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In-work benefits for low wage jobs: Can additional income hinder labor market integration?

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Beiträge zum wissenschaftlichen Dialog aus dem Institut für Arbeitsmarkt- und Berufsforschung

No. 28/2007

In-work benefits for low wage jobs

Can additional income hinder labor market integration?

Gerhard Krug

Bundesagentur für Arbeit

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Auch mit seiner neuen Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

Also with its new series "IAB Discussion Paper" the research institute of the German Federal Employment Agency wants to intensify dialogue with external science. By the rapid spreading of research results via Internet still before printing criticism shall be stimulated and quality shall be ensured.

In-work benefits for low wage jobs

Can additional income hinder labor market integration?

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Abstract

By financially supplementing low wages, in-work benefits are an instrument of active labor market policy to encourage labor market integration of low skilled and long-term unemployed persons. The hypothesis of this paper is that the financial benefit from the state, even though increasing the overall wage, is interpreted by the employee as a signal that employers are not willing to behave according to the norm of reciprocity and lowers wage satisfaction. This leads to negative side effects on employment stability foiling positive effects on labor market integration. This hypothesis is tested using a survey of in-work benefit recipients and of nonrecipients as a comparison group. The method of propensity score matching is applied to eliminate all compositional differences between benefit recipients and nonrecipients except for the source of their income. It is shown that in-work benefits reduce wage satisfaction (as an indicator of perceived violations of reciprocity) by 14 percentage points. However, whether this explains why in-work benefits are not successful in promoting employment stability remains an open question.

JEL-Classification: J48, C1, C41, D63

Key Words: in-work benefit, wage satisfaction, reciprocity, propensity score matching

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1 Introduction

In the recent years in-work benefits (Scharpf, 1994; Whitehouse, 1996) have become an important instrument of labor market as well as social policy in many Western Countries. In-work benefits are a supplementation of low wages with a financial benefit provided by the welfare system. One of the earliest implementations is the Earned Income Tax Credit (EITC) introduced in 1975 in the US. The original goal was to avoid poverty in low-income families with children, especially single mothers. 1994 the EITC was extended to low income earners without children. Following the example of its success, several European Countries introduced their own variants, e.g. Great Britain introduced the WFTC (Working Family Tax Credit) and France the "Prime Pour l`Emploi". Other in-work benefits have been implemented in Belgium and the Netherlands (Brücker and Konle-Seidl, 2006, Blundell, 2000).

Despite its pervasiveness in most Western welfare states, the aims pursued with in-work benefits vary with the national context. Whereas Anglo-Saxon in-work benefits are aimed at attenuating the poverty effects of a large low wage sector and low levels of unemployment benefits, in continental Europe in-work benefits are intended as an instrument for promoting the *extension* of a low wage sector given a rather *high* level of social security (Eichhorst, 2006). Especially in Germany they are not so much aimed at the working poor but at financially motivating the unemployed to take up jobs with wages below the level of unemployment benefits (Vierling, 2002; Spermann, 2002; Walwei, 2002). Several pilot-projects were started in the early 2000s to evaluate the effects of different implementations of temporary in-work benefits (Kaltenborn 2003). The results of these projects vary. Whereas evaluation of the "Hamburger Model" (a combination of in-work benefit with a wage subsidy to the employing firm) showed positive results on integrating the unemployed into stable employment (Jirjahn et al., 2006) the "Mainzer Modell" (MZM) has shown a neutral or even negative effect on employment stability (Kaltenborn et al., 2005).

However, most empirical evidence on Germany's in-work benefits suggests that they neither successfully motivate the unemployed to take up

low paid jobs nor do they have an effect on permanent labor market integration. On the contrary, they are plagued by rather high dropout rates during the supplementation period[i]. For example dropout rates in the "Hamburger Modell" were noted to be 56% of all benefit recipients (Gerhardt and Meyer Larsen, 2005: 12, see also Jirjahn et al., 2006: 27; Gerhardt and Prang, 2003: 22), the dropout rate in the "Mainzer Modell" during the first year was between 40 and 50% (Kaltenborn et al., 2005: 38) and in the "Baden-Württemberger Einstiegsgeld" dropout rates reached 47% (Dann et al., 2002: 49). At least for the "Mainzer Modell", where such data is available, it can be said that dropout does not seem to be motivated by the change to a better paid job. On the contrary about 80% of former benefit recipients change into a status different than employment, with 66% returning to the former unemployment status.

For an explanation this paper tries to identify one possible hindrance in motivating the unemployed to take up and most of all to *stay* in jobs by financially supplementing them with an in-work benefit. It is the assumption that people behave as rational utility (i.e. money) maximizers. Following the reasoning laid out by neoclassical economic agency theory, the unemployed are assumed to maximize their financial utility and to face only objective (rather than subjective) restrictions (Opp, 2004). More specifically, the expectation that in-work benefits will motivate the unemployed to take up employment in the low wage sector is based on the reservation wage assumption. The reservation wage is the minimum wage level that the unemployed are prepared to accept for work (Cahuc and Zylberberg, 2004: 8f) and is seen to be determined by the level of the unemployment benefit, especially for unskilled labor. Therefore an unemployed person will accept a job offer only if the wage paid by the firm reaches or surpasses the reservation wage / level of unemployment benefit. By supplementing low wages with an in-work benefit, active labor market policy aims at lifting wage offers from below the reservation wage over or at least up to the reservation wage threshold. This is expected to motivate labor market participation because financial utility from the overall income is higher than from the unemployment benefit. After having accepted the job, this argumentation means that receiving an in-work benefit should lead to a higher employment stability compared to regular employment without additional income, because opportunity costs are higher.

Giving up the subsidized job would result in a (higher) loss of income than giving up a regular job. This implies that more income is valued more highly irrespective of its source. But for in-work benefits the additional income does not derive from the employment relationship, but is a benefit granted by the state. This paper proposes that subsidized income is valued less even if it is higher than non-subsidized income, because social exchange relations in firms are more complex than neoclassical economics suggests. This is done on the basis of findings in sociology as well as experimental economics on the impact of the norm of reciprocity, more specifically the reciprocity of payment and job performance in employment relations.

