

Decision Strategies in Contracting Out Welfare-to-Work Services*

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Abstract

This paper examines the decision process within public employment services when faced with the choice of contracting out welfare-to-work services. We construct an employability measure using information that is also available to the employment services when deciding which workers to refer and which provider to refer to. We make use of a nationwide tender where private providers participated in a sealed bid auction to gain contracts in the Danish welfare-to-work industry. We find that employability plays a significant role in the decision of which workers to refer and that a 1,000DKK higher contract price lowers the relative conditional probability for providers of receiving workers aged 55 or more by 31%.

JEL codes: H70, J48, J6, L33.

Keywords: Public-private contracts, welfare-to-work services, conditional choices, employability.

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1 Introduction

The use of private providers (henceforth denoted providers) as mean of improving public-sector efficiency is an important topic. By providers the literature understand private or semi-private firms handling public services under a contract. In the welfare-to-work industry, the contract binds providers to deliver services on the behalf of Public Employment Services (PES). The discussion of contracting out welfare-to-work services has been active in many countries for years, e.g. the UK (Burgess and Ratto (2003)), US (Finn (2007)), Sweden (Benmarker, Gröqvist, and Öckert (2013)), the Netherlands (Koning and Heinrich (2013)), Australia (Struyven and Steurs (2005)), and France (Behaghel, Crépon, and Gurgand (2014)).

There is, however, limited knowledge as to what selection mechanisms are driving the decisions of contracting out welfare services from the referring side of the public employment services. They need to first decide whether they wish to contract out part of their stock of unemployed workers or not. Next, they must specify which workers to refer, and lastly, they also need to choose a provider among a list of available providers for each individual worker being referred. This process is potentially very complex and will be dependent on the state of the economy and the providers available to the PES. Given the complexity of the delivery of welfare services, the choice of provider should be made based on other criteria than merely the contract price (see e.g. Carpineti, Piga, and Zanza (2006) for an overview of European and US public procurement practices).

We model selection strategies of the PESs when they have the alternative to refer unemployed workers to different providers under a common agreement contract with provider individual prices. We explicitly model the selection made by PESs for a national Danish tender, where providers were to place bids in a sealed bid auction. The tender contained two target groups of workers and all providers had to apply with a specific price for the two target groups in one or more employment regions.

As mentioned, several papers investigate the effect of letting providers deliver welfare-to-work services on the behalf of the PES. The common ground for these papers is to estimate potential differences in terms of how good are the providers in placing unemployed workers compared to the PES. This paper contributes by being the first to explicitly model the selection process on the side of the PES when deciding to contract out the delivery of

welfare-to-work services in terms of when to refer, which unemployed workers to refer, and lastly, which provider to refer to. We moreover, expand the literature on public-private contracting by extracting contract prices and using these directly in the selection process.

We are hereby interested in answering three fundamental questions regarding the outsourcing of welfare-to-work services by the public employment services: (i) Why does a public employment service choose to contract out the core delivery of the agency itself? (ii) Do the public employment services choose randomly which unemployed workers to contract out or do they refer workers according to their employability? (iii) After choosing which individuals to refer, then do they randomly allocate them to available providers, or do they select provider based on identifiable criteria such as price and employability of the worker? Regarding (i), we find that PESs systematically use the option of contracting out welfare-to-work services as a means of leverage when the stock of unemployed increase. We also find that the choice of which individuals to refer depend employability which is a function of schooling, expenses already spend on the unemployed in terms of labor market programs, experience, age, gender, and other individual characteristics. Finally, we find that the contract price has a significant focus when contracting out older workers, and so mainly during times of decreasing unemployment.

The remainder of this paper is laid out as follows. In section 2 we present the institutional backgrounds for the Danish welfare-to-work industry. Section 3 sets forth our data. In section 4 we present our methodologies, while section 5 presents our results and section 6 concludes.

2 Institutional Background

Danish public employment services has since 1999 had the possibility of contracting out parts of the services they deliver to unemployed individuals (Rigsrevisionen (2013)). After 2002, there has been a political will to increase the use of private providers in the labor market industry in Denmark. This will has been caused by a belief that an open market for private providers optimizes the delivery of public services. According to standard contract theory, when observing behavior and output quality, providers should be more efficient than public organizations in delivering services (see e.g. Hart (2003)). However, with heterogeneous agents and information frictions there is not full consensus in the literature

on how to optimally contract out public services to private parties. E.g. Shleifer (1998) argues that because competition and regulation have become more effective ever since the Second World War only few areas maintain where it is optimal with a public producer. On the other hand, Grossman and Hart (1986) and Besley and Ghatak (2001) show that ownership of public goods or services should lay with the party who value it the most.

Denmark has four employment regions: Zealand (including the capital region), Southern Denmark, Central Denmark, and Northern Jutland. Self governing public employment services are placed within each region, as a rule of thumb, organized by the municipalities. The four employment regions act as governing bodies for carrying out labor market programs and report to the Danish Agency for Labour Market and Recruitment, an agency under the Danish Ministry of Employment.

The tender During 2006, the Danish Agency for Labour Market and Recruitment sent out a tender for private providers to apply for the servicing of two specific target groups of unemployed workers: (TG1) Unemployed workers with a qualifying education and (TG2) unemployed workers aged 55+.¹ The tender was such that each provider should specify which region(s) it would service and for which price. The provider could freely choose to bid for one or both target groups in one or more regions with the same or different prices across target groups and/or regions. Common for all bids were that for the price specified, the provider should take on the responsibility of all active labor market activities for the referred worker for 52 weeks. It was the responsibility of the provider to make sure that each referred were given the treatment thought to best comply with the situation of the individual. Moreover, to guarantee a steady flow of activity, all providers should at all times have at least 40% of all in-house referred individuals participating in some kind of labor market training. Which individual received which kind of training and at what time during the referral were up to the provider to decide.

When an unemployed worker was referred by a PES to a provider he could only in rare and specific cases complain about the referral. The provider itself could not refuse to serve a referred worker, which de-facto ruled out *cream skimming* on the part of the provider. However, such a setting did not rule out that the PESs would cream skim. There were no clear incentives for the PESs to do so, however, as there were no connection between the

¹TG1 was thus composed of unemployed workers who had completed a vocational, short-term further, or medium-term further education (equivalent to having a bachelor degree).

placement rate for the PESs and its remuneration or budget.

After providers submitted their sealed bids to the tender, it was the regional labor market boards that chose which providers would be granted access to referrals in which regions and for which target groups. Hereafter, the PESs could freely choose between the providers from the beginning of 2007 within its region and the tender lasted until the end of 2009, where it was succeeded by a new tender.

Referring an unemployed worker It was the individual PES that took the decision of referring unemployed workers and chose which provider to send the individual to. In case the PES was completely indifferent between the choice of two or more providers the unemployed worker could have a saying in deciding which one should *win* the referral. The providers had no saying in the referral decision. The providers received access to the register of labor market informations held at the PES regarding each referred worker such that they had the best possibilities of optimizing how to serve the referred individual.

The contract price The price submitted by the provider in the bidding tender was composed of two elements: *working expenses* and *bonus*. During the referral, the provider had to have frequent meetings with the referred individual, compose a job plan together with the referred, and offer participation in active labor market programs. The provider had to pay for all expenses related to all labor market programs other than private and public job training, where the unemployed would receive wages from the firm. This means that the working expenses should cover all expenses the provider had related to a referral. In the price submitted to the tender, working expenses made up 25%. The provider would only receive working expenses for the number of weeks the referred worker was actually with the provider. So the combined sum of working expenses, ω , for a given price, γ , received in relation to a referral was

$$\omega = \frac{0.25 \times \gamma}{52} \times \{\# \text{ of weeks in-house}\}. \quad (1)$$

The remaining 75% of the price was reserved for a potential bonus, β , that the provider would receive if the referred worker found *permanent* employment in relation to the referral. In the tender, permanent employment meant that within a 26 week window, the unemployed individual had to have at least 13 *good weeks* (the first 2 weeks of a referral

Table 1: Number of private providers participating in each target group within each region

	# of PPs	TG1	TG2	TG1 and TG2	Regions			
					1	2	3	4
Zealand	12	9	12	9	4	3	3	2
Southern Denmark	6	6	6	6	0	2	2	2
Central Denmark	9	7	9	7	2	1	4	2
Northern Jutland	5	5	5	5	0	0	3	2
Combined	15	12	15	12	6	3	4	2

could not enter this calculation). The search for good weeks continued for 15 weeks after the 52 week referral window. A week counted as a good week if the referred individual was either not receiving any form for public transfer (i.e. he was on self support interpreted as employed), if he was listed as an adult apprentice, or if he participated in a job training program. If the state in the 13th good week was adult apprenticeship or job training, the bonus payment was halved. If a referred worker found employment yielding a bonus and became unemployed again within the 52 weeks referral window he was sent back to the same provider. In such case, the provider received multiple bonuses of the same size if a referred individual found 13 good weeks again. With a referral being 52 weeks long plus the extra 15 week grace window, a referral could thus in theory entitle the provider up to 4 bonus payments.

