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IZA DP No. 14024

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Adam Ayaita
RWTH Aachen University

Christian Grund
RWTH Aachen University and IZA

Lisa Pütz
RWTH Aachen University

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Job Placement via Private vs. Public Employment Agencies: Investigating Selection Effects and Job Match Quality in Germany

Employment agencies aim to match individuals to appropriate jobs. There are public and private employment agencies, which co-exist in many countries. Selection effects may be relevant in the sense that private agencies potentially engage in 'cream-skimming' by prioritizing highly qualified workers. The resulting job match quality is also important from an individual, a firm, and a society perspective. We examine the selection into job placement via private and public employment agencies as well as the resulting job match qualities, taking a job-market reform in Germany into account: the introduction of placement vouchers for private job placements. Using representative German panel data, we find that cream-skimming is significantly less pronounced under the voucher policy, as private agencies shift the focus toward unemployed individuals with a voucher. In addition, we find evidence based on propensity score matching estimations that private agencies tend to create better matches than their public counterparts.

JEL Classification: J64, L33, M5

Keywords: cream-skimming, job match quality, job placement, job search, private employment agencies, public employment agency, selection, vouchers

Corresponding author:
Christian Grund
School of Business and Economics
RWTH Aachen University
Templergraben 64
52056 Aachen
Germany
E-mail: christian.grund@hrm.rwth-aachen.de

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1. Introduction

An effective matching of employees to appropriate jobs is an important issue for individuals, firms, and society as a whole. To fill vacancies, firms can make use of several recruitment strategies, e.g., placing advertisements on the internet or in newspapers, simply waiting for individuals' applications, or following recommendations of their employees. Moreover, firms and employees can consult employment agencies. Many countries have installed public (i.e., tax-financed) employment agencies. These might be complemented by private (for-profit) employment agencies. In such cases, different forms of competition or cooperation between these two institutions may occur.

Previous research already hints at selection effects in the sense that private employment agencies tend to mainly place highly qualified workers into jobs, thus concentrating their efforts on those job seekers whom they perceive to be the easiest to place (Osberg, 1993; Addison and Portugal, 2002; Grund, 2006; Weber and Mahringer, 2008; Eppel *et al.*, 2014). This behavior is called 'cream-skimming', 'creaming', or 'cherry-picking' and might be regarded as problematic from a policy perspective (Bartlett and Le Grand, 1993; Finn, 2010). However, an effective placement is not solely determined by successfully matching any individual to any job, but also by the resulting job match quality.

We examine both selection effects and subsequent job match quality of private and public job placement. We study the situation in Germany as a very interesting case of the co-existence of public and private employment agencies. In that country, the former monopoly of the public employment agency (the Federal Employment Agency) was abolished in 1994. Since then, job seekers and firms have been allowed to engage private employment agencies. In 2002, the German government introduced a job placement voucher policy, which gives unemployed individuals the opportunity to consult private placement providers, who receive public financial support in the case of successful placement (Zoellner *et al.*, 2018). Whether the introduction of such vouchers has changed the type of workers who are placed by private agencies has not been investigated as yet. We also extend the existing research with a comprehensive analysis of job match quality, given that a job placement by a private or a public agency has taken place. We

derive corresponding hypotheses based on cost-benefit considerations from a private employment agency's perspective.

In our empirical study we use data from the German Socio-Economic Panel. We first analyze whether the introduction of placement vouchers is associated with a decrease in cream-skimming by private employment agencies. We find evidence for cream-skimming in a situation without a voucher policy in place and show that cream-skimming is indeed less pronounced under the voucher policy, as private agencies shift the focus toward unemployed job seekers. Specifically, private agencies still engage in cream-skimming among job seekers without vouchers, but this is not the case among job seekers with vouchers.

Then, reflecting the multidimensional nature of job match quality, we analyze differences in job placements between public and private employment agencies regarding several relevant indicators: individuals' wages and job satisfaction as well as the incidence of fixed-term employment contracts and the termination of the employment relationship within one year as inverse measures. Based on these measures, we show that private agencies tend to create better job matches than their public counterparts, independent of whether a voucher is involved or not.

This contribution proceeds as follows. We briefly refer to related previous empirical research in Section 2. In Section 3, the job placement market and the job placement voucher scheme in Germany are described. Section 4 derives testable hypotheses for our selection and job match quality analyses on the basis of theoretical considerations. Section 5 describes our dataset and Section 6 our variables and methodology. We present our empirical results in Section 7. In Section 8, we discuss our results and conclude.

2. Previous empirical studies

Several studies from various countries address the question of whether private employment agencies tend to place mainly highly qualified workers, thus concentrating their efforts on those job seekers whom they perceive to be the easiest to place. This procedure is referred to as 'cream-skimming', 'creaming', or 'cherry-picking' (Bartlett and Le Grand, 1993; Finn, 2010; Koning and Heinrich, 2013; Pastore, 2020). Indeed, empirical studies concordantly find evidence of cream-skimming, showing that privately placed workers are positively selected with respect to their qualifications level relative to publicly placed ones (Osberg, 1993; Addison

and Portugal, 2002; Grund, 2006; Weber and Mahringer, 2008; Eppel *et al.*, 2014). However, these studies do not investigate whether the introduction of vouchers has changed the type of workers who are placed by private agencies and, in particular, whether it has successfully reduced cream-skimming.

Another strand of the literature compares the effectiveness of job placement services between public and private agencies in terms of recipients' employment probabilities (for an overview, see Stephan, 2016). Some studies use randomized control experiments in countries such as Sweden (Benmarker *et al.*, 2013), France (Behagel *et al.*, 2014), Denmark (Rehwald *et al.*, 2015), or Germany (Krug and Stephan, 2016). Results either do not find substantial differences between private and public agencies or differences in favor of public services. Only a few studies include an evaluation of job placement vouchers and hint at higher subsequent employment probabilities of voucher recipients (Winterhager *et al.*, 2006; Heyer *et al.*, 2012). Most of these studies do not examine the issue of how well the characteristics of a worker match job requirements, given that a placement has taken place.