2 Reciprocity in employment relations

The term reciprocity originates from early 20th century anthropological and ethnological analysis (Mauss, 1990; Firth, 1959; Malinowski, 2001; Sahlins, 1965) where it describes the basic principle or norm of gift exchange in non-market economies. Lately the principle of reciprocity has received much attention from scholars of sociology, economics and social-psychology alike, describing the relation between what is given by ego and what is expected to be returned by alter not only in non-market but also in market exchange. However, what is meant by the term reciprocity differs not only between but also within disciplines. As Sobel (2005) argues, reciprocity can be seen as intrinsic or instrumental. If it is instrumental, then it follows the basic principles of utility maximization. For example ego might be motivated by instrumental reciprocity if he/she returns a gift, kindness etc. because he/she wants to "sustain a profitable long-term relationship or to obtain a (profitable) reputation for being a reliable associate". On the other hand, reciprocity is intrinsic, when ego is "sacrificing his own material consumption to increase the material consumption of others" (Sobel, 2005: 392). As Gintis (2000), who makes a similar distinction between weak and strong reciprocity, points out: "However laboratory experiments, conducted in many different social settings by different research groups, consistently show that people tend to behave prosocially and punish antisocial behavior, at a cost to themselves,

even when the probability of future interactions is extremely low, or zero" (Gintis, 2000: 177). This quote also touches upon another aspect of reciprocity. Not only does the term refer to the repaying of kindness with kindness, but also to the reacting with unkindness towards unkindness. In the former case reciprocity is said to be constructive, in the latter it is destructive (Sobel, 2005: 397; Fehr and Gächter 2000). Following the work of classical anthropological exchange theorists, Molm, Collett and Schaefer (2007) use yet another distinction, the one between direct and indirect reciprocal exchange. In direct reciprocal exchange the benefits are given from ego to alter and alter to ego in return, whereas in indirect reciprocity ego gives benefits to alter but receives benefits from a third person.

A different, very encompassing typology is given by Sahlins (1999), who views reciprocity as a continuum ranging from generalized reciprocity to negative reciprocity with balanced reciprocity in between the two. An exchange relation is characterized by generalized reciprocity if there is only an implicit expectation about to which degree, when or even if alter will reciprocate ego's gift. In this regard the social side of the transaction dominates the material side. A transaction is characterized by negative reciprocity if it is mainly based on the material aspect. At the extreme a negative reciprocal transaction is the attempt to get something for free. Balanced reciprocity occupies the space in between generalized and negative reciprocity for several reasons. Firstly, balanced reciprocity focuses on the social as well as the material aspects of transactions. Secondly, it is characterized by the expectation that alter's return to ego's gift is of certain value, given within a certain time. Since we neither expect the employee to work for free nor the employer to pay the wage without demanding something from the employee in return, exchange in employment relations in this paper will focus on balanced reciprocity (Akerlof and Yellen, 1990; Voswinkel, 2005; Kotthoff, 2000; Rousseau, 1989). Furthermore we are only concerned with direct exchange relations and following the vast experimental evidence it regards reciprocity as (at least in part) intrinsic rather than purely instrumental.

2.1 Violations of the norm of reciprocity

Even though reciprocity has become an increasingly interesting field of study for the social sciences in general, most work is done in experimental economics. Since those experiments tend to contradict basic assumptions of neoclassic economics and support sociological reasoning about the importance of social aspects in the exchange relation (Homans, 1961; Blau, 1968), they have received much attention in sociology (Dieckmann, 2004; Fehr and Gintis, 2006; Adloff and Mau, 2006). The most prominent experiment showing the importance of reciprocity is based on the ultimatum bargaining game (Güth et al., 1982; Fehr and Schmidt, 1999). Here a proposer and a responder bargain about a certain amount of money, e.g. 10 Euros. The proposer begins by offering a division of this amount between the two and the responder can either accept or reject the offer. If it is rejected, neither of the two receives any money, if it is accepted the experimenter pays out the money according to the proposer's offer. Whereas neoclassical economic theory predicts that the proposer would offer only the minimum possible amount, say 1 Euro, to maximize his/her utility and the responder would accept this offer for the same reason, the results of the ultimatum game differ from this prediction systematically (Falk and Fischbacher, 2006). On the one hand the proposer's offers tend to be between 40-50% of the amount and therefore much higher than the minimum offer as well as close to equity. On the other hand offers below 30% tend to be rejected by the responder. In this case the responder is willing to put up with no money at all instead of accepting an offer far from equity. These results can be explained by the fact that the actions are not only guided by utility maximization but also by fairness considerations and the norm of reciprocity: "Reciprocity means that in response to friendly actions, people are frequently much nicer and much more cooperative than predicted by the self-interest model; conversely, in response to hostile actions they are frequently much more nasty and even brutal" (Fehr and Gächter, 2000: 159.

The ultimatum bargaining game shows, that the valuation of a certain amount of money received in a transaction does not only depend on the amount itself, but on the way it is received, particularly on whether the transaction conforms to the norm of reciprocity. A slight variation of the

ultimatum game, where the results of two different versions of the game are compared, shows that this involves a certain kind of subjective interpretation of the exchange relationship (Falk, Fischbacher 2006, 2000). In both versions the proposer again receives 10 Euros from the experimenter and the responder can accept or reject the offer, but now the proposer can only chose between two splits. In game (a) the proposer can either offer 2 and keep 8 or keep 2 and offer 8 Euros. In game (b) however, the proposer can chose between offering 2 and keeping 8 Euros or offering 5 and keeping 5 Euros. Even though in the case of the 8/2 split the objective payoff is exactly the same, rejection rates differ between the games with higher rejection rates in game (a). “The reason for the different rejection pattern is that responders care about why the proposer chose the 8/2-offer, i.e. they care about the proposer's intentions” (Falk, Fischbacher 2000: 6). In game (b) where a fair split was possible, the responder tend to infer an unfair intention, whereas in game (a), where no fair solution was available, they do not.

In addition to the influence of violations of the norm of reciprocity on the valuation of a certain amount of money, reciprocity considerations can also have a negative effect on the valuation of extra payment. Trying to ensure extra effort, some employment contracts contain incentives, counting on the assumption that employees will reciprocate. Instead, experiments have shown that such incentive contracts can have unforeseen negative effects on effort; they "may 'crowd out' reciprocal effort choices" and create "counterproductive effects" (Fehr and Gächter, 2000: 171/172). Most remarkably, this is the case for incentive contracts containing sanctions for reduced effort but also for contracts that contain a bonus for any extra effort made by the employee (Fehr and Gächter, 2002). "Explicit incentives may cause a hostile atmosphere of threat and distrust, which reduces any reciprocity-based extra effort" (Fehr and Gächter, 2000: 170), regardless of whether they are framed as sanctions or as bonuses. This "framing effect", as Fehr and Gächter call it, can be seen as an expression of the fact that it matters greatly how the wage is perceived.

