# Online Appendix: Employment Effects of Job Search Assistance for the Long-Term Unemployed \*

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#### 1 Related Literature and References

Due to length limitation in the main text, we provide below additional studies that motivated our research and/or provide additional context.

Kroft *et al.* (2013) and Faberman and Kudlyak (2019) provide evidence on challenges faced by job seekers when looking for a job.

For literature on the short-run effects of JSA, see e.g. Bloom *et al.* (1997), van den Berg and van der Klaauw (2006), Schochet *et al.* (2008), Card *et al.* (2010, 2018), and Arni (2015).

For literature on the long-run effects of JSA, see e.g. Decker et al. (2000), Maibom et al. (2017), and Manoli et al. (2018).

For studies on programs that affect unemployment outflow through sanctions or benefit reductions, see e.g. Black *et al.* (2003), Rosholm and Svarer (2008), Graversen and van Ours (2009), Petrongolo (2009), Schmieder *et al.* (2012), Arni *et al.* (2013), Arni *et al.* (2015), Blanco (2017), Blanco *et al.* (2018), and Bolhaar *et al.* (2018).

For literature on the effects of changes to the generosity of unemployment insurance on job quality, see e.g. Card *et al.* (2007), Lalive (2007), van Ours and Vodopivec (2008), Degen (2014), Schmieder *et al.* (2016), and Nekoei and Weber (2017).

For recent (but different) literature on the effects of outsourcing all services from the public employment service to private providers, see e.g. Bennmarker *et al.* (2013) on Sweden, Behaghel *et al.* (2014) on France, Cockx and Baert (2015) on Belgium, Rehwald *et al.* (2015) on Denmark, and Krug and Stephan (2016) on Germany.

For earlier work on Swiss active labor market policies, see e.g. Gerfin and Lechner (2002), Lalive *et al.* (2005), Lalive *et al.* (2008), and Arni *et al.* (2013), and Eugster (2015).

For literature on related econometric approaches, see e.g. Cox (1972), Eberwein *et al.* (1997). Lee (2009), Ba *et al.* (2017), and Bonhomme *et al.* (2017).

# 2 Descriptive Statistics

2006m1 2007m1 2008m1 2009m1 2010m1 Date

Figure 1: Unemployment in the Canton of Geneva

*Notes:* Unemployment rate in the Canton of Geneva between January 2006 and December 2010. The shared area indicates the period during which the experiment took place – first cohort in October 2006, last cohort in July 2007. *Source:* Authors' own calculations with data from the Swiss Federal Statistical Office.

Table 1: Descriptive statistics on participants

	Contro	Group	Hestia	Group		
Variable	Mean	s.e.	Mean	s.e.	Difference	t-stat
Women	0.51	0.03	0.49	0.02	-0.02	-0.50
Marital status						
Single	0.35	0.02	0.33	0.02	-0.02	-0.53
Married	0.51	0.03	0.54	0.02	0.03	0.80
Widower	0.01	0.00	0.00	0.00	-0.00	-0.30
Divorced	0.14	0.02	0.13	0.01	-0.01	-0.37
Experience						
None	0.01	0.01	0.03	0.01	0.01	1.33
Less than 1 year	0.07	0.01	0.09	0.01	0.01	0.80
1-3 years	0.25	0.02	0.26	0.02	0.01	0.20
More than 3 years	0.56	0.03	0.51	0.02	-0.05	-1.49
Age						
17-24	0.08	0.01	0.10	0.01	0.02	1.10
25-34	0.28	0.02	0.31	0.02	0.04	1.21
35-44	0.28	0.02	0.27	0.02	-0.01	-0.19
45-54	0.21	0.02	0.19	0.02	-0.02	-0.91
55-64	0.15	0.02	0.12	0.01	-0.03	-1.20
Schooling						
Compulsory	0.40	0.03	0.43	0.02	0.02	0.71
High-school level	0.36	0.02	0.36	0.02	-0.00	-0.01
University level	0.20	0.02	0.18	0.02	-0.01	-0.55
Workers						
Swiss	0.52	0.03	0.50	0.02	-0.02	-0.68
C permit	0.30	0.02	0.29	0.02	-0.01	-0.28
Other	0.18	0.02	0.21	0.02	0.03	1.19
Placement prospects						
Excellent	0.04	0.01	0.06	0.01	0.02	1.16
Good	0.55	0.03	0.53	0.02	-0.02	-0.62
Average	0.23	0.02	0.21	0.02	-0.02	-0.75
Poor	0.17	0.02	0.20	0.02	0.02	0.93
Number of observations	378	-	512	-	-	-

*Notes:* Summary statistics on the variables specific to the experiment. Some categories may not add up to one due to missing observations. The sixth column calculates the difference between control and Hestia groups, defined as Hestia minus control. The seventh column reports two-sided t-statistics on the differences.

