Appendix A: Econometrics

Table A.1.a: Bounds for $\gamma^0(x)$

	$B_\gamma^L(x)$	$B_\gamma^U(x)$
No data	$L^t(x)-U^c(x)$	$U^t(x)-L^c(x)$
No assumptions	$[g^t(x)-u^c(x,1)]p(x)+$ $[\ell^t(x,0)-g^c(x)][1-p(x)]$	$[g^t(x)-\ell^c(x,1)]p(x)+$ $[u^t(x,0)-g^c(x)][1-p(x)]$
Local exclusion for $\gamma^0(x)$, $\forall x\in\chi^0$	$\sup_{x\in\chi^0}\{[g^t(x)-u^c(x,1)]p(x)+$ $[\ell^t(x,0)-g^c(x)][1-p(x)]\}$	$\inf_{x\in\chi^0}\{[g^t(x)-\ell^c(x,1)]p(x)+$ $[u^t(x,0)-g^c(x)][1-p(x)]\}$
Local exclusion for $E(Y^t\mid X=x)$, $\forall x\in\chi^{0,t}$, $E(Y^c\mid X=x)$, $\forall x\in\chi^{0,c}$	$\sup_{x\in\chi^{0,t}}\{g^t(x)p(x)+\ell^t(x,0)[1-p(x)]\}-$ $\inf_{x\in\chi^{0,c}}\{g^c(x)[1-p(x)]+u^c(x,1)]p(x)\}$	$\inf_{x\in\chi^{0,t}}\{g^t(x)p(x)+u^t(x,0)[1-p(x)]\}-$ $\sup_{x\in\chi^{0,c}}\{g^c(x)[1-p(x)]-\ell^c(x,1)]p(x)\}$
Local exclusion for $E(Y^c\mid X=x,S=1)$, $\forall x\in\chi^{0,c}$, and $E(Y^t\mid X=x,S=0)$, $\forall x\in\chi^{0,t}$	$[g^t(x)-\inf_{x\in\chi^{0,c}}u^c(x,1)]p(x)+$ $[\sup_{x\in\chi^{0,t}}\ell^t(x,0)-g^c(x)][1-p(x)]$	$[g^t(x)-\sup_{x\in\chi^{c,0}}\ell^c(x,1)]p(x)+$ $[\inf_{x\in\chi^{0,t}}u^t(x,0)-g^c(x)][1-p(x)]$
Selection is such that $E(Y^t\mid X=x,S=1)-$ $E(Y^c\mid X=x,S=1)\geq 0$	$[\ell^t(x,0)-g^c(x)][1-p(x)]$	$[g^t(x)-\ell^c(x,1)]p(x)+$ $[u^t(x,0)-g^c(x)][1-p(x)]$
$\gamma^0(x)=\theta^0(x)=\xi^0(x)$, $\forall x\in\chi^0$	$\max[B_\theta^L(x),B_\xi^L(x)]$	$\min[B_\theta^U(x),B_\xi^U(x)]$

Note: $B_\xi^L(x)$ and $B_\xi^U(x)$ denote the lower and the upper bounds of the treatment effects for the nontreated ($S=0$).

Table A.1.b: Interval widths for $\gamma^0(x)$

	$W_\gamma(x)$
No data	$U^t(x)-L^t(x)+U^c(x)-L^c(x)$
No assumptions	$[u^c(x,1)-\ell^c(x,1)]p(x)+[u^t(x,0)-\ell^t(x,0)][1-p(x)]$
Local exclusion for $\gamma^0(x)$, $\forall x\in\chi^0$	$\inf_{x\in\chi^0}\{[g^t(x)-\ell^c(x,1)]p(x)+[u^t(x,0)-g^c(x)][1-p(x)]\}-$ $\sup_{x\in\chi^0}\{[g^t(x)-u^c(x,1)]p(x)+[\ell^t(x,0)-g^c(x)][1-p(x)]\}$
Local exclusion for $E(Y^t\mid X=x)$, $\forall x\in\chi^{0,t}$, $E(Y^c\mid X=x)$, $\forall x\in\chi^{0,c}$	$\inf_{x\in\chi^{0,t}}\{g^t(x)p(x)+u^t(x,0)[1-p(x)]\}-\sup_{x\in\chi^{0,c}}\{g^c(x)[1-p(x)]+\ell^c(x,1)]p(x)\}-$ $\sup_{x\in\chi^{0,t}}\{g^t(x)p(x)+\ell^t(x,0)[1-p(x)]\}+\inf_{x\in\chi^{0,c}}\{g^c(x)[1-p(x)]+u^c(x,1)]p(x)\}$
Local exclusion for $E(Y^c\mid X=x,S=1)$, $\forall x\in\chi^{0,c}$, and $E(Y^t\mid X=x,S=0)$, $\forall x\in\chi^{0,t}$	$[\inf_{x\in\chi^{0,c}}u^c(x,1)-\sup_{x\in\chi^{0,c}}\ell^c(x,1)]p(x)+[\inf_{x\in\chi^{0,t}}u^t(x,0)-\sup_{x\in\chi^{0,t}}\ell^t(x,0)][1-p(x)]$
Selection is such that $E(Y^t\mid X=x,S=1)-E(Y^c\mid X=x,S=1)\geq 0$	$[g^t(x)-\ell^c(x,1)]p(x)+[u^t(x,0)-\ell^t(x,0)][1-p(x)]$
$\gamma^0(x)=\theta^0(x)=\xi^0(x)$, $\forall x\in\chi^0$	$\min[B_\theta^U(x),B_\xi^U(x)]-\max[B_\theta^L(x),B_\xi^L(x)]$

Table A.2.a: Bounds for $\theta^0(x)$

	$B_\theta^L(x)$	$B_\theta^U(x)$
No data	$\ell^t(x,1)-u^c(x,1)$	$u^t(x,1)-\ell^c(x,1)$
No assumptions	$g^t(x)-u^c(x,1)$	$g^t(x)-\ell^c(x,1)$
Local exclusion for $\theta^0(x)$, $\forall x\in\chi^0$	$\sup_{x\in\chi^0}\{g^t(x)-u^c(x,1)\}$	$\inf_{x\in\chi^0}\{g^t(x)-\ell^c(x,1)\}$
Local exclusion for $E(Y^c\mid X=x)$, $\forall x\in\chi^0$ *)	$g^t(x)-g^c(x)+\dfrac{g^c(x)-\inf_{x\in\chi^0}v^u(x)}{p(x)}$	$g^t(x)-g^c(x)+\dfrac{g^c(x)-\sup_{x\in\chi^0}v^\ell(x)}{p(x)}$
Local exclusion $E(Y^c\mid X=x,S=1)$, $\forall x\in\chi^{0,c}$	$g^t(x)-\inf_{x\in\chi^{0,c}}u^c(x,1)$	$g^t(x)-\sup_{x\in\chi^{0,c}}\ell^c(x,1)$
Selection is such that $E(Y^t\mid X=x,S=1)-E(Y^c\mid X=x,S=1)\geq 0$	0	$g^t(x)-\ell^c(x,1)$

Note: *) $v^\ell(x)=\ell^c(x,1)p(x)+g^c(x)[1-p(x)]$, $v^u(x)=u^c(x,1)p(x)+g^c(x)[1-p(x)]$. Obtained from $E(Y^c\mid X=x)=E(Y^c\mid X=x,S=1)p(x)+g^c(x)[1-p(x)]$ and equation (2").

Table A.2.b: Interval widths for $\theta^0(x)$

	$W_\theta(x)$
No data	$u^t(x,1) - \ell^t(x,1) + u^c(x,1) - \ell^c(x,1)$
No assumptions	$u^c(x,1) - \ell^c(x,1)$
Local exclusion for $\theta^0(x),\ \forall x \in \chi^0$	$\inf_{x\in\chi^0}\{g^t(x) - \ell^c(x,1)\} - \sup_{x\in\chi^0}\{g^t(x) - u^c(x,1)\}$
Local exclusion for $E(Y^c \mid X = x),\ \forall x \in \chi^0$	$\dfrac{\inf_{x\in\chi^0} v^u(x) - \sup_{x\in\chi^0} v^\ell(x)}{p(x)}$
Local exclusion for $E(Y^c \mid X = x, S = 1),\ \forall x \in \chi^{0,c}$	$\inf_{x\in\chi^{0,c}} u^c(x,1) - \sup_{x\in\chi^{0,c}} \ell^c(x,1)$
Selection is such that $E(Y^t \mid X = x, S = 1) - E(Y^c \mid X = x, S = 1) \geq 0$	$g^t(x) - \ell^c(x,1)$

Note: See note on Table A.2.a.

Combining the cases given in Tables A.1.a and A.2.a with the assumption that treatment effects are the same in the treated and control population, i.e. $\theta^0(x) = \gamma^0(x),\ \forall x \in \chi^0$ is straightforward: The lower bound is given by $\sup_{x\in\chi^0}\{\theta^0(x),\ \gamma^0(x)\}$ and the upper bound is equal to $\inf_{x\in\chi^0}\{\theta^0(x),\ \gamma^0(x)\}$.