With the submitted price being a composition of 25% comprising working expenses and 75% the bonus payments, we can back out the contract price as

$$\gamma = \frac{\beta}{0.75}. \quad (2)$$

Table 1 shows the number of providers that had their bid accepted in the tender for each target group and region. We have no information as to how many providers submitted bids that were rejected. In total, 15 different providers had one or more bids accepted. All providers that had a bid accepted for target group 1 in a region also had a bid accepted for target group 2 in the region. Of the 15 different providers 9 were active in at least two regions, and only Zealand and Central Denmark had providers that were only locally active. Four providers were active in three regions and two were nationwide.

3 Data

We combine administrative register data on all individuals from Statistics Denmark with administrative data on all referrals delivered by the Danish national audit office. We further have information on a weekly basis of all public transfers delivered by the Danish Ministry of Employment.

3.1 Referrals

The data on referrals cover information of the sending PES, the receiving provider, and a unique id of the unemployed worker that is referred, which can be used to merge with the data from Statistics Denmark. We also know the exact date of the referral and the amount of working expenses and bonuses paid to the provider in relation to each individual referral.

3.2 Conditioning Set

According to the tender, the PES had the choice of which unemployed workers to refer. It is therefore important that we are able to control for much of the same information that forms the basis for the choice made by the PES. We therefore record the following informations on an individual basis split into personal characteristics and worker characteristics: gender, age, origin (Danish or immigrant/descendant), education (level and months), an indicator for whether the individual has had contact with a hospital during the last year, and an indicator for whether the individual has received public funds for paying rents. The worker characteristics include: labor market work experience, earnings made the year before referral, employment rate one, two, three, and four quarters before referral, an indicator for whether the PES termed him *hard-to-place* during the last meeting before referral, share of time spend in labor market training one, two, three, and four quarters before referral, and finally indicators for whether the individual has participated in job counselling, self-chosen education program, private job training, public job training, private internship, and public internship before the referral.

Table 2 shows summary statistics on the conditioning set for all referred individuals split into target groups and year of referral. We see a higher share of women in TG1 than TG2, which is especially evident for individuals referred during 2007 and 2008. The average

referred TG1-individual has 14.7 years of schooling, 11 years of labor market experience, and is 38 years old. The corresponding number for the TG2-referred individual is 12.6 years of schooling, 23 years of experience, and 58 years of age. Earnings one year before referral are deflated to 2007-level, and is increasing over the years. This can probably be explained by examining the average number of weeks the individuals are into their UI-spell before being referred. In 2007, the average individual is 32 (40) weeks into the UI-spell while in 2009 the numbers are 21 (19) weeks for TG1 (TG2) individuals. This of course means that the referred individuals have spent more time on the labor market one year before referral in 2009 than in 2007. We also see that 35% and 39% of the referred have got a *hard-to-place* signal by the PES at the last meeting before referral for TG1 and TG2 individuals, respectively. Around 10% of the referred individuals has participated in some sort of training one quarter before referral.

Given the structure of the tender, the providers could not cream skim referrals, but since the PES had the decision of which individuals to refer, they could. To test for evidence of cream-skimming by the PESs, we construct 11 different samples, one for each of the quarters: 2007Q2, 2007Q3, . . . , 2009Q4, consisting of all individuals belonging to target group 1 or 2 that are receiving UI benefits during the first week of the quarter. We then record whether an individual is referred some time during the quarter and then conduct t-tests of differences in means across non-referred and referred individuals for each quarter. Table 3 and 4 show the differences across conditioning variables and quarters together with indicators for significance. If the PESs randomly allocated which individuals to refer we should see no statistical differences between referred and non-referred individuals. The structure of the tender did, however, not specify that the PESs should randomly allocate individuals. In fact it was the complete opposite, as the PESs should refer workers thought to be in demand for a change of contact. For target group 1, we see that overall, if an unemployed individual were a woman, older within the group, Danish of origin, and earned less than the average unemployed the year before then she was more likely to be referred. We also see that during 2007 and 2008, the PESs were more prone to refer individuals that had not participated in training recently and have had a lower employment rate than average. There is a tendency that a higher share of non-referred individuals were signalled hard-to-place by the PES in the last meeting before the quarter, which is especially evident during 2009. We also note that it is only a relatively low fraction of the pool of potential

TG1-individuals that were actually referred.

Turning to target group 2 and Table 4 we note that the average age of referred is slightly lower than the non-referred, the number of weeks of receiving UI is somewhat lower for referred than non-referred. As with TG1 we also see that TG2-referred individuals have incurred less expenses for the PES one year before the quarter. There is a tendency that the referred individual had higher earnings than non-referred individuals one year before the quarter, which again is probably caused by the fact that the length of the UI spell is shorter for referred than non-referred. We also see a tendency that referred individuals to a lesser extent has been given the signal of being hard-to-place than non-referred.

Combining the tendencies from Table 3 and 4 we see differences between individuals that were chosen and individuals that were not chosen to be contracted out to a private provider during the period of the tender. There is a tendency that individuals that were referred were closer to the labor market than non-referred (seen by combining the hard-to-place signal, weeks of receiving UI benefits, prior earnings, and the sum of expenses used by the PES one year before). This could indicate that the PESs did not simply contract out individuals that they have 'given up on' but instead contracted out individuals with a realistic chance of returning to employment during a referral window. In the analysis to come, we construct a measure of employability composed of the information presented in the Tables.

Table 2: Summary statistics

	Referred during 2007						Referred during 2008						Referred during 2009							
	TG1		TG2		TG1		TG2		TG1		TG2		TG1		TG2		TG1		TG2	
	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.
Woman	0.55	0.50	0.47	0.50	0.73	0.44	0.57	0.50	0.64	0.48	0.48	0.50	0.44	0.50	0.44	0.50	0.44	0.50	0.34	0.47
Age	38.42	8.64	57.98	2.43	39.76	8.42	59.00	2.11	38.54	8.50	57.97	2.23	37.79	8.70	56.66	2.25	37.79	8.70	56.66	2.25
Contact with hospital during the year before referral	0.36	0.48	0.33	0.47	0.33	0.47	0.29	0.45	0.37	0.48	0.34	0.48	0.37	0.48	0.38	0.49	0.37	0.48	0.38	0.49
Immigrant/descendant	0.10	0.30	0.08	0.27	0.11	0.31	0.08	0.27	0.09	0.29	0.06	0.23	0.10	0.30	0.09	0.29	0.10	0.30	0.09	0.29
Received rent subsidy during the year before referral	0.15	0.36	0.07	0.25	0.19	0.39	0.08	0.27	0.18	0.39	0.06	0.24	0.13	0.34	0.05	0.23	0.13	0.34	0.05	0.23
Years of schooling	14.71	1.20	12.58	2.93	14.90	1.29	12.55	2.99	14.72	1.28	12.40	2.95	14.62	1.12	12.69	2.85	14.62	1.12	12.69	2.85
Weeks into unemployment spell before referral	23.57	23.83	29.85	34.28	31.58	32.95	39.91	41.29	20.91	23.28	25.12	32.06	20.65	17.42	18.88	17.17	20.65	17.42	18.88	17.17
Number of UI-spells last 3 years	3.96	2.73	4.61	3.81	4.46	2.99	5.19	4.11	4.27	2.83	4.93	3.91	3.66	2.54	3.73	3.15	3.66	2.54	3.73	3.15
Years of experience	11.50	8.33	23.35	10.09	10.42	7.90	22.14	10.11	10.45	8.01	23.18	9.77	12.25	8.52	24.98	9.97	12.25	8.52	24.98	9.97
Earnings one year before referral (1,000 DKK)	166.64	130.01	162.11	132.86	118.23	116.53	121.44	121.89	146.25	132.34	162.19	130.29	193.43	127.96	214.43	129.13	162.19	130.29	193.43	127.96
PES signal Hard-to-Match	0.35	0.48	0.39	0.49	0.41	0.49	0.43	0.50	0.39	0.49	0.40	0.49	0.32	0.47	0.34	0.48	0.32	0.47	0.34	0.48
No PES signal	0.03	0.16	0.04	0.19	0.04	0.21	0.03	0.17	0.02	0.15	0.03	0.18	0.02	0.14	0.05	0.21	0.02	0.14	0.05	0.21
Number of job counselling programs	0.64	0.93	0.66	0.99	0.80	1.11	0.84	1.11	0.63	0.92	0.63	0.91	0.57	0.83	0.44	0.77	0.63	0.91	0.57	0.83
Number of self chosen education spells	0.02	0.17	0.02	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.23	0.04	0.00	0.04	0.23	0.04
Number of private job training spells	0.03	0.20	0.04	0.23	0.04	0.27	0.05	0.26	0.04	0.22	0.06	0.27	0.02	0.14	0.02	0.14	0.02	0.14	0.02	0.14
Number of public job training spells	0.09	0.41	0.16	0.53	0.16	0.54	0.21	0.60	0.11	0.45	0.20	0.59	0.06	0.31	0.07	0.36	0.06	0.31	0.07	0.36
Number of private internships	0.04	0.20	0.02	0.13	0.00	0.00	0.00	0.00	0.01	0.11	0.01	0.09	0.06	0.26	0.04	0.20	0.01	0.09	0.06	0.26
Number of public internships	0.06	0.26	0.09	0.37	0.11	0.36	0.14	0.45	0.07	0.28	0.11	0.39	0.04	0.19	0.03	0.18	0.07	0.28	0.11	0.39
Rate of participating in training programs, 1 qtr before referral	0.10	0.20	0.09	0.21	0.10	0.21	0.09	0.21	0.10	0.22	0.12	0.25	0.10	0.20	0.08	0.19	0.10	0.22	0.12	0.25
Rate of participating in training programs, 2 qtr before referral	0.10	0.23	0.11	0.26	0.12	0.27	0.13	0.28	0.10	0.24	0.13	0.29	0.09	0.21	0.07	0.20	0.10	0.24	0.13	0.29
Rate of participating in training programs, 3 qtr before referral	0.07	0.21	0.09	0.25	0.10	0.26	0.12	0.28	0.07	0.21	0.11	0.27	0.06	0.19	0.05	0.18	0.07	0.21	0.11	0.27
Rate of participating in training programs, 4 qtr before referral	0.06	0.20	0.09	0.24	0.10	0.26	0.12	0.27	0.06	0.21	0.10	0.26	0.04	0.16	0.04	0.17	0.06	0.21	0.10	0.26
Rate of employment, 1 qtr before referral	0.14	0.22	0.14	0.22	0.12	0.21	0.11	0.21	0.17	0.25	0.18	0.25	0.14	0.22	0.16	0.23	0.14	0.22	0.16	0.23
Rate of employment, 2 qtr before referral	0.27	0.36	0.30	0.37	0.20	0.33	0.20	0.32	0.33	0.39	0.39	0.40	0.29	0.36	0.40	0.38	0.33	0.39	0.39	0.40
Rate of employment, 3 qtr before referral	0.43	0.41	0.42	0.43	0.27	0.37	0.27	0.38	0.43	0.42	0.47	0.43	0.49	0.41	0.60	0.48	0.43	0.42	0.47	0.43
Rate of employment, 4 qtr before referral	0.51	0.44	0.48	0.45	0.32	0.41	0.32	0.41	0.45	0.44	0.47	0.44	0.61	0.43	0.68	0.41	0.45	0.44	0.47	0.44
Observations	6,372		12,865		1,683		6,112		935		2,005		3,754		4,748		935		3,754	

