</td>
<td>.499 (0.451)</td>
<td>.798 (.567)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.179)</td>
</tr>
<tr>
<td>AGE</td>
<td>.402 (.431)</td>
<td>−.577 (.567)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.043)</td>
</tr>
<tr>
<td>CIT</td>
<td>−1.612*** (-1.610)</td>
<td>−1.010 (.928)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(.111)</td>
</tr>
<tr>
<td>STAT</td>
<td>−10.872*** (-5.28)</td>
<td>−10.639*** (-.694)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>−11.591*** (.904)</td>
</tr>
<tr>
<td>Constant</td>
<td>49.183*** (.174)</td>
<td>45.178*** (.2343)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.704*** (.470)</td>
</tr>
</tbody>
</table>

Table 4: Coefficients from Tobit regression analysis for dependent variables wage payment and expected effort ($*** p < 0.01$, number in brackets denotes standard error). We apply 0 for M, 24, G, and N and 1 for F, 31, T, and P/V as dummy variables.

However, the foreigner discrimination effect is mainly driven by female subjects. Males do not exhibit a significant disadvantage of Turkish employees. Furthermore, females clearly consider 31-year-old applicants to be more trustworthy.

In contrast to hiring, no consistent preference scheme within the wage payment decisions can be observed. However, a direct comparison of assigned average ranks and paid average wages which distinguishes between not previously convicted and previously convicted applicants yields a highly significant negative correlation (Spearman's $\rho = -0.22$, $p < 0.002$). This proves that a substantial negative correlation between ranks and wages exists - those who are less preferred for employment also suffer from substantially lower income.

### 3.3 Beliefs on exerted effort (reciprocity)

The evidence previously found in hiring and wage payments clearly leads to the conclusion that the first part of our working hypothesis cannot be rejected. Hence, it is shown that previously convicted ex-offenders are considerably less preferred for interaction and less trusted. To investigate motives and determinants for manifested behavior further, we next take a
closer look at stated beliefs on exerted offer. In addition, we will analyze the interplay of elicited beliefs and prior hiring preferences and wage allocation at an individual level.

The expected working effort indicates the employers’ expectation of exerted effort which an applicant would contribute in case of employment and depending on the wage she is paid. Table 3 and a one-sided Wilcoxon signed rank test show that employees holding an empty record are expected to exert an higher effort (4.78) compared to previously convicted (3.31, \(p = 0.000\), row (9), columns (VII) and (VIII)). Yet, it is reasonable to assume that previously convicted employees’ expected efforts are biased downwards because they receive substantially lower wage payments. Opposing average wages and corresponding beliefs on exerted efforts yields a positive correlation coefficient (Spearman’s \(\rho = 0.70, p < 0.000\)). To overcome this methodological issue in a first step we look at the different wage margins and corresponding effort beliefs separately (figure 5). This analysis evidences that in the wage margins [1-10] \((p < 0.011)\), [31-40] \((p < 0.001)\), and [41-50] \((p = 0.000)\), all Wilcoxon signed rank test, one-sided) a significantly higher work effort exerted by not previously convicted was expected compared to convicted. However, on the other hand, for the wage margins [0] \((p = 1.000)\), [11-20] \((p = 0.127)\), [21-30] \((p = 0.216)\), [51-60] \((p = 0.134)\), [61-70] \((p = 0.328)\), and [71-80] \((p = 0.063)\), all Wilcoxon signed rank test, one-sided), and therefore in 54% of all cases of positive wage payment for previously convicted, no substantial differences in employers’ expectations are verifiable\(^{14}\).

![Figure 5: Expected effort dependent on wage margin.](image)

Thus, in the relevant wage margin [0-50] (see figure 4) for applicants who are previously convicted, we observe some lower expectations of work effort exerted by previously convicted.