An analysis of possible differences in job match quality is important in order understand the effectiveness of private placements (with or without the use of placement vouchers) in a broader sense. Existing evidence from different western countries is mixed as to whether wages, job satisfaction, and job duration differ between privately and publicly placed individuals when holding observable worker characteristics constant. Either no significant differences or higher wages and longer job duration in the case of private placement are found (Wielgosz and Carpenter, 1987; Addison and Portugal, 2002; Weber and Mahringer, 2008; Eppel *et al.*, 2014). Using data from the German Socio-Economic Panel from 1995 to 2002 (i.e., before the voucher was introduced), the results of Grund (2006) point to a higher job match quality resulting from private compared to public placement in terms of higher wages and job satisfaction.

To the best of our knowledge, the selection into being privately placed through the use of placement vouchers as well as its relations to different indicators of job match quality have not yet been investigated, despite the importance of both for evaluating this policy instrument. Instead of relying on only one measure of job match quality, we take several dimensions of job match quality into account. Rather than focusing on the mechanisms that take place in employment agencies or on employment probabilities of clients, we examine selection effects

into different forms of job placement as well as job match quality, given that a placement has taken place.

3. Employment agencies in Germany

Before 1994, no private employment agencies were allowed in Germany; the only employment agency was the public one. This monopoly of the Federal Employment Agency was abolished on August 1, 1994. Since then, private recruitment agencies have been allowed to place job seekers into vacant jobs. Thus, over the past decades, the German job placement market has undergone a transition from the former monopoly system to the present system that is characterized by the co-existence of the public employment agency and private ones.

Another key regulatory change was introduced in 2002. Since 2002, the job placement voucher has been in effect in Germany. The aim of this policy is to integrate unemployed individuals into the labor market through the involvement of private employment agencies (Zoellner *et al.*, 2018). Individuals who qualify for receiving unemployment benefits and have at the time been unemployed for at least six weeks are eligible for vouchers. They can initiatively request a voucher, and caseworkers of the Federal Employment Agency can also offer the voucher to individuals based on their own subjective judgement. Voucher recipients can then consult a private agency of their choice to help them to find a job. After placing a voucher recipient successfully into a job, the private agency can redeem the voucher from the Federal Employment Agency. The necessary condition for redemption is placement into a socially insured job with at least 15 work hours per week and an employment duration of at least three months. Moreover, the placed person should previously not have worked for the new employer for more than three months within the last four years (Winterhager *et al.*, 2006).

Until 2004, the redemption amount varied between €500 and €1,500 per successful placement, depending on the duration of previous unemployment of the placed person. Since 2005 the redemption amount equals €2,000 independent of the duration of previous unemployment. In general, it is paid in two instalments of €1,000 each: the first one after six weeks and the second one after six months of socially insured employment. The first instalment has to be paid back if the employment does not last for at least three months. For long-term unemployed and disabled individuals, the value of the voucher can be raised to €2,500. Further, voucher recipients are not obliged to use their voucher, and private agencies are free to decline to invest efforts into finding a job for voucher recipients.

Private employment agencies receive remuneration from the (new) employer of a placed worker after a successful placement. Up to 2002, this remuneration was typically 2 to 2.5 times the (new) gross monthly wage of the placed individual. Under the voucher scheme, co-financing is carried out: Private agencies receive their remuneration partly from the employer of the placed individual and partly from the Federal Employment Agency through the voucher. Employers and private agencies typically agree on splitting up vouchers such that employers reduce their payment to private agencies if the private agency is able to redeem a voucher (Beckman *et al.*, 2004).

Beckmann *et al.* (2004) present a pessimistic view of the effectiveness of the voucher policy in reducing cream-skimming. Their evaluation is based on two arguments. First, they question whether vouchers produce a sufficient incentive for private agencies to expand their range of customers to more hard-to-place job seekers, as they doubt that the revenues will cover the placement costs. Second, they argue that job seekers who are hard to place are unemployed not because of inefficient public placement efforts but because of diverging qualifications and requirement profiles. In this view, such structural unemployment represents the main problem for hard-to-place job seekers, which cannot be overcome by the involvement of private agencies through vouchers.

4. Theoretical considerations and hypotheses

Within this section, we mainly argue from the perspective of a private employment agency that has to weigh costs of placement efforts against expected rewards for successful placements. We start by formalizing these cost-benefit considerations with respect to possible selection effects, before deriving consequences for job match quality.

4.1 Selection into job placement institutions

In our selection analysis, we investigate which job seekers are successfully placed by a private vs. the public employment agency. So far, to the best of our knowledge, no theoretical model for selection into private vs. public job placement has been proposed in the literature. In the following, we therefore illustrate the decision of a private employment agency to exert effort to place an individual into a job based on simple cost-benefit considerations. When making this selection decision, the private agency has two options: It can either refuse or agree to invest efforts. The latter is a precondition for successful private placement.

We first consider a situation without job placement vouchers. The private agency's expected revenue π_i from investing placement efforts in job seeker *i* is assumed to be the product of two terms: The probability p_i of placing i successfully in a job and the remuneration paid by the customer firm (employer) in the case of successful placement. The remuneration is a multiple *x* of the employee's subsequent monthly wage w_i. Both p_i and w_i depend on *i*'s qualifications level Q_i, such that $\partial p_i/\partial Q_i > 0$ and $\partial w_i/\partial Q_i > 0$. We use the term 'qualifications' in a broad sense, covering anything that positively affects an individual's employability.

The private agency's expected revenue from investing placement efforts in *i* can then be written as:

$$E[\pi_i(Q_i)] = p_i(Q_i) \cdot w_i(Q_i) \cdot x \qquad (1)$$

We further define C as the costs of investing placement efforts and assume for simplicity that C is fixed. These costs occur independently of whether placement efforts result in a successful placement or not. Then, the private agency makes its selection decision based on the following calculus:

$$E[\pi_i(Q_i)] \geq C. \qquad (2)$$

That is, only if its expected outcome from investing effort into placing job seeker *i* surpasses or equals its incurred costs does it invest placement efforts in job seeker *i*. In our model, this is the supply condition for private placement efforts.

