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## Article

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

Adam Ayaita · Christian Grund · Lisa Pütz

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**Abstract** 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 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.

**Keywords** Cream-skimming · Employment agencies · Job match quality · Job placement · Job search · Vouchers

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**Availability of data and material** The SOEP data are available at: German Institute for Economic Research (DIW Berlin), Mohrenstraße 58, 10117 Berlin, Germany (<https://www.diw.de/en/soep>). Code availability: available from the authors upon request.

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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.

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 on the basis of equity considerations, because the needs of hard-to-place job seekers are less likely to be met compared to the needs of other job seekers (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 on the basis of cost-benefit considerations from a private employment agency's perspective.

Our empirical analysis is based on data from the German Socio-Economic Panel (SOEP). 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 proxies for job match quality: 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. On the basis of 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 Sect. 2. In Sect. 3, the job placement market and the job placement voucher scheme in Germany are described. Sect. 4 derives testable hypotheses for our selection and job match quality analyses on the basis of theoretical considerations. Sect. 5 describes our dataset and Sect. 6 our variables and methodology. We present our empirical results in Sect. 7. In Sect. 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, who are perceived to be the easiest to place (cream-skimming; see Bartlett and Le Grand 1993; Finn 2010; Koning and Heinrich 2013; Pastore 2020). A common term for “being easy to place” is employability, which can be defined as “an individual’s chance of a job on the internal and/or external labour market” (Forrier and Sels 2003, p. 106). It can also be regarded as a set of competencies (Van der Heijde and Van der Heijden 2006; Van der Heijde et al. 2018). Employability has been linked to human capital theory, which assumes that an individual’s human capital (i.e., qualifications, knowledge, skills, and experience) is likely to increase her or his productivity (Schultz 1971; Becker 2009): Since employers seek to select the most productive workers, workers with high levels of human capital will have greater chances of being hired, i.e., higher employability (Fugate et al. 2021). In line with this reasoning, 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 (Behaghel et al. 2014), Denmark (Rehwalder 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 to 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 SOEP 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. In our job match quality analysis, we do not rely on only one proxy for job match quality but take several proxies for 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 types 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). The use of vouchers is governed by Paragraph 45 of the Third Book of the German Social Security Code. 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 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.

Until 2004, the redemption amount varied between €500 and €1500 per successful placement, depending on the duration of previous unemployment of the placed person. Since 2005, the redemption amount equals €2000 independent of the duration of previous unemployment. In general, it is paid in two instalments of €1000 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 €2500. 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 typically reduce their payment to private agencies by the amount of the voucher if the private agency is able to redeem a voucher (Beckmann 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 hard-to-place job seekers 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 by Different 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 on the basis of simple cost-benefit considerations. When making this selection decision, the private agency has two options: It can either refuse or agree to invest efforts. Only if the private agency invests efforts in placing a candidate, it may suggest that particular candidate to an employer. The employer can then decide whether to offer the suggested candidate a job or not. Therefore, the private agency's decision to invest placement efforts is a precondition for successful private placement.

We first consider a situation without job placement vouchers. The private agency's expected revenue  $\pi_i$  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 (expected) remuneration paid by the customer firm (i.e., 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 or human capital.

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

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

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:

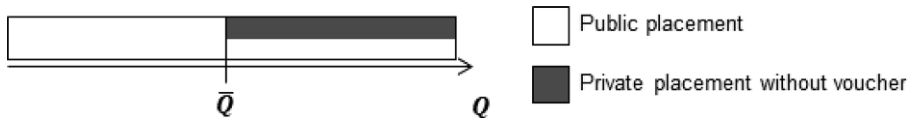
$$E[\pi_i(Q_i)] \geq C \quad (2)$$

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 into a job. Consequently, a threshold level denoted as  $\overline{Q}$  exists, which is a critical qualifications level: Only for values of  $Q$  greater than or equal to  $\overline{Q}$  are the placement efforts expected to be profitable from the perspective of the private agency so that:

$$E[\pi_i(\overline{Q})] = C \quad (3)$$

Thus, private employment agencies will invest resources only in those job seekers with values of  $Q$  greater than or equal to  $\overline{Q}$ , i.e., those job seekers with rather good anticipated labor market prospects. This means that private agencies engage in cream-skimming, as shown in Fig. 1. In this contribution, we understand cream-skimming not simply as employment agencies' focus on job seekers who are easier



**Fig. 1** Selection into Private and Public Job Placement by Qualifications Level ( $Q$ ) in a Situation without a Voucher Policy

to place (reflected by high values of  $p_i$ ), but as focus on job seekers who are expected to lead to high profits of the placement agency, which is determined not only by high values of  $p_i$  but also by high expected wages  $w_i$ . As described above, both of these factors are positively correlated with job seekers' qualifications. 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.