Table 3: Differences in means between referred and non-referred per quarter for target group 1

	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
Woman	0.09***	0.06**	0.03	0.08***	0.03	0.02	0.02	0.00	0.03*	0.02	-0.04***
Age	1.42***	0.75	0.55	0.21	1.46**	2.20***	1.28**	1.40***	1.40***	0.89***	1.24***
Contact with hospital 1 year before referral	-0.04*	0.00	-0.01	-0.01	-0.09***	0.02	0.00	-0.04*	-0.02	0.00	-0.01
Immigrant/descendant	-0.08***	-0.02	-0.01	-0.02	-0.08***	-0.06***	-0.04*	-0.04***	-0.01	-0.01	-0.02**
Received rent subsidy during the year before referral	0.04**	0.04*	0.00	0.02	0.07**	0.03	0.02	0.02	0.02	0.04***	0.01
Years of schooling	0.22***	0.08	0.25***	0.22***	0.03	-0.15	0.09	0.07	0.06	-0.03	0.08***
Weeks into unemployment spell before referral	1.94	3.62*	1.93	2.78	-1.93	0.59	-1.65	1.12	3.42***	3.38***	3.53***
Number of UI-spells last 3 years	-0.11	-0.32**	0.09	-0.27	0.20	0.11	0.03	0.38***	0.26***	0.29***	0.43***
Sum of expenses used by PES 1 year before referral (1,000 DKK)	1.00***	0.05	-0.04*	0.11***	0.28***	0.32***	0.11*	0.20***	0.10***	0.02	0.06***
Years of experience	0.08***	0.58	0.15	-0.55	1.02*	1.47**	0.62	0.61*	0.37	-0.15	0.50**
Earnings one year before referral (1,000 DKK)	-13.37***	2.25	-17.75***	-25.52***	-3.98	1.61	5.74	-25.22***	-21.42***	-17.73***	0.32
PES signal Hard-to-Match	-0.01	0.00	-0.03	-0.07**	-0.01	-0.05	-0.05	-0.08***	-0.03*	-0.14***	-0.07***
No PES signal	-0.10***	-0.05***	-0.14***	-0.17***	-0.11***	-0.13***	-0.11***	-0.18***	-0.12***	-0.19***	-0.15***
Number of job counselling programs	0.01	0.04	0.20***	0.04	0.25***	0.15*	0.05	0.14***	0.16***	0.15***	0.14***
Number of private job training spells	-0.03**	0.00	-0.01	0.00	-0.02*	0.01	0.00	0.02	0.00	-0.01	-0.01***
Number of public job training spells	0.04	0.03	-0.01	0.05	0.05	0.09*	-0.01	0.03	0.00	-0.03**	-0.03**
Number of public internships	0.02	0.04*	0.00	0.03	0.01	0.05*	0.01	0.04***	0.00	0.02*	-0.01
Rate of participating in training programs, 1 qtr before referral	-0.05***	-0.05***	-0.06***	-0.06***	-0.06***	0.00	-0.02	-0.01	0.00	-0.01	-0.01
Rate of participating in training programs, 2 qtr before referral	-0.03**	-0.02	-0.04***	-0.04***	-0.04**	-0.02	-0.03	0.01	0.01	0.01	0.01*
Rate of participating in training programs, 3 qtr before referral	-0.04***	0.00	-0.02**	-0.02	-0.04***	-0.03	-0.03**	0.01	0.00	0.00	0.00
Rate of participating in training programs, 4 qtr before referral	-0.02	0.01	-0.01	0.00	-0.01	-0.01	-0.04***	0.01	0.00	-0.02***	0.00
Rate of employment, 1 qtr before referral	-0.06***	-0.03**	-0.06***	-0.14***	-0.03	-0.04	-0.05**	-0.11***	-0.13***	-0.13***	-0.10***
Rate of employment, 2 qtr before referral	-0.09***	-0.02	-0.08***	-0.11***	-0.05*	-0.03	0.01	-0.07***	-0.12***	-0.16***	-0.15***
Rate of employment, 3 qtr before referral	-0.06***	-0.01	-0.06***	-0.03	0.01	-0.03	0.02	-0.04*	-0.05***	-0.06***	-0.02*
Rate of employment, 4 qtr before referral	-0.01	-0.02	-0.08***	-0.02	-0.05	-0.01	0.03	-0.06**	-0.04**	-0.01	0.01
Region Southern Denmark	-0.03**	0.18***	-0.02	0.09***	0.00	0.07*	0.01	0.10***	0.04***	0.12***	0.00
Region Central Denmark	0.00	-0.05**	-0.12***	-0.04	0.07**	0.04	0.09***	0.05**	0.08***	-0.16***	0.05***
Region Northern Jutland	0.23***	0.06***	-0.04***	-0.02	0.10***	0.03	0.06**	-0.02	-0.03***	-0.02	0.05***
Non-referred individuals	37,697	31,491	28,155	32,089	24,427	20,735	22,221	34,600	45,761	47,343	53,343
Referred individuals	514	335	544	259	199	157	199	509	818	803	1,192

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively from t-tests.

Table 4: Differences in means between referred and non-referred per quarter for target group 2