Table A.3: Bounds for the selection effect $\lambda^\theta(x)$

	$B^L_{\lambda^\theta}(x)$	$B^U_{\lambda^\theta}(x)$
No assumptions	$g^c(x) - u^c(x,1)$	$g^c(x) - \ell^c(x,1)$
Local exclusion for $\theta^0(x),\ \forall x \in \chi^0$	$\sup_{x\in\chi^0}\{g^t(x) - u^c(x,1)\} + g^c(x) - g^t(x)$	$\inf_{x\in\chi^0}\{g^t(x) - \ell^c(x,1)\} + g^c(x) - g^t(x)$
Local exclusion for $E(Y^c \mid X = x),\ \forall x \in \chi^{0\ *)}$	$\dfrac{g^c(x) - \inf_{x\in\chi^0} v^u(x)}{p(x)}$	$\dfrac{g^c(x) - \sup_{x\in\chi^0} v^\ell(x)}{p(x)}$
Local exclusion for $E(Y^c \mid X = x, S = 1),\ \forall x \in \chi^{c,0}$	$g^c(x) - \inf_{x\in\chi^{0,c}} u^c(x,1)$	$g^c(x) - \sup_{x\in\chi^{0,c}} \ell^c(x,1)$
Selection is such that $E(Y^t \mid X = x, S = 1) \cdot E(Y^c \mid X = x, S = 1) \geq 0$	$g^c(x) - g^t(x)$	$g^c(x) - \ell^c(x,1)$

Note: The width of the interval of the selection effect is the same as for the respective treatment effect given in Table A.2.a. See also notes of Table A.2.

Manski (1990) introduced an additional restriction which assumes that only individuals with a nonnegative effect (all of them) are selected. However, in a social context this is hardly plausible, because it may very well require too many ressources and too much information (about the future!) for those who select participants. Additionally, it a priori restricts $\theta^0(x)$ (but not $\gamma^0(x)$) to be nonnegative. This does not appear to be a credible strategy when

evaluating social programs. Several other restrictions appear in the different papers by Manski. Those most closely related to our problem are discussed in Manski (1993a, p. 163, 164). However, the assumption of *ordered outcomes* a priori assumes that outcomes when treated are never less than outcomes when not treated. Obviously, such an assumption is not attractive in the context of this paper. The assumption of ordered outcomes $P(y^t = y^c + \alpha(x) | X = x) = 1$ also appears to be too restrictive in this context. One of the reasons is that the shift is not in expectation, but with probability one. Assuming instead that $g^t(x) = E(Y^c | X = x, S = 1) + \alpha(x)$, and that $E(Y^c | X = x, S = 1)$ as well as $\alpha(x)$ are constant for at least two different values of *x* (level-set restriction), then $\theta^0(x)$ is identified provided $g^t(x)$ varies. It is however not plausible that $E(Y^c | X = x, S = 1)$ should be constant in some region of the *X*-space, while $E(Y^t | X = x, S = 1)$ [= $g^t(x)$] is assumed to vary exactly in the same region.

Appendix B: Results for off-the-job training versus no training

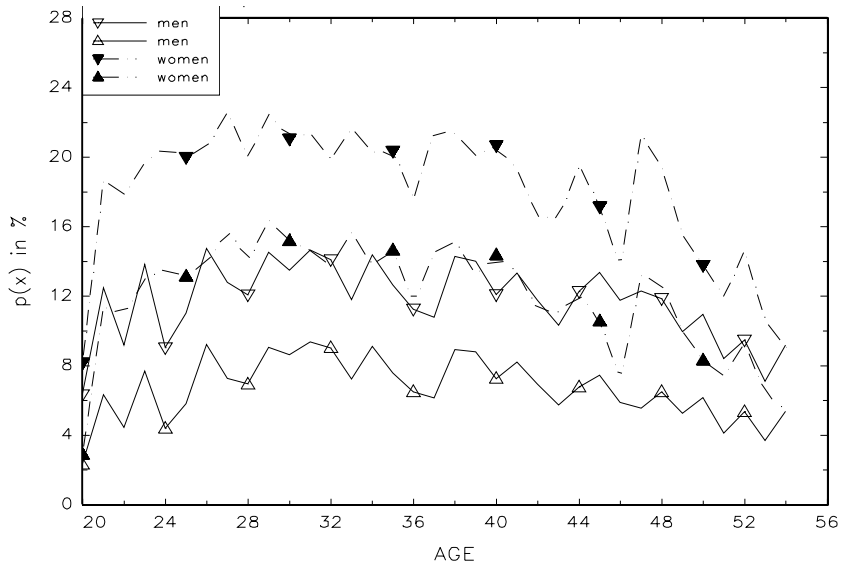
B.1 Identified quantities ($p(x)$, $g^t(x)$, $g^c(x)$)

Table B.1: Probabilities for off-the-job training versus no training in %

X-variables	Men		Women	
Federal states (Länder)				
Berlin (East)	10.9	14.1	15.8	19.7
Brandenburg	7.8	9.8	13.6	16.1
Mecklenburg-Vorpommern	9.0	11.7	15.0	18.3
Sachsen	7.6	8.8	12.6	14.5
Sachsen-Anhalt	8.6	10.8	13.2	15.9
Thüringen	7.7	9.7	14.7	17.2
Years of schooling (highest degree)				
12	16.2	19.0	20.2	23.4
10	8.5	9.5	15.4	16.8
8 or no degree	3.4	4.6	7.2	8.9

Note: Table shows 5% and 95% quantiles of respective bootstrap distributions.

Figure B.1: Probabilities for off-the-job training versus no training in %



Note: Figure shows 5% and 95% quantile of respective bootstrap distributions.

Table B.2: Estimates of $g^t(x)$ and $g^c(x)$ conditional on schooling and federal state for off-the-job training versus no training

	Men				Women			
X-variables	$g^t(x)$		$g^c(x)$		$g^t(x)$		$g^c(x)$	
	Probabilities of not being unemployed in %							
Years of schooling (highest degree)								
12	81.4	88.0	94.1	95.9	81.6	88.0	91.9	**94.3**
10	81.5	86.0	91.0	92.0	64.3	68.7	79.7	**81.3**
8 or no degree	60.4	76.2	83.5	85.8	52.2	63.4	68.6	**71.8**
Federal states (Länder)								
Berlin (East)	76.2	87.4	90.3	93.3	73.6	83.4	84.0	**88.0**
Brandenburg	74.1	83.4	89.0	91.2	62.2	71.2	77.6	**80.6**
Mecklenburg-Vorpommern	73.8	84.2	84.5	87.6	61.2	71.3	75.1	**79.1**
Sachsen	80.9	87.8	90.9	92.4	64.4	71.3	78.4	**80.6**
Sachsen-Anhalt	78.9	86.9	88.8	91.1	60.3	69.7	78.0	**81.1**
Thüringen	82.1	90.8	89.5	91.8	69.6	77.3	77.0	**80.3**
	Income in DM							
Years of schooling (highest degree)								
12	2148	2764	2155	2683	1640	2202	1672	**2156**
10	1529	2027	1593	2015	1106	1546	1133	**1535**
8 or no degree	1115	1739	1353	1787	895	1404	900	**1307**
Federal states (Länder)								
Berlin (East)	1924	2600	1947	2473	1491	2082	1439	**1922**
Brandenburg	1616	2242	1568	2025	1205	1747	1154	**1586**
Mecklenburg-Vorpommern	1548	2204	1509	1979	1107	1634	1104	**1555**
Sachsen	1625	2197	1597	2045	1153	1639	1089	**1500**
Sachsen-Anhalt	1618	2245	1544	1998	1111	1633	1118	**1551**
Thüringen	1535	2159	1585	2046	1014	1515	1069	**1501**

Note: Table shows 5% and 95% quantiles of respective bootstrap distributions. Most of the width of the income variable is due to the grouped nature of it (see Table 1).

Figure B.2: Estimates of $g^t(x)$ and $g^c(x)$ conditional on age for off-the-job training versus no training