\(^{14}\)Wage margins [81-90] and [91-100] are not considered since no previously convicted received a positive wage within these margins (see also figure 5).
This, to a certain extent, justifies why previously convicted applicants are assigned higher ranks and lower wages and it mirrors a possible lack of trust toward the prison inmates’ reliability. Nevertheless, the fact that no consistent proof of this behavior exists is an indication of employers’ intended discrimination behavior. Employers might prefer previously convicted applicants to a lesser extent although they do not expect a comparably lower work effort exerted by previously convicted in all cases.

Results from a Tobit regression confirm our picture (see table 4). Being convicted or holding a Turkish citizenship leads to lower employers’ expectations toward reciprocity. Female subjects belief in significantly inferior efforts of Turkish employees. This might explain why discrimination effects in hiring are mainly driven by female participants. In addition, in general, women are thought to be more trustworthy, from both male and female participants.

3.4 Do ex-offenders face discrimination?

To get a better insight why ex-offenders face lower employment opportunities and substantial wage losses - both in the real labor market and in the laboratory - we will now analyze the interplay of elicited beliefs and prior stated hiring preferences and wage allocations at an individual level. To reveal the individual motives and determinants of unfold behavior we use the following approach: First, we separately investigate each individual’s hiring attitudes toward ex-offenders and not previously convicted by applying a two-sided Wilcoxon signed rank test. Thus, thereafter we can classify each subject according to whether ex-offenders were significantly less or more preferred or if there is no difference among the two examined groups. In the next step the same procedure is utilized for wage payment and elicited beliefs. Using a two-sided Fisher-Pitman permutation test for paired replicates we group subjects dependent on their favoring, negatively discriminating, or neutral wage payments and stated beliefs about expected effort\(^\text{15}\). Combining the outcome of the described multi-level analysis a behavioral categorization for each of our 96 subjects can be generated. Table 5 shows the relevant permutations and the conducted type classification.

<table>
<thead>
<tr>
<th>Classification criterion</th>
<th>Hiring</th>
<th>Wage payment</th>
<th>Belief ((w))</th>
<th>Belief ((w = 100))</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Statistical discrimination</td>
<td>−</td>
<td>−</td>
<td>−/+/o</td>
<td>+/o</td>
</tr>
<tr>
<td>(2) Taste based discrimination</td>
<td>−</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>(3) Avoidance</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>(4) No difference</td>
<td>o</td>
<td>o</td>
<td>o</td>
<td>o</td>
</tr>
<tr>
<td>(5) Convicted favored</td>
<td>+</td>
<td>o</td>
<td>+/o</td>
<td>+/o</td>
</tr>
<tr>
<td>(6) Others</td>
<td>−/+/o</td>
<td>−/+/o</td>
<td>−/+/o</td>
<td>−/+/o</td>
</tr>
</tbody>
</table>

Table 5: Individual types dependent on hiring, wage payment, and stated beliefs. A ‘−’ (‘+') denotes a negative (positive) discrimination of ex-offenders. ‘o’ stands for no statistical differences.

\(^{15}\)A discriminating classification is carried out applying a \(p < 0.05\)-significance level.
Applying this individual pattern, can we explain our results with existing models of discrimination? Economic theories of discrimination can be classified into two main categories: statistical or rational discrimination models and taste based models. Statistical discrimination describes an income maximizing behavior based on the interpretation of new data in light of prior information (Aigner and Cain, 1977; Arrow, 1973; Phelps, 1972). Contrary, taste based discrimination illustrates a situation wherein individuals maximize utility. They are willing to sacrifice money, wages, or profits in order to cater to their prejudice (Becker, 1961)\(^\text{16}\).

Within our scheme a subject is supposed to show statistical discrimination when this particular person consistently discriminates in hiring, wage payment, and stated beliefs. However, focusing only on beliefs associated with actual paid wages, we here again face a similar methodological issue of downward biased beliefs. Since the expectation on exerted effort is elicited after wage payment we can not exactly say whether the given belief influenced the wage payment decision (thus, explicitly existing already beforehand) or vice versa (implying that a belief on reciprocity must not necessarily have existed ex-ante). The later case implies that we might actually observe taste based instead of statistical discrimination. To control for this ambivalence we introduce a fourth criterion (belief \(w = 100\), see table 5). In the experiment we also asked subjects what they believe how much effort employees would exert in case they received a wage payment of 100 (full trust). This information gives us a hint on subjects actual intentions and motives\(^\text{17}\). Consequently, a subject is classified a ‘statistical discriminator’ only if all four criterion consistently show a discrimination of previously convicted employees.