Target group 1	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
Woman	0.02*	-0.04***	-0.02	-0.03*	0.00	-0.07**	0.00	-0.06***	-0.03**	-0.01	-0.05***
Age	0.00	-0.13**	-0.34***	-0.19**	0.02	-0.12	-0.21*	0.14*	-0.07	-0.30***	-0.34***
Contact with hospital 1 year before referral	0.01	0.02	0.00	0.01	-0.02	0.03	0.00	0.00	0.03**	0.01	-0.01
Immigrant/descendant	0.00	0.00	-0.01*	-0.01	-0.04***	-0.05***	-0.06***	-0.02*	0.02**	0.02*	-0.01
Received rent subsidy during the year before referral	0.00	0.01	0.00	-0.01	-0.01	-0.03**	-0.01	0.01	0.00	0.01	-0.01
Years of schooling	-0.08	0.02	-0.10	-0.24**	-0.47***	-0.23	-0.17	-0.12	0.18**	-0.25***	-0.05
Weeks into unemployment spell before referral	-1.98**	-4.97***	-6.93***	-5.47***	-0.60	-5.93**	-4.92***	-3.66***	-0.55	-3.65***	-3.44***
Number of UI-spells last 3 years	-0.38***	-0.59***	-0.85***	-0.78***	-0.10	-0.92***	-0.28	-0.71***	-0.31***	-0.48***	-0.16*
Sum of expenses used by PES 1 year before referral (1,000 DKK)	-0.05***	-0.08***	-0.15***	-0.08***	0.20***	0.01	-0.05	-0.10***	-0.07***	-0.17***	-0.19***
Years of experience	-0.26	0.50*	0.56*	0.66*	0.03	1.11*	1.28***	1.24***	-0.51*	0.15	0.28
Earnings one year before referral (1,000 DKK)	-4.32*	15.87***	24.80***	13.81***	-3.58	10.50	17.88***	-0.40	-6.28	3.87	5.49
PES signal Hard-to-Match	-0.03***	0.01	0.05***	-0.02	-0.12***	-0.01	-0.05*	-0.08***	-0.05***	-0.04***	-0.08***
No PES signal	-0.01	0.02**	0.06***	-0.02*	-0.03***	0.02	-0.03**	-0.04***	-0.07***	-0.05***	-0.04***
Number of job counselling programs	0.04*	0.02	-0.08**	-0.09**	-0.03	-0.03	-0.04	-0.11***	0.01	-0.05*	-0.07***
Number of private job training spells	-0.01	0.00	-0.01*	0.02**	0.00	0.00	-0.02*	0.00	0.00	-0.02***	-0.02***
Number of public job training spells	-0.01	-0.01	-0.05***	0.06**	0.07**	0.10**	-0.04	-0.06***	-0.07***	-0.10***	-0.09***
Number of public internships	0.01	0.01	-0.01	0.02	0.05**	0.03	0.02	0.00	-0.02***	-0.03***	-0.03***
Rate of participating in training programs, 1 qtr before referral	-0.03***	0.01	-0.03***	-0.01	0.01	-0.02	-0.05***	-0.07***	-0.04***	-0.06***	-0.05***
Rate of participating in training programs, 2 qtr before referral	0.01	0.02**	-0.01	0.02**	0.05***	0.03	-0.03*	-0.03***	-0.02**	-0.04***	-0.03***
Rate of participating in training programs, 3 qtr before referral	0.00	0.00	-0.02*	0.03**	0.02*	0.00	-0.03**	-0.03***	-0.02***	-0.03***	-0.02***
Rate of participating in training programs, 4 qtr before referral	0.01	0.00	-0.01	0.04**	-0.01	-0.02	-0.06***	-0.03***	-0.02***	-0.04***	-0.03***
Rate of employment, 1 qtr before referral	-0.02***	0.01	0.02***	0.00	-0.02**	0.01	0.00	-0.03***	-0.08***	-0.05***	-0.01*
Rate of employment, 2 qtr before referral	-0.02***	0.05***	0.09***	0.07***	0.01	0.06**	0.08***	0.05***	-0.04***	0.03**	0.01
Rate of employment, 3 qtr before referral	-0.01	0.07***	0.12***	0.08***	0.01	0.05**	0.10***	0.08***	-0.02**	0.07***	0.06***
Rate of employment, 4 qtr before referral	0.02*	0.08***	0.11***	0.05***	-0.01	0.03	0.08***	0.05***	-0.02*	0.04***	0.06***
Region Southern Denmark	-0.03***	0.12***	0.11***	0.04***	-0.08***	0.00	-0.06***	-0.03**	-0.12***	-0.05***	-0.04***
Region Central Denmark	0.10***	0.01	-0.01	-0.02	0.15***	0.05*	-0.01	0.09***	-0.01	-0.08***	0.06***
Region Northern Jutland	-0.05***	-0.09***	-0.07***	-0.06***	0.05***	0.03	0.06***	-0.02	-0.06***	-0.04***	0.02
Non-referred individuals	23,117	18,823	16,723	19,873	14,186	10,783	10,731	15,689	18,135	17,646	19,367
Referred individuals	2,568	1,576	1,048	802	622	306	377	810	1,299	1,172	1,326

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively from t-tests.

Table 5: Summary statistics on realized prices (DKK)

	Combined		TG1		TG2	
	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.
Zealand	21,321.9	5,023.3	20,338.5	5,006.6	22,141.3	5,104.3
Southern Denmark	17,883.8	4,459.5	17,396.3	4,827.6	18,371.3	4,458.2
Central Denmark	22,282.3	6,613.3	22,008.5	7,525.5	22,495.3	6,277.9
Northern Jutland	21,093.6	4,706.6	20,989.6	5,315.7	21,197.6	4,643.0
Combined	20,852.3	5,443.0	20,241.8	5,670.8	21,386.6	5,267.4

4 Methodologies

4.1 Contract Prices

Since the tender was a sealed bid auction, we do not know the price of any of the providers. We know the amount of bonuses paid out, so we can use equation (2) to back out the prices of each provider within each TG and region. According to the tender, the provider might be entitled to multiple bonuses. We do not see whether or not the bonus paid out is the result of multiple bonuses or only one, but because we have access to data on all public transfers we can do the exact same search for good weeks as is specified in the tender, and thus, we can specify when a bonus is entitled related to any referral. In this way, we back out the accepted prices according to the following algorithm:

1. For all referrals calculate the number of bonuses entitled.
2. For all referrals entitling exactly one bonus, list the bonus paid out for all providers per region per target group.
3. Record the most frequent bonus paid out as 75% of the contract price.

This way, we are able to specify the most likely contract price for each provider in each region and target group. Table 5 shows the estimated prices by region and target group. On average, contract prices for TG2 is one thousand higher than for TG1. The largest mark-up for servicing TG2 compared to TG1 is in Zealand while prices overall are much lower in Southern Denmark than in the rest of the four regions.

4.2 The Choice between Workers

We wish to identify which indicators that predict which individuals are referred. We believe that our conditioning set captures the flow of information that a PES is likely to

have used in order to decide which individual among the pool of unemployed target group 1 and 2 should be referred to a provider. However, although the econometrician easily captures the relationship between a full range of observables, it is difficult to think that the case worker is actually assessing each individual on a long list of individual characteristics. Instead, we hypothesize that what the case worker is actually doing, is that he assesses each unemployed worker on a list of available characteristics and then places him in an overall rank among all unemployed workers.

We therefore need to construct a measure that is common across workers and comparable across time. We compose a measure of employability that is set up to describe the overall assessment of the PES of an unemployed worker. When the PES evaluates an unemployed worker, they do so by examining him on a long list of variables, that we believe is captured by our conditioning set mentioned above. Under this assumption, we can form expectations of the workers that are the econometricians' version of the caseworkers' overall judgement.

Let \mathbf{x}_{ijkt} be the vector of observables on individual i being unemployed in quarter t belonging to target group k in region j . Let

$$P(d_{ijkt+1} = 1 \mid \mathbf{x}_{ijkt}) = \frac{\exp(\mathbf{x}'_{ijkt}\beta_{kt})}{1 + \exp(\mathbf{x}'_{ijkt}\beta_{kt})}, \quad (3)$$

with $d_{ijkt+1} = 1$ indicating that worker i is employed in the first week of quarter $t+1$. From this probability, we can form out-of-sample predictions on quarter $t+1$ unemployed workers in region j for target group k using $\hat{\beta}_{kt}$. This approach gives us an employability measure of each individual that directly measures the individuals' instantaneous probability of being employed one quarter later. Given that all information we include in our conditioning set were also available for the PES, they would have had the chance to form the same expectations as we do. Therefore, let E_{ijkt+1} denote the employability of individual i unemployed in the first week of quarter $t + 1$ in region j belonging to target group k be given as

$$E_{ijkt+1} = \mathbf{x}'_{ijkt+1}\hat{\beta}_{kt}. \quad (4)$$

We are especially interested in how well this employability measure predicts the choice of which individuals to refer to a private provider. Therefore, let $\delta_{ijkt} = 1$ indicate that

individual i belonging to target group k is referred to a private provider from region j in quarter t . We can hereby estimate the probability of being referred across workers conditional on observables as

$$P(\delta_{ijkt} = 1 \mid E_{ijkt+1}(\mathbf{x}'_{ijkt+1}\hat{\beta}_{kt})) = \frac{\exp\left(E_{ijkt+1}(\mathbf{x}'_{ijkt+1}\hat{\beta}_{kt})\phi_{kt}\right)}{1 + \exp\left(E_{ijkt+1}(\mathbf{x}'_{ijkt+1}\hat{\beta}_{kt})\phi_{kt}\right)}. \quad (5)$$

To capture potential switches in the contribution of each information over time we estimate logit models on the likelihood of being referred for each quarter 2007Q2, 2007Q3, ..., 2009Q4 conditional on employability. Given that it might be difficult for the case workers to assess individuals on a continuous scale, we divide employability into quartiles.

4.3 The Choice between Providers

After having specified which individuals to refer the PES had still to make the choice of which provider among the possible providers the individual should be referred to. Since not all providers were accepted into all regions, we need to explicitly control for the fact that the PESs across regions had different provider choice sets. We therefore estimate the propensity to refer an individual to specific providers given the choice set of the PES. This is captured by a conditional logit model as pointed out by McFadden (1973). Besides capturing how well referral is predicted by observables, we also include in the model the explicit choice between providers conditional on the contract price that is individual for each provider in each region and for each target group. This reveals how much emphasis the PESs have put on prices in the choice of specific provider.

We thus assume that PES i 's objective function associated with referring to provider j has the form

$$F_{ij} = \mathbf{x}'_{ij}\beta + \nu_{ij}, \quad (6)$$

where \mathbf{x}_{ij} is the vector of our conditioning set that varies over the alternative private providers and a provider-region specific contract price. ν_{ij} are unobservable preference components. Identification of (6) requires an assumption of Independence of Irrelevant Alternatives, i.e. that the relative choice probability between two private providers does only depend on the attributes of these two specific private providers, and not on the

attributes of any other alternative. This means that ν_{ij} 's are independently distributed according to the type I extreme value distribution. With the assumption of IIA, the probability that PES i chooses provider j is given by

$$P(d_i = j | \mathbf{x}'_{ij}) = \frac{\exp(\mathbf{x}'_{ij}\beta)}{\sum_{h \in J_i} \exp(\mathbf{x}'_{ih}\beta)}, \quad (7)$$

with $d_i = j$ if PES i chooses provider j from its choice set J_i . Also because of the IIA assumption, we can extract the interpretation of our β coefficients as

$$\frac{P(d_i = j | \mathbf{x}'_{ij})}{P(d_i = k | \mathbf{x}'_{ik})} = \frac{\exp(\mathbf{x}'_{ij}\beta)}{\exp(\mathbf{x}'_{ik}\beta)} = \exp((\mathbf{x}'_{ij} - \mathbf{x}'_{ik})\beta), \quad (8)$$

which implies that exponentiated coefficients depict the change in relative choice probability associated with a marginal change in the covariate.