Figure B.2.a: Probabilities of not being unemployed in % for men

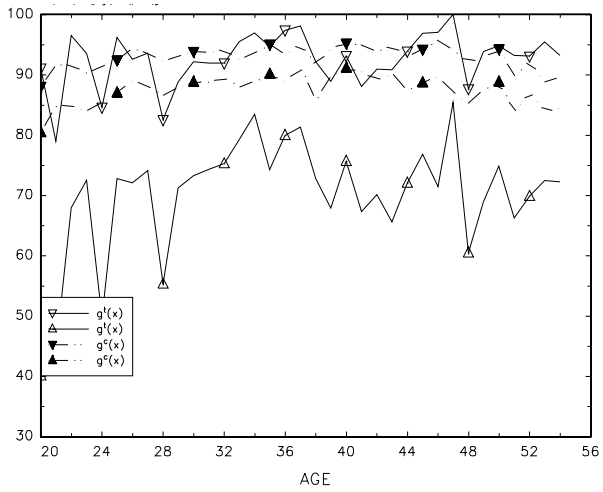


Figure B.2.b: Probabilities of not being unemployed in % for women

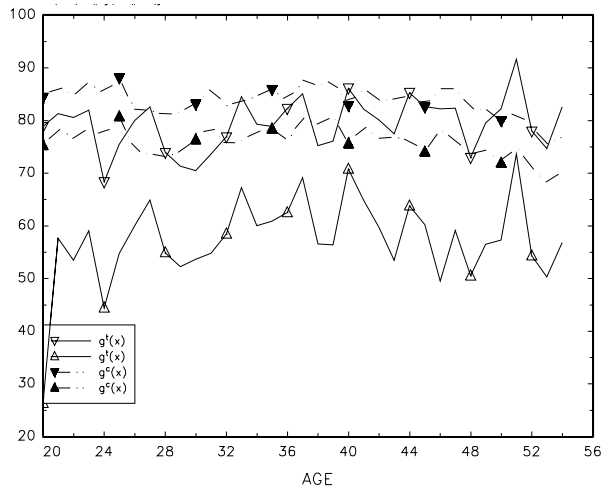


Figure B.2.c: Income in DM for men

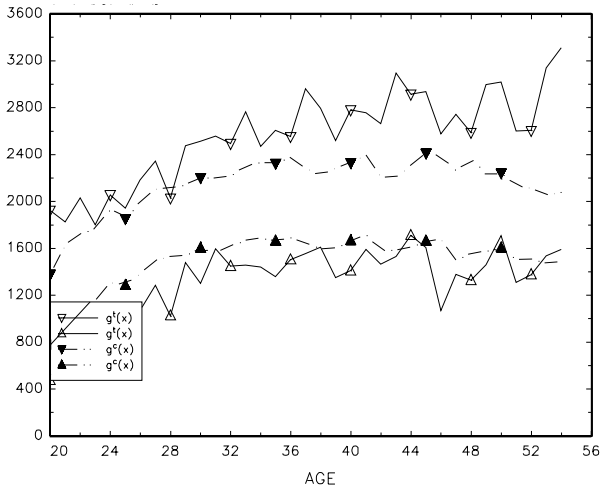
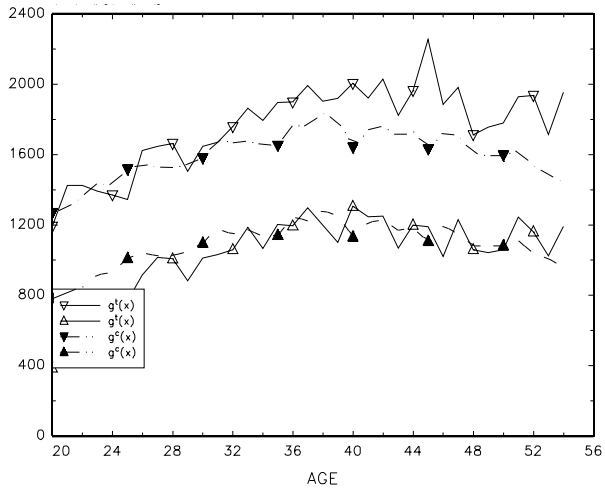


Figure B.2.d: Income in DM for women



Note: Figures shows 5% and 95% quantile of respective bootstrap distributions.

B.2 Bounds

Table B.1: Bounds for the treatment effects conditional on training participation for off-the-job training versus no training

	Men				Women			
Restrictions	**none**		**same effect for**		**none**		**same effect for**	
X-variables			**treated and controls**				**treated and controls**	
	Probabilities of not being unemployed in %							
Years of schooling (highest degree)								
12	-18.6	88.0	-18.6	5.9	-18.4	**88.0**	-18.4	**8.1**
10	-18.5	86.0	-18.5	9.0	-35.7	**68.7**	-35.7	**20.3**
8 or no degree	-39.6	76.2	-39.6	16.5	-47.8	**63.4**	-47.8	**31.2**
Federal states (Länder)								
Berlin (East)	-23.8	87.4	-23.8	9.6	-26.4	**83.4**	-26.4	**16.0**
Brandenburg	-25.9	83.4	-25.9	11.0	-37.8	**71.2**	-37.8	**22.4**
Mecklenburg-Vorpommern	-26.2	84.2	-26.2	15.5	-38.8	**71.3**	-38.8	**24.8**
Sachsen	-19.1	87.8	-19.1	9.1	-35.6	**71.3**	-35.6	**21.6**
Sachsen-Anhalt	-21.1	86.9	-21.1	11.1	-39.7	**69.7**	-39.7	**22.0**
Thüringen	-17.9	90.8	-17.9	10.5	-30.4	**77.3**	-30.4	**23.0**
	Income in DM							
Years of schooling (highest degree)								
12	**-5852**	**2764**	**-2686**	**2764**	**-6359**	**2202**	**-2158**	2202
10	**-6470**	**2027**	**-2016**	**2027**	**-6893**	**1546**	**-1535**	1546
8 or no degree	**-6884**	**1739**	**-1787**	**1739**	**-7104**	**1404**	**-1308**	1404
Federal states (Länder)								
Berlin (East)	**-6076**	**2600**	**-2473**	**2600**	**-6509**	**2082**	**-1924**	2082
Brandenburg	**-6383**	**2242**	**-2026**	**2242**	**-6794**	**1747**	**-1587**	1747
Mecklenburg-Vorpommern	**-6451**	**2204**	**-1981**	**2204**	**-6893**	**1635**	**-1556**	1635
Sachsen	**-6364**	**2197**	**-2046**	**2197**	**-6846**	**1639**	**-1500**	1639
Sachsen-Anhalt	**-6381**	**2245**	**-1999**	**2245**	**-6889**	**1633**	**-1552**	1633
Thüringen	**-6464**	**2159**	**-2046**	**2159**	**-6985**	**1515**	**-1501**	1515

Note: Sampling uncertainty due to the estimation of $g^t(x)$ and $g^c(x)$ is accounted for by showing the 5% and 95% quantiles of the bootstrap distribution of the lower repectively upper bounds of the intervals.

Figure B.3: Bounds for the treatment effects conditional on age and training participation for off-the-job training versus no training: no restriction, restriction of same expected treatment effects for treated and controls

Figure B.3.a: Probabilities of not being unemployed in %-points for men

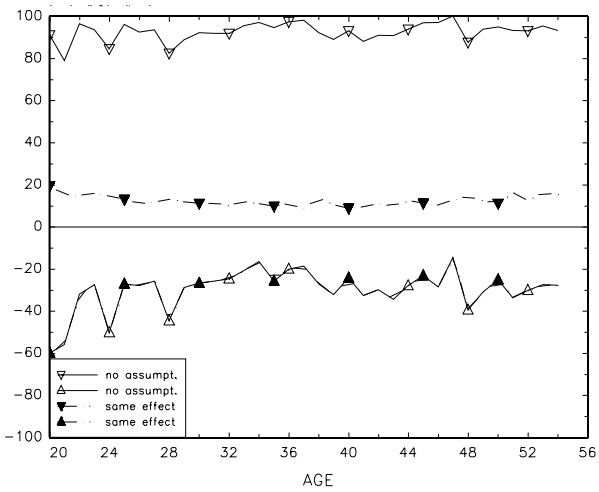


Figure B.3.b: Probabilities of not being unemployed in %-points for women

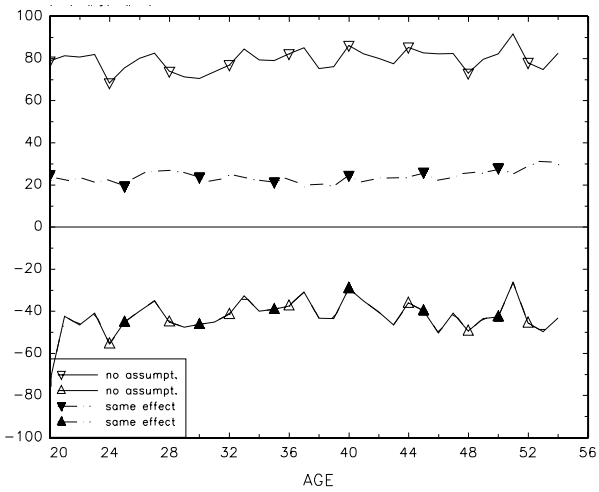


Figure B.3.c: Income in DM for men

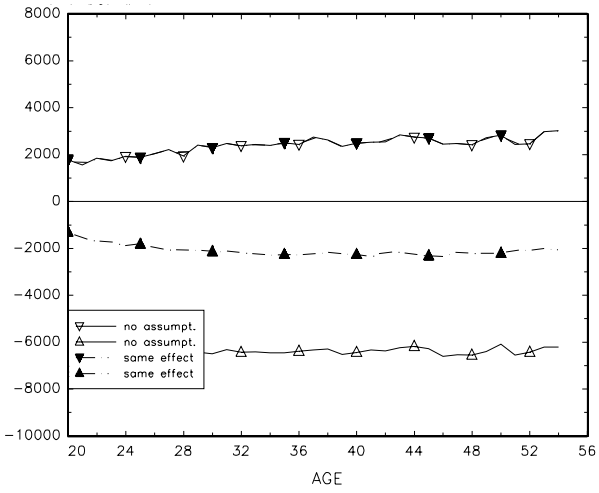


Figure B.3.d: Income in DM for women

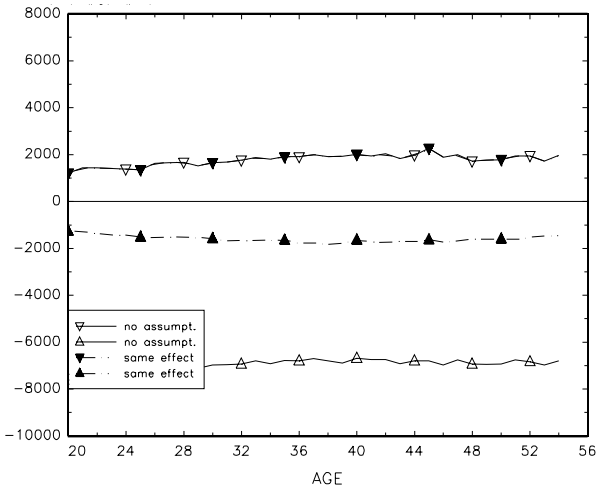


Figure B.4: Bounds for the treatment effects conditional on age and training participation for off-the-job training versus no training: rolling level-set restriction within narrow age groups for treatment effect or $E(Y^c | X = x)$