Individual taste based discrimination occurs when subjects discriminate in hiring and wage payment against their stated belief on employees’ reciprocity. Hence, we assign a subject to the taste based discrimination group if discrimination in hiring and wage payment is detected. Moreover, taking the existence of biased beliefs into account the third and fourth criterion must be fulfilled. Taste based discrimination is also present when an even positive belief on employees’ trustworthiness is given. Again, it is reasonable to assume that a person who intentionally discriminates according to the fourth criterion does so also with the third. Furthermore, taste based discrimination exists when a comparatively higher effort level in case of equal wages is expected.

In addition to the classification according to discrimination theory we find further types

\(^{16}\)Fershtman and Gneezy (2001) show that discrimination can be described as the outcome of these two aspects. They add the possibility of people having stereotypes about others that can be either true or not. In the case that these stereotypes are true, a special case of statistical discrimination arises. Even if they are not true, they may influence the interaction between individuals or groups and lead to biased decisions.

\(^{17}\)We assume that subjects do not substantially deviate in their expectation structure in the most extreme case of \(w = 100\) compared to \(w\).
of behavior: Forming a third group of discriminators, avoiders are antipathetic in hiring ex-offenders. Nevertheless, once employed they do not discriminate previously convicted applicants, neither in wage payment nor in stated beliefs. The fourth group is represented by those participants who did not display any kind of statistical significant discrimination attitudes toward ex-offenders. The last group of interest is given by subjects who at some point favor persons with a negative record by some reason (e.g., altruistic preferences).

85 out of 96 subjects fall into this classification scheme (88.54%). Figure 6 shows the distribution of types dependent on our formulated criteria.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statistical Avoiders</td>
<td>26.98</td>
<td>9.08</td>
<td>17.90</td>
</tr>
<tr>
<td>Taste based Avoiders</td>
<td>21.85</td>
<td>12.17</td>
<td>9.68</td>
</tr>
<tr>
<td>No difference</td>
<td>21.48</td>
<td>13.43</td>
<td>8.05</td>
</tr>
<tr>
<td>Favoured</td>
<td>15.00</td>
<td>8.64</td>
<td>6.36</td>
</tr>
<tr>
<td>Others</td>
<td>11.46</td>
<td>7.29</td>
<td>4.17</td>
</tr>
</tbody>
</table>

**Figure 6: Types of individual behavior and empirical frequencies.**

Our picture shows that in general ex-offenders are mostly disadvantaged because they are not liked and therefore are intentionally discriminated. 31.25% (= 30 persons) of all subjects exhibit taste based preferences. This finding gets an interesting further support by the quantity of subjects (21.88% = 21 persons) who tried to avoid an interaction with ex-offenders, although, once confronted with a previously convicted employee, they would not behave in a discriminating way. Merging the two previous groups we find that in 53.13% (= 51 subjects) of all cases ex-offenders are penalized - regardless of their potential performance.

In contrast, 23.96% (= 23 subjects) of our participants expected ex-offenders to manifest inferior reciprocity compared to the control group. Only 8.33% (= 8 subjects) of all subjects did not distinguish between employees according to previous conviction. The number of those who preferred them is insignificantly small (3.13% = 3 subjects). Looking separately at male and female subjects we observe that more males are willing to deliberately discriminate ex-offenders. Contrary, more female participants belief previously convicted to be less trustworthy\(^\text{18}\).