5 Results

First we estimate our employability measure for each quarter. We estimate employability in the following way

1. Estimate the logit model (3) for workers unemployed in the first week of quarter $t-1$ on being employed in the first week of quarter t using the conditioning set presented in Table 2.
2. With the parameter estimates, use out-of-sample prediction for all workers unemployed in the first week of quarter t to estimate the probability of him being employed in the first week of quarter $t+1$.
3. Do this for all quarters and both target groups.

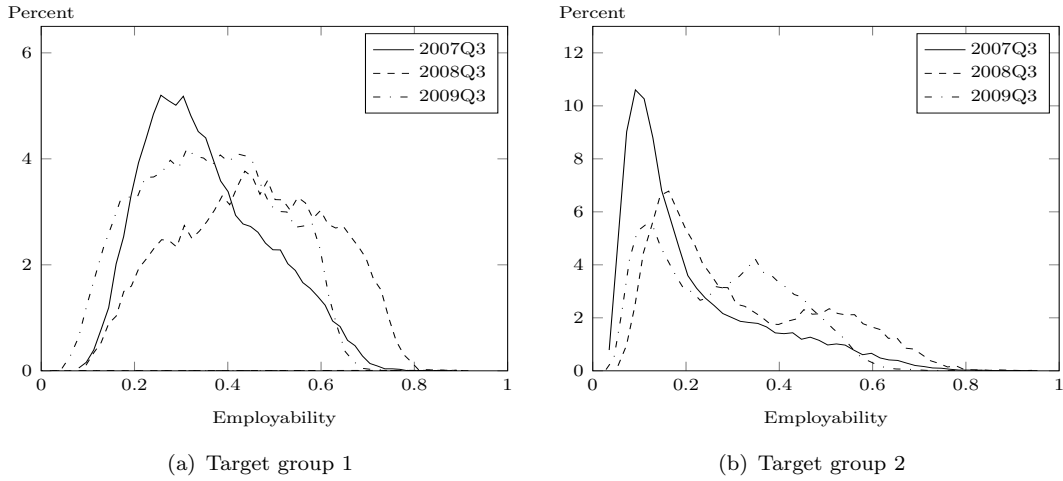
Table 6 shows the average employability per target group per quarter together with average employabilities when splitting the samples into four quartiles conditional on overall employability. To give a bigger picture of the evolution in employability and differences between target groups, Figure 1 shows the full distribution of employability for three quarters for both target groups.

From Table 6 we gain insights on the average composition of stocks of TG1 and TG2 unemployed workers. We see that TG1 individuals are overall more employable than TG2

Table 6: Average estimated overall and quartile employability for target groups 1 and 2 over quarters

TG 1	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
Employability	0.354	0.382	0.366	0.432	0.456	0.433	0.350	0.349	0.359	0.293	0.230
1st quartile	0.203	0.243	0.203	0.225	0.245	0.232	0.170	0.183	0.175	0.155	0.111
2nd quartile	0.292	0.342	0.310	0.370	0.399	0.376	0.291	0.310	0.302	0.253	0.187
3rd quartile	0.383	0.417	0.410	0.490	0.519	0.495	0.398	0.396	0.413	0.328	0.255
4th quartile	0.537	0.525	0.541	0.643	0.660	0.627	0.540	0.508	0.546	0.435	0.366
Individuals	31,826	28,699	32,348	24,626	20,892	22,420	35,109	46,579	48,146	54,535	54,535
TG2	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1	2009Q2	2009Q3	2009Q4
Employability	0.211	0.214	0.187	0.277	0.313	0.263	0.207	0.240	0.276	0.192	0.135
1st quartile	0.076	0.088	0.068	0.107	0.129	0.098	0.073	0.085	0.104	0.065	0.051
2nd quartile	0.125	0.143	0.119	0.185	0.207	0.176	0.133	0.188	0.203	0.133	0.095
3rd quartile	0.206	0.225	0.200	0.300	0.346	0.295	0.224	0.280	0.332	0.220	0.149
4th quartile	0.439	0.399	0.360	0.515	0.570	0.484	0.400	0.406	0.468	0.349	0.244
Individuals	20,399	17,771	20,675	14,808	11,089	11,108	16,499	19,434	18,818	20,693	20,693

Figure 1: Distributions of employability for both target groups across quarters



individuals. We also note that the composition of employability varies across quarters increasing until mid 2008 and decreasing until the end of our sample window. The instantaneous dispersion of employability between the least and most employable within both groups moves with an average employability in the fourth quartile being 2-3 and 5-6 times higher than the first quartile for TG1 and TG2, respectively.

If we inspect the distribution of employability for the two groups over time as depicted in Figure 1 for the quarters 2007Q3, 2008Q3, and 2009Q3, we see that the overall distribution of employability is very different for target group 1 versus target group 2. TG1 has a slight right skewed distribution in 2007Q3 which then widens towards symmetry in 2008Q3 and 2009Q3 with only limited changes to the tails. The TG2 employability distribution has a sharp right skewed distribution in 2007Q3, which stays right skewed

over 2008 and 2009, only with two extra humps to the right of the top of the distribution. Panel (a) and (b) of Figure 1 highlights underlying differences between the two target groups in terms of which workers should be referred. If one believes that only workers that are employable, but need new eyes on their labor market training should be referred, then we should be referring workers with e.g. employability within the range of 0.3 – 0.6, then the pool of target group 1 workers would be those with employability close to the median while the same pool of TG2 workers would be those in the far right end of the distribution. Instead of cutting the distribution into nominal employability we divide the two target groups into quartiles, thereby assuming that case workers are able to distinguish between referring TG1 and TG2 workers, and that they are referring on the basis of ranking workers within their groups.

5.1 Why Do PESs Contract Out Welfare Services?

Figure 2 depicts stocks of target group 1 and 2 unemployed and referred workers for the four regions. The figure quite clearly shows that there are fundamentally three different periods. How PESs referred individuals in 2007, 2008, and 2009. In 2007 we see an increasing number of referrals as the referral possibility was made available and the PESs thus starts using them, even though the stock of unemployed overall at the time is decreasing. In 2008 this tendency stops and is reversed as the stock of unemployed keeps decreasing, the stock of referred individuals also decrease until 2009, when the pool of unemployed starts to increase again as a result of the financial crisis, the PESs again increase the stock of referred individuals.

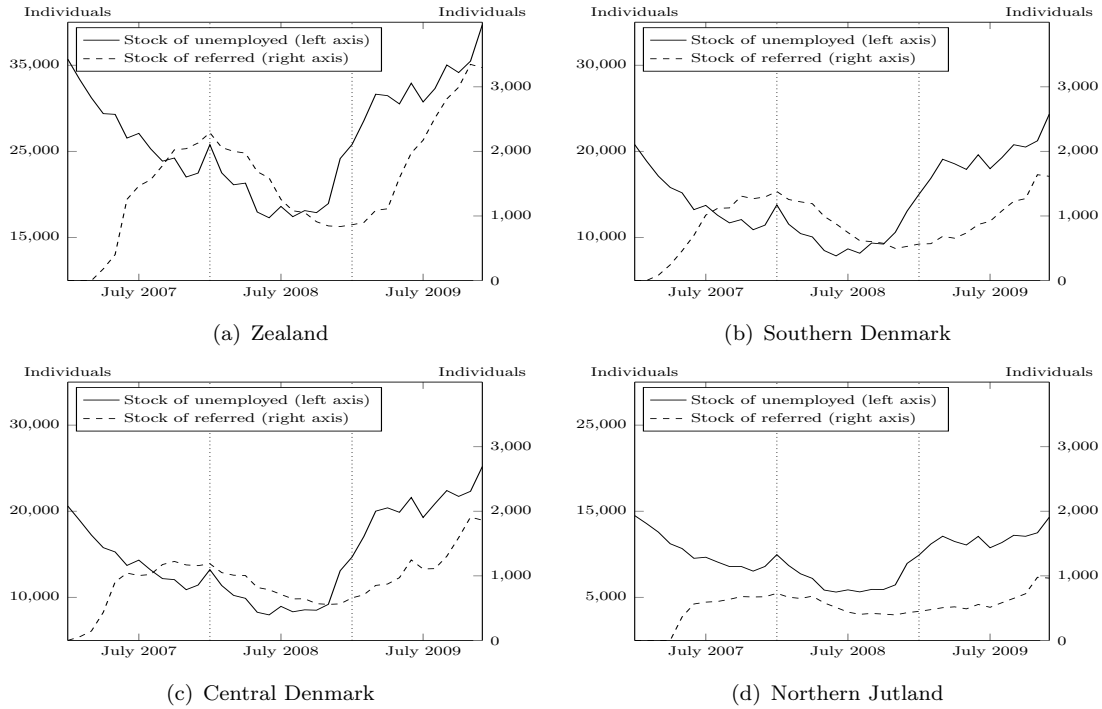
Combining Table 6 with Figure 1 and 2 reveals that as unemployment decrease from 2007-2008 we see an increase in the overall employability of the remaining pool of unemployed workers, which then declines as unemployment increase again from 2008 to 2009. Looking at Figure 2 definitely leads us to think that the PESs might have used the possibility of referring individuals as a way to react according to capacity constraints.