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  $V_i > 0$ ):

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

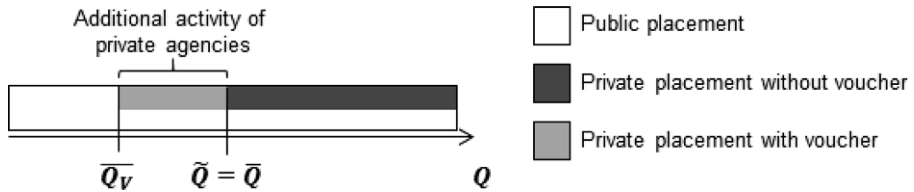
The voucher is only redeemable in the case of successful placement. Therefore, with the voucher option, expected revenues for the private agency change to the following term:

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

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,

<sup>1</sup> 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 Fig. 4 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  $[\bar{Q}_V, \bar{Q}]$ .





**Fig. 2** Selection into Private and Public Job Placement by Qualifications Level ( $Q$ ) in a Situation with a Voucher Policy

as illustrated in Fig. 2.<sup>1</sup> 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  $[\overline{Q}_v, \overline{Q})$ .

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:

*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 Fig. 2 is that privately placed individuals with vouchers have values of  $Q$  in the interval  $[\overline{Q}_v, \overline{Q})$ , whereas privately placed individuals without vouchers have values of  $Q$  greater than or equal to  $\overline{Q}$ . 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 Sect. 2, the voucher does not necessarily represent an additional remuneration 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 through better testing of job seekers or reduced 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 higher for privately placed individuals (using a voucher or not using a voucher) in comparison to publicly placed individuals. Thus, we hypothesize the following:

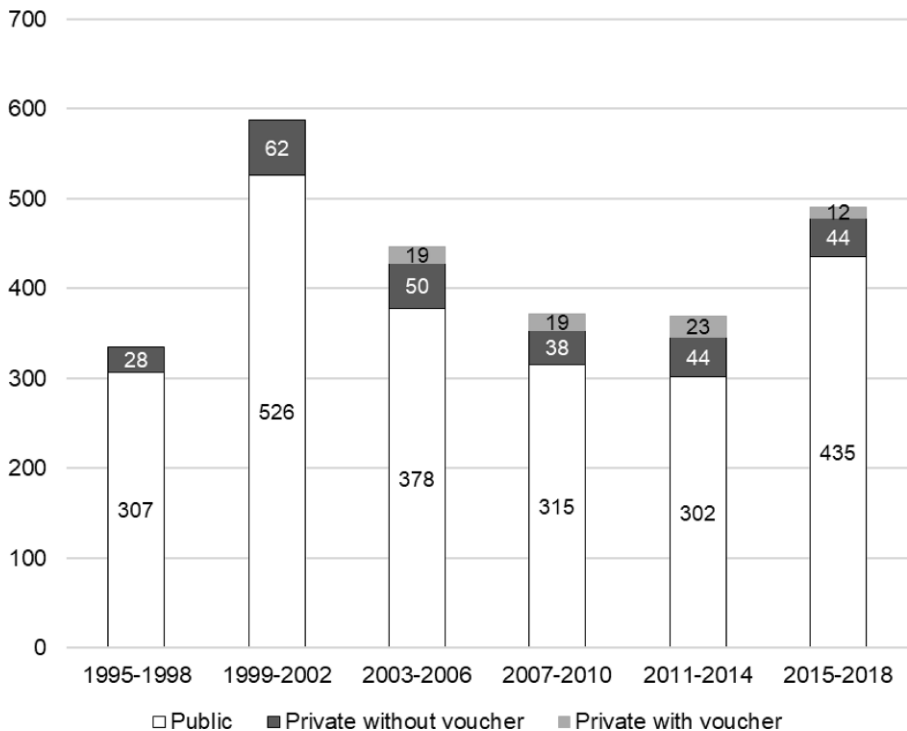
*Hypothesis 5 (H5):* Subsequent job match quality is on average higher in the case of private placement (with or without a voucher) as opposed to public placement.

## 5 Data

Our analysis is based on data from the 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 proxies for 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 between 18 and 65 years old. 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 2720 observations; 1041 observations in the time period 1995–2002 (without vouchers) and 1679 for the time period 2003–2018. A majority of 0.87 ( $n=2376$ ) is placed by the public employment agency. We also observe a number of privately placed employees, though ( $n=95$  during the years 1995–2002,  $n=176$  during the years 2003–2018 without a voucher, and  $n=73$  with a voucher).



**Fig. 3** Numbers of Observed Job Placements over Time

Fig. 3 shows the absolute numbers of different types of job placement (public, private without a voucher, and private with a voucher) observed in the data in four-year time intervals between the survey years 1995 and 2018. While vouchers appear in the data not before 2003 (due to the reform in 2002), the numbers of different types of job placement observed in the data are otherwise relatively stable over time. However, when interpreting this data, one must keep in mind that the total number of observations in the SOEP survey (for individuals from the adult population in Germany) was not constant over time but increased, due to the continuous adding of further random samples.

## 6 Variables and Methodology

### 6.1 Selection into Job Placement by Different 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:

$$\Pr(\text{Placement Type}_i = 1 | x_i) = G(x_i \beta) \quad (6)$$

The dependent variable *Placement Type<sub>i</sub>* 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, the number of 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 5 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  $\beta$  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 proxies for 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 wage 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 proxies for low 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.