Figure B.4.a: Probabilities of not being unemployed in %-points for men

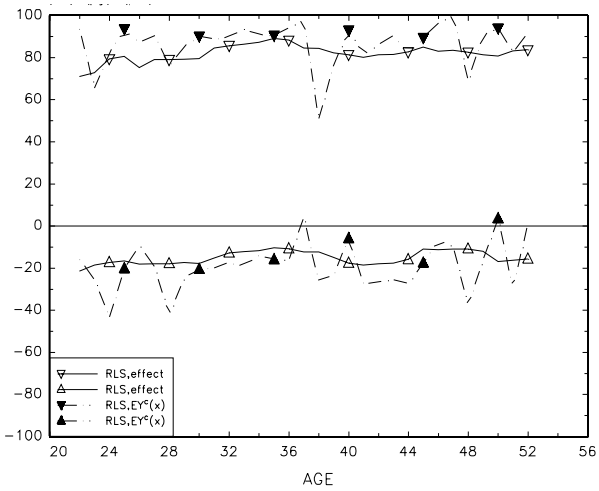


Figure B.4.b: Probabilities of not being unemployed in %-points for women

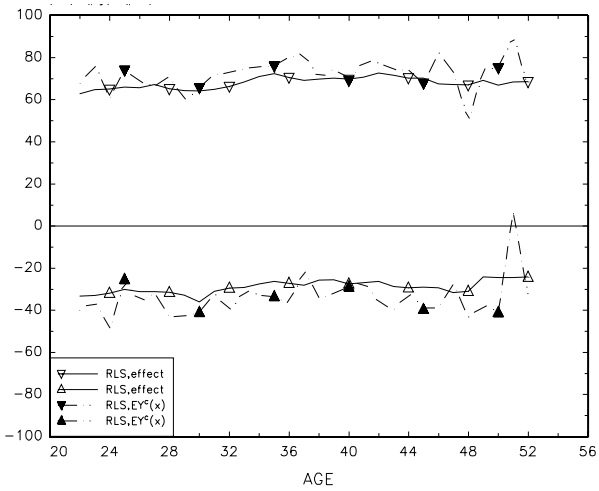


Figure B.4.c: Income in DM for men

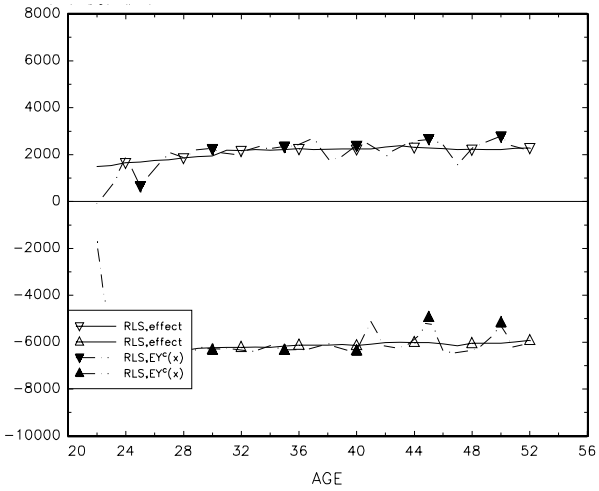
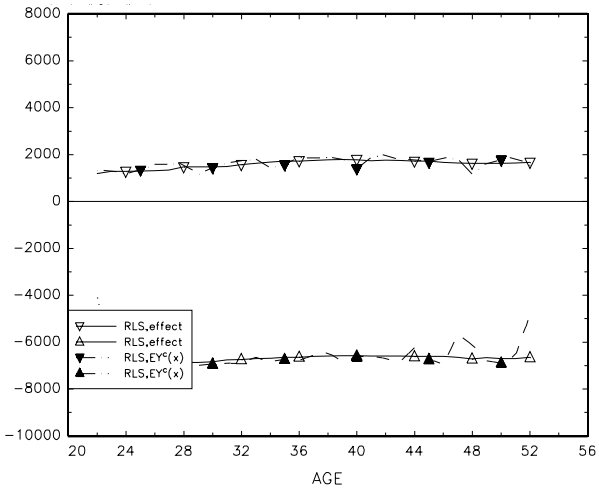


Figure B.4.d: Income in DM for women



Note: Level-set restriction is for ± 2 years.

Figure B.5: Bounds for the treatment effects conditional on age and training participation for off-the-job training versus no training: combining several restrictions

Figure B.5.a: Probabilities of not being unemployed in %-points for men

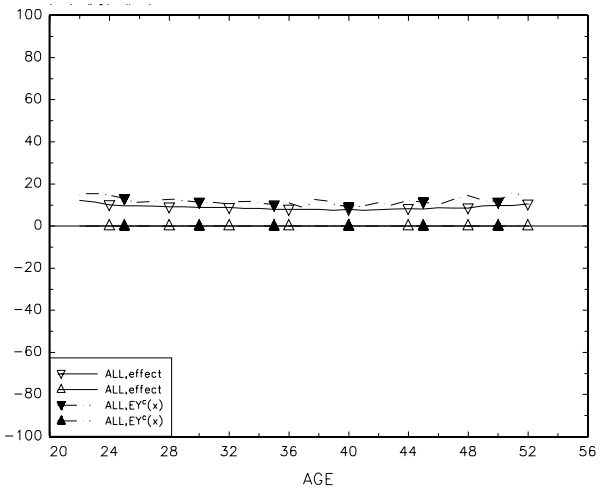


Figure B.5.b: Probabilities of not being unemployed in %-points for women

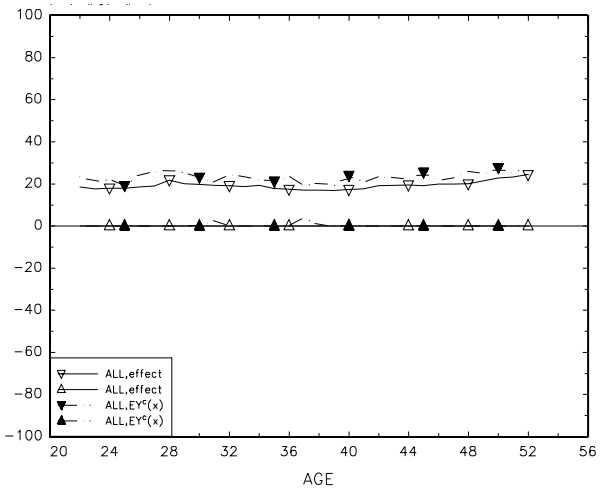


Figure B.5.c: Income in DM for men

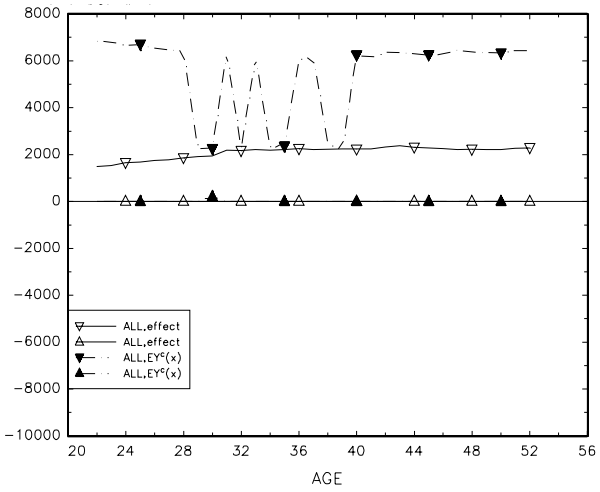
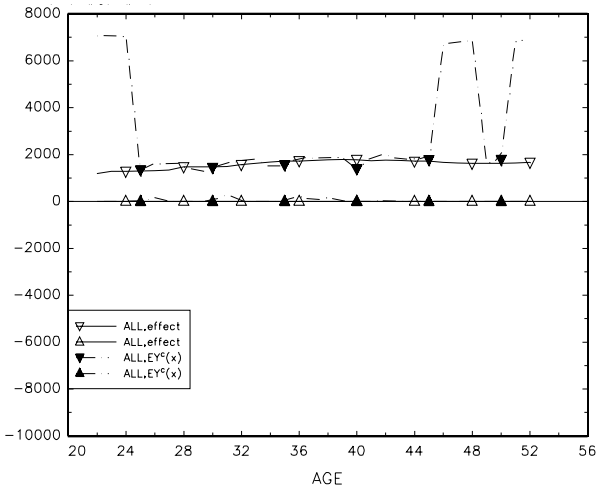