Table 2: Small randomization differences after accounting for non-participation

				Hest	Hestia Group							
	Control	Group (1)	Treated	Treated Group (2)	Non-treate	Non-treated Group (3)		Differ	Difference between groups	ween gr	sdno	
Variable	Mean	s.e.	Mean	s.e.	Mean	s.e.	(2)-(1)	t-stat	(3)-(1)	t-stat	(2)-(3)	t-stat
Women	0.51	0.03	0.50	0.03	0.48	0.03	-0.01	-0.23	-0.03	-0.62	0.02	0.36
Marital status												
Single	0.35	0.02	0.31	0.03	0.36	0.03	-0.04	-1.10	0.01	0.20	-0.05	-1.19
Married	0.51	0.03	0.55	0.03	0.52	0.03	0.04	1.05	0.01	0.29	0.03	89.0
Widower	0.01	0.00	0.00	0.00	0.00	0.00	-0.00	-0.27	-0.00	-0.24	-0.00	-0.02
Divorced	0.14	0.02	0.14	0.02	0.12	0.02	0.00	0.03	-0.02	-0.68	0.02	99.0
Experience												
None	0.01	0.01	0.01	0.01	0.04	0.01	-0.00	-0.19	0.03	1.94	-0.03	-2.01
Less than 1 year	0.07	0.01	0.07	0.02	0.10	0.02	-0.00	-0.11	0.03	1.36	-0.03	-1.37
1-3 years	0.25	0.03	0.24	0.03	0.28	0.03	-0.02	-0.45	0.03	0.77	-0.04	-1.11
More than 3 years	0.56	0.03	0.56	0.03	0.46	0.03	-0.00	-0.01	-0.10	-2.51	0.10	2.30
Age												
17-24	0.08	0.01	0.10	0.02	0.11	0.02	0.02	0.77	0.03	1.04	-0.01	-0.26
25-34	0.28	0.02	0.32	0.03	0.31	0.03	0.04	1.09	0.03	0.93	0.01	0.14
35-44	0.28	0.03	0.22	0.03	0.32	0.03	-0.06	-1.62	0.05	1.24	-0.10	-2.61
45-54	0.21	0.02	0.20	0.02	0.18	0.02	-0.02	-0.56	-0.03	-0.98	0.01	0.39
55-64	0.15	0.02	0.17	0.02	80.0	0.02	0.03	0.53	-0.07	-2.94	0.00	3.11
Schooling												
Compulsory	0.40	0.03	0.45	0.03	0.40	0.03	0.04	1.10	0.00	0.07	0.04	0.95
High-school level	0.36	0.02	0.33	0.03	0.39	0.03	-0.03	-0.76	0.03	0.74	-0.06	-1.37
University level	0.20	0.02	0.18	0.02	0.18	0.02	-0.01	-0.44	-0.02	-0.50	0.00	90.0
Workers												
Swiss	0.52	0.03	0.51	0.03	0.49	0.03	-0.01	-0.33	-0.03	-0.81	0.02	0.44
C permit	0.30	0.02	0.31	0.03	0.27	0.03	0.01	0.27	-0.03	-0.76	0.04	0.94
Other	0.18	0.02	0.18	0.02	0.24	0.03	0.00	0.11	90.0	1.83	-0.06	-1.59
Placement prospects												
Excellent	0.04	0.01	80.0	0.02	0.04	0.01	0.04	1.79	-0.00	-0.08	0.04	1.74
Good	0.55	0.03	0.53	0.03	0.52	0.03	-0.02	-0.39	-0.03	-0.65	0.01	0.24
Average	0.23	0.02	0.20	0.02	0.22	0.03	-0.03	-1.04	-0.01	-0.23	-0.03	-0.72
Poor	0.17	0.02	0.19	0.02	0.21	0.03	0.01	0.44	0.04	1.11	-0.02	-0.62
Number of observations	378	1	260	ı	252	ı	1	ı	1	ı	1	1

Notes: Breakdown of the summary statistics on the variables specific to the experiment. Some categories may not add up to one due to missing observations. Columns seven to twelve calculate the difference between control and Hestia groups and report two-sided t-statistics on the differences.