Moreover, $\partial \pi_i/\partial Q_i > 0$ holds, since job seekers with higher values of Q are more likely to be successfully placed and to earn higher wages after being placed in a job. Consequently, a threshold level denoted as $\bar{Q}$ exists, which is a critical qualifications level: Only for values of Q greater than or equal to $\bar{Q}$ are the placement efforts expected to be profitable from the perspective of the private agency so that:

$$E[\pi_i(\bar{Q})] = C. \qquad (3)$$

Thus, private employment agencies will invest resources only in those job seekers with values of Q greater than or equal to $\bar{Q}$, i.e., those job seekers with rather good anticipated labor market prospects. This means that private agencies engage in cream-skimming, as shown in Figure 1. In contrast, the public employment agency, in line with its legal obligation, operates not only

for job seekers with high qualifications (who will often not require this public service) but also and especially for those with low qualifications.

Figure 1 Selection into private and public job placement by qualifications level (Q) in a situation without a voucher policy

These considerations directly lead to our first hypothesis:

> **Hypothesis 1 (H1):** In a situation without a voucher policy in place, there is cream-skimming in terms of higher average qualifications of individuals placed by private employment agencies compared to individuals placed by the public employment agency.

We continue by incorporating the job placement voucher into our considerations. The potential job placement voucher is denoted as $V_i(Q_i)$. There is a threshold level $\tilde{Q}$ such that only job seekers with values of Q below $\tilde{Q}$ can obtain a voucher, since it is targeted at hard-to-place cases with low values of Q. This can be noted formally in the following way (with the voucher value $V_i > 0$):

$$V_i(Q_i) = \begin{cases} V_i & if\ Q_i < \tilde{Q} \\ 0 & if\ Q_i \geq \tilde{Q} \end{cases}. \quad (4)$$

The voucher is only redeemable in the case of successful placement. Therefore, with the voucher option, expected revenues for the private agency change from (1) to the following term:

$$E[\pi_i] = p_i(Q_i) \cdot [w_i(Q_i) \cdot x + V_i\,(Q_i)]. \quad (5)$$

The impact of vouchers on the selection decision of the private agency depends on the relation between the threshold for private placements efforts ($\bar{Q}$) and the threshold for obtaining a voucher ($\tilde{Q}$). Three possible cases regarding this relation can be distinguished: $\bar{Q} < \tilde{Q}$, $\bar{Q} = \tilde{Q}$, and $\bar{Q} > \tilde{Q}$. Suppose in the simplest case that $\bar{Q}$ equals $\tilde{Q}$, meaning that everyone below $\bar{Q}$ can

obtain a voucher, as illustrated in Figure 2.[1] In comparison to a situation without a voucher scheme, the private agency expands its range of potential customers and operates additionally for less qualified job seekers, since the voucher represents an additional remuneration component for the private agency which compensates for the lower expected revenue. However, there is a minimum qualifications level $\overline{Q_V}$, such that for individuals below this threshold, the expected revenue is below the placement costs despite the voucher. Thus, compared to a situation without a voucher scheme, the private employment agency additionally invests efforts into placing individuals with values of Q in the interval $[\overline{Q_V}, \bar{Q})$.

Figure 2 Selection into private and public job placement by qualifications level (Q) in a situation with a voucher policy

As private agencies expand their range of potential customers to include more hard-to-place job seekers with lower values of Q, we expect that under a voucher policy (i.e., since 2002), cream-skimming will be weaker compared to a situation where such a voucher policy is not in place (i.e., before 2002). Accordingly, we state the following hypothesis:

> **Hypothesis 2 (H2):** In a situation with a voucher policy in place, cream-skimming is less pronounced than in a situation without such policy.

However, the introduction of vouchers does not lead private agencies to alter their selection decision with regard to individuals without vouchers. Thus, under a voucher scheme we still expect privately placed individuals without vouchers to be on average more qualified than publicly placed individuals. Therefore, we hypothesize the following:

[1] Our theoretical predictions do not change in the other two potential cases where $\tilde{Q}$ is either located to the left or to the right of $\bar{Q}$. These cases are depicted in Figure A1 in the Appendix. We argue that $\bar{Q} = \tilde{Q}$ represents the ideal case from a policy perspective, since in this case there are no windfall gains and private agencies expand their range of potential customers to the entire and not only to a part of the interval $[\overline{Q_V}, \bar{Q})$.

Hypothesis 3 (H3): In a situation with a voucher policy in place, there is still cream-skimming among privately placed individuals without vouchers in the sense that they are on average more qualified than publicly placed individuals.

Further, a key point to note from Figure 2 is that privately placed individuals with vouchers have values of Q in the interval $[\overline{Q_V}, \bar{Q})$, whereas privately placed individuals without vouchers have values of Q greater than or equal to $\bar{Q}$. We therefore expect the latter to be on average more qualified than the former, leading us to state the following hypothesis:

Hypothesis 4 (H4): Privately placed individuals with vouchers are on average less qualified than privately placed individuals without vouchers.

Therefore, we expect that the reduction of cream-skimming in the situation with a voucher policy in place (H2) is driven by private placements involving vouchers rather than private placements without the use of vouchers.

Under co-financing, as described in Section 2, the voucher does not necessarily represent an additional redemption component for private agencies, as has been assumed so far in our model, because the employer might reduce the payment to the private employment agency (via x) if a voucher is in place. Nevertheless, without this assumption our hypotheses remain unchanged. If employers lower the remuneration to the private employment agency, then their costs for the private placement services are reduced. Therefore, employers are more likely to employ job seekers with low values of Q who would not be employed in a situation without vouchers (with higher remuneration). Thus, $p(Q)$ increases with the use of the voucher, which in turn increases the expected revenue of private agencies, as assumed above.

