Additional Appendix to "Get Training or Wait? Long–Run Employment Effects of Training Programs for the Unemployed in Germany"

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Contents

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1 Estimation Results for the Propensity Score

1.1 Sample Sizes

Cohort 86/87, West Germany			
	Stratum 1	Stratum 2	Stratum 3
Waiting	20153	9440	6364
PF	74	60	69
SPST	503	257	176
RT	172	101	71

Cohort 93/94, West Germany			
	Stratum 1	Stratum 2	Stratum 3
Waiting	24223	13751	9244
PF	102	102	86
SPST	528	481	669
RT	198	138	106

1.2 Variable Definitions

Table 1: Variable Definitions

Label	Definition
Personal Attributes	
aXXYY	Age at start of unemployment $\geq$XX and $\leq$ YY
age	Age at start of unemployment
female	Female
foreign	No German citizenship
kids	Has dependent children
married	Married
qual_u	No vocational training degree
qual_l	No vocational training degree or education information missing
qual_m	Vocational training degree
qual_h	University/College degree
Last Employment	
BER1	Apprentice
BER2	Blue Collar Worker
BER3	White Collar Worker
BER4	Worker at home with low hours or BER missing
BER5	Part–time working
pearn	Daily earnings $\geq$ 15 Euro per day in 1995 Euro
earncens	Earnings censored at social security taxation threshold
earn	Daily earnings if pearn=1 and earncens=0, otherwise zero
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Table 1: Variable Definitions <continued>

Label	Definition
logearn	log(earn) if pearn=1 and earncens=0, otherwise zero
logearnsq	logearn squared
earnp90	Daily earnings above 90th percentile
Last Employer	
industry1	Agriculture
industry2	Basic materials
industry3	Metal, vehicles, electronics
industry4	Light industry
industry5	Construction
industry6	Production oriented services, trade, banking
industry7	Consumer oriented services, organization and social services
frmsize1	Firm Size (employment) missing or ≤ 10
frmsize2	Firm Size (employment) > 10 and ≤ 200
frmsize3	Firm Size (employment) > 200 and ≤ 500
frmsize4	Firm Size (employment) > 500
Employment and Program History	
preexM	Employed M (M=6, 12, 24) month before unemployment starts
preex60cumst	Number of months employed in the last 60 months before unemployment starts, standardized
preex60sq	preex60cumst squared
pretxY	Participation in any ALMP program reported in our data in year(s) Y (Y=1, 2, 3–5) before unemployment starts
Regional Information	
state6	Schleswig-Holstein/Hamburg
state7	Niedersachsen-Bremen
state8	Nordrhein-Westfalen
state9	Hessen
state10	Rheinland-Pfalz/ Saarland
state11	Baden-Württemberg
state12	Bayern
denst	population density (standardized)
densq	denst squared
R1	Population density <100 inhabitants per square kilometer, Rural area
R2	Population density $\geq$100 and $<$ 150, Medium population density
R3	Population density $\geq$150 and $<$ 400, Dense area
R4	Population density $\geq$400, Metropolitan area
ur	Unemployment rate at district level (Kreis), 80s
ursq	ur squared
urtb	Unemployment rate at district level (Kreis), 90s
urtbsq	urtb squared

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Table 1: Variable Definitions <continued>

Label	Definition
urtb100	urtb/100
Calendar Time of Entry into Unemployment	
tnull	First unemployment month (months counted from January 1960)
uentry	First unemployment month (months counted from January 1986 (1993) in the 80s (90s))
uentry2	uentry squared
yYY	Unemployment begins in year YY
qQ	Unemployment begins in quarter Q of the year
yYYqQ	Unemployment begins in quarter Q of year YY
Interaction of Variables	
f_	female
for_	foreign

All variables are defined at the time of entry into unemployment and constant during the unemployment spell.

1.3 Results of Propensity Score Estimations and Balancing Tests

Remark: The propensity score tables show the estimated coefficients of the probit regressions of the conditional probability to participate in the first of the two treatments mentioned in the header. The estimations are carried out separately for each time window of elapsed unemployment duration (Stratum 1, 2, and 3). Standard errors are in parentheses. *, **, *** means significant at the 10%, 5%, 1% level, respectively, in a two–sided test. Each probit table is followed by two tables indicating how many regressors pass the Smith/Todd (2005) balancing test at different significance levels using a cubic and a quartic of the propensity score, respectively. Graphs with the densities of the propensity scores are in the next subsection.

Treatment PF vs Waiting, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
state10	0.327 (0.140)**		
state79	0.479 (0.090)***		
a2529			0.362 (0.315)
a2534		0.104 (0.197)	
a3034	-0.073 (0.124)		0.829 (0.307)***
a3539	-0.020 (0.136)	0.050 (0.233)	
a3544			0.734 (0.333)**
a4044	-0.129 (0.154)	0.107 (0.239)	
a4549	-0.070 (0.141)	0.240 (0.223)	0.487 (0.267)*
a5055	-0.308 (0.177)*		
ur	0.094 (0.067)	0.149 (0.085)*	0.265 (0.095)***
ursq	-0.005 (0.003)*	-0.007 (0.004)*	-0.011 (0.004)***
densq			0.094 (0.042)**
denst			-0.183 (0.081)**
earn			-0.021 (0.009)**
f_BER3		0.191 (0.198)	
f_a3034		0.546 (0.218)**	
f_a3539		0.439 (0.306)	
f_a3544	0.355 (0.200)*		
f_preex60cumst			-0.089 (0.090)
female	-0.388 (0.126)***	-0.709 (0.202)***	-0.468 (0.117)***
frmsize23	0.211 (0.089)**	0.148 (0.116)	
frmsize4		0.273 (0.154)*	
logearn	0.018 (0.071)	0.038 (0.066)	
logearnsq			0.099 (0.048)**
married			-0.218 (0.107)**
pearn	-0.374 (0.384)		
preex12			-0.305 (0.130)**
preex24	0.205 (0.117)*	-0.181 (0.098)*	
preex60cumst	-0.063 (0.057)		0.189 (0.073)***
preex60sq	0.084 (0.037)**		0.113 (0.043)***
pretx1			-0.423 (0.281)
pretx2			0.652 (0.208)***
pretx35			-0.232 (0.206)
qual_l		-0.528 (0.334)	
qual_l_a2539		0.866 (0.356)**	
qual_m_a3544			0.088 (0.189)
qual_m_a4555			0.036 (0.263)
uentry		0.036 (0.028)	0.010 (0.007)
uentry2		-0.002 (0.001)	
y86q2	0.705 (0.317)**		
y86q34	0.779 (0.290)***		
y87q1	0.812 (0.292)***		
y87q2	0.926 (0.303)***		
y87q3	1.050 (0.295)***		
y87q4	0.848 (0.296)***		
_cons	-3.935 (0.535)***	-3.496 (0.555)***	-4.605 (0.677)***
N	20227	9500	6433

Treatment PF vs Waiting, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	21	22	23	23
Stratum 2	16	17	17	18
Stratum 3	16	21	21	22

Treatment PF vs Waiting, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	15	17	17	23
Stratum 2	15	15	16	18
Stratum 3	12	14	17	22