2.2 Violations of reciprocity in employment relations

The experiments reported in the previous section are to a high degree guided by the theoretical work of George Akerlof, which in turn is influenced by sociological and social psychological exchange theories e.g. by Adams (1963) or Homans (1961). In Akerlof and Yellen (1990) a model is proposed to explain behavioral consequences of violations of reciprocity in employment relations. According to Akerlof and Yellen the importance of the norm of reciprocity for employment relations in contrast to mere utility maximization arises from the problem of incomplete employment contracts. This is because employment contracts determine the wage but can never cover every detail of the effort expected from the employee and even if they could, there would be a problem of incomplete information on the part of the firm as to whether an employee fulfils the contract to the best of his/her ability or not. The worker's ability to chose his/her work effort within a certain range without having to fear detection by the firm opens up the employment relation to fairness or reciprocity considerations. This is reflected in the fair wage-effort hypothesis (Akerlof and Yellen, 1990), which states that the relation between a worker's effort is determined by the *perceived* earnings or wage and the *perceived* fair wage. In the context of exchange in employment relations the fraction this relation can be interpreted as the reciprocity between the wage paid by the employer (as perceived by the employee) and what is expected by the employee as compensation for his/her effort. If the perceived actual wage equals the perceived fair wage there is perfect balanced reciprocity, if it is lower than the fair wage, there is a perceived violation of reciprocity and effort will be lowered to achieve a new balance. Because it is the perception of ones wage that determines the workers effort, the model therefore states objective consequences of more or less subjective evaluations of reciprocity in the employment relationship (see also Rousseau 1989).

However, there are other behavioral consequences of perceived violations of the norm of reciprocity besides reducing work effort. As Sheppard et al. (1992; see also Liebig, 1997) show, there can be several reactions to (perceived) unfair behavior of the firm: loyalty, voice, exit and withdrawal behavior. Loyalty behavior means that employees need not react with a perceived violation of reciprocity but can rationalize the unfair behavior of

the firm, e.g. by adapting their perceptions of what constitutes a wage conforming to the norm of reciprocity. Voice behavior means that employees can react by openly protesting against the perceived violation of reciprocity. The reduction of effort can be interpreted as a special form of voice behavior if it is done in a deliberately way visible to the employer or their representatives in the firm. The option of exit behavior is chosen if employees react by leaving the job. This is a somewhat strong reaction compared to the reduction of effort predicted in the fair wage-effort hypothesis. But, on the one hand it should be taken into account that unfair treatment with regard to the wage not only leads to a loss of income but often is interpreted by the employee as a depreciation (Honneth, 2003; Kotthoff, 2000) of one's work for the firm. This makes it plausible that at least some proportion of the benefit recipients will react this way. On the other hand it is possible that for some employees the reduction of effort is not possible and quitting is viewed as the only option. This assumption is supported by Fehr and Gintis (2007: 50) who conclude from a public good game that "stopping cooperation is the only way to punish other group members in the absence of a direct punishment opportunity"[ii]. Finally, withdrawal behavior means that employees lower their commitment to the firm. It can take many forms, ranging from a covert reduction of effort to absenteeism and even theft or damaging the firm's property. Except for loyalty behavior all the possible reactions to an unfair wage have in common that they raise the chances for a termination of the employment contract either directly or indirectly. This is most evident in the exit behavior which constitutes per definition the end of the employment relation by the employee quitting his/her job. But also withdrawal and voice behavior can lead to a similar consequence, albeit initiated by the employer. This is because open as well as covert reduction of effort will influence the firm's decision to keep or dismiss an employee. When reducing effort, employees are reducing their productivity for the firm compared to the normal effort the firm expects, raising the risk of dismissal by the employer.

2.3 Hypotheses

In contrast to regular employment in-work benefits introduce a special kind of extra payment, i.e. the subsidy is paid not by the employer but by the state. This could be seen by the subsidized employee as a signal that the employing firm is not willing to behave according to the norm of reciprocity and fair wage payment. Because of the subjectivity involved, this can be the case even if the in-work benefit is in fact paid in addition to the usual market wage and therefore constitutes an increment of the usual wage paid for this kind of job.

Hypothesis 1: *Despite raising the overall income, working in a job subsidized with in-work benefits has a negative effect on the valuation of one's wage.*

If this is the case, then we would expect benefit recipients to attach a lower value to their income even if, because of the benefit, they earn more than they would have in a regular employment.

If indeed such an effect should be found, this does not automatically imply behavioral consequences. As seen before there is a variety of possible reactions to perceived unfair behavior by the firm, including adapting one's perception (loyalty behavior). However, if there is indeed an adverse effect of the benefit, this could in turn result in in-work benefits having a negative effect on employment stability because benefit recipients behave in ways that endanger or actually end the employment relationship. Aggregating behavioral consequences to employment stability, the second hypothesis is:

Hypothesis 2: *All in all in-work benefits have a negative effect on employment stability.*

Finally, the third hypothesis concerns the relevance of violations of reciprocity for explaining lower employment stability in subsidized jobs:

Hypothesis 3: *The negative behavioral consequences of in-work benefits on employment stability can be explained by their negative effect on the valuation of one's wage.*

This means that in-work benefits are not successful in permanent labor market integration despite raising the overall income, because they also lead to negative side effects that undo any positive effects.

3 Data and estimation method

To test these hypotheses laboratory or field experiments could be conducted, randomizing subjects into a treatment group receiving an in-work benefit and a control group in regular employment. Aside from the huge logistic efforts this would take, it is not clear whether in this case a randomization is technically possible or ethically justifiable. A different option is to use observational data, that is data collected from actual recipients and non-recipients of in-work benefits, and eliminate all systematic differences between them. The following subsections describe such a data source and introduce propensity score matching as a method to approximate a randomized experiment in situations with non-random selection into treatment and control status.