Wages, job satisfaction, the incidence of a fixed-term (vs. permanent) contract, and termination of the employment relationship reflect different facets of job match quality and are common proxies for job match quality used in the literature (see, e.g., van Ours and Vodopivec 2008; Yankow 2009; Ferreira and Taylor 2011). Wages of employed workers can be used as a proxy for job match quality, first because they are a relevant outcome for employees and second because higher wages reflect more productive job matches from the perspective of employers, under the assumption that the wage is positively correlated with workers' productivity (Yankow 2009). Job satisfaction is a reasonable proxy for job match quality because the quality of the job match is an underlying criterion that is accounted for by the individual in the process of generating an overall assessment of job satisfaction (Ferreira and Taylor 2011). We use the incidence of a nonpermanent contract as a proxy for low job match quality because a fixed-term contract might reflect doubts on the part of the employer about the match quality (compare, e.g., Venhorst and Cörvers 2018; van Ours and Vodopivec 2008) and employees usually prefer permanent contracts. We understand a good job match as one that is stable over time because both parties (i.e., employer and employee) have no interest in terminating the employment relationship. Therefore, termination of employment can also be regarded as a proxy for low job match quality. In particular, we focus on the termination of employment within one year because both parties could end the employment relationship easily during the probation period within the first year of the employment relationship if they are unsatisfied with the job match (Bowlus 1995).

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 proxies for job match quality. For example, individuals with higher qualifications levels might be overrepresented in the group of privately placed individuals without voucher (see Sect. 6.1). This might create selection effects in the sense that individuals with specific characteristics are selected into specific types of job placements. If these characteristics (e.g., measures of qualifications level) are not only related to the type of job placement but also to the proxies for job match quality, then they might bias the results by creating a spurious relationship between type of placement and job match quality. It is therefore important to appropriately account for such potential selection effects in the analysis of job match quality in order to estimate the effect of type of job placement on job match quality.

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 explanatory variables (years of schooling, previously registered as unemployed, gender, age, marital status, the number of 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 Sect. 6.1. In the second step, the effect of the respective placement type on the dependent variable (a specific proxy for job match quality) is estimated. In order to estimate these effects, PSM compares the job match quality of treated individuals to that of similar non-treated individuals. We apply nearest neighbor matching on the propensity score, with exactly one match per observation. 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 explanatory variables) (Rosenbaum and Rubin 1983). With this PSM approach, we approximate the average treatment effect on the treated (ATT): Because the control group is—by design—very similar to the treatment group, the observed effects in the control group should be (almost) identical to the effects that would occur in the treatment group in the absence of the treatment. In this way, we identify the effect of the treatment in the group of treated individuals.

## 7 Results

### 7.1 Descriptive Statistics

Table 1 provides descriptive statistics about characteristics of placed individuals in our sample separately for the two main time periods (i.e., 1995–2002 and 2003–2018) 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, 11.47 years of schooling, and 56% of them were registered as unemployed before placement.

**Table 1** Descriptive Statistics of Selection Analysis Variables

Time Period	1995–2002				2003–2018			
	Public ( <i>n</i> = 946)		Private ( <i>n</i> = 95)		Public ( <i>n</i> = 1430)		Private without voucher ( <i>n</i> = 176)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<i>Years of schooling</i>	<b>11.47</b>	2.07	<b>12.29</b>	2.86	<b>11.90</b>	2.24	<b>13.26</b>	3.02
<i>Previously registered as unemployed</i> (1 = yes)	<b>0.56</b>	0.50	<b>0.25</b>	0.44	<b>0.44</b>	0.50	<b>0.24</b>	0.43
<i>Female</i>	<b>0.48</b>	0.50	<b>0.35</b>	0.48	<b>0.52</b>	0.50	<b>0.35</b>	0.48
<i>Age</i>	<b>37.14</b>	10.93	<b>35.91</b>	9.97	<b>38.84</b>	11.52	<b>40.61</b>	10.14
<i>Marital status</i> (1 = married)	<b>0.54</b>	0.50	<b>0.48</b>	0.50	<b>0.46</b>	0.50	<b>0.60</b>	0.49
<i>Children</i>	<b>0.74</b>	0.99	<b>0.71</b>	0.93	<b>0.69</b>	0.94	<b>0.74</b>	0.94
<i>German nationality</i> (1 = yes)	<b>0.90</b>	0.31	<b>0.86</b>	0.35	<b>0.88</b>	0.32	<b>0.87</b>	0.34
<i>Migration background</i> (1 = yes)	<b>0.20</b>	0.40	<b>0.24</b>	0.43	<b>0.26</b>	0.44	<b>0.28</b>	0.45
<i>Eastern Germany</i> (1 = yes)	<b>0.54</b>	0.50	<b>0.25</b>	0.44	<b>0.34</b>	0.48	<b>0.23</b>	0.42
<i>Job type</i>								
Agriculture, forestry, farming, gardening	<b>0.08</b>	0.28	<b>0.02</b>	0.14	<b>0.03</b>	0.17	<b>0.01</b>	0.11
Production of raw materials and goods, manufacturing	<b>0.38</b>	0.49	<b>0.28</b>	0.45	<b>0.27</b>	0.44	<b>0.24</b>	0.43
Construction, architecture, natural sciences, informatics	<b>0.05</b>	0.22	<b>0.11</b>	0.31	<b>0.07</b>	0.26	<b>0.11</b>	0.31
Travel, logistics, safety, security, military	<b>0.09</b>	0.29	<b>0.14</b>	0.35	<b>0.14</b>	0.35	<b>0.10</b>	0.30
Commercial services, trading, sales, hotel business, tourism	<b>0.10</b>	0.30	<b>0.11</b>	0.31	<b>0.11</b>	0.32	<b>0.19</b>	0.39
Business organization, accounting, law, administration	<b>0.14</b>	0.34	<b>0.24</b>	0.43	<b>0.18</b>	0.38	<b>0.21</b>	0.41
Health care, social sector, teaching, education	<b>0.13</b>	0.34	<b>0.06</b>	0.24	<b>0.17</b>	0.38	<b>0.09</b>	0.28
Humanities, social sciences, economics, media, art, culture	<b>0.02</b>	0.15	<b>0.04</b>	0.20	<b>0.03</b>	0.16	<b>0.05</b>	0.22
<i>SD standard deviation</i>								