Treatment SPST vs Waiting, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER1	-0.003 (0.194)		
BER2		-0.067 (0.126)	-0.117 (0.121)
BER3	0.302 (0.054)***	0.275 (0.170)	0.202 (0.112)*
BER3_a2539		-0.120 (0.127)	
industry3	0.317 (0.065)***		0.163 (0.146)
industry4	0.098 (0.080)		0.081 (0.160)
industry5	-0.161 (0.076)**		
industry6	0.230 (0.050)***		0.112 (0.129)
industry7			0.014 (0.132)
a2529	0.404 (0.091)***		1.075 (0.235)***
a3034	0.382 (0.094)***	-0.030 (0.102)	1.192 (0.236)***
a3539	0.445 (0.096)***	0.110 (0.226)	
a3544			0.814 (0.256)***
a4044	0.213 (0.118)*	-0.096 (0.231)	
a4549	0.233 (0.103)**	-0.023 (0.238)	0.727 (0.191)***
a5055		-0.504 (0.248)**	
ur			0.134 (0.059)**
ursq			-0.006 (0.003)**
denst			0.038 (0.034)
earncens	0.372 (0.232)	0.624 (0.240)***	
f_BER2	-0.292 (0.094)***		
f_BER3		0.063 (0.134)	
f_industry7		-0.224 (0.095)**	
f_a2529		-0.069 (0.126)	
f_a3544			0.101 (0.168)
f_a4044	0.355 (0.125)***		
f_a4555			0.626 (0.205)***
female	0.105 (0.056)*	0.012 (0.113)	-0.217 (0.100)**
for_age		-0.009 (0.003)***	
foreign	-0.109 (0.083)		-0.327 (0.142)**
logearn	0.107 (0.044)**		
logearnsq		0.032 (0.010)***	
m_industry5			-0.755 (0.293)***
married	-0.120 (0.042)***	-0.191 (0.059)***	-0.238 (0.073)***
preex12	0.129 (0.049)***		
preex60cumst	-0.045 (0.022)**	-0.033 (0.029)	
preex60sq			0.002 (0.033)
preex60sq_a3544		0.125 (0.039)***	0.145 (0.056)***
pretx1	0.204 (0.096)**	0.235 (0.122)*	0.372 (0.150)**
pretx2	0.071 (0.095)		
pretx35	0.066 (0.072)		
qual_h	0.277 (0.108)**	0.387 (0.196)**	
qual_h_a3544		-0.224 (0.299)	
qual_h_a4555		0.252 (0.349)	
qual_m	0.261 (0.072)***	0.316 (0.143)**	
qual_m_a3544		-0.224 (0.208)	
qual_m_a4555		0.077 (0.240)	
uentry	0.024 (0.010)**		
uentry2	-0.001 (0.000)*	-0 (0.000)***	
y86q2			-0.267 (0.141)*
y86q3			-0.046 (0.127)
y86q4			-0.120 (0.131)
y87q1			-0.245 (0.134)*
y87q2			-0.188 (0.134)
y87q3			-0.399 (0.146)***
y87q4			-0.016 (0.124)
_cons	-3.345 (0.213)***	-2.508 (0.233)***	-3.316 (0.419)***
N	20656	9697	6540

Treatment SPST vs Waiting, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	24	26	26	27
Stratum 2	20	25	26	26
Stratum 3	24	27	27	29

Treatment SPST vs Waiting, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	19	23	25	27
Stratum 2	19	21	24	26
Stratum 3	20	22	23	29

Treatment RT vs Waiting, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER3			-0.099 (0.121)
state10	-0.074 (0.128)	-0.275 (0.186)	
state11	0.081 (0.101)	-0.088 (0.140)	
state12		-0.245 (0.149)*	
state6		0.026 (0.132)	-0.030 (0.183)
state612	-0.175 (0.086)**		
state7	-0.089 (0.099)	-0.141 (0.128)	
state710			0.347 (0.108)***
state9	0.200 (0.100)**	0.077 (0.139)	
a2529	0.837 (0.146)***	0.994 (0.301)***	
a2534			0.760 (0.356)**
a3034	0.848 (0.150)***	1.062 (0.303)***	
a3539		0.666 (0.320)**	0.669 (0.425)
a3544	0.658 (0.151)***		
a4044		0.682 (0.326)**	0.400 (0.431)
a4549		0.449 (0.339)	
densq	-0.036 (0.029)	-0.170 (0.077)**	
denst	0.110 (0.049)**	0.119 (0.072)*	0.061 (0.047)
f_densq		0.072 (0.080)	
f_preex60cumst		-0.137 (0.076)*	
f_qual_h	0.341 (0.144)**		
f_uentry			0.009 (0.014)
female	-0.112 (0.070)	-0.585 (0.219)***	-0.196 (0.196)
foreign	-0.340 (0.130)***	-0.577 (0.205)***	-0.209 (0.188)
logearn	0.074 (0.061)	0.061 (0.055)	
logearnsq			0.028 (0.017)*
m_BER2		-0.420 (0.207)**	
m_BER3		-0.318 (0.228)	
pearn	-0.290 (0.329)		-0.633 (0.355)*
preex12	0.147 (0.073)**		
preex60cumst	-0.150 (0.035)***	-0.114 (0.064)*	
preex60cumst_a2534			-0.072 (0.055)
preex60cumst_a3544	0.164 (0.066)**	0.233 (0.104)**	-0.018 (0.079)
preex60sq		-0.061 (0.039)	
pretx1	0.267 (0.118)**		
qual_h			0.156 (0.263)
qual_h_a3544			0.587 (0.422)
qual_m			-0.138 (0.453)
qual_m_a2534			0.316 (0.472)
qual_m_a3544			0.423 (0.526)
uentry		-0.003 (0.006)	0.001 (0.010)
y86q2			0.362 (0.147)**
y86q23	0.155 (0.120)		
y86q4	0.208 (0.125)*		
y87q1	0.192 (0.119)		
y87q2	0.235 (0.136)*		
y87q3	0.371 (0.124)***		
y87q4	0.342 (0.119)***		
_cons	-3.308 (0.292)***	-2.609 (0.411)***	-2.950 (0.441)***
N	20325	9541	6435

Treatment RT vs Waiting, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	24	24	24	25
Stratum 2	19	22	23	24
Stratum 3	18	20	20	21

Treatment RT vs Waiting, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	15	19	22	25
Stratum 2	11	12	15	24
Stratum 3	13	14	17	21

Treatment PF vs SPST, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
R1	0.528 (0.226)**		
a2534	-0.197 (0.147)		
densq			0.134 (0.078)*
denst			-0.304 (0.139)**
f_BER3	-0.621 (0.275)**		
f_preex6		-1.006 (0.390)***	
f_preex60sq		-0.261 (0.129)**	
f_tnull	0.037 (0.011)***		
female		1.510 (0.741)**	-0.868 (0.200)***
foreign	0.437 (0.256)*	0.691 (0.318)**	
logearn	0.729 (0.330)**		1.170 (0.446)***
logearnsq	-0.181 (0.069)***	-0.066 (0.034)**	-0.232 (0.086)***
m_logearn		0.301 (0.189)	
m_tnull	0.039 (0.012)***		
preex6	-0.342 (0.167)**		
qual_mh		-0.753 (0.235)***	
qual_u			0.651 (0.227)***
tnull		0.014 (0.013)	
_cons	-13.225 (3.797)***	-4.685 (4.442)	-1.449 (0.647)**
N	577	317	245

Treatment PF vs SPST, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	8	9	9	9
Stratum 2	8	8	8	8
Stratum 3	5	5	6	6

Treatment PF vs SPST, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	8	9	9	9
Stratum 2	8	8	8	8
Stratum 3	6	6	6	6

Treatment PF vs RT, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
state10	0.831 (0.335)**		
state12	0.580 (0.299)*		
state7	0.868 (0.266)***		
state9	0.634 (0.270)**		
industry7		-0.707 (0.275)**	
a2529		-1.428 (0.418)***	-1.199 (0.326)***
a3034		-1.033 (0.410)**	-0.616 (0.318)*
a3539		-0.592 (0.473)	-0.663 (0.349)*
a4044		-0.822 (0.543)	
ur100			30.948 (21.463)
ursq			-141.761 (95.828)
densq	0.103 (0.099)	0.352 (0.147)**	
denst	-0.221 (0.157)	-0.524 (0.187)***	
f_a2534	-1.197 (0.386)***		
f_preex12	-0.317 (0.489)		
f_preex24	0.924 (0.546)*		
female	-1.041 (0.705)		-0.544 (0.239)**
foreign		1.455 (0.437)***	
m_a2534	-1.121 (0.376)***		
m_a3544	-0.868 (0.403)**		
married		-0.356 (0.237)	
tnull	0.007 (0.015)		
_cons	-2.379 (4.870)	0.632 (0.411)	-0.713 (1.168)
N	246	161	140