3.1 Data

Data for the kind of analysis needed here are hard to find. The testing of the above hypotheses requires not only objective data on the employment situation (e.g. wage, industry sector) but also information about the subjective judgments of employees concerning their wage. On the one hand existing surveys often contain such information. However, these surveys typically do not contain information about such special labor market programs as in-work benefits and if they do, the number of cases is very low. On the other hand administrative data used for the evaluation of labor market programs is available for every single participant but the range of

variables is limited to information needed by employment agencies, which excludes "soft" information (for administrative data see Hakim, 1983; for a comparison of survey and administrative data see Hartmann and Krug, 2007). However, for the evaluation of the in-work benefit "Mainzer Modell", that was finished 2005 (Kaltenborn et al., 2005), a survey was conducted, including benefit recipients as well as a comparison group of non-recipients. Even though the survey was originally not intended for this purpose, it contains sufficient information to be used to test the hypotheses formulated above.

In 2000 the "Mainzer Modell" (Gerster and Deubel, 2001; Kaltenborn et al., 2005; Schneider, 2002) was started as a pilot project in certain areas of Rhineland-Palatinate and Brandenburg to evaluate the use of in-work benefits in Germany. Not long after, in May 2002 it was extended to all areas in Germany. Eligibility was means tested and mainly based on the applicant starting a new employment with wages above 320 Euro, whereby overall household income (including income from this job) had to be below certain thresholds. The benefit was implemented as a subsidy to social security contributions; for persons with children the subsidy was supplemented with higher child benefits. Consequently, subsidized employees receiving the same gross wage as regularly employed persons have higher net wages.

In 2003 the "Mainzer Modell" was discontinued and replaced by so called “Mini and Midi Jobs” (Rudolph, 2003; Caliendo and Wrolich, 2006) but benefits already granted were paid until 2006. The data used here is a representative survey conducted in 5 waves by *TNS Infratest Sozialforschung* (Hartmann, 2004) and financed by the (then) German Federal Ministry of Economics and Labor.

Interviews were conducted (stratified by region and time of starting employment) with benefit recipients and non-recipients who started work between January 2001 and August 2002 (pilot project phase) and between September 2002 and March 2003 (nationwide implementation). 3,080 interviews were carried out with benefit recipients and 1,443 with non-recipients as a control group, the latter being a random sample of all low skilled and/or long-term unemployed persons starting a new employment. Since the comparison group was restricted to those low skilled and/or un-

employed, this leaves 1,176 recipients who also meet this criterion. After eliminating non-recipients who - contrary to initial information from process data - were actually not employed at all and after elimination of single parents[iii], the analysis was left with 1,199 cases, 564 benefit recipients and 635 control individuals.

Survey questions ranged from objective data on socio-demographic characteristics, employment history, household context, individual and household income to subjective information on attitudes towards different aspects of life and employment as well as satisfaction with different aspects of the job. The Question "How satisfied have you been with your earnings?" ("Wie zufrieden waren sie mit dem Verdienst?") is used to capture on the valuation of one's wage. Answers were measured on a four point scale of "very satisfied, satisfied, not satisfied, not at all satisfied". For the matching analysis the variable was dichotomized with "very satisfied" and " satisfied" indicating satisfaction with one's wage. To analyze the behavioral consequences of perceived violations of reciprocity the duration of the (non-)subsidized job and employment status at the time of the interview was used.

3.2 The matching estimator for causal effects

For the following analysis let iwb be a dummy treatment indicator for a job being subsidized with an in-work benefit or not and let s be a binary outcome variable indicating whether the employee in this job is satisfied with his/her wage or not. Following Rubin's Causal Model (RCM, see Rubin, 1974; Holland, 1986; Rubin, 2005; Gangl and DiPrete, 2004; Winship and Morgan, 1999; Sobel, 1995) two potential versions of the outcome variable have to be distinguished, depending on whether the job is subsidized or not:

$$s = \begin{cases} s^0, & if \;\; iwb = 0 \\ s^1, & f \;\; iwb = 1 \end{cases}$$

Within this framework one important causal effect is the *average causal effect of treatment on the treated* δ:

$$\delta = E(s^1 \mid iwb = 1) - E(s^0 \mid iwb = 1)$$

This causal effect compares what is the outcome of working in a subsidized job for those who received the subsidy with the outcome the same persons *would have* experienced *if they had not* worked in a subsidized job. In this sense δ is a counterfactual causal effect. Because the outcome variable is binary, the causal effect can be interpreted as the difference in the probability of being satisfied with one's wage induced by in-work benefits.

Since, however, one person cannot be employed both in a subsidized job and an unsubsidized job at the same time, the counterfactual expectation $E(s^0 \mid iwb = 1)$ is impossible to estimate from the data. The problem can be solved if a vector $\mathbf{x}$ can be identified that contains all the variables that simultaneously influence whether a person receives an in-work benefit and his/her wage satisfaction. This can be achieved best, if $\mathbf{x}$ covers as much of the process by which individuals select themselves or are assigned to a job subsidized with an in-work benefit (the assignment mechanism, see Rubin 1991). If this is successfully done, conditional mean independence between treatment status iwb and outcome variable s is achieved:

$$E(s^0 \mid iwb = 1, \mathbf{x}) = E(s^0 \mid iwb = 0, \mathbf{x}) = E(s^0 \mid \mathbf{x})$$

It follows that the counterfactual expectation can be replaced by a factual expectation of the wage satisfaction given regular employment (Holland 1986):

$$\delta = E_{\mathbf{x}}\left(E(s^1 \mid iwb = 1, \mathbf{x}) - E(s^0 \mid iwb = 0, \mathbf{x})\right)$$

It is necessary to point out that when relevant aspects of the assignment process could not be included in the vector of covariates $\mathbf{x}$, selection bias is still present and can distort the actual causal effect[iv].