Table 3: ALMP participation

	Control	Group	Hestia	Group		
Variable	Mean	s.e.	Mean	s.e.	Difference	t-stat
Individual ALMPs						
Base program	0.03	0.01	0.04	0.01	0.00	0.37
Personality development	0.02	0.01	0.01	0.00	-0.01	-0.79
Basic skills acquisition	0.02	0.01	0.02	0.01	-0.00	-0.03
Language course	0.12	0.02	0.11	0.01	-0.01	-0.50
Basic IT skills	0.09	0.01	0.07	0.01	-0.02	-1.15
Advanced IT skills	0.03	0.01	0.04	0.01	0.02	1.26
Others	0.16	0.02	0.13	0.01	-0.03	-1.33
None	0.62	0.02	0.65	0.02	0.03	0.94
Group ALMPs						
Base program	0.23	0.02	0.62	0.02	0.39	12.89
Personality development	0.04	0.01	0.04	0.01	-0.00	-0.15
Basic skills acquisition	0.01	0.00	0.00	0.00	-0.01	-1.20
Language course	0.01	0.00	0.01	0.00	0.00	0.29
Basic IT skills	0.01	0.00	0.01	0.00	-0.00	-0.37
Advanced IT skills	0.00	0.00	0.00	0.00	0.00	1.00
Others	0.16	0.02	0.13	0.01	-0.03	-1.43
None	0.56	0.03	0.28	0.02	-0.27	-8.48
Sanctions						
None	0.79	0.02	0.79	0.02	0.00	0.17
One	0.10	0.02	0.11	0.01	-0.01	-0.52
More than One	0.11	0.02	0.10	0.01	0.01	0.30
Sanction Days (Avg.)	7.79	0.50	6.97	0.42	0.82	1.25
Meetings at PES						
Number	21.77	0.74	21.59	0.69	0.18	0.18
<b>Duration (Minutes)</b>	28.76	0.40	28.85	0.83	-0.09	-0.10
Number of observations	378	-	512	-	-	-

*Notes:* Summary statistics of the active labor market policies (ALMP) mix followed by job seekers from the entry into the experiment until July 2016. The sixth column calculates the difference between control and Hestia groups, defined as Hestia minus control. The seventh column reports two-sided t-statistics on the differences. *Source:* Authors' own calculations.

# 3 Results

## 3.1 Employment

Figure 2: Labor market states over time

*Notes:* Labor market states in which individuals can be at a given point in time. These three states are mutually exclusive. The figure can be seen as a snapshot of the employment situation of all the individuals in the sample for a given month.

Months before or after the experiment

12

24

Unemployed without UB

48

60

Employed without UB

**UB** recipients

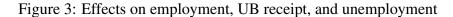
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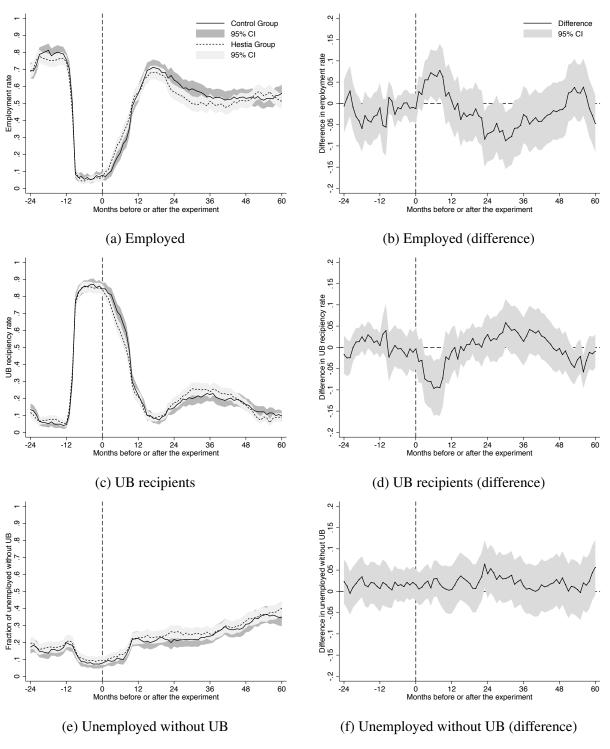
Source: Authors' own calculations.