Treatment PF vs RT, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	12	12	13	13
Stratum 2	8	8	9	9
Stratum 3	6	6	6	6

Treatment PF vs RT, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	12	13	13	13
Stratum 2	8	8	9	9
Stratum 3	6	6	6	6

Treatment RT vs SPST, Cohort 86/87 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER2			0.327 (0.175)*
BER3	-0.474 (0.118)***		
state1012		-0.450 (0.209)**	
a2529			1.051 (0.382)***
a2534	1.004 (0.251)***	1.033 (0.263)***	
a3034			0.914 (0.393)**
a3539			1.132 (0.406)***
a3544	0.701 (0.265)***	0.392 (0.293)	
a4044			0.759 (0.451)*
densq	-0.111 (0.053)**	-0.119 (0.068)*	
denst	0.210 (0.086)**		
earnp90		-0.411 (0.265)	
f_preex60cumst		-0.465 (0.162)***	
f_preex60sq		-0.269 (0.093)***	
preex60cumst	-0.170 (0.070)**		
preex60sq	-0.031 (0.053)		
qual_h		-0.776 (0.330)**	
qual_m		-0.710 (0.229)***	
qual_u	0.463 (0.185)**		
y87	0.299 (0.112)***		
_cons	-1.453 (0.267)***	-0.372 (0.316)	-1.624 (0.359)***
N	675	358	247

Treatment RT vs SPST, Cohort 86/87 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	9	9	9	9
Stratum 2	8	9	9	9
Stratum 3	5	5	5	5

Treatment RT vs SPST, Cohort 86/87 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	9	9	9	9
Stratum 2	8	9	9	9
Stratum 3	5	5	5	5

Treatment PF vs Waiting, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER2	0.225 (0.154)	0.192 (0.152)	-0.157 (0.197)
BER3	0.275 (0.153)*	0.211 (0.156)	-0.492 (0.241)**
state10	0.216 (0.127)*		0.078 (0.186)
state1112			0.068 (0.143)
state67			0.367 (0.120)***
state7	0.263 (0.101)***	0.259 (0.091)***	
state9	0.207 (0.108)*		0.085 (0.181)
industry6			-0.120 (0.126)
a3034	0.130 (0.104)	-0.276 (0.122)**	
a3539	0.124 (0.114)	0.046 (0.110)	0.373 (0.129)***
a4044		-0.075 (0.132)	0.368 (0.134)***
a4049	0.274 (0.097)***		
a4549		-0.086 (0.139)	0.311 (0.147)**
a5055	-0.304 (0.173)*	-0.276 (0.138)**	0.071 (0.163)
urtb	-0.015 (0.016)		0.275 (0.130)**
urtbsq			-0.013 (0.007)**
densq		0.012 (0.034)	0.087 (0.040)**
denst	-0.013 (0.038)	-0.074 (0.060)	-0.211 (0.080)***
f_BER3			1.107 (0.260)***
f_industry6			0.338 (0.204)*
f_a4055		0.236 (0.156)	
f_a5055			0.518 (0.223)**
f_logearn	0.141 (0.128)	0.109 (0.111)	
f_qual_m	0.670 (0.221)***		
f_uentry	0.018 (0.010)*		
female	-1.233 (0.559)**	0.014 (0.399)	-0.977 (0.219)***
foreign		0.070 (0.100)	-0.202 (0.138)
logearnsq	-0.009 (0.010)		0.004 (0.011)
m_logearn		0.152 (0.089)*	
m_pretx35			0.362 (0.137)***
married			-0.215 (0.097)**
pearn		-0.794 (0.420)*	
preex12			-0.171 (0.117)
preex24	0.119 (0.079)		
preex60cumst		-0.014 (0.041)	0.119 (0.058)**
preex60sq	-0.028 (0.046)		
pretx35	0.240 (0.091)***		
qual_m		0.205 (0.093)**	
uentry	-0.007 (0.007)		-0.012 (0.007)*
y93q2		-0.251 (0.148)*	
y93q3		-0.065 (0.127)	
y93q4		-0.162 (0.132)	
y94q1		-0.117 (0.132)	
y94q2		-0.175 (0.150)	
y94q3		-0.125 (0.139)	
y94q4		-0.319 (0.155)**	
_cons	-2.824 (0.264)***	-2.391 (0.380)***	-3.505 (0.686)***
N	24325	13853	9330

Treatment PF vs Waiting, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	19	19	19	20
Stratum 2	23	24	25	25
Stratum 3	23	25	25	26

Treatment PF vs Waiting, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	14	18	19	20
Stratum 2	17	17	19	25
Stratum 3	20	22	24	26

Treatment SPST vs Waiting, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER1			0.481 (0.169)***
BER2	-0.124 (0.073)*	-0.088 (0.082)	0.039 (0.077)
BER3	0.270 (0.071)***	0.110 (0.083)	0.151 (0.080)*
state10	0.199 (0.070)***	0.222 (0.085)***	
state11	-0.123 (0.063)*	0.031 (0.069)	
state12	-0.027 (0.055)	0.096 (0.069)	
state6	-0.047 (0.075)	-0.003 (0.088)	
state7	-0.100 (0.065)	0.021 (0.073)	
state9	-0.118 (0.073)	-0.128 (0.085)	
industry3	0.147 (0.076)*	-0.058 (0.086)	0.038 (0.080)
industry4	-0.010 (0.090)	0.076 (0.094)	0.007 (0.091)
industry5	-0.057 (0.094)	-0.377 (0.120)***	-0.223 (0.106)**
industry6	0.073 (0.072)	-0.003 (0.080)	0.026 (0.076)
industry7	-0.127 (0.079)	-0.195 (0.088)**	-0.085 (0.081)
a3034	0.019 (0.054)	0.097 (0.063)	0.155 (0.062)**
a3539	-0.065 (0.069)	0.162 (0.068)**	0.189 (0.075)**
a4044		-0.483 (0.157)***	-0.283 (0.119)**
a4049	-0.085 (0.064)		
a4549		-0.654 (0.162)***	-0.482 (0.128)***
a5055	-0.460 (0.082)***	-0.891 (0.161)***	-0.914 (0.128)***
urtb			-0.014 (0.008)*
densq		0.036 (0.018)**	
denst		-0.033 (0.037)	
earncens	0.023 (0.190)	0.362 (0.335)	-0.298 (0.306)
f_industry5		0.851 (0.235)***	
f_a2534	-0.192 (0.078)**		-0.402 (0.107)***
f_a3544			-0.185 (0.109)*
f_for_a2539		-0.181 (0.093)*	
f_married			-0.183 (0.066)***
f_qual_h			-0.623 (0.177)***
f_qual_m			-0.249 (0.086)***
female	0.034 (0.058)	0.009 (0.081)	0.428 (0.118)***
for_a2534	-0.301 (0.098)***		
for_a2539		-0.205 (0.084)**	
for_a3544	-0.209 (0.119)*		
foreign			-0.331 (0.062)***
frmsize2	0.103 (0.046)**		
frmsize3	0.225 (0.068)***		
frmsize4	0.192 (0.064)***		
logearn	-0.010 (0.036)	0.104 (0.070)	-0.001 (0.063)
married		-0.111 (0.047)**	
pearn		-0.355 (0.319)	0.484 (0.306)
preex12	0.138 (0.049)***	0.087 (0.060)	
preex60cumst		0.023 (0.030)	0.020 (0.025)
preex60sq	0.050 (0.025)**	-0.028 (0.030)	
pretx1		-0.033 (0.125)	0.105 (0.122)
pretx2		0.252 (0.097)***	0.021 (0.101)
pretx35		0.103 (0.068)	0.239 (0.063)***
qual_h		0.133 (0.114)	
qual_h_a4055		0.578 (0.203)***	0.571 (0.169)***
qual_m		-0.026 (0.073)	
qual_m_a4055		0.571 (0.145)***	0.487 (0.104)***
y93q2		0.109 (0.110)	-0.011 (0.082)
y93q3		0.225 (0.103)**	0.058 (0.079)
y93q4		0.400 (0.098)***	0.104 (0.079)
y94q1		0.512 (0.096)***	0.124 (0.079)
y94q2	0.390 (0.055)***	0.507 (0.100)***	0.097 (0.084)
y94q3	0.311 (0.056)***	0.567 (0.097)***	0.160 (0.081)**
y94q4	0.409 (0.052)***	0.554 (0.097)***	0.021 (0.084)
_cons	-2.308 (0.168)***	-2.229 (0.229)***	-1.913 (0.241)***
N	24751	14232	9913