4.2 Job placement institutions and job match quality

Our job match quality analysis aims to investigate differences in the quality of job matches created by private agencies (with or without vouchers) compared to the German public employment agency. In previous literature, it has been argued that efficiency gains might be realized when job seekers are placed by private as opposed to public agencies. Such efficiency gains might result from monetary incentives due to the performance-based pay of private agencies (Pfeiffer and Winterhager, 2006). Private placement might improve the employer-employee matching compared to placement by the public agency, for example by conducting better testing of job seekers or by reducing information asymmetries between employers and

job seekers (Beckmann *et al.*, 2004). Reducing such information asymmetries and ensuring a good employer-employee matching is of major importance in order for private employment agencies to maintain their reputation, which is a precondition for their market success (Walwei, 1998). For these reasons, we expect the subsequent job match quality to be greater for privately placed individuals (using a voucher or not using a voucher) in comparison to publicly placed individuals. Thus, we hypothesize the following:

> **Hypothesis 5 (H5):** Subsequent job match quality is on average higher in the case of private placement (with or without a voucher) as opposed to public placement.

5. Data

Our analysis is based on data from the German Socio-Economic Panel (SOEP), which is representative of people resident in Germany. Starting in 1984, about 30,000 individuals and nearly 15,000 private households in Germany are asked on a yearly basis about various aspects of their life (Goebel *et al.*, 2019). The SOEP is a very suitable data source for the present study because it provides various information about individuals, including measures of their qualifications, as well as job-specific characteristics and different measures of job match quality over several years for these same individuals.

As private agencies have been allowed in Germany since 1994, data on job placement via private agencies have been available in the SOEP since 1995 (in each survey year, individuals are asked about the previous year). The most recent data stem from 2018. We therefore choose an investigation period spanning the 24 years from 1995 to 2018.

For the purpose of this study, our sample consists only of individuals who found a job during the last year with the help of an employment agency and are placed either publicly or privately with or without a voucher. We further restrict our sample to individuals who are employed full- or part-time and are aged between 18 and 65 years. Since the voucher is not paid for placement into marginal employment, we do not include marginally employed individuals.

In the final sample, individuals are observed after a job placement (i.e., when they report that they were placed since the last survey). Specific information from previous and later years is merged to the sample, such as the unemployment status in the previous year (before the placement), because of differences in job search behavior between unemployed and employed individuals (Blau, 1992). This results in a sample size of 2,602 observations; 923 in the time

period 1995-2002 (without vouchers) and 1,679 for the time period 2003-2018. A majority of 0.87 (n=2,263) is placed by the public employment agency. We also observe a number of privately placed employees, though (n=90 during the years 1995-2002, n=176 during the years 2003-2018 without a voucher, and n=73 with a voucher).

6. Variables and methodology

6.1 Selection into job placement institutions

In our selection analysis, we explore whether placed individuals differ in person- and job-specific characteristics depending on placement by public or private agencies with or without a voucher. We start with a descriptive view on the subgroups in our sample with regard to the placement regime. Specifically, in order to test H1–4, we estimate binary probit models in which the probability of a specific placement type of each individual *i* is modeled in the following way:

$$\Pr(PlacementType_i = 1 \mid x_i) = G(x_i\beta). \quad (6)$$

The dependent variable $Placement\ Type_i$ is a dummy. Depending on our analysis, it represents: private placement with or without voucher (1) vs. public placement (0); private placement without voucher (1) vs. public placement (0); or private placement with voucher (1) vs. private placement without voucher (0).

The vector x_i comprises the explanatory variables. They include the qualifications level Q_i of individual *i*, which is operationalized in our empirical investigation by two separate variables: *years of schooling* and *previously registered as unemployed* (i.e., unemployment in the year before the job placement). Other explanatory variables are the following person- and job-specific characteristics of individual *i*: gender, age, marital status, children in the household, German nationality, migration background, resident in eastern Germany (i.e., in one of the "new" federal states of Germany) or in western Germany (i.e., in one of the "old" federal states of Germany), and job type. Table A1 in the Appendix provides detailed information about how these variables are defined in our study. We also include dummies for the survey year. G is the cumulative distribution function of the error term, which, in the probit model, is assumed to follow a standard normal distribution, and the vector β contains the coefficients.

6.2 Job placement institutions and job match quality

In order to test H5, we investigate the subsequent job match quality for privately placed individuals with or without a voucher compared to individuals placed via the Federal Employment Agency. We consider several indicators of job match quality as dependent variables. All dependent variables refer to the job that the individual has been placed into. The first dependent variable is the logarithm of the gross hourly earnings in euros. The second dependent variable is the individual's job satisfaction, which is assessed by a single self-reported item "How satisfied are you with your job?" with responses on an eleven-point-scale ranging from 0 (*completely dissatisfied*) to 10 (*completely satisfied*). We further consider as inverted measures of job match quality a dummy for working on a fixed-term (1) or permanent contract (0) and a dummy for termination of employment, which reflects the stability of the employment relationship and takes on the value 1 for individuals who have left the employment relationship (because of a switch to another employer or because of becoming unemployed) within one year after placement.

The three main explanatory variables in the job match quality analysis capture the type of placement: private placement with or without a voucher (1) vs. public placement (0); private placement without a voucher (1) vs. public placement (0); and private placement with a voucher (1) vs. public placement (0).

In comparing the subsequent job match quality of private and public placement, the fundamental evaluation problem is present. That is, the job match quality resulting from private and public placement (i.e., from treatment and non-treatment) cannot be observed for the same individual at the same time, as an individual is placed either privately or publicly at a certain point in time. With private placement as treatment, public placement as control, and job match quality as the outcome, it is thus impossible to directly measure the treatment effect. In particular, an endogeneity problem might arise because placement by private agencies (especially without the use of a voucher) might be influenced by person and job characteristics that also affect measures of job match quality. For example, individuals with higher qualifications levels might be overrepresented in the group of privately placed individuals without voucher (see Section 5.1).