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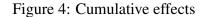
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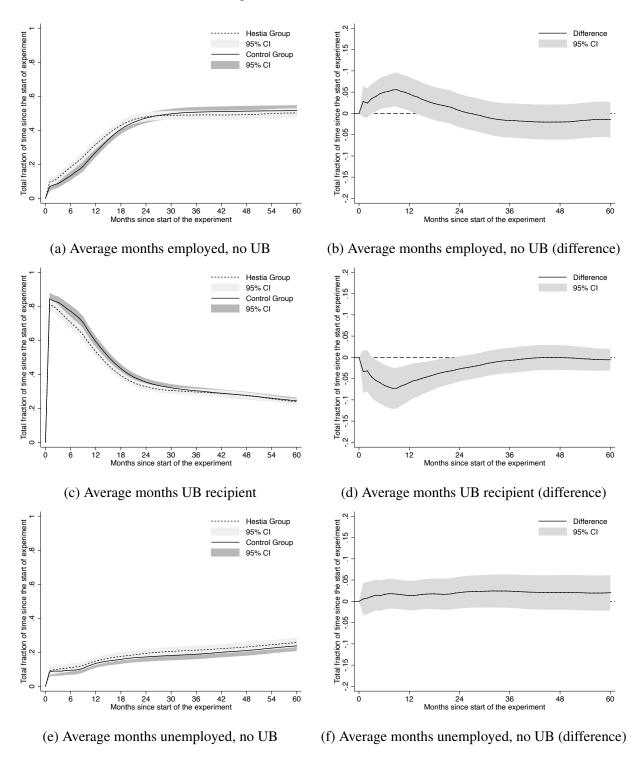
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*Notes:* Fraction of individuals who are employed (top), of individuals who receive UB (middle), and of unemployed individuals who do not receive UB (bottom). We report on the right the difference between the two groups, defined as Hestia minus control.





*Notes:* Average cumulative months spent by individuals employed (top), by individuals receiving UB (middle), and by unemployed individuals not receiving UB (bottom). The variables are constructed by computing the cumulative sum of months in a given state at each point in time and dividing it by number of months since start of the experiment. *Source:* Authors' own calculations.

Table 4: Effects on employment, UB receipt, and unemployment

	Employe	ed, no UB	UB rec	ipients	Unempl	oyed, no UB
	(1)	(2)	(3)	(4)	(5)	(6)
A. Treatment Effects						
Hestia × 1-12 m. after	0.044**	0.038*	-0.059***	-0.052**	0.015	0.014
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Hestia × 13-24 m. after	-0.026	-0.031	0.002	0.007	0.024	0.023
1100000 / ( 10 2 / 100 000)	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.03)
Hestia × 24-36 m. after	-0.067**	-0.079***	0.033	0.044*	0.033	0.034
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
Hestia $\times$ 37+ m. after	-0.011	-0.011	-0.002	0.000	0.014	0.011
	(0.03)	(0.03)	(0.02)	(0.02)	(0.03)	(0.03)
B. Randomization						
Hestia $\times$ 24-11 m. before	-0.023	-0.032	0.006	0.013	0.016	0.018
	(0.02)	(0.03)	(0.01)	(0.01)	(0.02)	(0.02)
Hestia $\times$ 12-1 m. before	-0.014	-0.017	-0.001	0.003	0.015	0.014
1100000 / 12 1 / 110 001010	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)
Control variables	No	Yes	No	Yes	No	Yes
Adjusted $R^2$	0.138	0.174	0.254	0.269	0.033	0.081
Individuals	874	844	874	844	874	844

Notes: Point estimates of OLS regressions on the three labor market states from 24 months before to 60 months after the start of the experiment. All three states are continuous variables ranging between zero and one. The constant is included in the regressions but not reported here. Control variables include: gender, age, marital status, schooling, nationality, mother tongue, residence permit, professional qualifications, placement prospects, OCE job code, and cohort number. Standard errors clustered at an individual level in parentheses. \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01. Source: Authors' own calculations.