Treatment SPST vs Waiting, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	29	30	30	31
Stratum 2	42	44	44	45
Stratum 3	33	37	37	37

Treatment SPST vs Waiting, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	29	30	30	31
Stratum 2	37	40	43	45
Stratum 3	34	36	36	37

Treatment RT vs Waiting, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER2	0.312 (0.103)***	0.048 (0.124)	0.215 (0.145)
BER3	0.017 (0.107)	0.111 (0.127)	0.234 (0.152)
state11		-0.211 (0.106)**	
state1112	-0.174 (0.072)**		
state12		-0.210 (0.108)*	
industry3	-0.089 (0.108)		
industry4	-0.096 (0.122)		
industry5	-0.253 (0.129)*		
industry67	0.050 (0.092)		
a2529		1.028 (0.188)***	0.424 (0.114)***
a3034	-0.042 (0.069)	1.021 (0.181)***	0.605 (0.109)***
a3539		0.811 (0.181)***	0.559 (0.119)***
a3544	-0.556 (0.156)***		
a4044		0.612 (0.184)***	
a4549	-0.497 (0.135)***		
a5055	-0.822 (0.155)***		
urtb	0.019 (0.013)		
denst	-0.013 (0.030)	-0.083 (0.035)**	
f_age		0.016 (0.011)	
f_preex12		0.594 (0.197)***	
f_preex60cumst	-0.078 (0.055)	-0.285 (0.081)***	
f_qual_m	0.331 (0.133)**		
female	-0.216 (0.116)*	-1.137 (0.397)***	
for_age	0.015 (0.012)	-0.009 (0.003)**	
foreign	-0.951 (0.447)**		-0.227 (0.115)**
frmsize2	0.121 (0.068)*		
frmsize34	0.267 (0.078)***		
logearnsq			0.012 (0.010)
m_preex60cumst	-0.091 (0.047)*		
preex12	0.116 (0.072)		
preex24	0.181 (0.078)**		
preex60cumst		0.071 (0.046)	-0.043 (0.043)
pretx35			0.310 (0.103)***
qual_h		-0.462 (0.209)**	
qual_m	-0.251 (0.086)***		
qual_m_a3544	0.462 (0.166)***		
uentry	0.015 (0.014)	0.012 (0.018)	
uentry2	-0.001 (0.001)	-0.001 (0.001)	
y94q34			-0.260 (0.108)**
_cons	-2.722 (0.216)***	-3.049 (0.224)***	-2.976 (0.196)***
N	24421	13889	9350

Treatment RT vs Waiting, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	25	26	26	27
Stratum 2	15	17	18	18
Stratum 3	8	10	10	10

Treatment RT vs Waiting, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	23	23	25	27
Stratum 2	12	12	12	18
Stratum 3	7	9	10	10

Treatment PF vs SPST, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER2	0.634 (0.204)***		
BER3			-0.708 (0.207)***
state10	0.185 (0.248)	-0.552 (0.329)*	
state11	-0.101 (0.274)	-0.585 (0.260)**	
state12	0.232 (0.215)	-0.033 (0.207)	
state6	0.062 (0.283)	0.163 (0.267)	0.277 (0.207)
state7	0.743 (0.216)***	0.343 (0.212)	0.627 (0.162)***
state9	0.665 (0.244)***	0.439 (0.252)*	
a2529	-0.356 (0.162)**		
a3034		-0.535 (0.245)**	
a3555		0.056 (0.165)	
a4044			0.188 (0.174)
a4549			0.327 (0.203)
a5055			0.718 (0.194)***
urtb100	-5.813 (2.990)*		
denst		-0.222 (0.068)***	
f_BER2	-0.303 (0.330)		
f_BER3			1.665 (0.340)***
f_a3034		-0.272 (0.411)	
f_logearn		-2.979 (1.379)**	
f_logearnsq		0.547 (0.195)***	
f_preex12	-0.295 (0.312)		
f_preex24	0.196 (0.242)		
f_preex6	-0.063 (0.310)		
f_qual_u	-1.233 (0.455)***		
f_tnull			-0.006 (0.018)
female	0.671 (0.331)**	2.948 (2.640)	-7.643 (8.579)
foreign		0.602 (0.201)***	
logearn		1.923 (1.307)	
logearnsq		-0.320 (0.170)*	
m_tnull			-0.023 (0.012)*
preex60sq	-0.175 (0.084)**		
qual_u	0.523 (0.233)**		
y93q2	0.196 (0.271)	-0.561 (0.317)*	
y93q3	0.208 (0.263)		
y93q34		-0.458 (0.241)*	
y93q4	-0.118 (0.271)		
y94q1	0.206 (0.269)	-0.797 (0.267)***	
y94q2	-0.297 (0.255)	-0.989 (0.292)***	
y94q3	-0.205 (0.249)	-0.847 (0.269)***	
y94q4	-0.681 (0.268)**	-1.246 (0.293)***	
_cons	-0.853 (0.399)**	-2.614 (2.603)	7.908 (4.722)*
N	630	583	755

Treatment PF vs SPST, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	24	24	24	24
Stratum 2	22	22	22	22
Stratum 3	10	10	10	10

Treatment PF vs SPST, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	23	24	24	24
Stratum 2	21	22	22	22
Stratum 3	7	9	10	10

Treatment PF vs RT, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER3	0.476 (0.197)**	-0.540 (0.308)*	
state10		0.224 (0.440)	
state11	0.323 (0.330)	0.061 (0.361)	
state12	0.748 (0.246)***	0.698 (0.310)**	
state6	0.480 (0.340)	0.623 (0.360)*	
state7	0.615 (0.242)**	0.810 (0.275)***	
state9		0.844 (0.347)**	
state910	0.602 (0.247)**		
industry7		-0.724 (0.246)***	
a3034		-0.228 (0.257)	
a3539	0.281 (0.228)		
a3544		0.608 (0.239)**	
a4044	0.654 (0.224)***		
a4549	0.710 (0.408)*	1.763 (0.450)***	
a5055	0.412 (0.453)	2.046 (0.631)***	
f_BER3		1.427 (0.481)***	
f_BER34			1.923 (0.524)***
f_state10			-0.236 (1.087)
f_state11			-0.768 (1.137)
f_state12			0.781 (0.754)
f_state6			0.054 (0.959)
f_state7			0.448 (0.744)
f_state9			0.206 (0.898)
f_a3539			-0.410 (0.592)
f_a4044		0.976 (0.536)*	
f_a4055			1.568 (0.546)***
f_a4549	0.818 (0.652)		
f_married			-0.503 (0.466)
f_qual_m	1.091 (0.487)**		
female	-1.111 (0.481)**	-0.804 (0.330)**	-0.353 (0.926)
foreign	0.502 (0.307)	0.602 (0.276)**	
m_BER25			1.370 (0.408)***
m_state10			0.971 (0.659)
m_state11			0.165 (0.421)
m_state12			-1.058 (0.642)*
m_state6			0.460 (0.501)
m_state7			0.984 (0.407)**
m_state9			-0.066 (0.510)
m_a3539			0.955 (0.351)***
m_a4055			2.325 (0.485)***
m_married			-1.142 (0.384)***
tnull		-0.018 (0.015)	
_cons	-1.212 (0.191)***	6.714 (5.956)	-1.844 (0.511)***
N	300	240	192