**Table 2** Descriptive Statistics of Job Match Quality Variables

Time Period	1995–2002				2003–2018					
Placement	Public ( <i>n</i> = 885)		Private ( <i>n</i> = 82)		Public ( <i>n</i> = 1344)		Private without voucher ( <i>n</i> = 166)		Private with voucher ( <i>n</i> = 66)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Log. gross hourly wage	<b>2.08</b>	0.35	<b>2.38</b>	0.55	<b>2.28</b>	0.41	<b>2.79</b>	0.62	<b>2.21</b>	0.48
Job satisfaction	<b>6.63</b>	2.25	<b>7.34</b>	2.10	<b>6.93</b>	2.22	<b>7.16</b>	2.14	<b>6.50</b>	2.25
Fixed-term contract	<b>0.53</b>	0.50	<b>0.30</b>	0.46	<b>0.53</b>	0.50	<b>0.39</b>	0.49	<b>0.38</b>	0.49
Placement	Public ( <i>n</i> = 768)		Private ( <i>n</i> = 72)		Public ( <i>n</i> = 956)		Private without voucher ( <i>n</i> = 106)		Private with voucher ( <i>n</i> = 49)	
Variable	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Termination of employment within one year	<b>0.59</b>	0.49	<b>0.38</b>	0.49	<b>0.53</b>	0.50	<b>0.38</b>	0.49	<b>0.45</b>	0.50

SD standard deviation

In comparison, the average number of years of schooling is 12.29 for privately placed individuals in our sample, and on average 25% 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  $p < 0.01$ , 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  $p < 0.01$ ), 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 ( $p < 0.01$ ).

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  $n = 2720$  to  $n = 2543$  (and  $n = 1951$  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 the case of private vs. public placement (higher average wage 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 highly significant ( $p < 0.01$ ), 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 the different types of private placement (without or with a voucher) to public placement.

## 7.2 Selection into Job Placement by Different 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 tend to engage in cream-skimming by placing more qualified workers and neglecting less qualified ones, at least with respect to the previous unemployment status.

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 ( $p < 0.10$ ). This shows that cream-skimming still takes place in the time period in which vouchers are in effect.

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 7.6 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

**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 without voucher vs. public	Private with vs. without voucher
<i>Qualification Measures</i>					
Years of schooling	0.007 (0.004)	0.020*** (0.004)	0.015*** (0.005)	0.019*** (0.004)	−0.020* (0.012)
Previously registered as unemployed	−0.070*** (0.019)	−0.034* (0.018)	−0.101*** (0.023)	−0.060*** (0.016)	0.167*** (0.055)
Later (2003–2018) × Years of schooling	—	—	0.001 (0.006)	—	—
Later (2003–2018) × Previously registered as unemployed	—	—	0.076*** (0.027)	—	—
<i>Controls</i>					
Female	−0.043** (0.021)	−0.044** (0.020)	−0.042*** (0.015)	−0.052*** (0.018)	0.030 (0.056)
Age	0.000 (0.001)	0.002** (0.001)	0.001** (0.001)	0.001 (0.001)	0.006* (0.003)
Marital Status	−0.018 (0.021)	0.016 (0.021)	0.002 (0.015)	0.023 (0.019)	−0.087 (0.064)
Children	0.006 (0.009)	0.014 (0.010)	0.010 (0.007)	−0.000 (0.009)	0.057* (0.031)
German nationality	−0.005 (0.035)	−0.009 (0.032)	−0.010 (0.024)	−0.024 (0.028)	0.081 (0.090)
Migration background	−0.001 (0.031)	0.035 (0.026)	0.018 (0.020)	0.016 (0.023)	0.124 (0.076)
Eastern Germany	−0.058*** (0.021)	−0.016 (0.020)	−0.034** (0.015)	−0.034* (0.018)	0.119** (0.054)
Job type dummies	Included	Included	Included	Included	Included
Year dummies	Included	Included	Included	Included	Included
Pseudo R-squared	0.144	0.084	0.101	0.125	0.258
Observations	1041	1679	2720	1606	249

Average marginal effects from binary probit estimations. The dependent variable is the type of job placement. Robust standard errors clustered at the individual level in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

private agencies shift the focus somewhat toward individuals who were previously registered as unemployed.<sup>2</sup>

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.