\(^{18}\)However, this difference is not significant \((p = 0.132, \text{Pearson chi}^2 = 2.2689, \text{Chi square test, two-sided})\).
Taking even into account that some of the subjects assigned to the statistical discrimination group are actually taste based discriminators we can reveal a multitude of motives for the behavior found at hiring and wage payment stages. To sum up, the evidence is two-edged. On the one hand subjects do actually believe ex-offenders to act more selfishly and less reciprocal compared to the control group. Consequently, trust plays an important role in interactions with ex-offenders which gives support to our advanced hypothesis. However, a substantial amount of participants penalizes stigmatized ex-inmates independent of an underlying assumption considering their performance. Taking a potential belief bias into account this picture becomes even more distinctive and pessimistic. The later evidence also clearly confirms our working hypothesis.

4 Conclusion

In this paper we empirically examined whether educated (former) prison inmates are disadvantaged in employment seeking and income level because of the lack of trust and inferior expectations concerning their trustworthiness. Utilizing a laboratory experiment we were able to induce labor supply homogeneity and to control the composition of target and control group. This allowed us to eliminate typical methodological issues of previous empirical studies. Although external validity of our findings might be limited to some extent our study delivers and important insight into employers’ reluctance to hire previously convicted applicants. By strictly controlling variables that are usually not controllable or even observable to the researcher and by systematically varying our treatment variables our results allow to infer that trust and expected reciprocity are key determinants of employers’ behavior.

According to our initial hypothesis we find substantial support for a disadvantage of ex-offenders caused by discrimination. Our results show that previously convicted applicants are discriminated not only within employment decisions where previously convicted applicants were clearly less preferred but also through significantly lower wage payments. Consequently, they have substantially lower chances of being employed and of receiving an adequate wage compared to not previously convicted applicants. Beyond this fact, we found substantial evidence that, among not convicted, Turkish job seekers are significantly disadvantaged. However, this evidence is mainly driven by female employers who also belief Turkish applicants to be less trustworthy.

In addition, detected preferences for not convicted female employees within hiring as well as the balance of wage payments between male and female supports the results of Langenhoff and Rohlmanns (2006). Conducting a survey among temporary job firms in Germany these authors showed that chances of a job placement for men and women only differed
marginally. Since in our study we focused on trust and reciprocity, and given the fact that we were able to eliminate any entrance barriers typical for some types of branches such as physical hard work, it can be shown that women even have a slight advantage over men.

Does only employers’ lack of trust explain lower employment chances and comparably lower wages of previously convicted applicants? First, a comparison of ranks and wages has made clear that persons who are higher ranked are not always paid lower wages. Furthermore, contrasting paid wages and therewith associated expected working effort reveals the possibility to show that employers partly do not expect lower working efforts exerted by lesser preferred and previously convicted applicants within the wage categories relevant to previously convicted applicants. This is a clear indication for the fact that employers also consciously penalize prison inmates despite similar expectations of reliability. From an investigation at the individual level we obtained further support for this finding. Although trust plays an important role in interactions with ex-offenders a substantial amount of participants penalizes stigmatized ex-inmates independent of an (existing) underlying assumption considering their performance. Moreover, a third mayor group of subjects tried to minimize the probability for an actual interaction with ex-offenders, although, once confronted with a previously convicted employee, they would not behave in a discriminating way. Taking these findings together we deliver a better picture about the causes for ex-offenders’ lower employment opportunities and wage losses at the real labor market.

The results of our study advise to invest in an increased preparatory and accurate qualification of prison inmates as well as to take care of them enduringly after release in order to support professional and social rehabilitation of previously convicted people by means of enduring education and its certification as well as signaling it. A decline of the relapse risk can thus be accomplished. Furthermore, with the help of extensive clarification of their behavior, negative and discriminating expectations and lack of trust as well as selective employment decisions which results consequentially have to be dispelled among potential employers. Incentives for an enlarged employment of former prison inmates and a more intensive engagement for this group of employers have to be established. Furthermore, possibilities in order to balance the paucity of information and to reduce fears of contact are given by arrangements to build confidence and by adequate certification and signaling of occupational qualification.