Treatment PF vs RT, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	13	13	13	14
Stratum 2	14	16	17	17
Stratum 3	20	20	21	21

Treatment PF vs RT, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	13	14	14	14
Stratum 2	15	17	17	17
Stratum 3	17	20	20	21

Treatment RT vs SPST, Cohort 93/94 West Germany			
	Stratum 1	Stratum 2	Stratum 3
BER2	0.808 (0.122)***		
state10	-0.512 (0.199)**	-0.384 (0.234)	
state11	-0.312 (0.186)*	-0.338 (0.194)*	
state12	-0.404 (0.151)***	-0.523 (0.185)***	
state79			0.278 (0.133)**
a2529		1.612 (0.505)***	
a3034		1.511 (0.507)***	
a3539	-0.241 (0.154)		
a3544			-0.323 (0.131)**
a3549		1.046 (0.502)**	
a4044	-0.286 (0.169)*		
a4549	-0.725 (0.233)***		
a4555			-0.799 (0.196)***
a5055	-0.896 (0.283)***		
f_BER2		0.743 (0.242)***	0.473 (0.215)**
f_married	-0.137 (0.179)		
f_preex60cumst		-0.180 (0.117)	
f_qual_m		0.382 (0.260)	
f_qual_u	-0.490 (0.297)*		
female	0.502 (0.163)***	-0.893 (0.303)***	-0.097 (0.164)
logearn			0.199 (0.127)
m_married	0.360 (0.148)**		
m_qual_h		-1.020 (0.359)***	
m_qual_m		-0.303 (0.196)	
married			0.354 (0.174)**
marriedBER2			-0.302 (0.217)
pearn			-0.658 (0.797)
qual_h			-0.458 (0.292)
qual_u	0.521 (0.183)***		
y93q2	-0.187 (0.250)	-0.427 (0.286)	
y93q3	0.237 (0.218)	-0.480 (0.265)*	
y93q4	-0.111 (0.224)	-0.630 (0.250)**	
y94q1	0.084 (0.220)	-0.567 (0.245)**	
y94q2	-0.215 (0.206)	-0.602 (0.270)**	
y94q3	-0.289 (0.214)	-0.933 (0.268)***	
y94q34			-0.340 (0.155)**
y94q4	-0.481 (0.209)**	-1.123 (0.270)***	
_cons	-0.900 (0.199)***	-0.949 (0.545)*	-1.088 (0.628)*
N	726	619	775

Treatment RT vs SPST, Cohort 93/94 West Germany, Cubic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	20	20	20	20
Stratum 2	17	18	18	19
Stratum 3	10	11	11	11

Treatment RT vs SPST, Cohort 93/94 West Germany, Quartic of Pscore				
	P-values>.1	P-values>.05	P-values>.01	Regressors
Stratum 1	17	18	20	20
Stratum 2	17	18	19	19
Stratum 3	11	11	11	11