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 coefficient for years of schooling is negative and statistically significant ( $p < 0.10$ ). The coefficient for previously registered unemployed is positive and highly significant ( $p < 0.01$ ). Thus, H4 is supported with regard to both measures of individuals' qualifications: Individuals who have less years of schooling and individuals who have previously been registered as 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 with regard to previous unemployment observed in Model (3) is driven by private placement with a voucher, rather than by private placement without a voucher.<sup>3</sup>

Table 6 in the Appendix presents the results of a corresponding multivariate logit analysis for the years 2003–2018, in which the type of job placement (public, private without voucher, or private with voucher) is used as the dependent variable, with public placement as the reference category. More years of schooling are a positive predictor of being privately placed without a voucher, while unemployment is a negative predictor of being privately placed without a voucher but a positive predictor of being privately placed with a voucher, compared to public placement.

### 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 Sect. 7.2 that privately placed individuals (either using a voucher or not using a voucher) do sta-

<sup>2</sup> 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.

<sup>3</sup> The interaction of the later time period and years of schooling in Model (3) is insignificant even though Model (5) reveals that privately placed individuals with vouchers are on average negatively selected with respect to years of schooling compared to privately placed individuals without vouchers in the time period 2003–2018. This is likely explained by the fact that private placement *without* voucher has apparently become *more* selective with respect to years of schooling in the later time period (see Model (4)) compared to the former time period (see Model (1)).

tistically 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”. The number of observations is (slightly) reduced compared to Table 3 because there are some missing values in the dependent variables of the job match quality analysis.

Table 4 provides our estimation results for the four considered proxies for 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. The estimated coefficients are not in all time periods statistically significant, but when they are, then private placement is associated with higher job match quality compared to public placement (i.e., higher wages, higher job satisfaction, a lower probability of employment on a fixed-term contract, or a lower probability of termination of employment within one year). This points to a higher job match quality in the case of private (vs. public) placement and therefore provides support for H5.

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. Hourly wages and job satisfaction are significantly higher for privately placed individuals without vouchers compared to publicly placed individuals, on average ( $p < 0.01$  and  $p < 0.10$ , respectively). For privately placed individuals with vouchers, the estimated coefficients on hourly wage and job satisfaction are statistically insignificant. When using fixed-term contract as a proxy for low job match quality, we find that individuals placed privately with vouchers are significantly less likely to be placed into 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, the estimated coefficients are statistically insignificant in Panels D–E. 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 partial evidence for cream-skimming in a situation without a voucher policy in place, as the clientele of the Federal Employment Agency is more

**Table 4** Types of Job Placement and Proxies for Job Match Quality

	Log. gross hourly wage	Job satisfaction	Fixed-term contract	Termination of employment within one year
<i>Panel A:</i>				
1995–2018				
Private vs. public	0.119*** (0.026)	0.274 (0.193)	−0.094* (0.049)	−0.158*** (0.039)
Observations	2543	2543	2543	1951
<i>Panel B:</i>				
1995–2002				
Private vs. public	0.024 (0.039)	0.808*** (0.275)	−0.179** (0.078)	−0.060 (0.057)
Observations	967	967	967	840
<i>Panel C:</i>				
2003–2018				
Private vs. public	0.138*** (0.037)	0.029 (0.184)	−0.080* (0.046)	−0.096* (0.053)
Observations	1576	1576	1576	1111
<i>Panel D:</i>				
2003–2018				
Private without voucher vs. public	0.171*** (0.036)	0.307* (0.181)	0.036 (0.051)	−0.126 (0.105)
Observations	1510	1510	1510	1062
<i>Panel E:</i>				
2003–2018				
Private with voucher vs. public	0.119 (0.147)	−0.416 (0.476)	−0.187*** (0.025)	0.047 (0.073)
Observations	1410	1410	1410	1005

Estimates from propensity score matching (nearest neighbor matching, one match per observation). The dependent variables are the proxies for job match quality. The treatment variable is the type of job placement. Explanatory variables of the treatment model: years of schooling, unemployment in the previous year, female, age, marital status, the number of 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