A nonparametric estimator for the causal effect under conditional mean independence is the matching estimator (Rosenbaum and Rubin, 1983, 1985; Dehejia and Wahba, 2002; Heckman et al., 1998; Morgan and Harding, 2006). It estimates δ by matching benefit recipients to regularly employed persons with an identical vector of covariates $\mathbf{x}$ to create two

subsamples that differ only in receiving or not receiving the in-work benefit. Since with many covariates exact matches are hard to find, Rosenbaum and Rubin (1983) propose to match on the propensity score which is a scalar. This score is defined as the probability of receiving an in-work benefit conditional on the covariates: $P(\mathbf{x} \mid iwb = 1) = P(\mathbf{x})$. This leads to the following equivalent representation of the causal effect δ:

$$\delta = E_{P(\mathbf{x})}\left(E(s^1 \mid iwb = 1, P(\mathbf{x})) - E(s^0 \mid iwb = 0, P(\mathbf{x}))\right) .$$

The corresponding matching estimator for the causal effect δ is given by

$$\hat{\delta} = \frac{1}{n_1}\sum_{i \in I_1}(s_i^1) - \frac{1}{n_1}\sum_{i \in I_1}\sum_{j \in I_0} w(i,j)(s_j^0) ,$$

with I_1 and I_0 denoting benefit recipients and regularly employed control persons, respectively. n_1 is the number of individuals of the recipient group and $w(i,j)$ is the weight given to observation j when matched to observation i. Depending on the choice of $w(i,j)$, different versions of the matching estimators can be constructed. For example, in single-nearest neighbor matching (SNNM) without replacement, observation j is chosen as a match to observation i, when it is closest to i in terms of the absolute distance of their propensity scores $|P(\mathbf{x}_i) - P(\mathbf{x}_j)|$.

To avoid matches where $P(\mathbf{x}_j)$ even though being the nearest neighbor to $P(\mathbf{x}_i)$ is very far from it, a maximum level of acceptable distances (caliper) has to be set. SNNM then weighs the outcome of the observation j whose propensity score is closest to observation i's propensity score with $w(i,j) = 1$ and all other control observations with $w(i,j) = 0$ and computes the causal effect[v]. Since usually the exact probabilities of receiving a treatment are unknown, they are estimated by a logistic regression. Even though similarity of matches is only based on the probability of receiving a benefit, propensity score matching leads to a balancing of *all* covariates (and therefore elimination of all compositional effects) between the recipients and the control group.

4 Empirical analysis

4.1 Assignment mechanism

Central to the application of Rubins`s Causal Model is the fulfillment of the conditional independence condition. Within the framework of the RCM the researcher need not know the determinants of the outcome variable, but only the determinants of the probability of receiving an in-work benefit. In the case of the outcome variable “wage satisfaction”, this seems to be a mayor advantage compared to regression analysis, since it can be assumed that there are many difficult to observe influences on such subjective evaluations. Still, reaching conditional independence presupposes comprehensive knowledge about the implementation of the concrete in-work benefit under analysis, which in part is derived from explorative analysis of the "Mainzer Modell’s" implementation conducted by the *Institut für Arbeit und Technik* (IAT) (Kalina et al., 2004: 29ff, see also Cords, 2003) and in part from our own considerations.

Whether a job is subsidized with an in-work benefit or not depends on the interaction of three different aspects of the assignment mechanism: Self-selection of the job seeker (1), assignment by the employment agency’s case manager (2) and selection by an employing firm (3). These aspects are addressed sequentially in this subsection[vi].

(1) Self-selection:

Self-selection means that even if eligible only certain people chose to apply for an in-work benefit, while others do not. The probability of a job being subsidized with an in-work benefit therefore certainly depends on whether the individual knows about this kind of subsidy at all. Information material about the MZM was mainly written in German and often information about the availability of in-work benefits was given by providers of further training. Therefore migrants might have a lower probability and persons having taken further training a higher probability of self-selecting into receiving benefits. Quite generally the chances to receive an in-work benefit will depend on whether the job was found via the unemployment agency or another way, such as friends or the unemployed’s own efforts. Furthermore an individual's decision to take up a job subsidized with a fi-

nancial benefit will be guided by whether he expects to profit more from the subsidized job than from regular employment. This might be the case for the long-term unemployed and for those with disadvantages in the labor market (persons with low human capital, the older unemployed, women, etc.). In addition, the amount of the benefit varies, depending on whether there is a partner with an income of his/her own and the number of children in the household. This too can influence the decision to apply for an in-work benefit.

(2) Assignment by the case manager:

When deciding to offer an in-work benefit to an unemployed job seeker, case managers are confronted with two restrictions. Firstly, there are official rules of eligibility, which in the "Mainzer Modell" were mainly based on household income. Since there was no right to be granted an in-work benefit and since the unemployed as well as the employment officers considered the determination of eligibility very difficult, this does not mean that being subsidized is completely determined by the household income (in this case the matching approach would not be suitable). Low incomes only heighten the probability of being subsidized. Furthermore, it is well known that the German segregation of unemployment insurance on the one and welfare benefits on the other hand lead the employment agencies to focus on integrating (costly) recipients of unemployment insurance benefits (Gerster and Deubel, 2001). Therefore there might be selectivity of assignment depending on this, too. With the calculation of eligibility having been very complex and time consuming, this could have led to the case manager having less time to focus on the match between the applicant's qualification and the firm’s requirements. In addition, rules of eligibility tended to favor the subsidizing of part-time jobs, since eligibility was based on monthly and not hourly wages.

Secondly and of considerable importance, since the claiming of in-work benefits turned out to be lower than expected, case managers needed to take an active part in motivating the unemployed to take up subsidized jobs. Basically there are two possibilities. Case managers can focus on offering the in-work benefit to those they see as especially needy and who would have low chances of finding a regular job (negative selection). Or they can focus on those persons with a high probability of staying in the

job, so that the benefit is "well spent" (positive selection). In any case variables should be controlled for that are correlated with labor market success, e.g. regional labor market conditions, prior history of participation in active labor market programs, search effort during unemployment, work experience, prior history of unemployment and on who's initiative the last job was terminated.

(3) Selection by the employing firm:

Contrary to initial expectations firms showed very little interest in offering new jobs to benefit recipients. The selection of employing firms is, therefore, of rather marginal importance. Firms who later employed subsidized persons usually did not even know that their employee was receiving an in-work benefit (Gewiese, 2004: 275f; Cords, 2003: 114). However, it can be hypothesized that firms offering jobs eligible for financial subsidies might be situated in different business sectors than those offering regular jobs.