1.4 Common Support

Figure 1: Densities of Propensity Scores for Cohort 86/87, West Germany

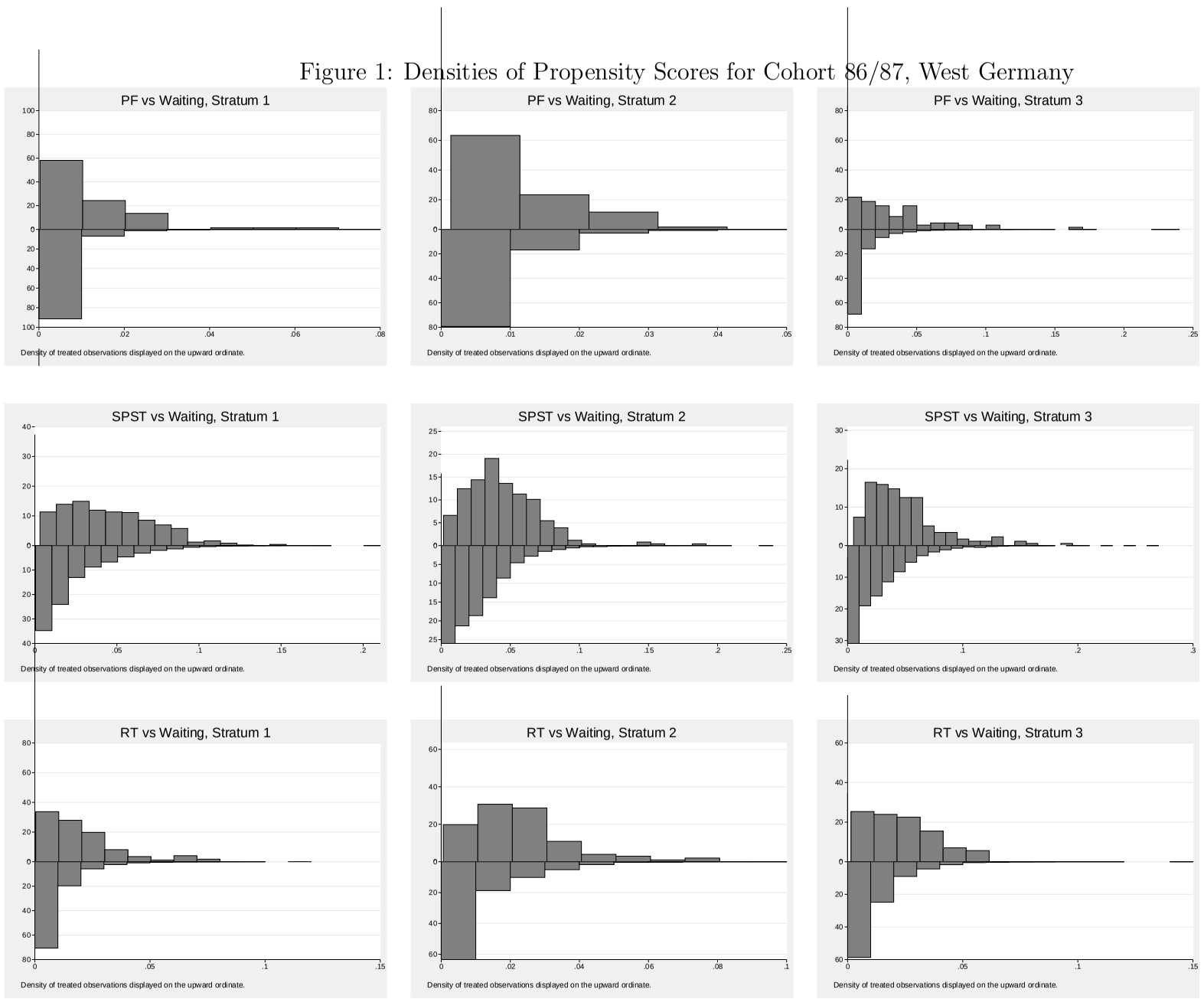


Figure 2: Densities of Propensity Scores for Cohort 86/87, West Germany

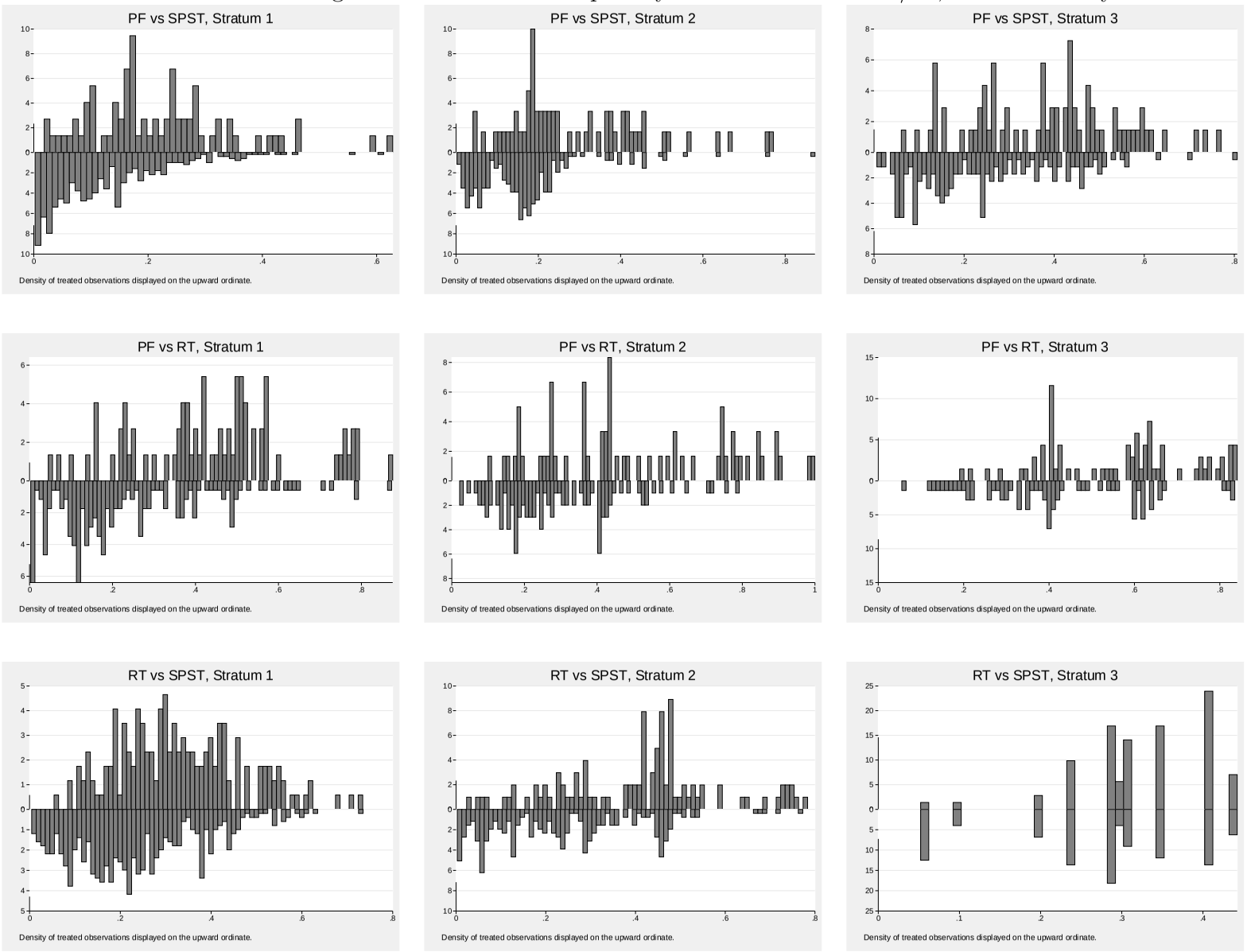


Figure 3: Densities of Propensity Scores for Cohort 93/94, West Germany

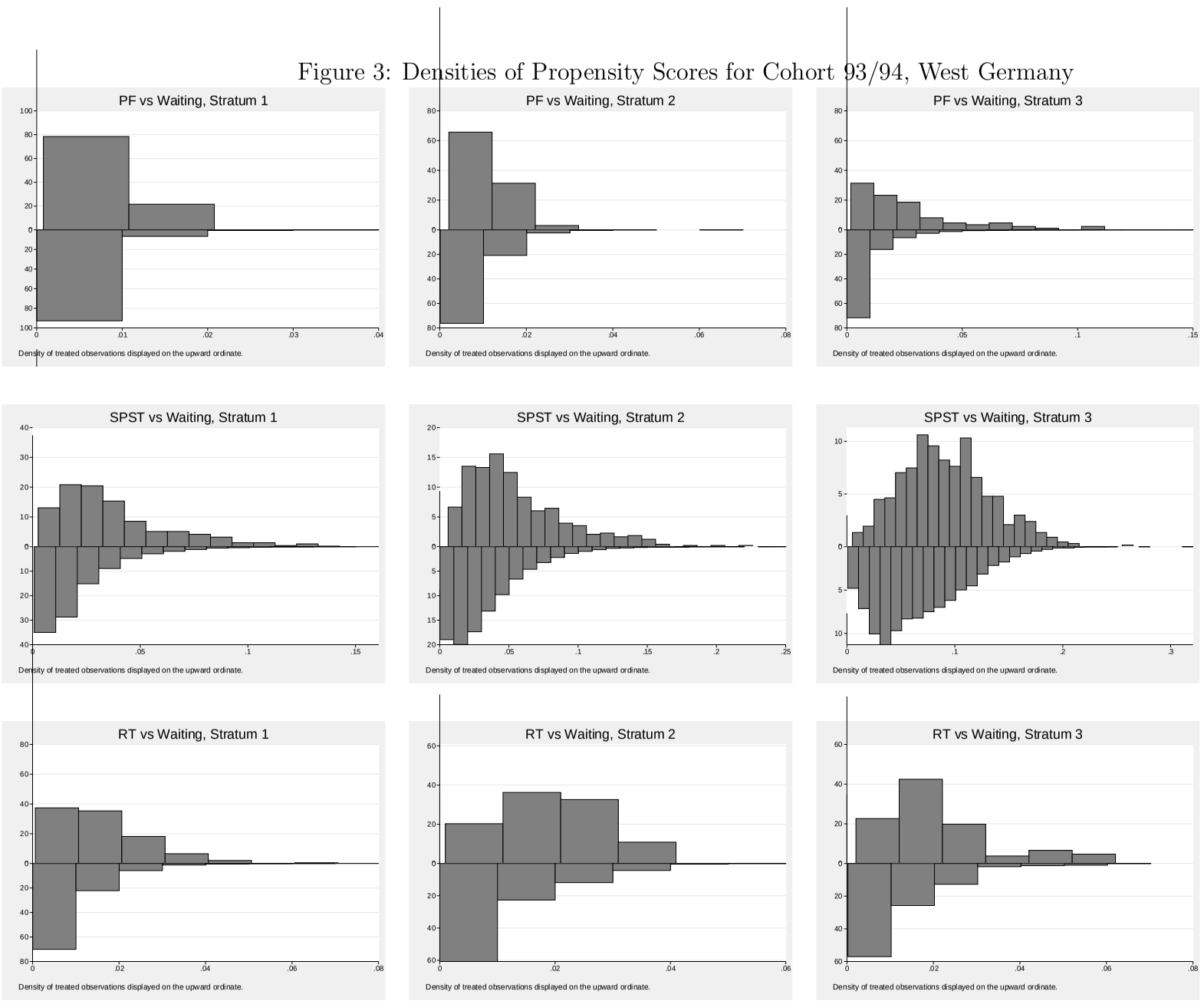
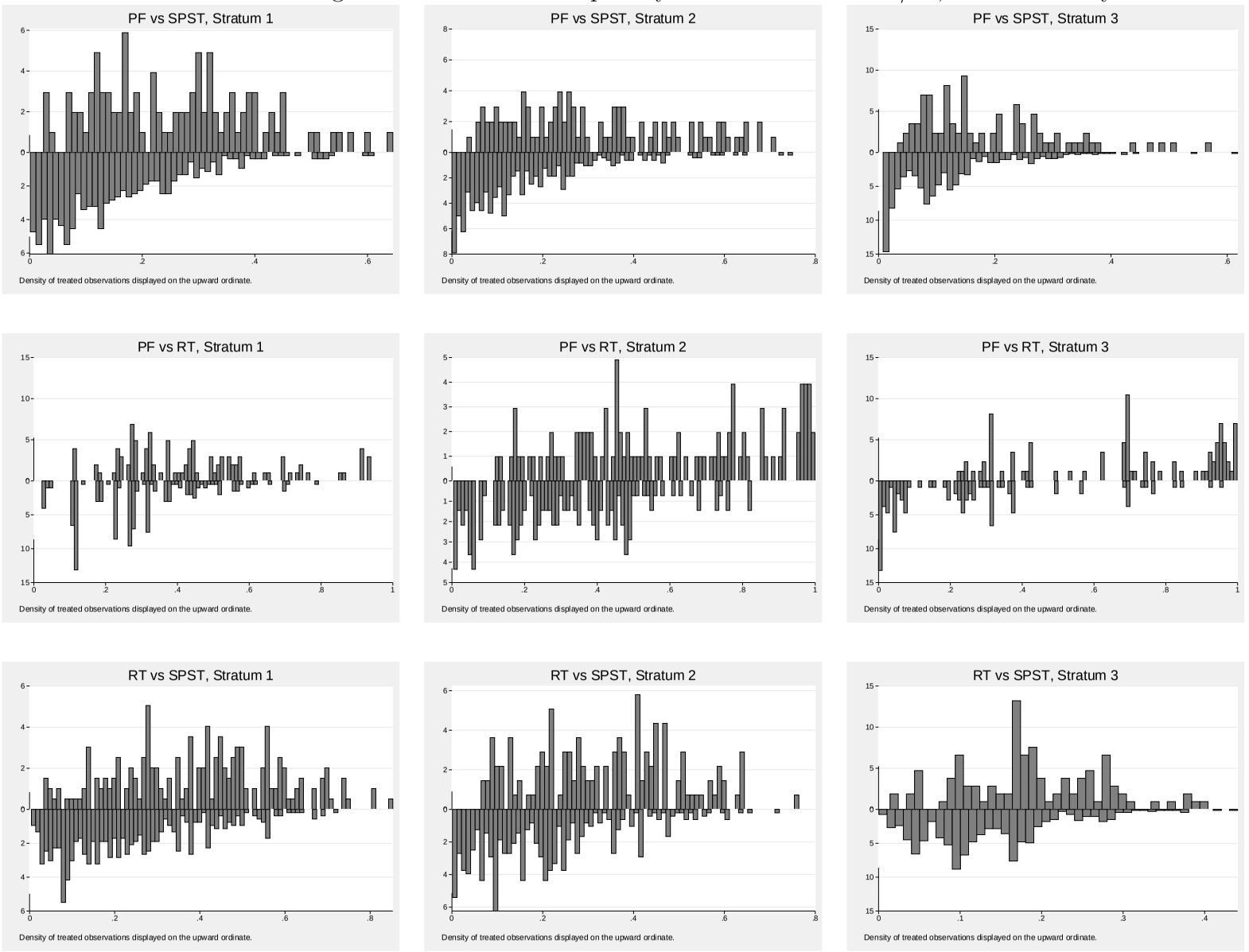