We overcome the fundamental evaluation problem and the possibly resulting endogeneity problem by using propensity score matching (PSM), which enables us to compare the job match

quality of treated individuals to that of very similar non-treated individuals. This approach consists of two steps. First, the treatment (a specific placement type, e.g. private vs. public placement) is regressed on the control variables (gender, age, marital status, children in the household, German nationality, migration background, resident in eastern or western Germany, job type, and year dummies), equivalent to the model used in our selection analysis as described in Section 5.1. In the second step, the effect of the respective placement type on a specific job match quality measure is estimated. In order to calculate these effects, PSM compares the job match quality of treated individuals to that of similar non-treated individuals. We apply nearest neighbor matching. Thereby, each member of the treatment group is matched to the member of the control group with the closest propensity score. The propensity score gives the probability of treatment conditional on the other observed characteristics of individuals (i.e., their values on the control variables) (Rosenbaum and Rubin, 1983).

7. Results

7.1 Descriptive statistics

Table 1 provides descriptive statistics about characteristics of placed individuals in our sample separately for the two time periods as well as for the three relevant groups: individuals publicly placed and individuals privately placed with or without a voucher. From the survey years 1995-2002, publicly placed individuals in our sample have, on average, 11.49 years of schooling, and 56% of them were registered as unemployed before placement. In comparison, the average number of years of schooling is 12.27 for privately placed individuals in our sample, and on average 24% of them were previously registered as unemployed within this time period. The differences in years of schooling and previous unemployment between privately and publicly placed individuals are highly significant (both $p < .01$, two-sided *t*-tests), which points to the presence of cream-skimming in the time period without vouchers and therefore provides first support for H1.

Under the voucher policy, i.e., in the survey years 2003-2018, the average number of years of schooling in the three different groups (public placement, private placement without voucher, and private placement with voucher) is 11.90, 13.26, and 11.43, respectively. The share of previously unemployed individuals is 44%, 24%, and 63%, respectively. In this time period, differences in years of schooling and previous unemployment between privately placed individuals without vouchers and publicly placed individuals as well as between privately placed individuals without vouchers and privately placed individuals with vouchers are highly

significant (both $p < .01$), which provides first support for H3 and H4. Comparing privately placed individuals who use vouchers with publicly placed individuals, the difference in years of schooling is statistically insignificant, whereas the difference in previous unemployment is highly significant ($p < .01$).

Table 1 Descriptive statistics of selection analysis variables

Time Period	1995-2002				2003-2018					
Placement	Public (n = 833)		Private (n = 90)		Public (n = 1,430)		Private Without Voucher (n = 176)		Private With Voucher (n = 73)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Years of schooling	**11.49**	2.08	**12.27**	2.85	**11.90**	2.24	**13.26**	3.02	**11.43**	2.23
Previously registered as unemployed	**0.56**		**0.24**		**0.44**		**0.24**		**0.63**	
Female	**0.48**		**0.37**		**0.52**		**0.35**		**0.44**	
Age	**37.14**	11.01	**36.18**	9.96	**38.84**	11.52	**40.61**	10.14	**40.97**	10.57
Marital status	**0.53**		**0.49**		**0.46**		**0.60**		**0.51**	
Children	**0.72**	0.99	**0.66**	0.90	**0.69**	0.94	**0.74**	0.94	**0.92**	1.09
German nationality	**0.89**		**0.87**		**0.88**		**0.87**		**0.88**	
Migration background	**0.20**		**0.24**		**0.26**		**0.28**		**0.32**	
Eastern Germany	**0.53**		**0.26**		**0.34**		**0.23**		**0.45**	

Note. SD = standard deviation.

Descriptive statistics for our job match quality variables are shown in Table 2. The sample size for the investigation period from 1995-2018 is reduced from n=2,602 to n=2,433 (and n=1,855 for termination of employment within the next year) in comparison to our selection analysis due to some missing values in the dependent variables. From 1995-2002, the descriptive results point to higher job match quality in case of private vs. public placement (higher average earnings and job satisfaction as well as a lower probability of fixed-term employment and termination of employment). The differences in means between private and public placement for the four job match quality variables are statistically significant ($p < .05$ for job satisfaction and $p < .01$ for the other variables), which provides first support for H5. For the second time period, average differences in job match quality between public and private placement are less consistent, in particular when comparing public placement to private placement with voucher.

Table 2 Descriptive statistics of job match quality variables

Time Period	1995-2002				2003-2018					
Placement	Public (n = 780)		Private (n = 77)		Public (n = 1,344)		Private Without Voucher (n = 166)		Private With Voucher (n = 66)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log. gross hourly earnings	**2.09**	0.34	**2.37**	0.55	**2.28**	0.41	**2.79**	0.62	**2.21**	0.48
Job Satisfaction	**6.69**	2.19	**7.30**	2.15	**6.93**	2.22	**7.16**	2.14	**6.50**	2.25
Fixed-term contract	**0.53**		**0.32**		**0.53**		**0.39**		**0.38**	
Placement	Public (n = 673)		Private (n = 71)		Public (n = 956)		Private Without Voucher (n = 106)		Private With Voucher (n = 49)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Termination of employment within one year	**0.59**		**0.38**		**0.53**		**0.38**		**0.45**	

Note. SD = standard deviation.

7.2 Selection into job placement institutions

The results of the selection analysis are shown in Table 3. Our focus lies on the qualifications of individuals, which are reflected by the variables *years of schooling* and *previously registered as unemployed*. The control variables are held constant in this analysis.

In Model (1), we consider the time period without vouchers, i.e., the survey years 1995-2002. In this time interval, previous unemployment status is associated with a lower probability to be privately (vs. publicly) placed ($p<0.01$). The sign of the coefficient for years of schooling is positive, but statistically insignificant. The finding with regard to previous unemployment is in line with H1 and mirrors the findings of Grund (2006): Without a voucher scheme in place, private agencies engage in cream-skimming by placing predominantly highly qualified workers and neglecting less qualified ones.

In Model (2), we focus on the time period with vouchers, i.e., 2003-2018. We find that more years of schooling are positively associated with the probability of private (vs. public) placement ($p<0.01$), while previous unemployment is a negative predictor of private placement ($p<0.1$). This shows that cream-skimming still takes place in the time period in which vouchers are in place.