Table 5: Cumulative effects

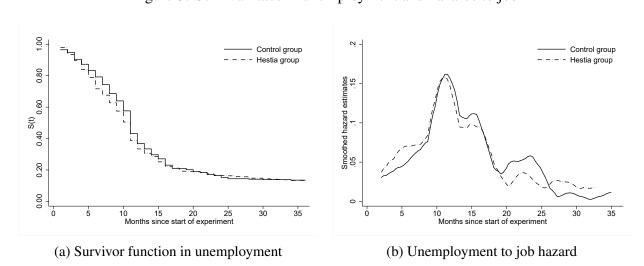
	Control	Group	Hestia (	Group		
Outcome variable	Mean	s.e.	Mean	s.e.	Difference	t-stat
A. After one year						
Months employed, no UB	3.26	0.18	3.81	0.17	0.55	2.26
Unemployment benefits (CHF)	29,123	1,451	25,317	1,104	-3,806	-2.09
Income from work (CHF)	18,534	1,040	19,551	994	1,016	0.71
Social assistance benefits (CHF)	244	70	199	55	-45	-0.50
Total earnings (CHF)	47,901	1,685	45,067	1,376	-2,834	-1.30
B. After five years						
Months employed, no UB	31.05	0.96	30.16	0.84	-0.89	-0.70
Unemployment benefits (CHF)	53,005	2,779	51,398	2,215	-1,607	-0.45
Income from work (CHF)	144,818	6,934	136,403	6,851	-8,415	-0.86
Social assistance benefits (CHF)	7,813	1,421	8,076	1,123	263	0.15
Total earnings (CHF)	205,637	7,262	195,878	7,068	-9,759	-0.96

*Notes:* Cumulative effects of the JSA program on key outcome variables. Panel A reports results on variables cumulated over one year since program start, panel B reports results on variables cumulated over five years since program start. Total earnings are comprised of work income, UB, and social assistance benefits. Income, UB, social assistance benefits, and total earnings are in expressed in Swiss Francs (CHF). The sixth column calculates the difference between control and Hestia groups, defined as Hestia minus control.

Source: Authors' own calculations.

#### 3.2 Transitions and Potential Mechanisms

Figure 5: Survival rates in unemployment and hazards to job



*Notes:* Kaplan-Meier survivor function in unemployment (left) and one-period smoothed unemployment to job hazard estimates of (right). The origin is defined as the start of the experiment, while failure is the entry into a new job. The sample only includes individuals who started the experiment unemployed.

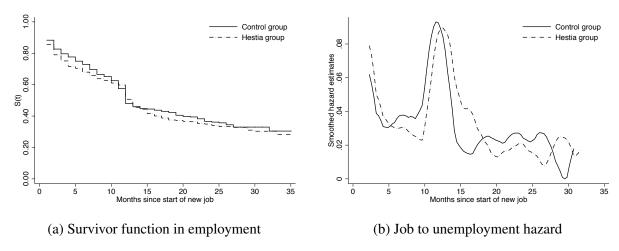
Table 6: Comparing Unobserved Heterogeneity Groups

	Group 1/2	Group 2/2	z-Value
Women	.514	.498	339
Age	38.843	39.713	.801
Schooling			
Secondary	.086	.445	8.262
Tertiary	.579	.104	-14.679
Residence permit			
Permanent	.514	.245	-6.502
Other	.036	.212	4.981
Placement prospects			
Poor	.136	.189	1.482
Average	.129	.238	2.847
Good	.657	.525	-2.872
Excellent	.079	.049	-1.397
Number of observations	140	652	-

*Notes:* Comparison of job seekers allocated to unobserved heterogeneity groups 1 and 2, based on the algorithm proposed by Bonhomme *et al.* (2017).

Source: Authors' own calculations.

Figure 6: Survival in employment and hazards back to unemployment



*Notes:* Kaplan-Meier survivor functions in employment (left) and one-period smoothed job to unemployment hazard estimates of (right). The origin is the beginning of a new employment spell after the start of the experiment, while failure is the loss of the job. Only individuals who have found a job after the start of the experiment are considered here.