Figure 4: Densities of Propensity Scores for Cohort 93/94, West Germany



2 Information about the data

2.1 Other types of further training

In this study we are interested in active labor market programs for unemployed who have previously been employed and who have not already found a new job. However, we also want to give a short overview about other programs regulated by the labor promotion act (AFG) which we do not evaluate.

Short term programs according to §41a AFG
These programs last only about four weeks and were offered from 1979 until 1992. They are mainly intended to evaluate the participant's problems in finding regular employment. Starting 1993 such programs are no longer recorded as independent programs but as part of the regular counseling for unemployed. Hence we can not identifiy them in the inflow sample 1993/94. In order to make the samples comparable we treat the programs according to §41a in the 1986/87 inflow sample also as open unemployment. Thus if an unemployed first takes part in a §41a program and later in the same unemployment spell in Retraining we would consider the retraining the first program and evaluate it.

German Courses
The German Courses are intended for newly arrived immigrants. So the participants typically have not been employed in Germany before the German Course and hence are not part of the focus group of this study, the previously employed unemployed.

Career Advancement
These programs are typical programs directed at the employed, which were more important when the labor promotion act was introduced in 1969. By providing additional human capital the participant's risk of becoming unemployed should be lowered. Prime examples are courses in which the participants with a vocational training degree obtain additional certificates which allow them to independently run craftsman's establishments and to train trainees in the dual system of vocational training.

Wage subsidies
Wage subsidies are paid for the employment of formerly long-term unemployed and are intended to decrease the competitive disadvantage of these recruits for the period of familiarization with the skill requirement of the job. Even if the target group of wage subsidies are also unemployed we do not evaluate them because they require a job for which the wage subsidy is paid. This means provision of wage subsidies is already conditional on employment which is the success criteria for the other programs.

Any program which starts together with a job
For the same reasons why we do not evaluate wage subsidies we also do not evaluate any program which starts together with employment. Because we want to evaluate the program's effect on employment we do not consider programs which start

together with employment.

2.2 Construction of the monthly panel

The IABS employment and LED benefit payment data are daily register data whereas the FuU training data gives monthly information about program participation. This study uses the merged data as described in Bender et al. (2005). From the merged data we construct a monthly panel. If the original daily data contain more than one spell overlapping a specific month we take the information from the spell with the largest overlap as the spell defining the monthly information.

The defining condition to be part of our inflow sample into unemployment is a transition from an employment month to a nonemployment month, in which the last employment month was between December 1985 (1992) and November 1986 (1993) and thus the first unemployment month was between January 1986 (1993) and December 1987 (1994). In order to divide nonemployment (to be precise: not employed subject to social security contributions) into unemployment and other states (like labor market leavers, transition into self employment, employment as civil servant) we additionally require a month with benefit payments from the employment office within the first twelve month of nonemployment or indication of participation in any labor market program in one of our data to be part of the inflow sample in unemployment.

Later on we aggregate the information further from monthly to quarterly information. Whereas the monthly employment information is binary the quarterly employment information can take the values 0, 1/3, 2/3 or 1.

We identify program participation if a person starts a program while being in the defining unemployment spell. The participant must not be employed in in the first month of the program. Otherwise we would consider such a program as a program which starts together with a job which we do not evaluate. In this case we would treat such a person as being employed. The exact identification of the program types will be explained in the following.

2.3 Identifying program participation

We identify participation in a further training program from a combination of FuU training data information, the benefit payment information and the employment status information. In principle, every participant in a further training program should be recorded in the FuU training data and we would not need the benefit payment data for identification of participation. There are two reasons to use the benfit payment data as well. First we find the training data to be incomplete, many recipients of training related benefits are not contained in the training data.[1] Only

[1]Remember the purpose of the training data was only internal documentation. This might explain its incompleteness.

using the benefit payment data identifies these participants. Second, quite often the type of training in the training data is given very unspecific as "Other adjustment of working skills". The benefit payment data can give more information about these programs. Finally we need the employment status to identify participation because we only evaluate programs which start while being unemployed.

In the remaining part of this section we describe how we aggregated the benefit payment information and the training data information. The next section contains the exact coding plan. We disclose in detail which combination of information from benefit payment and training data we identify as PF, SPST or RT.[2]

Benefit payment information from the LED-data

The merged data we use contain three variables with benefit payment information from the original LED data, ("parallel original benefit information 1-3" [*Leistungsart im Original 1-3*] L1LA1, L2LA1, L3LA1). The main variable is L1LA1. If there are two parallel payment informations in the original data L1LA2 also contains information and only if there is a third parallel payment spell L3LA1 is also filled. In general we use L1LA1. Only if L1LA1 is not informative about program participation and L2LA1 is we use L2LA1 and only if L1LA1 and L2LA1 are not informative but L3LA1 we use L3LA1. The benefit payment information is given in time varying three-digit codes (for the coding plan see Bender et al. 2005). We extracted the program related information from the benefit payment information as given in table 2. The main distinction regarding program participation is the distinction between no benefits at all or unemployment benefits/assistance on the one hand and program related maintenance benefits on the other hand. There are five types of program related benefits. Most important for us are the more general maintenance benefits while in further training and the more specific maintenance benefits while in retraining.