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

likely to previously have been unemployed compared to that of private agencies. Under the voucher policy, this 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 more likely to have been unemployed and have less years of schooling than 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 hard-to-place 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. When comparing the whole group of privately placed individuals (i.e., with and without vouchers) to the group of publicly placed individuals, the estimated coefficients on the proxies for job match quality are not statistically significant for all time periods, but when they are, then private placement is related to a higher job match quality. For privately placed individuals without vouchers, the estimated hourly wage and job satisfaction are significantly higher compared to publicly placed individuals on average. For privately placed individuals with vouchers, placement into a job with a fixed-term contract is significantly less likely compared to publicly placed individuals on average, which points to a higher job match quality with respect to fixed-term (vs. permanent) employment. 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 unobserved selection effects into different types of job placement because some relevant unobserved characteristics of job seekers are possibly not accounted for in our analysis. For example, it is possible that job seekers who approach a private employment agency differ in unobserved qualification- or motivation-related characteristics from job seekers who do not approach private agencies. This implies that our analysis of selection patterns into placement by private and public employment agencies is of course not complete and could be further extended by including even more job seeker characteristics. Since this selection model also underlies our PSM analysis of job match quality differences, this analysis cannot detect causal effects with certainty, because workers who used different types of job placement might not be perfectly comparable. While this caveat needs to be kept in mind, we did our best to account for selection effects by including all measures from the rich dataset that are reasonably important in the present context.

A second limitation arises from the fact that our empirical analyses are restricted to individuals who were successfully placed into a job. There may be cases where employment agencies decide to invest placement efforts which do not result in successful placements, but these cases are not included in our dataset. Since successful placement is the result of two events that are not empirically separable with the present data—an employment agency investing placement effort and an employer hiring the job seeker—we do not know to what extent our results are driven by placement agencies' or employers' decisions. Future research might extend our study by additionally considering unsuccessful placement efforts and by investigating determinants of successful vs. unsuccessful placement.

Relatedly, 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 placement.

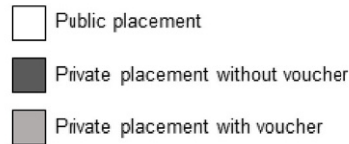
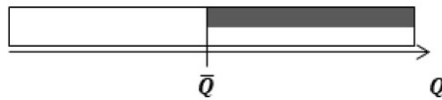
Next to cream-skimming, 'parking' is another risk generally associated with the pay-for-performance scheme of private agencies (Koning and Heinrich 2013). Individuals with the greatest employment barriers are likely to be 'parked', meaning that they receive minimal services and make little progress in 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, we acknowledge that the proxies for job match quality used in our analysis are not perfect measures of job match quality. For example, some workers might be satisfied with a job even though their qualifications do not match the requirements of the position well (in particular if the job is associated with a high wage and status). Furthermore, termination of employment does not necessarily reflect a poor job match but might also reflect better offers from competitive firms after a relatively successful job match. Regarding the results of the job match quality analysis, we cannot perfectly explain why private (vs. public) placement is positively related to only some of the proxies for job match quality (see Table 4). Future research may attempt to disentangle different underlying explanations with regard to various facets of job match quality. Future research might also consider additional or alternative indicators of job match quality, such as other subjective assessments from employees (e.g., Mang 2012).

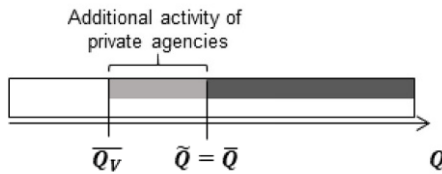
In sum, we find that the voucher policy has succeeded in mitigating cream-skimming in Germany. Under the voucher policy, private agencies continue to engage in cream-skimming activities among individuals without vouchers, but there is now significantly less cream-skimming—to some extent even the opposite—among individuals with vouchers, at least with respect to placing more unemployed individuals. 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.

## Appendix

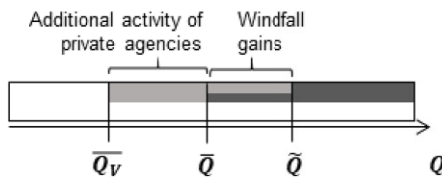
### Situation without vouchers



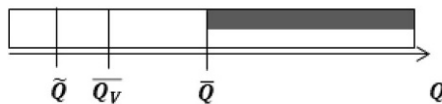
### Situation with vouchers



1. Case:  $\tilde{Q} = \bar{Q}$

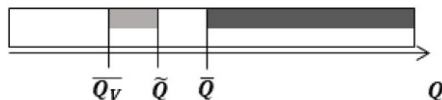


2. Case:  $\tilde{Q} > \bar{Q}$



3. Case:  $\tilde{Q} < \bar{Q}$

3.1 Subcase:  
 $p_i(\tilde{Q}) \cdot [w_i(\tilde{Q}) \cdot x + V_i(\tilde{Q})] < C$



3.2 Subcase:  
 $p_i(\tilde{Q}) \cdot [w_i(\tilde{Q}) \cdot x + V_i(\tilde{Q})] \geq C$

#### 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

$\bar{Q}_V$  = critical qualifications level for private placement with voucher

$\tilde{Q}$  = threshold for obtaining a voucher

**Fig. 4** Cases from our Model on Selection into Private vs. Public Job Placement



**Table 5** Variable Definitions

Variable	Description
Years of schooling	Person's years of schooling (metric variable)
Previously registered as unemployed	Dummy equals 1 if the person was registered as unemployed in the year before job placement
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	The number of children in the household (metric variable)
German nationality	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)
Job type	8 job type dummies based on the KldB 2010 classification of occupations by the German Federal Employment Agency
Survey year	Year dummies for each year from 1995 to 2018