For future complementary empirical work we suggest a systematical investigation of employer’s ex-ante elicited expectations on employees’ exerted efforts. In addition, employers’ hiring behavior can be in the focus on interest when fully enforceable contracts are given. Moreover, the effect of previous baseless impeachment and it’s stigmatizing impact on employment opportunities and income levels are interesting approaches to plot a more differentiated picture of employers’ behavior.
Literature


Appendix

A. Instructions for employers (in German)

Instruktionen für das Experiment


Um Ihnen Anonymität gewährleisten zu können, werden Sie vor Beginn des Experiments eine persönliche Kennzahl ziehen. Durch die persönliche Kennzahl ist es uns nicht möglich, einzelne Entscheidungen oder Antworten aus dem Experiment konkreten Personen zuzuordnen.


1 Punkt = 0.10 EURO


Das Experiment ist in einzelne Schritte unterteilt. Am Ende des Experiments bitten wir Sie, verschiedene Fragen zu beantworten, die wir für die statistische Auswertung des Experiments benötigen. Ihre Antworten werden anonym ausgewertet.

Überblick über das Experiment


Das Experiment besteht aus insgesamt drei Schritten, wobei Sie als Arbeitgeber heute Entscheidungen in zwei Schritten davon treffen müssen:

1. Schritt: In diesem Schritt erstellen Sie eine persönliche Rangordnung der Bewerber.

2. Schritt: In diesem Schritt legen Sie - bevor ein spezifischer Bewerber tatsächlich eingestellt wird - den Lohn fest, den Sie jedem möglichen Bewerber im Falle einer Einstellung zahlen werden. Die Höhe deslohns können
Sie für jeden Bewerber individuell festlegen.

An dieser Stelle ist nach der Beantwortung eines Fragebogens die heutige Experimentssitzung für Sie beendet. Bevor Sie den Fragebogen bearbeiten, erfahren Sie auf Ihren Bildschirmen, welchen Bewerber Sie tatsächlich einstellen.


Ausführliche Beschreibung des Experimentablaufs

1. Schritt: Rangordnungs-Entscheidung der Arbeitgeber
In diesem Schritt legen Sie an Ihren Bildschirmen Ihre persönliche Rangordnung der 16 Bewerber fest. Sie erhalten dazu 16 codierte Kurzlebensläufe mit Informationen über die 16 Bewerber. Die Kurzlebensläufe der Bewerber sehen wie folgt aus, wobei der "Text" bei verschiedenen Bewerbern natürlich unterschiedlich ist:

<table>
<thead>
<tr>
<th>Alter</th>
<th>text</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geschlecht</td>
<td>text</td>
</tr>
<tr>
<td>Nationalität</td>
<td>text</td>
</tr>
<tr>
<td>Familienstand</td>
<td>text</td>
</tr>
<tr>
<td>Schulbildung</td>
<td>text</td>
</tr>
<tr>
<td>Berufliche Qualifikationen</td>
<td>text</td>
</tr>
<tr>
<td>Berufliche Zusatzkenntnisse</td>
<td>text</td>
</tr>
<tr>
<td>Bemerkungen</td>
<td>text</td>
</tr>
</tbody>
</table>

Beachten Sie, dass:

1. es sich bei den Bewerbern um tatsächliche Personen handelt und,
2. dass die Bewerber, die in diesen Kurzlebensläufen genannten Eigenschaften tatsächlich besitzen.


Die Eingabemaske am Computer für die Rangordnungsentscheidung sieht wie folgt aus:
Wie wird Ihnen ein Bewerber zugeordnet?

Nach Beendigung des zweiten Experimentsschrittes (Lohnfestlegung) wird jeder Arbeitgeber eine Zufallszahl zwischen 1 und 16 ziehen. Diese Zufallszahl bestimmt die Reihenfolge, in welcher die Arbeitgeber ihre Bewerber tatsächlich zugeordnet bekommen und beeinflusst damit ebenfalls die Wahrscheinlichkeit, mit der Sie einen gewünschten Bewerber später tatsächlich einstellen können.