Table 1: The model for computing the propensity scores

Logistic Regression of working in a job subsidized with an in-work benefit	Model 1: full model before matching		Model 2: reduced model before matching		Model 3: reduced model after matching	
	Odds Ratio	p	Odds Ratio	p	Odds Ratio	p
Household constellation (R: single, no children)						
Partner unemployed, no children	2.615	0.00	2.418	0.00	0.611	0.20
Partner employed, no children	1.107	0.76	1.196	0.56	0.704	0.40
Partner unemployed, with children	6.716	0.00	5.843	0.00	0.726	0.35
Partner employed, with children	2.340	0.00	2.047	0.01	0.457	0.06
Working hours	0.954	0.00	0.958	0.00	0.999	0.90
Match person-job (R: no qualifications necessary)						
Good match	1.095	0.70				

Average or bad match	1.185	0.61				
How did employee find the job? (R: employment agency)						
Friends	0.884	0.63	0.853	0.51	0.688	0.24
Own effort	1.033	0.90	1.052	0.83	0.591	0.10
Other	0.601	0.05	0.612	0.05	0.954	0.89
Job training before	2.943	0.03	2.765	0.04	1.197	0.78
Unemployment compensation before employment (R: unemployment insurance)						
Unemployment benefit	2.694	0.00	2.673	0.00	0.802	0.46
No compensation	0.861	0.57	0.803	0.38	1.094	0.79
Social benefits	2.885	0.00	2.870	0.00	0.777	0.53
Formal Qualification (R: none)						
Skilled worker/technical training (*Facharbeiter/lehre*)	0.940	0.79				
Vocational training/master craftsman/technician (*Berufs)fachsch./meister. techniker*)	1.106	0.74				
University, university of applied sciences (*Fach)hochschule*)	0.890	0.78				
Other	0.563	0.25				
Nationality (German)	0.688	0.19				
Sex (female)	0.893	0.60				
Age	0.997	0.85				
Temporary employment contract	2.485	0.00	2.546	0.00	1.050	0.83
Industry sector (dummy variables)	yes	yes	yes	yes	yes	yes
Job important (yes)	1.022	0.91				
Family important (yes)	0.841	0.43				
Leisure time important (yes)	1.197	0.39				
Income important (yes)	1.048	0.81	1.073	0.68	1.165	0.52
Work important (yes)	1.015	0.94				
Search effort (number of different search strategies used)	1.194	0.00	1.169	0.00	0.997	0.97
Ever turned down employment offer because wage was too low?	1.526	0.16	1.682	0.07	1.035	0.93
Is job interim employment?	1.123	0.51				
Job experience (years)	1.017	0.28				
Duration of unemployment in						

career (< 6 month)						
6 - 12 month	0.418	0.02	0.420	0.01	1.529	0.37
12 - 24 month	1.123	0.71	1.172	0.61	1.619	0.26
> 24 month	1.006	0.98	1.070	0.81	1.388	0.39
Subsidized employment immediately before this one	1.349	0.37				
Different kind of ALMP immediately before employment	1.085	0.83				
Who ended last employment? (R: other)						
Employee	1.562	0.19	1.608	0.15	0.991	0.98
Employer	1.585	0.03	1.735	0.01	0.873	0.60
Labor market situation (dummy variables)	yes	yes	yes	yes	yes	yes
Income from secondary employment (yes)	0.442	0.07	0.478	0.09	1.308	0.65
Household income	0.999	0.00	0.999	0.00	1.000	0.20
Gross wages per hour (R: up to 4.60 Euro)						
4.61 to 6.90 Euros	0.952	0.87	1.072	0.81	0.761	0.45
6.91 to 9.20 Euros	0.687	0.24	0.773	0.40	0.970	0.94
9.21 Euros or more	0.594	0.14	0.694	0.28	0.865	0.74
No (plausible) answer	0.658	0.19	0.740	0.32	0.794	0.56
cases (benefit recipients)	974 (500)		983 (503)		372 (186)	
Pseudo R^2	0.337		0.328		0.026	
Log likelihood	-447.400		-457.874		-251.119	
ch^2	454.757		446.440		13.46	
LR-Test (prob>chi2)	0.000		0.000		1.000	
aic	1,008.800		995.749		582.238	
bic	1,287.040		1,191.373		738.993	

Finally, in addition to these three kinds of selection variables from the theoretical perspective it seems important to control for aspects that might influence wage satisfaction, such as the attitude toward different areas of life (e.g. work, income), whether the individual rejected a job offer because of low wages and whether there is an income from a second job as well as gross hourly wages. The “Mainzer Modell” was implemented as a reduction of social security contribution and - potentially - higher child allowances. So for every two persons with the same gross wage and the same value of other covariates, net wages of recipients are higher

than those of non-recipients by the amount of the benefit. In the propensity-score-matched sample per definition this does not need to hold for the matched individuals, but it holds for the mean of gross and net wages in both groups.

Table 1 shows the logistic regression of receiving benefits on the variables identified in this subsection[vii]. The variables with coefficients that are not significant can be eliminated from the computations of the propensity score. On the one hand they do not lead to a significantly different composition of recipients and non-recipients but on the other hand they lead problems of the precision of the estimator (Imbens 2004: 23). For the following analysis the insignificant variables were eliminated[viii] except for some that from this paper's theoretical perspective seemed too relevant to be excluded (e.g. importance of income, turned down low wage job). As can be seen from the values of Akiake's information criterion (aic) and the Bayesian information criterion (bic) the reduction of variables involves only a small loss of information.

4.2 Testing the hypotheses

Applying the matching approach to the problem at hand, firstly the influence of in-work benefits on wage satisfaction is considered (hypothesis 1). From Table 2 we can see that before matching there is a difference of 23 percentage points in wage satisfaction between subsidized employees and regularly employed persons. This difference includes the compositional differences of both groups. When matching is performed to eliminate these differences, matches within the range of the caliper (0.005 percentage points) were found for 186 benefit recipients. This leaves the analysis with fewer cases but ensures that only those members of the two groups that are very similar to each other are used for comparison. As can be seen in Table 1, after the matching of recipients and nonrecipients, the likelihood-ratio-test shows that the hypothesis "all coefficients are zero" can not be rejected, suggesting that balance of all covariates has been achieved[ix].

Comparing means of the outcome variable in the treatment group (Table 2) it can be seen that there was a negative selection. That is, persons with individual and job characteristics that lead them to be dissatisfied with their wage end up receiving in-work benefits more frequently. But even after the elimination of compositional differences, subsidized jobs lead to a statistically significant (t-value of 2.82) decrease of 14 percentage points in the percentage of mean wage satisfaction. Accordingly, the first result of this analysis is that the hypothesis stating that in-work benefits negatively affect the valuation of one's wage despite raising overall incomes is supported by the data.