Figure B.5.d: Income in DM for women



Appendix C: Results for on-the-job-training versus off-the-job-training

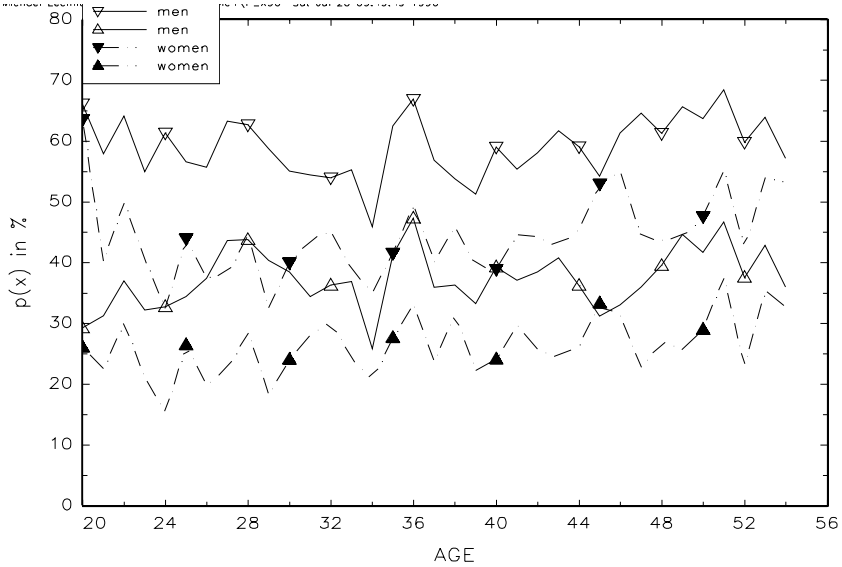
C.1 Identified quantities ($p(x)$, $g^t(x)$, $g^c(x)$)

Table C.1: Probabilities for on-the-job versus off-the-job training in %

X-variables	Men		Women	
Federal states (Länder)				
Berlin (East)	44.9	55.4	39.6	48.7
Brandenburg	41.5	50.3	27.7	34.8
Mecklenburg-Vorpommern	40.6	51.4	29.0	37.3
Sachsen	48.1	54.3	33.4	39.0
Sachsen-Anhalt	43.3	52.0	33.5	40.6
Thüringen	42.6	51.5	25.5	32.8
Years of schooling (highest degree)				
12	40.4	47.3	35.4	42.2
10	47.2	51.6	32.4	36.1
8 or no degree	49.5	60.2	28.1	36.7

Note: Table shows 5% and 95% quantiles of respective bootstrap distributions.

Figure C.1: Probabilities for on-the-job versus off-the-job training in %



Note: Figure shows 5% and 95% quantiles of respective bootstrap distributions.

Table C.2: Estimates of $g^t(x)$ and $g^c(x)$ conditional on schooling and federal state for on-the-job versus off-the-job training

	Men				Women			
X-variables	$g^t(x)$		$g^c(x)$		$g^t(x)$		$g^c(x)$	
	Probabilities of not being unemployed in %							
Years of schooling (highest degree)								
12	95.5	98.8	81.4	88.0	94.8	98.5	81.6	**88.0**
10	94.1	96.7	81.5	86.0	91.1	94.4	64.3	**68.7**
8 or no degree	88.4	96.0	60.4	76.2	85.0	94.7	52.2	**63.4**
Federal states (Länder)								
Berlin (East)	93.6	98.9	76.2	87.4	95.5	99.5	73.6	**83.4**
Brandenburg	92.3	97.6	74.1	83.4	90.5	97.2	62.2	**71.2**
Mecklenburg-Vorpommern	90.0	97.4	73.8	84.2	93.5	98.8	61.2	**71.3**
Sachsen	94.4	97.9	80.9	87.8	88.9	94.2	64.4	**71.3**
Sachsen-Anhalt	90.9	96.9	78.9	86.9	84.8	92.7	60.3	**69.7**
Thüringen	94.3	99.1	82.1	90.8	91.5	97.9	69.6	**77.3**
	Income in DM							
Years of schooling (highest degree)								
12	2282	2919	2148	2764	1914	2507	895	**2202**
10	1760	2251	1529	2027	1509	1987	1106	**1546**
8 or no degree	1501	2076	1115	1739	1274	1836	1640	**1404**
Federal states (Länder)								
Berlin (East)	2217	2890	1924	2600	1900	2501	1491	**2082**
Brandenburg	1812	2420	1616	2242	1553	2138	1205	**1747**
Mecklenburg-Vorpommern	1653	2294	1548	2204	1457	2044	1107	**1635**
Sachsen	1841	2387	1635	2197	1503	2029	1153	**1639**
Sachsen-Anhalt	1670	2260	1618	2245	1413	1973	1111	**1633**
Thüringen	1804	2423	1535	2159	1489	2107	1014	**1515**

Note: Table shows 5% and 95% quantiles of respective bootstrap distributions.

Figure C.2: Estimates of $g^t(x)$ and $g^c(x)$ conditional on age for on-the-job versus off-the-job training

Figure C.2.a: Probabilities of not being unemployed in %-points for men

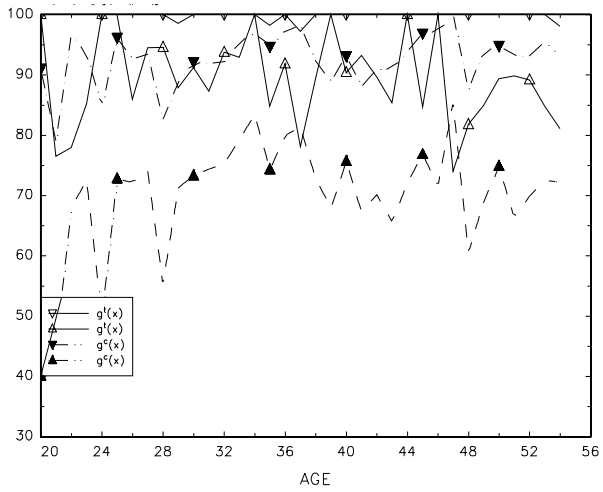


Figure C.2.b: Probabilities of not being unemployed in %-points for women

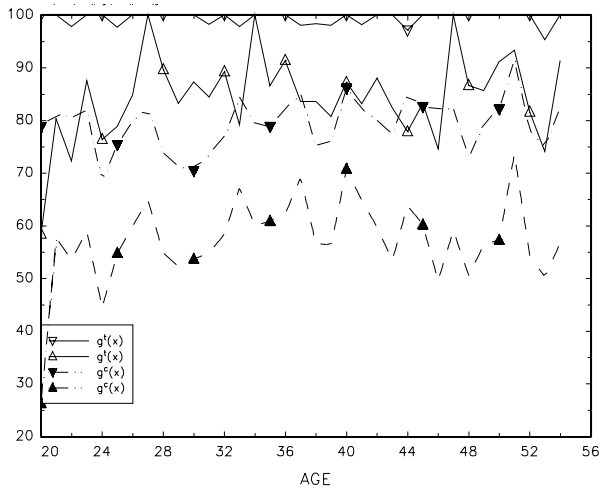


Figure C.2.c: Income in DM for men

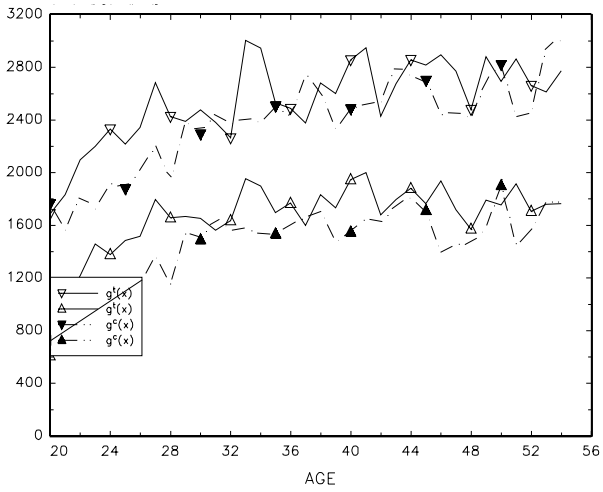
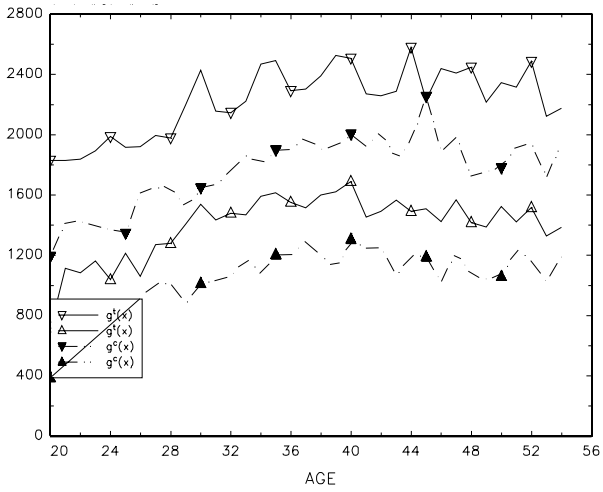


Figure C.2.d: Income in DM for women



Note: Figure shows 5% and 95% quantile of respective bootstrap distributions.