5.2 The Choice between Workers

To examine which workers are most prone to be referred we estimate model (5) of referral on employability quartiles.

Figure 3 and 4 present employability parameter estimates with confidence bands on

Figure 2: Combined stock of target group 1 and 2 unemployed and referred workers. Dotted lines indicate January 2008 and 2009



being referred during quarters 2007Q1, 2007Q2, ..., 2009Q4 for target group 1 and 2, respectively. We see that for target group 1, the PESs systematically chooses to refer unemployed workers believed to be within the first and fourth quartile of the employability distribution. This is especially evident during 2008, but the most employable individuals are consistently referred on a lower pace than workers in the second employability quartile. Such a pattern makes sense from the point of view of a cost minimizing employment service, as the group of most employable workers should also be the the ones most likely to find employment themselves within a referral window, and thus would yield a bonus to the provider for a lesser effort with a higher probability. It is, however, interesting that it is not the least employable workers that are being referred, although the PESs had the chance of freely choosing which workers to refer. From Figure 4 we see that the first quartile employable workers are consistently less likely than the second quartile workers to be referred while the third quartile workers are more likely. This pattern is somewhat counter-intuitive if the PESs were acting purely out of a cost minimizing mind set as referring 3rd quartile employable workers instead of 2nd quartile workers comes with a higher expected cost of referring.

As shown in equation (8) we can use estimated coefficients to extract conditional proba-

Figure 3: Estimates on the probability of being referred across quarters for target group 1 workers assessed to be in quartile 2-4 compared to quartile 1

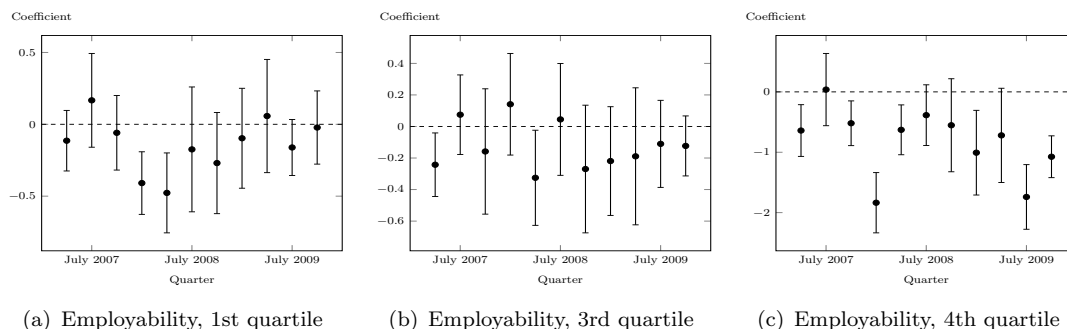
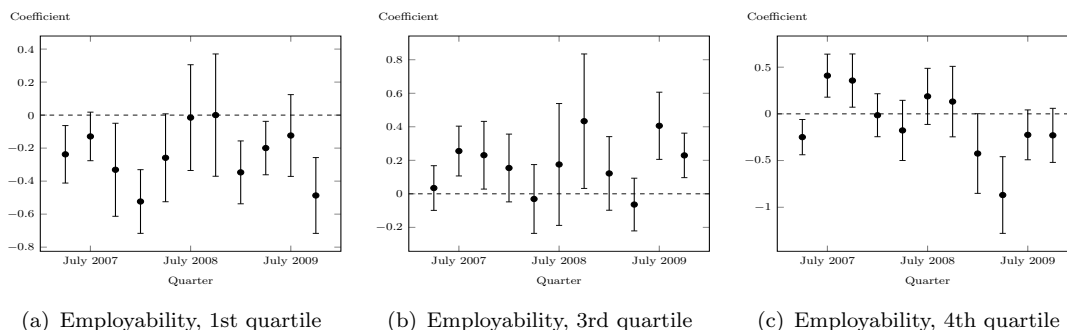
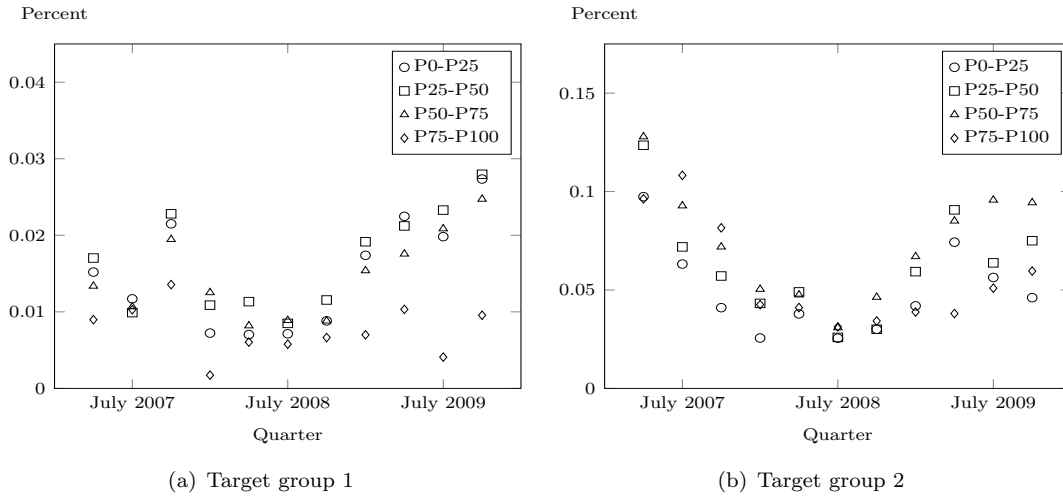


Figure 4: Estimates on the probability of being referred across quarters for target group 2 workers assessed to be in quartile 2-4 compared to quartile 1



bilities of being referred for each employability group 1-4. These probabilities are depicted in Figure 5 for both target groups. Panel (a) shows the intertemporal probabilities of being referred for workers in the four employability quartiles for TG1. We first note that the overall probability of being referred is very low in this group compared to TG2. Second, we see that the conditional probability of referral is consistently below 1 percent for workers with the highest employability. Workers in the first, second, and third quartile show movement indicating that these three groups all complied with increases and decreases along with the overall tendency to refer shown in Figure 2. For TG2, we see more homogeneous movement for all four quartiles of employability over quarters. The first quartile have the quarter by quarter lowest conditional probability of being referred while the third and fourth quartile workers have the highest conditional probabilities during 2009 and 2007-2008, respectively.

Figure 5: Intertemporal probabilities of being referred conditional on employability



5.3 The Choice between Providers

Figure 7 and 8 show parameter coefficients and confidence bands across private providers for target group 1 and 2, respectively while Table 7 show the parameter estimates of contract prices in the decision of choosing which private provider to refer each individual unemployed worker to. Table 8 contain the corresponding contract price estimates split into year of referral.

If PESs have a systematic strategy of referring individuals with specific characteristics (e.g. all they think are hard-to-place) to one or two specific private providers, perhaps because especially these two have specific strengths in providing labor market programs for this type of individuals, then we should see clear patterns in the prediction of choosing providers from Figure 7 and 8. Regarding the hard-to-place signal, we see that one (two) provider has a strong negative and one (one) provider a strong positive prediction on being chosen for individuals with a hard-to-place signal for target group 1 (2). We also see that three providers are especially used for contracting out individuals with a relatively long period of receiving UI benefits. In total, we do find evidence in support of PESs making individual specific choices when faced with the decision of which private provider to use for which individual unemployed worker. Figure 6 shows that for TG2 especially one provider is likely to be chosen when the referred worker is very non-employable.

Turning to the importance of the contract price, Table 7 shows that we find no statistical relationship between the contract price for target group 1 and the choice between

Table 7: Conditional logit estimates on the importance of contract price in the decision of which provider to use

	TG1				TG2			
Contract price (1,000 DKK)	-0.025 (0.159)	-0.018 (0.158)	-0.008 (0.154)	-0.022 (0.159)	-0.398*** (0.127)	-0.389*** (0.128)	-0.371*** (0.129)	-0.402*** (0.127)
Personal characteristics	No	Yes	Yes	No	No	Yes	Yes	No
Worker characteristics	No	No	Yes	No	No	No	Yes	No
Estimated employability	No	No	No	Yes	No	No	No	Yes
Log likelihood	-11,154	-10,964	-10,501	-11,077	-24,685	-24,343	-23,447	-24,585
Minimum alternatives	5	5	5	5	5	5	5	5
Maximum alternatives	9	9	9	9	10	10	10	10
Average alternatives	6.9	6.9	6.9	6.9	8.3	8.3	8.3	8.3
Individuals	6,327	6,327	6,327	6,327	12,717	12,717	12,717	12,717
Observations	43,364	43,364	43,364	43,364	106,156	106,156	106,156	106,156

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. Numbers in parentheses display standard errors.

providers. We do, on the other hand, find a strong negative relationship between the contract price for target group 2 and the choice of provider. The relationship is robust as to the inclusion of conditioning variables. The estimates indicates that when faced with multiple providers, the provider with everything else equal and a contract price of 1,000 DKK less than the other is 31% more likely to receive the referral.²

Table 8 splits the estimations into years. For target group 1, we do not see any significant changes to the estimates although the insignificant parameter estimates turn positive during 2008. Focusing at target group 2, though, it is clear that the relationship between contract prices and the probability for receiving unemployed workers for the providers is driven by the year 2007 and especially 2008 (the year with decreasing stock of referred).