In order to test whether cream-skimming is significantly reduced under the voucher scheme, we compare in Model (3) the extent of cream-skimming in the time period with the voucher scheme to that in the time period without the voucher scheme. For this purpose, we first use an interaction of the later time period (1 = after 2002, 0 = until 2002) and years of schooling. This interaction term is statistically insignificant. Thus, the role of schooling for private vs. public placement does not significantly differ between the later time period (with vouchers) and the former time period (without vouchers). Second, we use an interaction of the later time period and previously registered unemployment. The interaction effect is positive and highly significant ($p<0.01$), indicating that under the voucher policy, previous unemployment is associated with a 8.6 percentage points higher probability of private (vs. public) placement compared to the situation without a voucher policy. This finding is in line with H2. Overall, H2 is partly supported by the data: Our findings suggest that cream-skimming has been weakened through the voucher scheme, since private agencies shift the focus somewhat toward individuals who were previously registered as unemployed.[2]

In Models (4)–(5), the group of privately placed individuals is divided into those placed without and those placed with the use of a voucher. As Model (4) shows, more years of schooling are positively associated with the probability of private placement without voucher compared to public placement ($p<0.01$). Furthermore, previous unemployment is negatively associated with the probability of private placement without voucher compared to public placement ($p<0.01$). Therefore, under the voucher scheme, private agencies still engage in cream-skimming with regard to individuals without vouchers. These results are in line with H3.

[2] We perform a robustness check in which all workers who were privately placed with a voucher are dropped from Model (3). The results show that the interaction terms are then statistically insignificant. This indicates that the results from Model (3) are indeed driven by vouchers. The importance of vouchers for selection effects into private placement is further indicated by Models (4) and (5), which show that cream-skimming is still pronounced among individuals without vouchers but diminishes when vouchers are involved.

Table 3 Selection into different types of job placement

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Time Period	1995-2002	2003-2018	1995-2018	2003-2018	2003-2018
Placement	Private vs. Public	Private vs. Public	Private vs. Public	Private With-out Voucher vs. Public	Private With vs. Without Voucher
Qualification Measures					
Years of schooling	0.007 (0.005)	0.020*** (0.004)	0.014*** (0.005)	0.019*** (0.004)	-0.019 (0.012)
Previously registered as unemployed	-0.083*** (0.020)	-0.035* (0.018)	-0.113*** (0.025)	-0.061*** (0.016)	0.176*** (0.054)
Later(2003-2018) *Years of schooling	—	—	0.002 (0.006)	—	—
Later(2003-2018) *Previously registered as unemployed	—	—	0.086*** (0.029)	—	—
Controls					
Female	-0.039* (0.023)	-0.043** (0.020)	-0.041*** (0.015)	-0.050*** (0.018)	0.029 (0.056)
Age	0.001 (0.001)	0.002** (0.001)	0.002** (0.001)	0.001 (0.001)	0.006* (0.003)
Marital status	-0.017 (0.023)	0.015 (0.021)	0.004 (0.016)	0.022 (0.019)	-0.086 (0.064)
Children	0.002 (0.010)	0.015 (0.010)	0.009 (0.007)	0.000 (0.009)	0.053* (0.030)
German nationality	0.003 (0.038)	-0.009 (0.032)	-0.007 (0.025)	-0.024 (0.028)	0.083 (0.092)
Migration background	0.009 (0.034)	0.034 (0.025)	0.022 (0.020)	0.015 (0.022)	0.123* (0.074)
Eastern Germany	-0.058** (0.023)	-0.017 (0.020)	-0.032** (0.015)	-0.035* (0.018)	0.129** (0.055)
Job type dummies	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included
Observations	923	1,679	2,602	1,606	249

Note. Average marginal effects from binary probit estimations. The dependent variable is the type of job placement. Marginal effects are calculated at the means of the explanatory variables. Robust standard errors clustered at the individual level in parentheses. ***$p < .01$. ** $p < .05$. *$p < .10$.

We finally test whether individuals placed privately with the help of a voucher significantly differ from individuals placed privately without the help of a voucher. These results are shown in Model (5). We find that the sign of the coefficient for years of schooling is negative, but statistically insignificant. The coefficient of previously registered unemployed is positive and highly significant ($p<0.01$). Thus, H4 is supported with regard to previous unemployment: Individuals who have previously been unemployed are more likely to be privately placed through the use of vouchers than to be privately placed without using vouchers. This indicates that the decrease in cream-skimming observed in Model (3) is driven by private placement with a voucher, rather than by private placement without a voucher.[3]

7.3 Job placement institutions and job match quality

In our job match quality analysis, we compare the job match quality of individuals placed by private vs. public employment agencies. We found in Section 7.2 that privately placed individuals (either using a voucher or not using a voucher) do statistically differ with respect to their qualifications from those publicly placed. We therefore use propensity score matching in our job match quality analysis to mitigate possible selection bias. We compare the whole group of privately placed persons as well as specific subgroups of privately placed individuals (without respectively with a voucher) to a matched control group of publicly placed individuals. Depending on our analytical focus, we define treatment as "private placement with or without voucher", "private placement without voucher", or "private placement with voucher".

Table 4 provides our estimation results for the four considered indicators of job match quality. First, we compare the whole group of privately placed individuals to the group of publicly placed ones; these results are shown in Panels A–C of Table 4. In all time periods analyzed, for privately placed individuals the estimated hourly wage is on average significantly higher compared to similar publicly placed individuals. Moreover, privately placed individuals are significantly less likely to be placed in a job with a fixed-term contract. Concerning job satisfaction and termination of employment, the estimated coefficients are not statistically significant in all time periods, but when they are, then private placement is associated with higher job match quality (i.e., higher job satisfaction or a lower probability of termination). Therefore, H5 is mostly supported by these results.

[3] Supplementary analyses show that previous unemployment is also significantly positively related to private placement with voucher compared to public placement ($p<0.05$). With regard to years of schooling, the sign of the coefficient is negative, yet statistically insignificant. The detailed results are available from the authors upon request.