C.2 Bounds

Table C.2: Bounds for the treatment effects conditonal on schooling and federal states for on-the-job training versus off-the-job training

	Men				Women			
Restrictions	**none**		**same effect for treated and controls**		**none**		**same effect for treated and controls**	
X-variables								
	Probabilities of not being unemployed in %							
Years of schooling (highest degree)								
12	**-52,4**	**54,2**	**-4.5**	**18.4**	**-57,1**	**61,8**	**-5.2**	18.1
10	**-46,8**	**57,7**	**-5.9**	**18.4**	**-47,8**	**55,5**	**-8.9**	35.6
8 or no degree	**-40,3**	**70,2**	**-11.6**	**38.9**	**-47,1**	**50,3**	**-15.0**	47.7
Federal states (Länder)								
Berlin (East)	**-47,4**	**62,8**	**-6.4**	**23.6**	**-49,5**	**59,6**	**-4.5**	26.1
Brandenburg	**-49,1**	**59,7**	**-7.7**	**25.8**	**-51,6**	**56,3**	**-9.5**	37.6
Mecklenburg-Vorpommern	**-50,5**	**59,2**	**-10.0**	**26.2**	**-50,1**	**58,7**	**-6.5**	38.8
Sachsen	**-46,4**	**60,0**	**-5.6**	**19.1**	**-49,4**	**56,5**	**-11.1**	35.5
Sachsen-Anhalt	**-50,2**	**58,1**	**-9.1**	**21.1**	**-48,5**	**58,8**	**-15.2**	39.5
Thüringen	**-52,2**	**57,1**	**-5.7**	**17.6**	**-57,9**	**50,6**	**-8.5**	30.3
	Income in DM							
Years of schooling (highest degree)								
12	**-4077**	**4583**	**-2770**	**2076**	**-6366**	**2205**	**-2204**	2507
10	**-4168**	**4428**	**-2028**	**2251**	**-6899**	**1552**	**-1547**	1987
8 or no degree	**-4524**	**4411**	**-1739**	**2919**	**-7112**	**1410**	**-1409**	1836
Federal states (Länder)								
Berlin (East)	**-4263**	**4536**	**-2612**	**2890**	**-3951**	**4824**	**-2082**	2501
Brandenburg	**-4147**	**4632**	**-2249**	**2490**	**-3325**	**5436**	**-1748**	2138
Mecklenburg-Vorpommern	**-4216**	**4655**	**-2206**	**2294**	**-3387**	**5421**	**-1636**	2044
Sachsen	**-4287**	**4393**	**-2199**	**2387**	**-3490**	**5189**	**-1641**	2029
Sachsen-Anhalt	**-4285**	**4490**	**-2246**	**2260**	**-3579**	**5177**	**-1638**	1973
Thüringen	**-4155**	**4638**	**-2160**	**2423**	**-3086**	**5656**	**-1515**	2107

Note: Sampling uncertainty due to the estimation of $g^t(x)$ and $g^c(x)$ is accounted for by showing the 5% and 95% quantiles of the bootstrap distribution of the lower repectively upper bounds of the intervals. These are expected treatment effects for individuals randomly drawn from the population in both types of training (γ).

Figure C.3: Bounds for the treatment effects conditional on age for on-the-job training versus off-the-job training: no restriction, restriction of same expected treatment effects for treated and controls

Figure C.3.a: Probabilities of not being unemployed in %-points for men

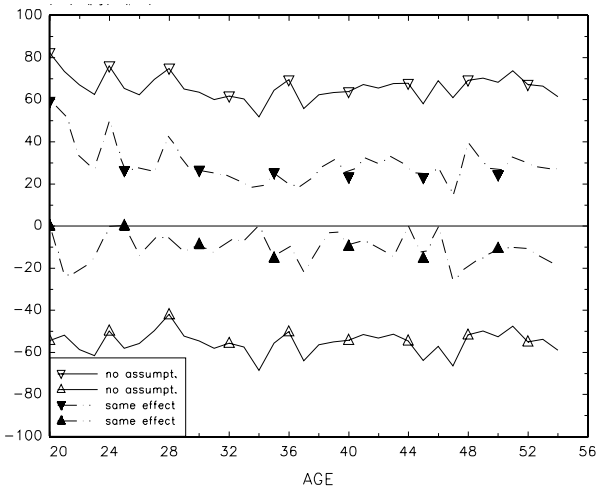


Figure C.3.b: Probabilities of not being unemployed in %-points for women

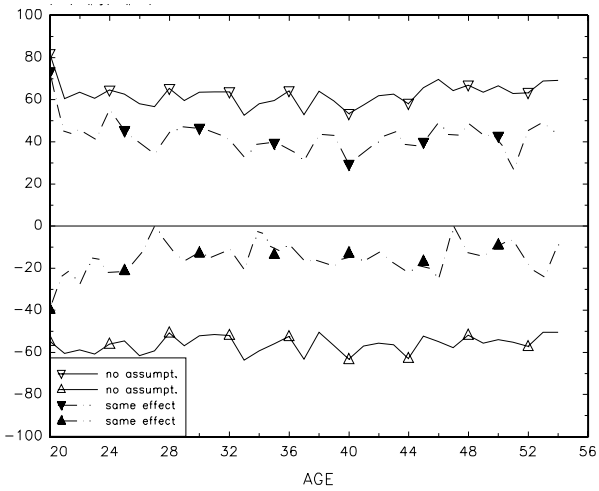


Figure C.3.c: Income in DM for men

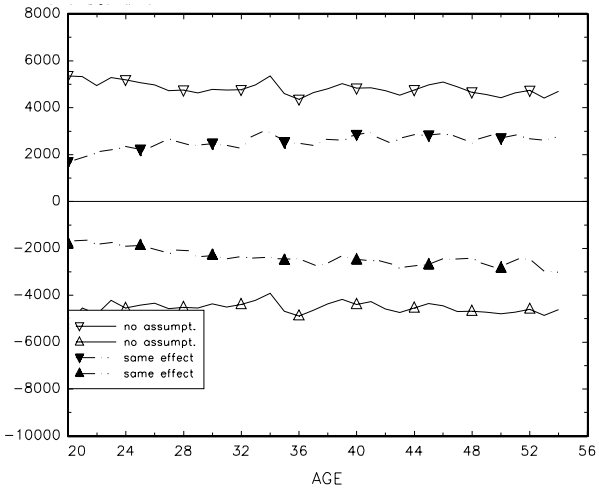
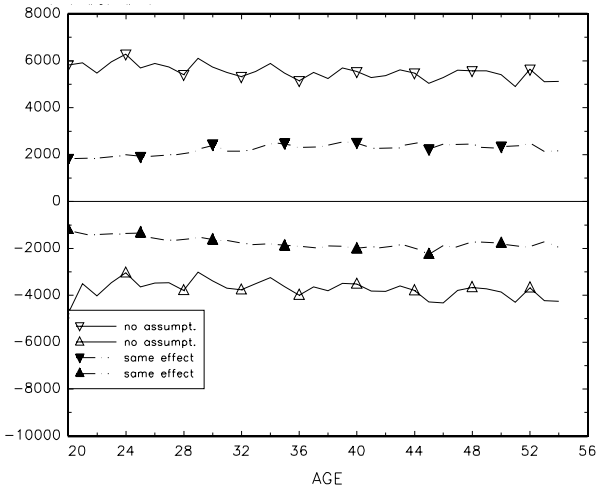


Figure C.3.d: Income in DM for women



Note: These are expected treatment effects for individuals randomly drawn from the population in both types of training (γ).

Figure C.4: Bounds for the treatment effects conditional on age for on-the-job training versus off-the-job training: rolling level-set restriction within narrow age groups for treatment effect or $E(Y^c \mid X = x)$