6 Conclusions

This paper examines three decision processes made by public employment services when faced with the possibility of contracting out welfare-to-work services: (1) Should the PES refer workers to private providers, (2) which workers are then referred, and (3) to which provider should the contract go. We analyze a Danish nationwide tender for two target groups - workers with a qualifying education with maximum a bachelor equivalent and workers older than 55, with provider specific contract prices. We find that contracting out possibility is especially used during times when the PES is likely to experience capacity constraints while the use decrease during time with decreasing unemployment. We also

² $e^{-0.38} - 1 = 0.316$.

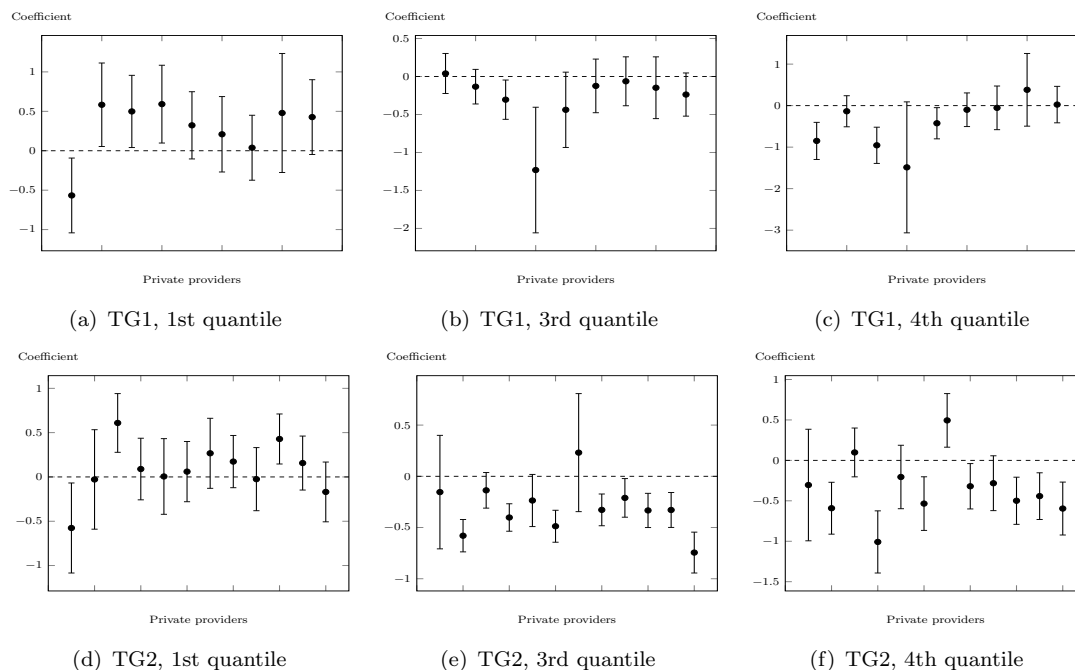
Table 8: Conditional logit estimates on the importance of contract price in the decision of which provider to use, split by year of referral

2007	TG1				TG2			
Contract price (1,000 DKK)	-0.102 (0.150)	-0.097 (0.152)	-0.061 (0.160)	-0.102 (0.150)	-0.344** (0.142)	-0.343** (0.141)	-0.328** (0.146)	-0.345** (0.143)
Personal characteristics	No	Yes	Yes	No	No	Yes	Yes	No
Worker characteristics	No	No	Yes	No	No	No	Yes	No
Estimated employability	No	No	No	Yes	No	No	No	Yes
Log likelihood	-2,740	-2,645	-2,434	-2,740	-11,534	-11,386	-11,003	-11,488
Minimum alternatives	5	5	5	5	5	5	5	5
Maximum alternatives	9	9	9	9	10	10	10	10
Average alternatives	6.9	6.9	6.9	6.9	8.3	8.3	8.3	8.3
Individuals	1,671	1,671	1,671	1,671	6,093	6,093	6,093	6,093
Observations	11,474	11,474	11,474	11,474	50,303	50,303	50,303	50,303
2008	TG1				TG2			
Contract price (1,000 DKK)	0.009 (0.244)	0.004 (0.251)	0.002 .	0.009 (0.244)	-0.623** (0.202)	-0.621** (0.203)	-0.659** (0.195)	-0.626** (0.202)
Personal characteristics	No	Yes	Yes	No	No	Yes	Yes	No
Worker characteristics	No	No	Yes	No	No	No	Yes	No
Estimated employability	No	No	No	Yes	No	No	No	Yes
Log likelihood	-1,576	-1,524	-1,386	-1,576	-3,619	-3,552	-3,266	-3,583
Minimum alternatives	5	5	5	5	5	5	5	5
Maximum alternatives	9	9	9	9	10	10	10	10
Average alternatives	6.9	6.9	6.9	6.9	8.1	8.1	8.1	8.1
Individuals	928	928	928	928	1,983	1,983	1,983	1,983
Observations	6,277	6,277	6,277	6,277	16,026	16,026	16,026	16,026
2009	TG1				TG2			
Contract price (1,000 DKK)	-0.007 (0.171)	0.016 (0.173)	0.043 (0.157)	-0.007 (0.171)	-0.365 (0.304)	-0.358 (0.302)	-0.370 (0.275)	-0.372 (0.302)
Personal characteristics	No	Yes	Yes	No	No	Yes	Yes	No
Worker characteristics	No	No	Yes	No	No	No	Yes	No
Estimated employability	No	No	No	Yes	No	No	No	Yes
Log likelihood	-6,600	-6,408	-5,967	-6,600	-8,837	-8,695	-8,190	-8,746
Minimum alternatives	5	5	5	5	5	5	5	5
Maximum alternatives	9	9	9	9	10	10	10	10
Average alternatives	6.9	6.9	6.9	6.9	8.6	8.6	8.6	8.6
Individuals	3,728	3,728	3,728	3,728	4,641	4,641	4,641	4,641
Observations	25,613	25,613	25,613	25,613	39,827	39,827	39,827	39,827

Notes: *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively. Numbers in parentheses display standard errors. TG1 did not converge in 2008 with both personal and worker characteristics included in the model.

find, by constructing an employability measure, that for the group of workers with a qualifying education, the PES is systematically referring the mid 50% of the employability distribution. For the group of older workers, we see the same picture, although not as clear. Lastly, we find that when faced with multiple alternative providers to choose between, the contract price plays no role for the educational target group whereas there is a significant negative relationship between the contract price and the possibility for the provider to receive a referral.

Figure 6: Conditional logit estimates on employability quantiles across providers for target group 1 (panel (a), (b), and (c)) and target group 2 (panel (d), (e), and (f))