Table 4 Types of job placement and job match quality measures

	Log. Gross Hourly Earnings	Job Satisfaction	Fixed-Term Contract	Termination of Employment Within One Year
Panel A:				
1995-2018				
Private vs. public	0.104***	0.268	-0.108**	-0.128***
	(0.028)	(0.183)	(0.047)	(0.040)
Observations	2,433	2,433	2,433	1,855
Panel B:				
1995-2002				
Private vs. public	0.050**	0.559**	-0.173***	-0.054
	(0.023)	(0.257)	(0.043)	(0.058)
Observations	857	857	857	744
Panel C:				
2003-2018				
Private vs. public	0.164***	0.121	-0.079*	-0.164***
	(0.035)	(0.195)	(0.047)	(0.040)
Observations	1,576	1,576	1,576	1,111
Panel D:				
2003-2018				
Private without voucher vs. public	0.180***	0.271	-0.001	-0.116**
	(0.036)	(0.170)	(0.046)	(0.053)
Observations	1,510	1,510	1,510	1,062
Panel E:				
2003-2018				
Private with voucher vs. public	0.124***	-0.520	-0.148***	0.000
	(0.047)	(0.330)	(0.055)	(0.023)
Observations	1,410	1,410	1,410	1,005

Note. Estimates from propensity score matching. The dependent variables are the job match quality measures. Explanatory variables of the treatment model: years of schooling, unemployment in the previous year, female, age, marital status, children in the household, German nationality, migration background, resident in eastern or in western Germany, job type, and survey year. Robust standard errors in parentheses. ***$p < .01$. ** $p < .05$. *$p < .10$.

We additionally analyze the job match quality of specific subgroups of privately placed individuals (with or without a voucher) compared to that of publicly placed ones. The estimation results are reported in Panels D–E of Table 4. For both subgroups of privately placed individuals, the estimated hourly wage is significantly higher compared to publicly placed individuals ($p<0.01$). With regard to job satisfaction, we do not find significant differences between publicly and privately placed individuals with or without vouchers. When using fixed-

term contract as an inverted measure of job match quality, we find that individuals placed privately with vouchers are significantly less likely to be placed in a job with a fixed-term contract compared to individuals publicly placed ($p<0.01$), while the result is insignificant for individuals placed privately without a voucher. For termination of employment, we find that privately placed individuals without vouchers are significantly less likely to leave the employment relation compared to publicly placed ones ($p<0.05$). In contrast, for the group of privately placed individuals with vouchers, the estimated coefficient on termination of employment is statistically insignificant, which suggests that no difference in the stability of the employment relationship dependent on the intermediaries involved exists. In sum, we find some evidence for higher job match quality in the case of private placement without and with vouchers compared to public placement, which further supports H5.

8. Discussion & conclusion

This paper investigates selection effects of private and public job placement as well as the quality of subsequent job matches for the case of Germany. In our selection analysis, we evaluate job placement vouchers as a potential solution for cream-skimming, which is the tendency of private employment agencies to primarily place highly qualified workers and to neglect unemployed individuals with a lower qualifications level. We find evidence for cream-skimming in a situation without a voucher policy in place, i.e., the clientele of the Federal Employment Agency has on average a lower level of qualifications compared to that of private agencies. Under the voucher policy, cream-skimming is less pronounced; in particular, more individuals who have previously been registered as unemployed are privately placed since vouchers are in effect. With the voucher policy in place, cream-skimming still exists among individuals privately placed without the use of vouchers, but individuals placed privately with vouchers are on average less qualified compared to those placed privately without vouchers. Individuals placed privately with vouchers were even more often unemployed before placement than individuals placed by the Federal Employment Agency. Thus, the voucher scheme successfully incentivized private placement providers to shift the focus increasingly toward unemployed individuals.

We also explore differences in job match quality between the three relevant groups: individuals publicly placed and individuals privately placed with or without a voucher. We find that individuals placed privately with or without vouchers earn significantly higher wages compared to individuals placed publicly. In comparison to public placement, privately placed individuals

with a voucher are significantly less likely to be placed in a job with a fixed-term contract. Moreover, termination of employment within one year after placement is significantly less likely for privately placed individuals without vouchers compared to publicly placed ones. Thus, we find evidence that private placement might be more successful than public placement in creating good job matches from the perspective of job seekers. Therefore, introducing the possibility to use a placement voucher has not only reduced cream-skimming among private employment agencies but also created opportunities for (overall) better job matches by providing unemployed individuals access to private placement services.

This study is hampered by some limitations. First, there might be additional qualifications-related characteristics of job seekers that our explanatory variables do not cover sufficiently. Thus, the relevant groups in our job match quality analyses might not be perfectly comparable.

Second, we cannot analyze the extent and duration of placement efforts before successful placement with our data. Leaving unemployment more quickly can be considered desirable from a job seeker's point of view as well as from a political point of view. In addition, from a firm's perspective, faster job placement can reduce opportunity costs of vacancies that have not yet been filled. Future research should analyze whether the duration of efforts up to successful placement differs depending on the type of employment agency involved.

Next to cream-skimming, 'parking' is another risk generally associated with the pay-for-performance scheme of private agencies (Koning and Heinrich, 2013). Individuals with the greatest employment barriers are likely to be 'parked', meaning that they receive minimal services and make little progress in their job search (Finn, 2010). As our data are limited to successfully placed individuals, we cannot analyze parking activities in Germany. Parking can be viewed as a substitute for cream-skimming, for instance if private agencies are obliged to accept all voucher recipients so that a pre-selection cannot take place (Koning and Heinrich, 2013). This is not the case for Germany. Therefore, we expect parking activities to play a rather limited role in the present context.

Finally, in our selection analysis, we investigate characteristics of successfully placed individuals only. There may also be cases where private agencies decide to invest placement efforts which do not result in successful placements. Characteristics of individuals who were not successfully placed cannot be observed using our data. Investigating determinants of

unsuccessful placement efforts in comparison to successful placements could be a fruitful avenue for future research.