**Table 6** Selection into Different Types of Job Placement (2003–2018, multivariate logit model)

	Private without Voucher	Private with Voucher
<i>Qualification Measures</i>		
Years of schooling	0.017*** (0.003)	0.000 (0.003)
Previously registered as unemployed	−0.064*** (0.016)	0.023** (0.011)
Female	−0.051*** (0.018)	0.007 (0.010)
Age	0.001 (0.001)	0.001 (0.001)
Marital status	0.024 (0.018)	−0.006 (0.012)
Children	−0.001 (0.008)	0.012** (0.006)
German nationality	−0.026 (0.027)	0.015 (0.019)
Migration background	0.010 (0.022)	0.026 (0.016)
Eastern Germany	−0.038** (0.018)	0.021* (0.011)
Job type dummies	Included	Included
Year dummies	Included	Included
Pseudo R-squared	0.128	
Observations	1679	

Average marginal effects from a multivariate logit model. The dependent variable is the type of job placement, with placement by the public employment agency as the reference category. Robust standard errors clustered at the individual level in parentheses

\*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.10$

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**Conflict of interest** A. Ayaita, C. Grund and L. Pütz declare that they have no competing interests.

## References

- Addison, John T., and Pedro Portugal. 2002. Job search methods and outcomes. *Oxford Economic Papers* 54(3):505–533. <https://doi.org/10.1093/oeq/54.3.505>.
- Bartlett, Will, and Julian Le Grand. 1993. The theory of quasi-markets. In *Quasi-markets and social policy*, ed. Julian Le Grand, Will Bartlett, 13–34. London: Palgrave Macmillan.
- Becker, Gary S. 2009. *Human capital: A theoretical and empirical analysis, with special reference to education*. Chicago: University of Chicago Press.
- Beckmann, Michael, Julia Deimel, and Bernd Schauenberg. 2004. Vermittlungsgutscheine als neues Instrument der Arbeitsmarktpolitik: Eine erste Analyse. *Perspektiven der Wirtschaftspolitik* 5(2):127–137. <https://doi.org/10.1111/j.1468-2516.2004.00143.x>.
- Behaghel, Luc, Bruno Crépon, and Marc Gurgand. 2014. Private and public provision of counseling to job seekers: evidence from a large controlled experiment. *American Economic Journal: Applied Economics* 6(4):142–174. <https://doi.org/10.1257/app.6.4.142>.
- Benmarker, Helge, Erik Grönqvist, and Björn Öckert. 2013. Effects of contracting out employment services: evidence from a randomized experiment. *Journal of Public Economics* 98:68–84. <https://doi.org/10.1016/j.jpubeco.2012.12.002>.
- Blau, David M. 1992. An empirical analysis of employed and unemployed job search behavior. *Industrial and Labor Relations Review* 45(4):738–752. <https://doi.org/10.1177/001979399204500409>.
- Bowlus, Audra J. 1995. Matching workers and jobs: cyclical fluctuations in match quality. *Journal of Labor Economics* 13(2):335–350. <https://doi.org/10.1086/298377>.
- Eppel, Rainer, Helmut Mahringer, and Andrea Weber. 2014. *Job search behaviour and job search success of the unemployed*. WIFO Working Paper No. 471. Vienna: Austrian Institute of Economic Research.
- Ferreira, Priscila, and Mark Taylor. 2011. Measuring match quality using subjective data. *Economics Letters* 113(3):304–306. <https://doi.org/10.1016/j.econlet.2011.08.018>.
- Finn, Dan. 2010. Outsourcing employment programmes: contract design and differential prices. *European Journal of Social Security* 12(4):289–302. <https://doi.org/10.1177/138826271001200403>.
- Forrier, Anneleen, and Luc Sels. 2003. The concept employability: a complex mosaic. *International Journal of Human Resources Development and Management* 3(2):102–124. <https://doi.org/10.1504/IJHRDM.2003.002414>.
- Fugate, Mel, Beatrice Van der Heijden, Ans De Vos, Anneleen Forrier, and Nele De Cuyper. 2021. Is what's past prologue? A review and agenda for contemporary employability research. *Academy of Management Annals* 15(1):266–298. <https://doi.org/10.5465/annals.2018.0171>.
- Goebel, Jan, Markus M. Grabka, Stefan Liebig, Martin Kroh, David Richter, Carsten Schröder, and Jürgen Schupp. 2019. The German Socio-Economic Panel (SOEP). *Journal of Economics and Statistics* 239(2):345–360. <https://doi.org/10.1515/jbnst-2018-0022>.
- Grund, Christian. 2006. Selektionseffekte und Vermittlungserfolge privater Arbeitsvermittlung. *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung* 58:212–234. <https://doi.org/10.1007/BF03371651>.
- Heyer, Gerd, Susanne Koch, Gesine Stephan, and Joachim Wolff. 2012. Evaluation of active labor market programs: a summary of recent results for the German program reform 2011. *Journal for Labour Market Research* 45:41–62. <https://doi.org/10.1007/s12651-012-0099-5>.