Table 7: Cox regressions on job entry

	(1)	(2)	(3)	(4)
Hestia × 1-3 months	0.087	0.039	0.057	0.055
	(0.22)	(0.22)	(0.22)	(0.22)
	0.706111	0.45011	0.4-0.1	o 4 <b>-</b> 4
Hestia $\times$ 4-6 months	0.506***	0.458**	0.472**	0.471**
	(0.19)	(0.19)	(0.19)	(0.19)
Hestia × 7-12 months	0.009	-0.018	-0.015	-0.012
riestia × 7 12 montus	(0.10)	(0.11)	(0.11)	(0.11)
	(0.10)	(0.11)	(0.11)	(0.11)
Hestia $\times$ 13-18 months	-0.047	-0.058	-0.059	-0.062
	(0.17)	(0.18)	(0.18)	(0.18)
Hestia $\times$ 19+ months	-0.367*	-0.437**	-0.434*	-0.446**
	(0.22)	(0.22)	(0.22)	(0.22)
Group 2/2			0.403***	
Group 2/2				
			(0.13)	
Group 2/4				0.412***
- · · · · ·				(0.14)
				, ,
Group 3/4				$0.700^{***}$
				(0.16)
C 4/4				0.422*
Group 4/4				0.432*
				(0.25)
Control variables	No	Yes	Yes	Yes
Subjects	820	792	792	792
Failures	739	713	713	713

*Notes:* Point estimates of Cox regressions on transitions to job. The origin is defined as the start of the experiment, while failure is the entry into a new job. Control variables include: gender, age, marital status, schooling, nationality, mother tongue, residence permit, professional qualifications, placement prospects, OCE job code, and cohort number. Robust standard errors in parentheses. \*p < 0.10,\*\* p < 0.05,\*\*\* p < 0.01.

Table 8: Socio-demographic characteristics of individuals who found a job

	Contro	l Group	Hestia	Group		
Variable	Mean	s.e.	Mean	s.e.	Difference	t-stat
A. All job seekers						
Fraction of group with job	0.85	0.02	0.84	0.02	-0.01	-0.28
Number of observations	372	-	502	-	-	-
B. Job finders						
Women	0.50	0.03	0.50	0.02	0.00	0.10
Marital status						
Single	0.37	0.03	0.34	0.02	-0.03	-0.90
Married	0.49	0.03	0.52	0.02	0.03	0.92
Divored or widower	0.14	0.02	0.14	0.02	-0.00	-0.08
Experience						
3 years and less	0.36	0.03	0.37	0.02	0.01	0.38
More than 3 years	0.54	0.03	0.51	0.02	-0.02	-0.67
Age						
17-24	0.09	0.02	0.11	0.02	0.02	0.91
25-34	0.28	0.03	0.32	0.02	0.03	1.01
35-44	0.29	0.03	0.27	0.02	-0.01	-0.41
45-54	0.21	0.02	0.18	0.02	-0.03	-1.17
55-64	0.13	0.02	0.12	0.02	-0.01	-0.25
Schooling						
Compulsory	0.41	0.03	0.43	0.02	0.02	0.56
High-school level	0.36	0.03	0.37	0.02	0.01	0.36
University level	0.19	0.02	0.17	0.02	-0.02	-0.60
Workers						
Swiss	0.53	0.03	0.50	0.02	-0.03	-0.82
C permit	0.31	0.03	0.31	0.02	-0.01	-0.17
Other	0.16	0.02	0.19	0.02	0.04	1.30
Placement prospects						
Good or excellent	0.61	0.03	0.60	0.02	-0.01	-0.22
Average	0.22	0.02	0.22	0.02	-0.01	-0.21
Poor	0.17	0.02	0.18	0.02	0.01	0.51
Number of observations	316	-	423	-	-	-

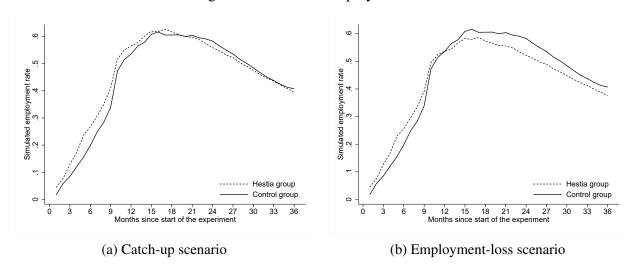
*Notes:* Socio-demographic characteristics of the individuals who found a job after the start of the experiment. Some categories may not add up to one due to missing observations. The sixth column calculates the difference between control and Hestia groups, defined as control minus treatment. The seventh column reports two-sided t-statistics on the differences.