In sum, we find that the voucher policy has succeeded in mitigating cream-skimming in Germany. Under the voucher policy, private agencies continue to engage in cream-skimming activities among individuals without vouchers, but there is now significantly less cream-skimming—to some extent even the opposite—among individuals with vouchers. Private agencies expanded their activity by addressing an additional group of job seekers consisting of voucher recipients. Thus, vouchers have successfully incentivized private agencies to shift the focus also toward hard-to-place job seekers. Moreover, we find that private agencies tend to create better job matches than their public counterparts. Overall, implementing a voucher policy can be an effective regulatory tool to foster cooperation between public and private employment agencies, to counter cream-skimming activities, and to give unemployed individuals access to jobs with a relatively high match quality.

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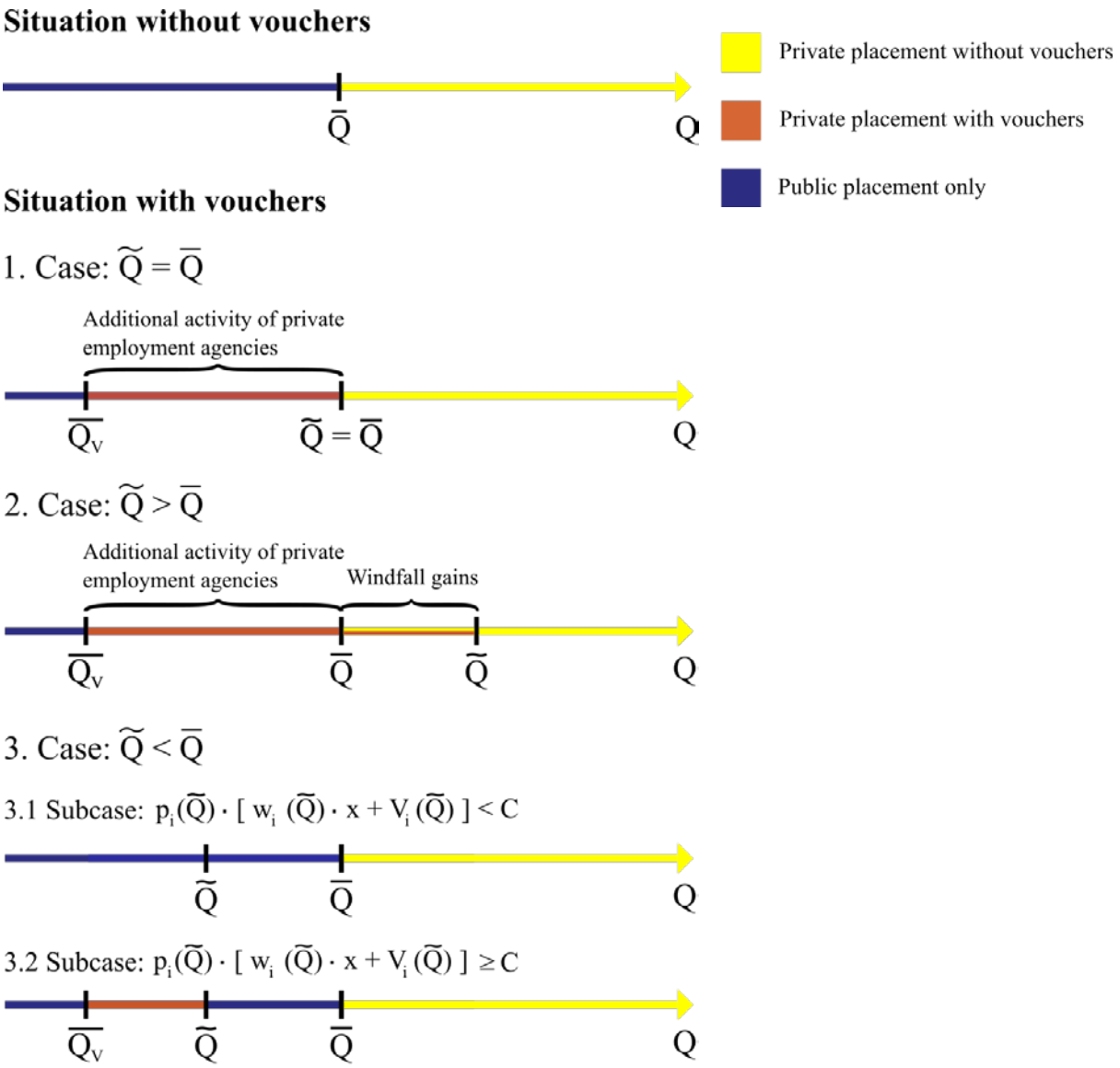
Appendix

Figure A1 Cases from our model on selection into private vs. public job placement



Notes:
C = the private agency's costs of investing placement efforts
Q_i = job seeker *i`s* qualifications level
$p_i(Q_i)$ = probability of successfully placing job seeker *i* into a job
$w_i(Q_i) \cdot x$ = remuneration paid by the employer to the private agency in the case of successful placement
$V_i(Q_i)$ = job placement voucher
$\bar{Q}$ = critical qualifications level for private placement without voucher
$\overline{Q_V}$ = critical qualifications level for private placement with voucher
$\tilde{Q}$ = threshold for obtaining a voucher

Table A1 Variable definitions

Variable	**Description**
Female	Dummy equals 1 if the person is female.
Age	Person's age in years (metric variable).
Marital status	Dummy equals 1 if the person is married.
Children	Number of children in the household (metric variable).
German	Dummy equals 1 if the person possesses German citizenship.
Migration background	Dummy equals 1 if the person has a direct or indirect migration background.
Eastern Germany	Dummy equals 1 if the person lives in eastern Germany (including Berlin).
Years of schooling	Person's years of schooling (metric variable).
Job type	10 job type dummies based on the German Classification of Occupations 2010.
Previously registered as unemployed	Dummy equals 1 if the person was registered as unemployed in the year before job placement.
Survey year	Year dummies for each year from 1995 to 2018.