Table 2: Aggregated types of benefit payment

German Abbreviation	Description
ALG	unemployment benefits
ALHi	unemployment assistance
UHG §41a	maintenance payment while in specific short term measure
UHG Fortbildung	maintenance payment while in further training
UHG Umschulung	maintenance payment while in retraining
UHG Darlehen	maintenance payment as a loan
UHG Deutsch	maintenance payment while in a German course

The original benefit payment information is given in three variables L1LA1, L2LA1 and L3LA1 with time varying three-digit codes.

[2]More details about the benefit payment data and training data can be found in Speckesser (2004), Fitzenberger and Speckesser (2005) and Bender et al. (2005).

Type of training from FuU-data

In this evaluation study one of the most important advantages compared to survey data is the information about the precise type of training. It allows us to identify homogeneous treatments for the evaluation. In the merging process, up to two parallel FuU-spells were merged to one spell of the IABS data because in many cases the FuU-data provided more than one parallel spell. These two parallel spells provide two variables indicating the type of course (*Maßnahmeart* [FMASART1, FMASART2]).

Correcting Type of training for 1986 The annual frequency for the type of training *14* in 1986 looks very different than in the years before and after. Additionally the distributions of the planned durations and the types of examination completing the program *14* in 1986 are different than in the adjacent years. We think this is due to a lacking recoding of *14* to *12*, which was necessary for the years until 1985 because the coding of FMASART changed over the years. Hence we recode *14* to *12* in 1986 if the planned duration is less than 10 month.

Aggregating the training type information Since type of treatment (*Maßnahmeart*) is often coded as "other adjustment"
(FMASART1=12 [*Sonstige Anpassungen*]) in the FuU-data, we increase the precision of information about the type of treatment by relying on the second parallel information about the type of training: The second FuU-spell is used if the first FuU-spell is coded as "other adjustment" (*"Sonstige Anpassungen"*) and a second spell includes a code different from 12. Such combined information of FMASART1 and FMASART2 is referred to as FMASART* in the following.

Combining the information

When using information from different sources, the sources may give differing information. If the training data indicated training participation and the benefit payment data did not or vice versa we relied on the source which indicated training for the following reasons. If somebody receives training related benefits it is more likely that the employment agency forgot to fill in the training data record than the agency wrongly induced payment of benefits. And if somebody is contained in the training data but does not receive maintenance benefits he either receives no benefits, which is possible while being in training, or receives unemployment benefits/assistance and the payment is just wrongly labelled.

If both training and benefit payment data indicate program participation but differ in the type of program we generally use the training data information. An example: the benefit payment indicates maintenance payments for further training and the training data indicates Retraining. We use Retraining from the training data. The only exception is unspecific program information from the training data "other

adjustment". If in such cases the benefit payment data give specific information like Retraining we use the information from benefit payment data. All possible combinations of training and benefit payment information which we use to identifiy participation in one of the three programs are given in the following section.

2.4 Coding plan for the treatment information

This section gives the exact coding plans for identification of Practice Firm, SPST and Retraining. In general we identify program participation as start of a program in an unemployment spell before another employment begins. This means that we only identify a start of a program if the employment status in the first month of the program indicates no employment (BTYP≠1).

Practice Firm

Practice Firm is a consolidation of the program types Practice enterprise and Practice studio from the FuU training data. There is no specific benefit payment type related to Practice Firms, rather the participants shall receive the general maintenance payment for further training. Since the training data are more reliable than the benefit payment data regarding type of the program we identify Practice Firm whenever FMASART shows the codes 11 or 12 independently of the payment information.

Program code	Label	Label in German
10	Practice enterprise	Übungsfirma
11	Practice studio	Übungswerkstatt

In table 3 we show how often which combination of benefit payment information and program type information identifies *Practice Firm* in the two inflow samples.

Table 3: Identification of *Practice Firm* with program type and benefit payment type: Frequencies

	Type of payment					
	no benefits	UB/UA	maintenance benefits for short term training	maintenance benefits for further training	retraining	
Program						Total
Practice enterprise	4	5	1	198	2	210
Practice studio	11	19	0	311	20	361
Total	15	24	1	509	22	571

Both inflow samples together. BTYP≠1 as an additional requirement.

Provision of specific professional skills and techniques

We identify SPST in the following cases.

(a) Identification from training data and benefit payment data
We identify SPST if the training data indicates the general program "Other adjustment" and the benefit payment information is no benefit payments, unemployment benefits, unemployment assistance or maintenance payments while in retraining.

Program code	Label	Label in German
12	Other adjustment of working skills	sonst. Anpassung der berufl. Kenntnisse

(b) Reliance on benefit payment data
We identify SPST if the program information from the training data is missing and the benefit payment information is maintenance payments while in further training.

Program code	Label	Label in German
-9	missing	fehlende Angabe

(c) Additional program from training data
We also identify SPST when another program of little quantitative importance but SPST–comparable content is recorded in the training data independent of the benefit payment information.

Program code	Label	Label in German
31	Further education of trainers and multidisciplinary qualification	Heran-/Fortbildung v. Ausbildungskräften/ berufsfeldübergreifende Qualifikation

(d) Additional combinatioin
Finally we identify SPST if the training data indicate the unspecific "other carreer advencement" and the benefit payment information indicates further training.

Program code	Label	Label in German
28	Other promotion	sonstiger Aufstieg (< 97)

In table 4 we show how often which combination of benefit payment information and program type information identifies *SPST* in the two inflow samples.

Table 4: Identification of *SPST* with program type and benefit payment type: Frequencies

Program	Type of payment no benefits	UB/UA	maintenance benefits for further training	Total
missing	0	0	644	644
Other adjustment of working skills	57	89	2095	2241
Other promotion	0	0	150	150
Further education of trainers and multidisciplinary qualification	0	1	1	2
Total	57	90	2890	3037

Both inflow samples together. BTYP≠1 as an additional requirement.

Retraining

Retraining or longer "Qualification for the first labor market via the education system" is taking part in a new vocational training and obtaining a new vocational training degree according to the German dual education system. Additionally, but quantitatively of little importance we see the make up of a missed examination "Certification" as comparable to retraining because the result is the same. Furthermore and also only of marginal importance we see participation in the programs "Technican" or "Master of Business administration (not comparable to an american style MBA)" while not receiving maintenance benefits as a loan as Retraining. Conventionally these two programs are considered as career advancement programs which we do not evaluate. Benefits as a loan would underline their character as career advancements.

(a) Identification from training data
We identify the following two programs as Retraining independent of the benefit payment information.

Program code	Label	Label in German
29	Certification	berufl. Abschlussprüfung
32	Retraining	Umschulung

(b) Reliance on benefit payment data
If the training data is uninformative and maintenance benefits for Retraining are paid we identify Retraining.

Program code	Label	Label in German
-9	missing	fehlende Angabe
12	Other adjustment of working skills	sonst. Anpassung der berufl. Kenntnisse

(c) Other programs from training data
Two other programs are identified from the training data. They typically also take two years full time and require an existing vocational training degree, hence are somewhat comparable to retraining in a narrower definition. Not identified if maintenance benefits are paid as a loan.

Program code	Label	Label in German
26	Technician	Techniker (<97)
27	Master of business administration	Betriebswirt (<97)

In table 5 we show how often which combination of benefit payment information and program type information identifies *Retraining* in the two inflow samples.

Table 5: Identification of *Retraining* with program type and benefit payment type: Frequencies

	Type of payment					
	no benefits	UB/UA	maintenance benefits			
Program			further training	retraining	loan	Total
missing	0	0	0	110	0	110
Other adjustment of working skills	0	0	0	65	0	65
Technician	2	1	5	2	0	10
Master of business administration	0	2	1	1	0	4
Certification	4	1	20	7	0	32
Retraining	11	13	231	355	2	612
Total	17	17	257	540	2	833

Both inflow samples together. BTYP≠1 as an additional requirement.