Table 2: The causal effect of in-work benefits on wage satisfaction

	Wage satisfaction: yes		***(Causal) effect***	***t-value***
	Subsidized employment	***Regular employment***		
Before matching	0.36	0.59	-0.23	7.38
After matching	0.41	0.55	-0.14	2.82

SNNM without replacement, caliper = 0.005

Since this result could be explained not only by the signal effect of the in-work benefit, but also by less attractive working conditions, we compared the judgment of subsidized and regular employees on their satisfaction with the kind of job. After the matching there is no significant difference in job satisfaction between subsidized and regular employees (Table 3).

Table 3: The causal effect of in-work benefits on satisfaction with the job

	Job satisfaction: yes		***(Causal) effect***	***t-value***
	Subsidized employment	***Regular employment***		
Before matching	0.773	0.821	-0.05	-1.85
After matching	0.770	0.818	-0.05	-1.15

SNNM without replacement, caliper = 0.005

To test the second hypothesis, the effect of extra payments in the form of an in-work benefit on employment stability, the method of regression adjusted matching is applied (Rubin, 1973). This means that a regression is performed on the sample of matched pairs of recipients and non-recipients. With the employment duration as the outcome of interest, a Cox-Regression is chosen; the results are displayed in Table 4, model 1. Contrary to what was expected, the effect of receiving an in-work benefit on the propensity to stay employed is not significant and only slightly negative, raising the risk of a job termination only by 1.5%. Therefore hypothesis 2 must be rejected. However, there is also no *positive* effect of the extra income on employment stability of benefit recipients as expected from a utility maximizing perspective. This could mean that the in-work benefits do lead to a perceived violation of reciprocity resulting in lower probabilities of being satisfied with the wage (as reflected in hypothesis 1 and supported by the data), but this effect is not strong enough to lead to negative effects on employment stability. It only suppresses the positive effects of the additional income on the propensity to stay employed, leading to spurious independence of in-work benefits and employment stability in model 1. Therefore hypothesis 3 is slightly revised:

Hypothesis 3 (revised): *The nonexistent behavioral consequences of in-work benefits on employment stability can be explained by their negative effect on the valuation of one's wage*.

This revised hypothesis 3 can be tested by looking at the net effect of the benefit. It is important to note that the effect displayed in Table 4 (full sample) is the overall effect of the benefit on employment stability and therefore includes the direct as well as the indirect effect (i.e. the effect via wage satisfaction) of benefit recipience. To adjust the net effect for the indirect effect the latter has to be held constant. This can be achieved similar to the classical three-variables analysis (Lazarsfeld, 1955; Nowak, 1960), even though Rubins Causal Model suggests that this strategy is not always as straightforward as one might expect since it suggests adjusting for a covariate already influenced by the causal variable (Rosenbaum 1984a). If, however, the conditional independence holds for the variables iwb and s as well as iwb and es (the latter denoting employment stability), this problem can be ignored and the analysis can be done by stratifying

the matching analysis based on the binary indicator for wage satisfaction. By doing this, the effect of in-work benefits on the valuation of wage is eliminated leaving only the net effect(s) of the benefit on employment stability (Table 4, Samples 1 and 2).

Table 4: The overall and net causal effect of in-work benefits on employment stability: Cox-Regressions on the matched samples

Cox-Regressions	full sample		Sample 1: satisfied		Sample 0: not satisfied	
	Hazard Ratio	p	Hazard Ratio	p	Hazard Ratio	p
In-work benefit	1.015	0.94	0.702	0.29	0.929	0.82
Household constellation (R: single. no children)						
Partner unemployed (no children)	0.684	0.27	0.919	0.89	0.932	0.91
Partner employed (no children)	0.775	0.50	0.890	0.86	1.549	0.52
Partner unemployed (with children)	0.769	0.35	1.902	0.25	0.701	0.50
Partner employed (with children)	0.804	0.52	1.151	0.82	1.284	0.68
Working hours	1.014	0.08	1.003	0.84	1.051	0.00
How did employee find the job? (R: employment agency)						
Friends	0.669	0.17	0.533	0.20	1.041	0.93
Own effort	1.035	0.90	1.191	0.71	1.538	0.34
Other	0.749	0.30	0.723	0.52	0.577	0.35
Job training before	0.375	0.34	0.775	0.83		
Unemployment compensation before employment (R: unemployment insurance)						
Unemployment benefit	0.947	0.83	0.544	0.21	0.949	0.90
No compensation	0.980	0.94	0.588	0.36	1.101	0.83
Social benefits	1.137	0.68	2.048	0.24	0.863	0.77
Temporary employment contract	1.317	0.17	1.481	0.28	0.733	0.38
Industry sector (dummy variables)	yes	yes	yes	yes	yes	yes
Income important (yes)	1.090	0.67	1.460	0.30	0.716	0.33
Search effort (number of different search strategies used)	1.022	0.71	1.018	0.86	0.940	0.54
Ever turned down employment offer because wage was too low?	0.645	0.24	0.771	0.63	0.520	0.35
Duration of unemployment in career (< 6 months)						
6 - 12 months	1.252	0.61	4.631	0.07	1.384	0.63
12 - 24 months	1.484	0.29	4.348	0.05	2.046	0.21
> 24 months	1.766	0.08	4.341	0.04	1.663	0.33
Who ended last employment? (R: other)						
Employee	1.141	0.74	2.369	0.18	1.052	0.95
Employer	1.084	0.72	1.558	0.24	0.658	0.28
Type of labor market situation (dummy	yes	yes	yes	yes	yes	yes

variables)						
Income from secondary employment (yes)	2.499	0.02	0.877	0.86	6.332	0.02
Household income	1.000	0.59	0.999	0.04	0.999	0.10
Gross wages per hour (R: up to 4.60 Euro)						
4.61 to 6.90 Euro	0.742	0.30	0.284	0.02	1.071	0.89
6.91 to 9.20 Euro	0.563	0.11	0.583	0.37	0.930	0.91
9.21 Euro or higher	0.847	0.66	0.296	0.10	3.840	0.04
No (plausible) answer	0.966	0.92	0.352	0.09	1.323	0.64
cases	363		171		177	
Log likelihood	-633.360		-226.928		-251.711	

Note: The missing coefficient of the variable „Job training before" reflects the fact that very few of the matched pairs in model 3 received a job training before accepting the (subsidized) job. These cases had to be eliminated to estimate the Cox-Regression. This was done too with one "Types of labor market situation" dummy in model 2 and with one "Industry sector" dummy in model 2 and 3 respectively.