- Koning, Pierre, and Carolyn J. Heinrich. 2013. Cream-skimming, parking and other intended and unintended effects of high-powered, performance-based contracts. *Journal of Policy Analysis and Management* 32(3):461–483. <https://doi.org/10.1002/pam.21695>.
- Krug, Gerhard, and Gesine Stephan. 2016. Private and public placement services for hard-to-place unemployed: Results from a randomized field experiment. *Industrial and Labor Relations Review* 69(2):471–500. <https://doi.org/10.1177/0019793915615334>.
- Mang, Constantin. 2012. *Online job search and matching quality*. Ifo Working Paper No. 147. Berlin: Leibniz Institute for Economic Research at the University of Munich.
- Osberg, Lars. 1993. Fishing in different pools: job-search strategies and job-finding success in Canada in the early 1980s. *Journal of Labor Economics* 11(2):348–386. <https://doi.org/10.1086/298300>.
- van Ours, Jan C., and Milan Vodopivec. 2008. Does reducing unemployment insurance generosity reduce job match quality? *Journal of Public Economics* 92(3–4):684–695. <https://doi.org/10.1016/j.jpubeco.2007.05.006>.
- Pastore, Francesco. 2020. The quasi-market of employment services in Italy. *Journal of Policy Modeling* 42(6):1248–1269. <https://doi.org/10.1016/j.jpolmod.2019.06.008>.
- Pfeiffer, Friedhelm, and Henrik Winterhager. 2006. Selektivität und direkte Wirkungen von Vermittlungsgutscheinen: Empirische Befunde aus der Einführungsphase. *Perspektiven der Wirtschaftspolitik* 7(3):395–415. <https://doi.org/10.1111/j.1468-2516.2006.00219.x>.
- Rehwald, Kai, Michael Rosholm, and Michael Svarer. 2015. *Are public or private providers of employment services more effective? Evidence from a randomized experiment*. IZA Discussion Paper No. 9365. Bonn: Institute for the Study of Labor.
- Rosenbaum, Paul R., and Donald B. Rubin. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika* 70(1):41–55. <https://doi.org/10.1093/biomet/70.1.41>.
- Schultz, Theodore W. 1971. *Investment in human capital: the role of education and of research*. New York: The Free Press.
- Stephan, Gesine. 2016. Public or private job placement services: are private ones more effective? *IZA World of Labor* <https://doi.org/10.15185/izawol.285>.
- Van der Heijde, Claudia M., and Beatrice I.J.M. Van Der Heijden. 2006. A competence-based and multidimensional operationalization and measurement of employability. *Human Resource Management* 45(3):449–476. <https://doi.org/10.1002/hrm.20119>.
- Van der Heijde, Claudia M., Beatrice I.J.M. Van der Heijden, Dora Scholarios, Nikos Bozionelos, Aslaug Mikkelsen, Olga Epitropaki, et al. 2018. Learning climate perceptions as a determinant of employability: an empirical study among European ICT professionals. *Frontiers in psychology* 9:2471. <https://doi.org/10.3389/fpsyg.2018.02471>.
- Venhorst, Viktor A., and Frank Cörvers. 2018. Entry into working life: Internal migration and the job match quality of higher-educated graduates. *Journal of Regional Science* 58(1):116–140. <https://doi.org/10.1111/jors.12347>.
- Walwei, Ulrich. 1998. *Job placement in Germany: developments before and after deregulation*. IAB Labour Market Research Topics No. 31. Nuremberg: Institute for Employment Research.
- Weber, Andrea, and Helmut Mahringer. 2008. Choice and success of job search methods. *Empirical Economics* 35:153–178. <https://doi.org/10.1007/s00181-007-0148-z>.
- Wielgosz, John B., and Susan Carpenter. 1987. The effectiveness of alternative methods of searching for jobs and finding them: an exploratory analysis of the data bearing upon the ways of coping with joblessness. *The American Journal of Economics and Sociology* 46(2):151–164. <https://doi.org/10.1111/j.1536-7150.1987.tb01951.x>.
- Winterhager, Henrik, Anja Heinze, and Alexander Spermann. 2006. Deregulating job placement in Europe: a microeconomic evaluation of an innovative voucher scheme in Germany. *Labour Economics* 13(4):505–517. <https://doi.org/10.1016/j.labeco.2006.02.003>.
- Yankow, Jeffrey J. 2009. Some empirical evidence of the efficacy of job matching in urban labor markets. *International Advances in Economic Research* 15:233–244. <https://doi.org/10.1007/s11294-009-9206-y>.
- Zoellner, Moritz, Michael Fritsch, and Michael Wyrwich. 2018. An evaluation of German active labour market policies: a review of the empirical evidence. *Journal of Entrepreneurship and Public Policy* 7(4):377–410. <https://doi.org/10.1108/JEPP-D-18-00023>.