Figure C.4.a: Probabilities of not being unemployed in %-points for men

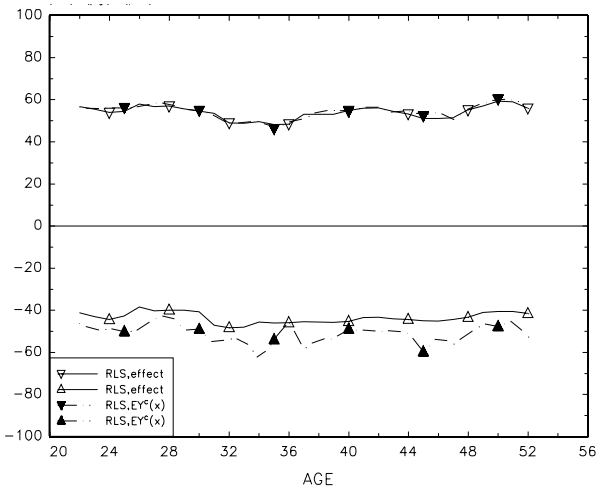


Figure C.4.b: Probabilities of not being unemployed in %-points for women

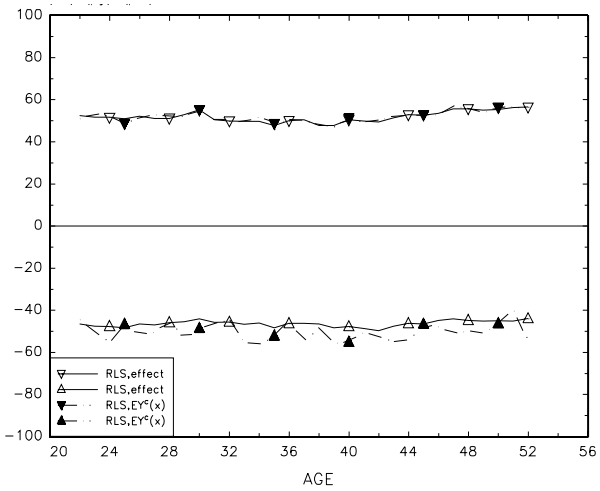


Figure C.4.c: Income in DM for men

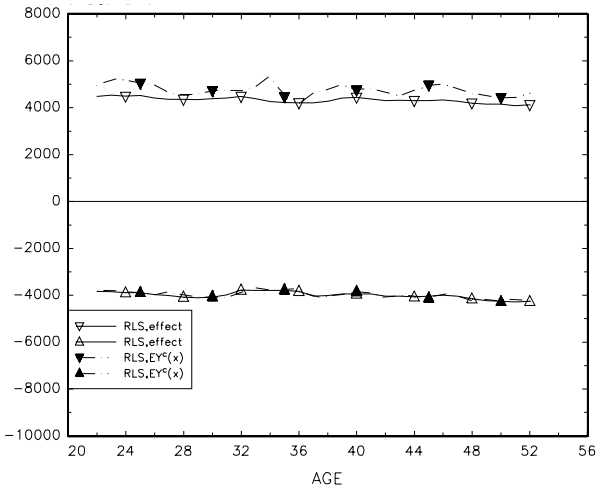
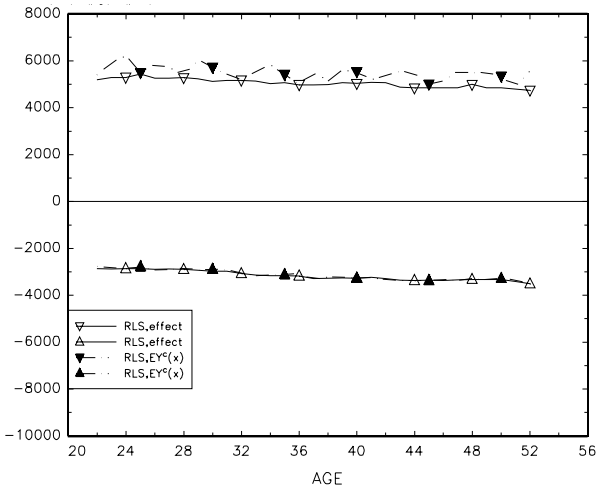


Figure C.4.d: Income in DM for women



Note: These are expected treatment effects for individuals randomly drawn from the population in both types of training (γ).Level-set restriction is for ± 2 years.

Figure C.5: Bounds for the treatment effects conditional on age for on-the-job training versus off-the-job training: combining several restrictions

Figure C.5.a: Probabilities of not being unemployed in %-points for men

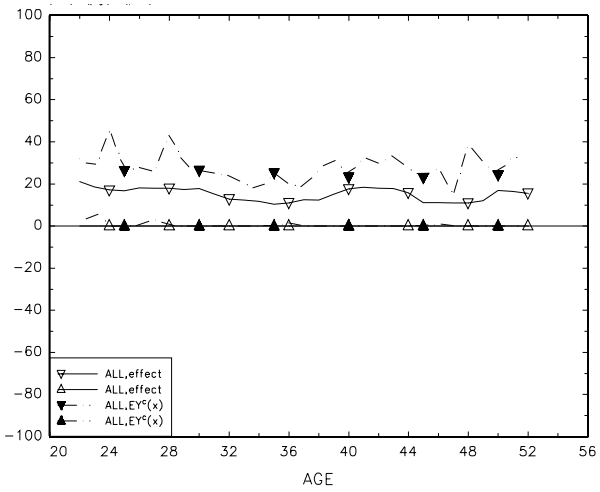


Figure C.5.b: Probabilities of not being unemployed in %-points for women

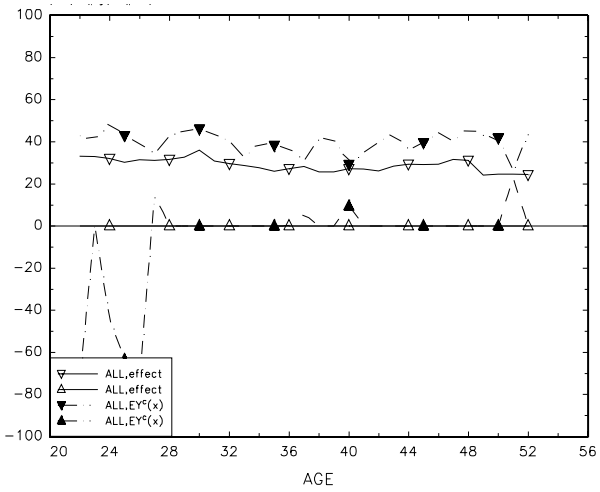


Figure C.5.c: Income in DM for men

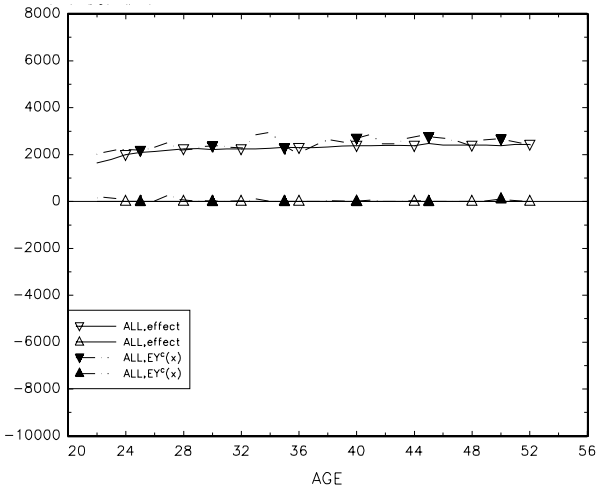
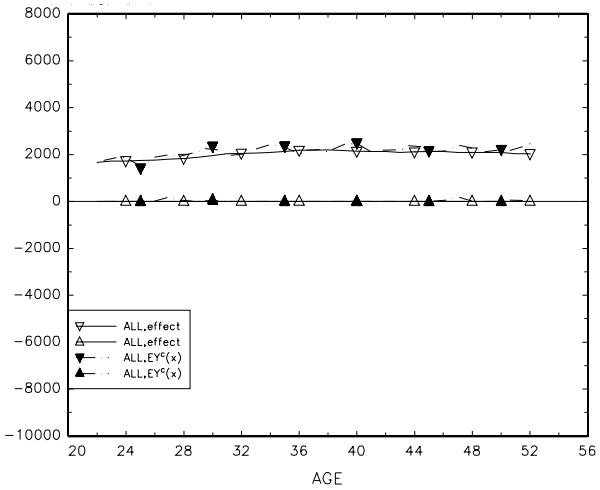


Figure C.5.d: Income in DM for women



Note: These are expected treatment effects for individuals randomly drawn from the population in both types of training (γ).

Appendix D: Additional results for on-the-job-training versus no training (women only)

D.1 Identified quantities ($p(x)$, $g^t(x)$, $g^c(x)$)

Table D.1: Estimates of $g^t(x)$ and $g^c(x)$ for on-the-job training versus no training conditional on schooling and federal state

	Probabilities of not being unemployed in %				Income in DM			
X-variables	$g^t(x)$		$g^c(x)$		$g^t(x)$		$g^c(x)$	
Years of schooling (highest degree)								
12	94.8	98.5	91.9	**94.3**	1914	2507	1671	**2155**
10	91.1	94.4	79.7	**81.3**	1509	1987	1133	**1535**
8 or no degree	85.0	94.7	68.6	**71.8**	1274	1836	900	**1307**
Federal states (Länder)								
Berlin (East)	95.5	99.5	84.0	**88.0**	1900	2501	1439	**1922**
Brandenburg	90.5	97.2	77.6	**80.6**	1553	2138	1153	**1586**
Mecklenburg-Vorpommern	93.5	98.8	75.1	**79.1**	1457	2044	1104	**1555**
Sachsen	88.9	94.2	78.4	**80.6**	1503	2029	1089	**1500**
Sachsen-Anhalt	84.8	92.7	78.0	**81.1**	1413	1973	1118	**1552**
Thüringen	91.5	97.9	77.0	**80.3**	1489	2107	1069	**1501**

Note: Table shows 5% and 95% quantile of respective bootstrap distributions. Most of the width of the income variable is due to the grouped nature of the income variable (see Table 1). Women only.