In accordance with the revised hypothesis 3 stratifying on the intervening wage satisfaction indeed leads to a positive effect of in-work benefits on employment stability (i.e. a lower hazard rate) both in the sample of satisfied as well as dissatisfied employees, but none of the effects is significant. Whether this is due to the low number of cases (171 and 177 respectively) cannot be said.

All in all the data gives some support to the explanation of the - counterintuitive - zero-effect of the extra income from in-work benefits on employment stability by their negative effect on satisfaction with the wage received. However, it is an equally valid interpretation of the data that the measured negative causal effect of subsidized wages on the valuation of this wage does not lead to the behavioral consequences on the stability of social relations proposed sociological theory (e.g. Sahlins, 1965; Blau 1968; Bode and Brose 1999: 181).

5 Conclusions

In this paper we analyzed why the extra income in a subsidized employment does not lead to higher employment stability, even though, by leaving the subsidized job employees lose more income than the regularly employed. The reason proposed is that even though raising the income, in-work benefits are interpreted as a signal that the wage paid by the employing firm does not conform to the norm of reciprocity. This hypothesis

was tested on the basis of survey data and the method of propensity score matching. Whereas the hypothesis of lower valuation of the wage due to working in a subsidized job was confirmed, the question whether this explains the low success of in-work benefits in reintegrating unemployed into employment remained unresolved.

Before proceeding with the conclusions it is necessary to address some limitations on the generalization of these results. The first aspect to be considered is generalization to all recipients of in-work benefits. The results reported in this paper are based on a survey of people with low skills and/or the long-term unemployed, whereby single parents have been excluded. This means that the effect of in-work benefits on those who neither have low skills nor are the long-term unemployed could differ from the one presented here, even if it seems likely that skilled employees working in low wage jobs subsidized by the state will also perceive a violation of reciprocity, maybe even more so. As far as single parents are concerned, this group might or might not be as susceptible to perceived violations of reciprocity. Which is the case cannot be answered with the available data. The second aspect concerns the generalization to other kinds of in-work benefits. Even though the analysis leads to the conclusion that in-work benefits raise the probability of perceiving a violation of reciprocity for employees, this does not necessarily mean that other forms of implementing such benefits, e.g. with permanent instead of temporary payment of benefits, will lead to the same negative side effects. Also additional wage subsidies to the employer might produce a second, positive effect by reducing labor costs for the firms, thereby balancing reductions of effort by the employee.

As to the broader implications of the results presented here, even though the evidence is not unambiguous, for implementing labor market programs concerned with integrating the unemployed into permanent employment, it seems sensible to take into account that employment relations have not only a financial, but also a social side to them. By focusing on a financial supplementation, in-work benefits are aimed at avoiding permanent welfare dependence without forcing the unemployed to take up extremely low wage jobs. But at the same time they tend to disregard the social elements of employment relations, in this case the norm of reciproc-

ity on the one hand and on the other the fact that people are not always rational in the sense that their actions are guided by "objective" facts that are shared by policy makers, employers and employees alike. This observation very much conforms to Bourdon's analysis that rational behavior need not be based on objective facts alone. It can also be motivated by things the actors consider to be true, but that are actually wrong or seen differently by different persons, and can still be rational (Boudon 1996, 1998). Contrary to this, many labor market programs are based on the rationality assumption of neoclassical economics (called "strong rationality assumptions" by Goldthorpe, 2000). Whether this has or has not consequences on effectiveness is a question that unfortunately could not be resolved here. However, it might be interesting for further research to analyze whether at least part of the missing success of other active labor market policies, that has been noted repeatedly (e.g. Eichhorst and Zimmermann, 2007; Wunsch and Lechner, 2007), can be attributed to the divergence between underlying behavioral assumptions and a more diverse social reality.

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Endnotes

[i] The pilot-projects all paid the in-work benefit for a limited time, ranging from 10 months in the "Hamburger Modell" to 36 month in the "Mainzer Modell".

[ii] In this experiment free riders could not be punished during the first 10 rounds of the game, which led to high refusals to cooperate. After introducing the opportunity to punish, however, social cooperation was high.

[iii] The reason being, on the one hand, that in the "Mainzer Model" single parents could get an in-work benefit even if they did not work in the low wage sector (e.g. by reducing working hours). Because of this they might differ substantially in regard to the evaluation of the fairness of subsidized wages. On the other hand the control group did not contain sufficient numbers of single parents, so it was neither possible to perform a separate matching analysis of this subgroup alone nor to achieve balance in a propensity score matching with single parents included in the sample.

[iv] Extensive tests have been performed to make sure that no relevant variable is missing, including using different outcome variables as proposed in Rosenbaum, 1984b and applying methods that do not rely on the full observation of the selection variables, e.g. a bivariate Heckman selection model (Angrist, 1991). The results are not presented here but are available from the author on request. They always indicate that no relevant variables are missing. Of course this only supports the conditional independence assumption but does not prove it, since it is in principle not verifiable.

[v] When more than one control observation is used, as with multiple-nearest neighbor matching (MNNM), the counterfactual is constructed as a weighted mean of the matched controls.

[vi] This implies a different perspective from the one taken in most evaluations of active labor market policies. Here we see the (non) subsidized employment, the interaction between employer and employee, as the unit of analysis, whereas the usual approach to ALMP evaluations is dominated by the focus on the individual unemployed deciding for or against taking up employment.

[vii] The survey has no information on firm size, so it cannot be included in the logistic regression. Since this can pose a problem for the conditional independence assumption, the influence of firm size on receiving the in-

work benefit "Mainzer Modell" was tested with register data. The influence was found to be very small and statistically not significant.

[viii] For this a likelihood ratio test was performed. Extensive sensitivity analysis has shown that including all variables does not lead to substantially different results in the causal effect.

[ix] More extensive balancing tests, including bivariate t-tests and standardized bias computations, are available from the author upon request.

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