2. Schritt: Lohn-Entscheidung der Arbeitgeber

In diesem Schritt bestimmen Sie am Bildschirm die Höhe des Lohnes, den Sie einem Bewerber im Falle einer Einstellung zahlen werden. Da Sie noch nicht wissen, welchen Bewerber Sie einstellen werden, müssen Sie für jeden der 16 Bewerber einen Lohn festlegen. Beachten Sie dass jede Lohnzahlung potentiell relevant ist. Für diese Entscheidung benutzen Sie erneut die codierten Kurzlebensläufe der 16 Bewerber. Der Lohn, den Sie zahlen, ist ein ganzzahler Wert zwischen 0 und 100, d.h.

\[ 0 \leq \text{Lohn} \leq 100. \]

Die Eingabemaske am Computer für die Löhne sieht wie folgt aus:

Nachdem Sie erfahren haben, mit welchem Bewerber Sie tatsächlich interagieren, bitten wir Sie, zum Abschluss einen Fragebogen zu bearbeiten. Danach ist die heutige Experimentssitzung für Sie beendet.

3. Schritt: Entscheidung der Bewerber


Die Bewerber können einen beliebigen ganzzahligen Arbeitseinsatz zwischen 1 und 10 wählen, d.h. $1 \leq \text{Arbeitseinsatz} \leq 10$.

Der Arbeitseinsatz kommt dem Arbeitgeber zugute. Für die Bewerber verursacht der Arbeitseinsatz Kosten, die von der Höhe des Arbeitseinsatzes abhängen. Je höher die Arbeitsleistung, desto höher sind die Kosten.

Dieser Schritt geschieht zu einem anderen Zeitpunkt nach diesem Experiment, innerhalb einer gesonderten Experimentssitzung.
Wie berechnen sich die Einkommen?

**Einkommen der Arbeitgeber: Ihr Einkommen** Ihr Einkommen hängt davon ab, welchen Lohn Sie dem von Ihnen eingestellten Bewerber gezahlt haben und welchen Arbeitseinsatz der Bewerber für diesen Lohn geleistet hat. Ihr Einkommen wird wie folgt bestimmt:

\[
\text{Ihr Einkommen} = 10 \times \text{Arbeitseinsatz des Bewerbers} - \text{Lohn}
\]

Wie Sie aus der obigen Formel sehen, ist Ihr Einkommen umso höher, je höher der geleistete Arbeitseinsatz des Bewerbers ist. Gleichzeitig ist Ihr Einkommen umso höher, je tiefer der Lohn ist, den Sie dem Bewerber zahlen.

**Einkommen der Bewerber: Einkommen des von Ihnen eingestellten Bewerbers** Das Einkommen Ihres Bewerbers entspricht seinem Lohn abzüglich der Kosten seines Arbeitseinsatzes, die er zu tragen hat. Das Einkommen Ihres Bewerbers berechnet sich wie folgt:

\[
\text{Einkommen Ihres Bewerbers} = \text{Lohn} - \text{Kosten für seinen Arbeitseinsatz}
\]

Die Kosten für den Bewerber sind umso höher, je höher der von ihm gewählte Arbeitseinsatz ist. In der nachfolgenden Tabelle sind die Kosten für jeden möglichen Arbeitseinsatz aufgeführt:

<table>
<thead>
<tr>
<th>Arbeitseinsatz</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kosten</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
<td>18</td>
</tr>
</tbody>
</table>

Das Einkommen Ihres Bewerbers ist umso höher, je höher sein Lohn ist. Außerdem ist sein Einkommen umso höher, je niedriger der von ihm geleistete Arbeitseinsatz ist.

Die Einkommen aller Arbeitgeber und Bewerber werden in derselben Weise berechnet. Jeder Arbeitgeber kann also das Einkommen seines Bewerbers berechnen und jeder Bewerber kann das Einkommen seines Arbeitgebers ermitteln.

Beachten Sie, dass Arbeitgeber und Bewerber jeweils auch Verluste erzielen können. Sollten Sie am Ende des Experiments insgesamt einen Verlust erzielt haben, müssen Sie diesen aus Ihrem Startgeld (= 10 EURO) begleichen.
B. Employees’ exerted efforts

Figure 7: Actual effort of previously convicted employees and control group. All differences are significant at a $p = 0.000$-significance level.