Figure D.1: Estimates of $g^t(x)$ and $g^c(x)$ conditional on age for on-the-job training versus no training

Figure D.1.a: Probabilities of not being unemployed in %-points

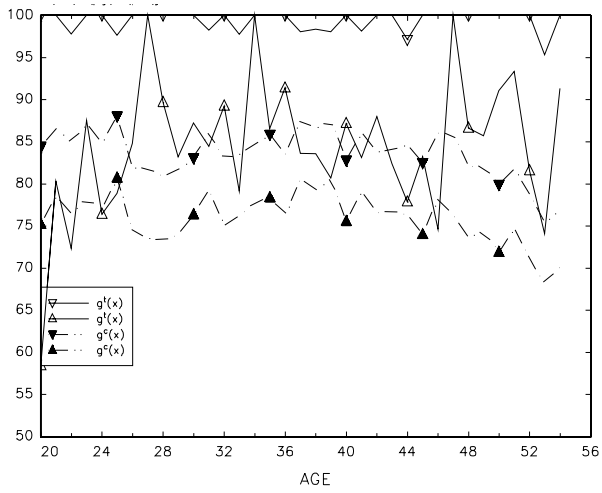
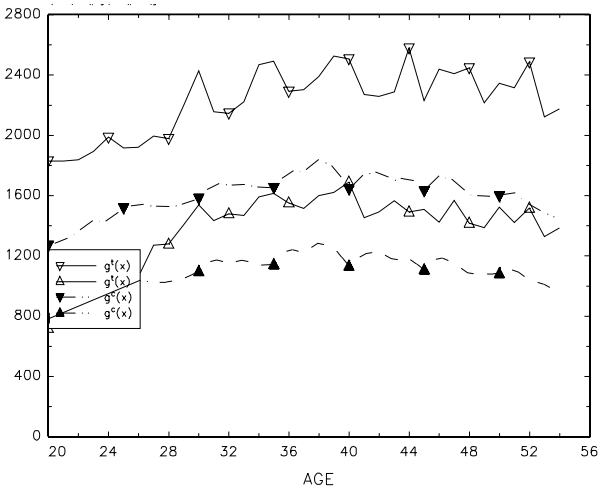


Figure D.1.b: Income in DM



Note: Figures show 5% and 95% quantile of respective bootstrap distributions. Women only.

D.2 Bounds

Table D.2: Bounds for the treatment effects conditional on training participation for on-the-job training versus no training

	Probabilities of not being unemployed in %				Income in DM			
Restrictions	**none**		**same effect for treated and controls**		**none**		**same effect for treated and controls**	
X-variables								
Federal states (Länder)								
Berlin (East)	**-4.5**	**99.5**	**-4.5**	16.0	**-6099**	**2501**	**-1924**	2501
Brandenburg	**-9.5**	**97.2**	**-9.5**	22.4	**-6447**	**2138**	**-1587**	2138
Mecklenburg-Vorpommern	**-6.5**	**98.8**	**-6.5**	24.8	**-6542**	**2044**	**-1556**	2044
Sachsen	**-11.1**	**94.2**	**-11.1**	21.6	**-6496**	**2029**	**-1500**	2029
Sachsen-Anhalt	**-15.2**	**92.7**	**-15.2**	22.0	**-6586**	**1973**	**-1552**	1973
Thüringen	**-8.5**	**97.9**	**-8.5**	23.0	**-6510**	**2107**	**-1501**	2107
Years of schooling (highest degree)								
12	**-5.2**	**98.5**	**-5.2**	8.1	**-6085**	**2507**	**-2158**	2507
10	**-8.9**	**94.4**	**-8.9**	20.3	**-6490**	**1987**	**-1535**	1987
8 or no degree	**-15.0**	**94.7**	**-15.0**	31.2	**-6725**	**1836**	**-1308**	1836

Note: Sampling uncertainty due to the estimation of $g^t(x)$ and $g^c(x)$ is accounted for by showing the 5% and 95% quantiles of the bootstrap sampling distribution of the lower repectively upper bounds of the intervals. Women only.

Figure D.3: Bounds for the treatment effects conditional on age and training participation for on-the-job training versus no training: no restriction, restriction of same expected treatment effects for treated and controls

Figure D.3.a: Probabilities of not being unemployed in %-points

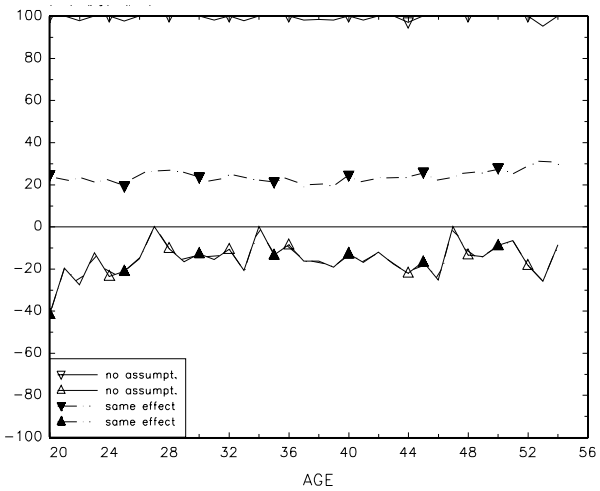


Figure D.3.b: Income in DM

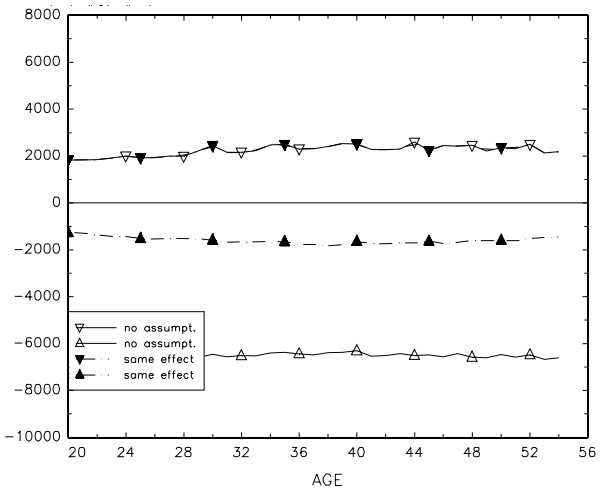


Figure D.4: Bounds for the treatment effects conditional on age and training participation for on-the-job training versus no training: rolling level-set restriction within narrow age groups for treatment effect or $E(Y^c | X = x)$

Figure D.4.a: Probabilities of not being unemployed in %-points

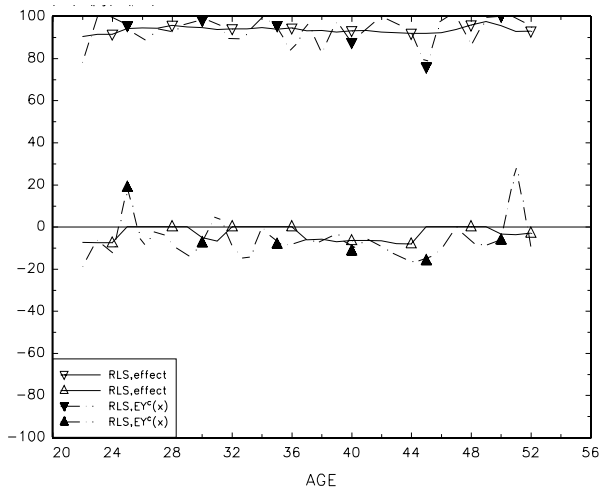
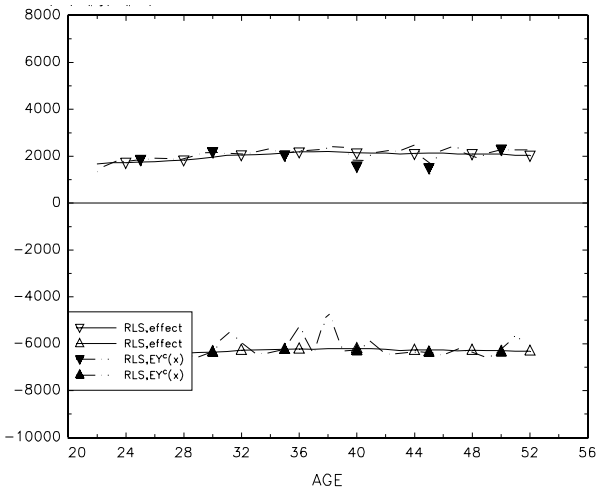


Figure D.4.b: Income in DM



Note: Level-set restriction is for ± 2 years.

Figure D.5: Bounds for the treatment effects conditional on age and training participation for on-the-job training versus no training: combining several restrictions

Figure D.5.a: Probabilities of not being unemployed in %-points

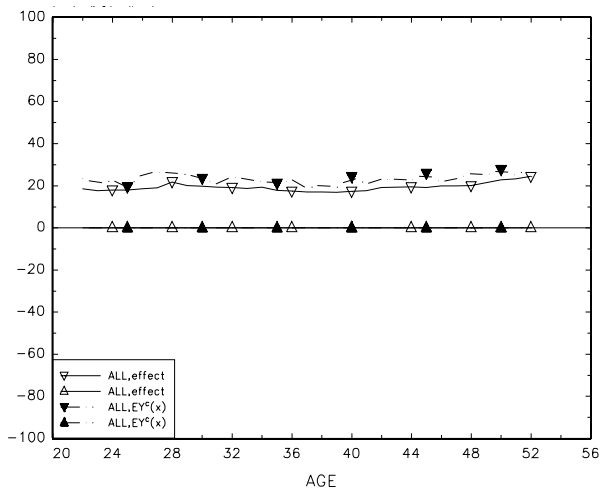


Figure D.5.b: Income in DM