Table 9: Cox regressions on job exits

	(1)	(2)	(3)	(4)	(5)
Hestia × 1-3 months	0.253*	0.272*	0.242	0.247	0.241
	(0.15)	(0.16)	(0.16)	(0.16)	(0.16)
Hestia $\times$ 4-6 months	-0.036	0.022	-0.005	0.000	-0.006
	(0.27)	(0.28)	(0.28)	(0.28)	(0.28)
Hestia $\times$ 7-12 months	-0.343**	-0.362**	-0.395**	-0.384**	-0.396**
	(0.16)	(0.16)	(0.16)	(0.16)	(0.16)
Hestia $\times$ 13-18 months	0.657***	0.736***	0.687**	0.699***	0.686**
	(0.25)	(0.27)	(0.27)	(0.27)	(0.27)
Hestia $\times$ 19+ months	-0.158	-0.182	-0.235	-0.210	-0.235
	(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
Group 2/2			-0.654***		-0.655***
			(0.16)		(0.16)
Group 2/4				-0.248*	
				(0.15)	
Group 3/4				-0.849***	
				(0.20)	
Group 4/4				-0.274	
				(0.29)	
Control variables	No	Yes	Yes	Yes	Yes
Control for job search duration	No	No	No	No	Yes
Subjects	739	713	713	713	713
Failures	586	565	565	565	565

Notes: Point estimates of Cox regressions on transitions back to unemployment. The origin is defined as the beginning of a new employment spell after the start of the experiment, while failure is the loss of the job. Control variables include: gender, age, marital status, schooling, nationality, mother tongue, residence permit, professional qualifications, placement prospects, OCE job code, and cohort number. Robust standard errors in parentheses. p < 0.10, p < 0.05, p < 0.01.

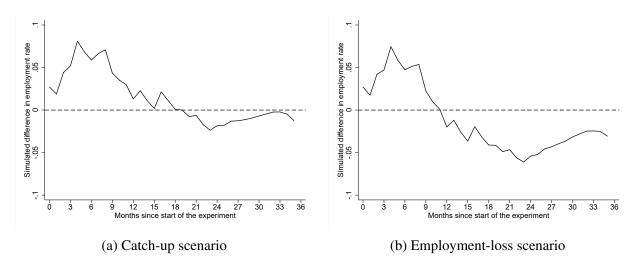
Figure 7: Simulated employment levels



*Notes:* Simulated employment rates between the group assigned to Hestia, and the control group. On the left, individuals from each group find jobs at a rate specific to their own group but lose them at the rate of the control group. On the right, individuals from both groups find jobs and lose them at rates specific to their own group.

Source: Authors' own calculations.

Figure 8: Difference in simulated employment levels



*Notes:* Difference in simulated employment rates between the group assigned to Hestia, and the control group. On the left, individuals from each group find jobs at a rate specific to their own group but lose them at the rate of the control group. On the right, individuals from both groups find jobs and lose them at rates specific to their own group. *Source:* Authors' own calculations.

Table 10: Bounds on the probability of finding a better paid job

Type of bounds	Lower bound	Upper bound
Worst-case selection	-0.489	0.511
Negative selection	0.038	0.511
Positive selection	-0.489	0.038

*Notes:* Bounds on the probability of earning more in the new job than in the last one. Worst-case bounds make no assumption on the selection process, negative selection bounds assume that individuals in the Hestia group are more likely to experience a decrease in work income conditional on treatment assignment, while positive selection bounds assume the opposite.

Source: Authors' own calculations.

Table 11: Effects on work income growth

	(1)	(2)
Hestia	0.006	-0.021
	(0.10)	(0.10)
Control variables	Yes	Yes
Control for job entry timing	No	Yes
Adjusted $R^2$	0.010	0.017
Individuals	674	674

*Notes:* Point estimates of OLS regressions on the change in log work income. Control variables include: gender, age, marital status, schooling, nationality, mother tongue, residence permit, professional qualifications, placement prospects, OCE job code, and cohort number. Model (2) adds controls for the timing of the job entry, which are dummy variables equal to one if the individual has been placed in the first three months, in months four to six, in months seven to twelve, etc. The base category in model (2) is being placed in the first three months of the experiment. Robust standard errors in parentheses. \*p < 0.10,\*\*p < 0.05,\*\*\*p < 0.01.

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