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A Conditional logit models

Figure 7: Conditional logit estimates across providers for target group 1

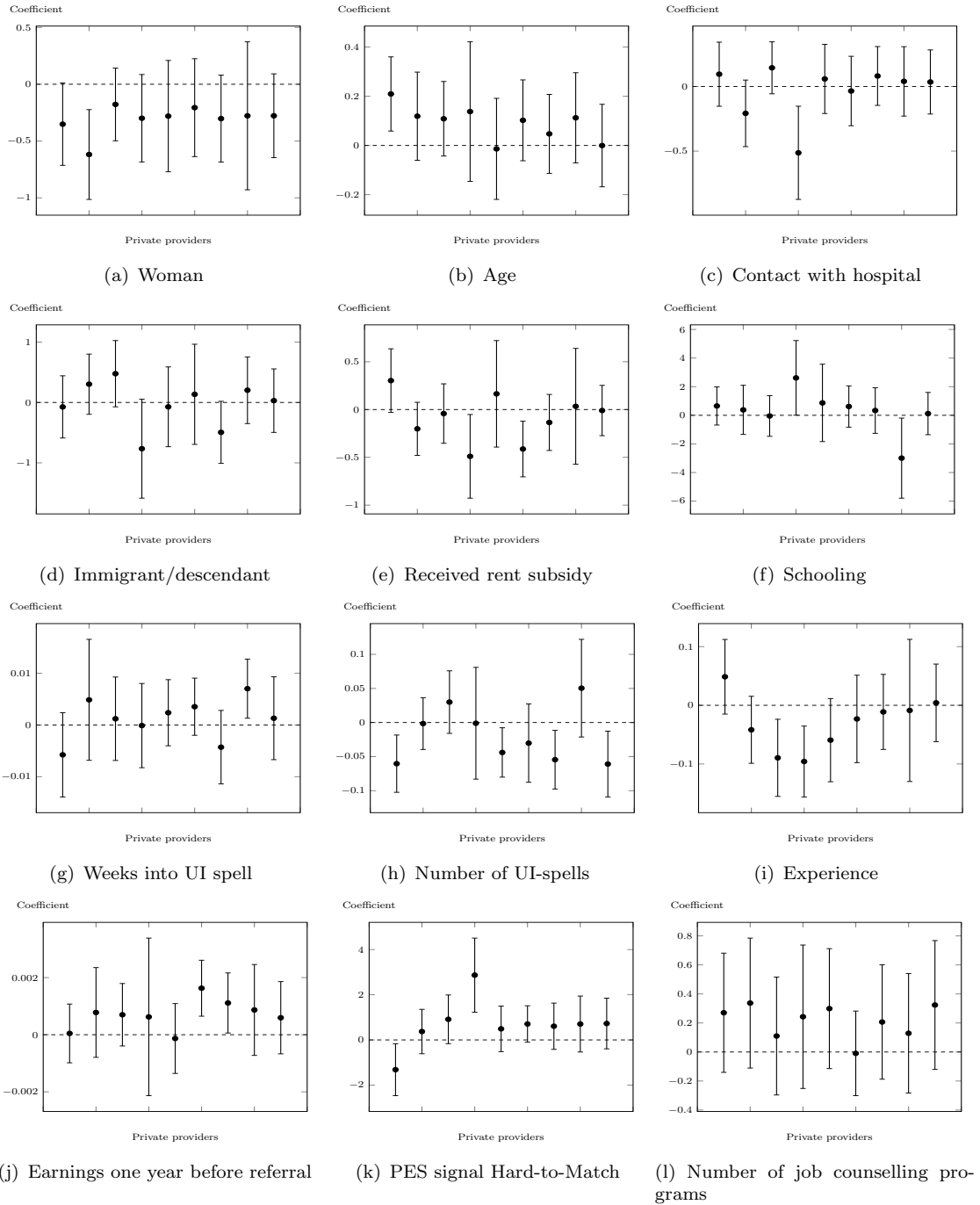
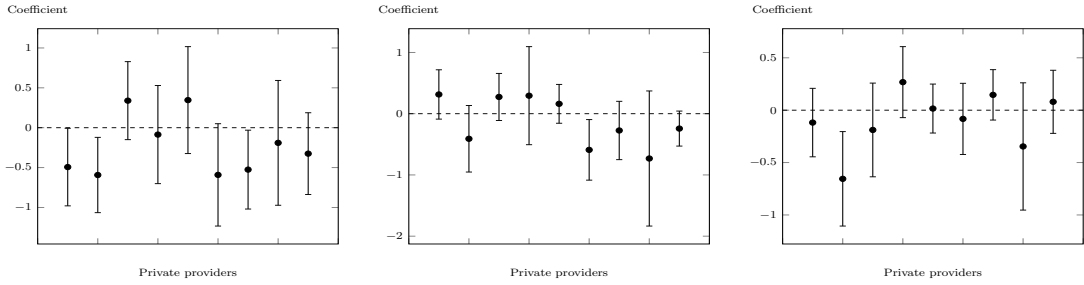
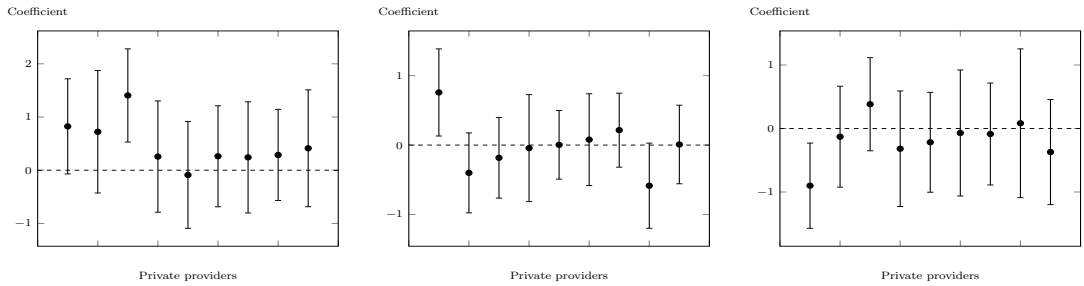


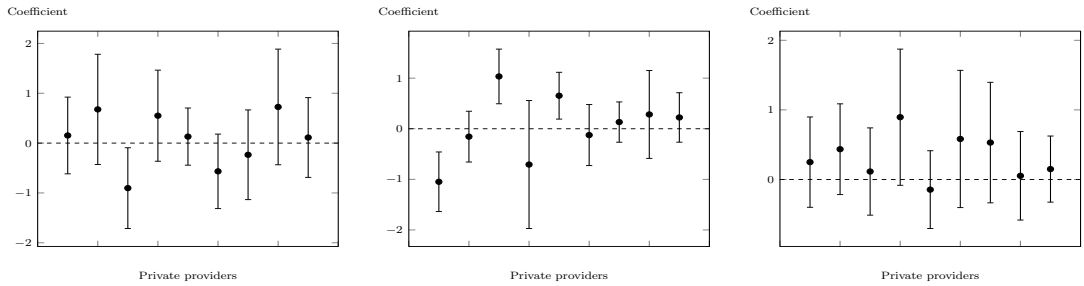
Figure 7: Conditional logit estimates across providers for target group 1, continued



(m) Number of self chosen education spells (n) Number of private job training spells (o) Number of public job training spells



(p) Number of private internships (q) Number of public internships (r) Rate of participating in training programs, 1 qtr before referral



(s) Rate of participating in training programs, 2 qtr before referral (t) Rate of employment, 1 qtr before referral (u) Rate of employment, 2 qtr before referral

Figure 8: Conditional logit estimates across providers for target group 2

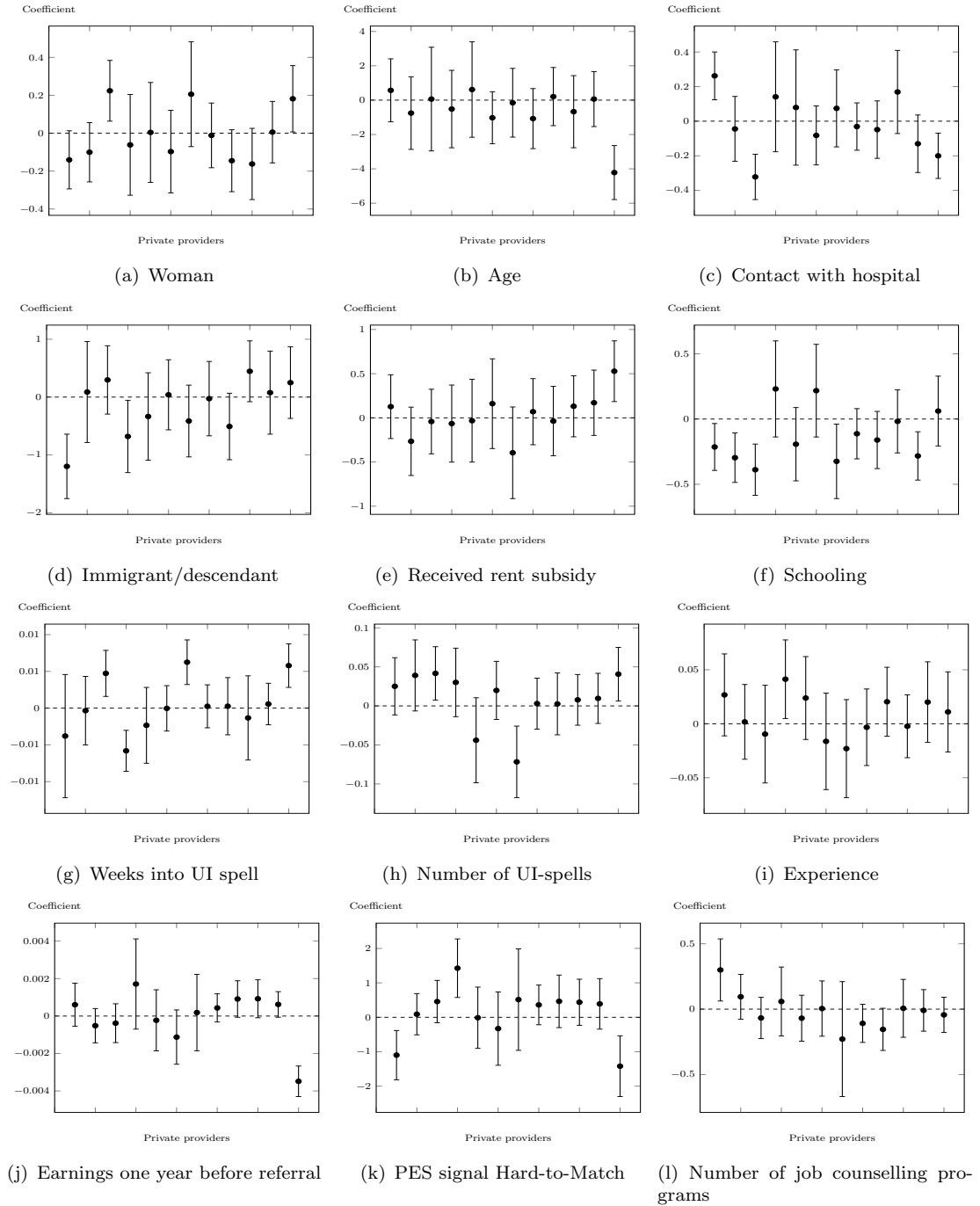


Figure 8: Conditional logit estimates across providers for target group 2, continued

