

Unemployment Insurance and Entrepreneurship: Evidence from a Natural Experiment

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Motivation

- Income Volatility and Unemployment Risk
- Occupational Choice Persistence:
 - 98% employees of at $t-1$ also **employees** at t
 - 85% of self-employed at $t-1$ also **self-employed** at t
 - 23% of self-employed at $t=0$ also **self-employed** at $t=1$
- Unemployment Insurance (UI) could affect entry into entrepreneurial activity:
 - Individuals may shy away from riskier occupations – even if more profitable
 - Income insurance mechanisms



Motivation

- Exploit exogenous increase in Unemployment Benefits (UB) for self-employed to identify causal effect of UB on self-employment propensity, $P(SE=1)$

- Value of self-employment ($SE=1$) vs. employment

$$V(s_t) = U(C_t) + \beta E[\max\{V^0(s_{t+1}), V^1(s_{t+1})\}]$$

- main uncertain component of expected occupation-specific value is occupation-specific income:

$$Y_{t+1}^0(s_t) = p_U^0 UB_t(W_t) + (1 - p_U^0) W_{t+1}^0$$

$$Y_{t+1}^1(s_t) = p_U^1 UB_t^1 + (1 - p_U^1) W_{t+1}^1$$

$V^1(SE=1) \uparrow \uparrow$



Previous Literature

- Impact of UI on incentives – equity vs. efficiency
 - Gruber (1997), Acemoglu & Shimer (1999)
- UI allows consumption smoothing during unemployment
- UI induces risk averse workers to search for high R&R jobs
- We propose that UI also affects occupational choice
- Insurance mechanisms may foster entrepreneurs
 - Fan & White (2003), Berkowitz & White (2004)
- bankruptcy exemptions reducing downside risk
- Reward for failure may increase risk taking
 - Manso (2011)
- propensity to innovate
- Consumer credit increases willingness to take jobs with higher income risk Friebe & Giannetti (2009), Giannetti (2011)

Plan of Presentation



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- Motivation
- Previous Literature
- Natural Experiment
- Data
- Results
- Extensions and Further Research

Natural Experiment

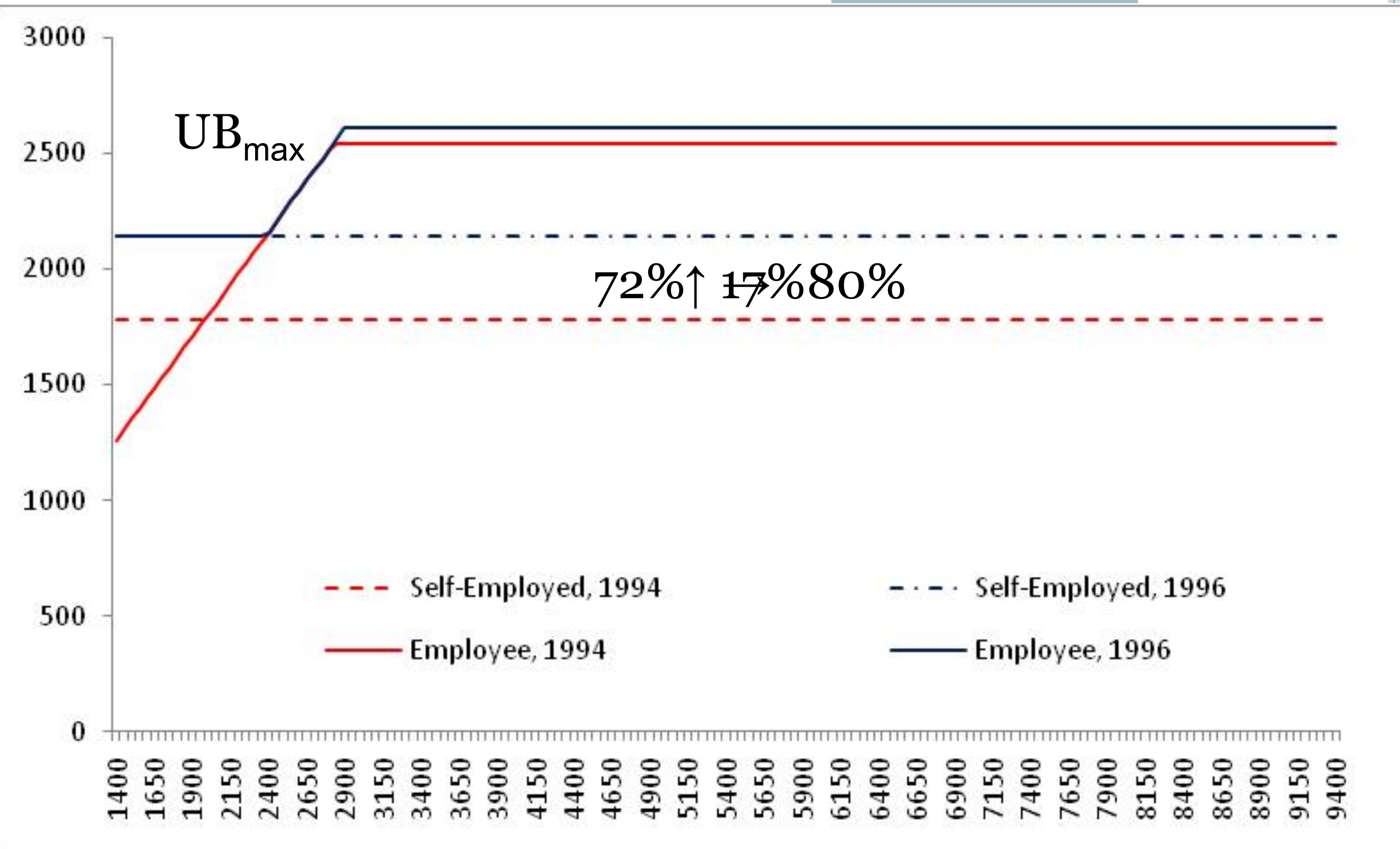


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- Unemployment Benefits (UB) for self-employed increased from 72% to 80% of maximum UB independent of past earnings
- UB increase of 17% (DKK356 \approx €50) per week
 - Increases future expected value of self-employment
 - Increases probability of self-employment?

Figure 1. Weekly Unemployment Benefits (UB) as function of past Weekly Earnings.



Natural Experiment



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- Timing of Events:
 - Bill put forward on December 6, 1995
 - Legally passed on December 20, 1995
 - Change effective as of January 1, 1996
- No obvious reason to expect *anticipatory effects*
- Compare occupational choices in 1994-95 (*before*) to occupational choices in 1996-98 (*after*)
- Exploit differential change across various dimensions: past earnings, unemployment risk, liquid assets

Institutional Setting



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- UI existed in Denmark since 1907
 - sole aim: securing financial assistance in case of unemployment
- UI funds organized by professional field
- Voluntary UI fund contribution, but 70-90% contribute
- Covers both employees and self-employed
- Seniority and contributions transferable between funds
- Run business for at least 3 years before UB payed out

Data



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- Danish prime-age population (30-55 years) in 1994-98
 - Background: Gender, Age, Education, Children,...
 - Labor market histories:
 - Earnings
 - Actual Labor Market Experience
 - Occupational Choice (ultimo November)
 - Self-Employment Experience (Years Self-Employed)
 - Firm Profits, Size, FTE, Employees, Ownership, and Industry
 - Wealth, Assets, House, Liquid Assets,... 1993-2007
- ...also for **cohabitating partner** and **parents**

Data

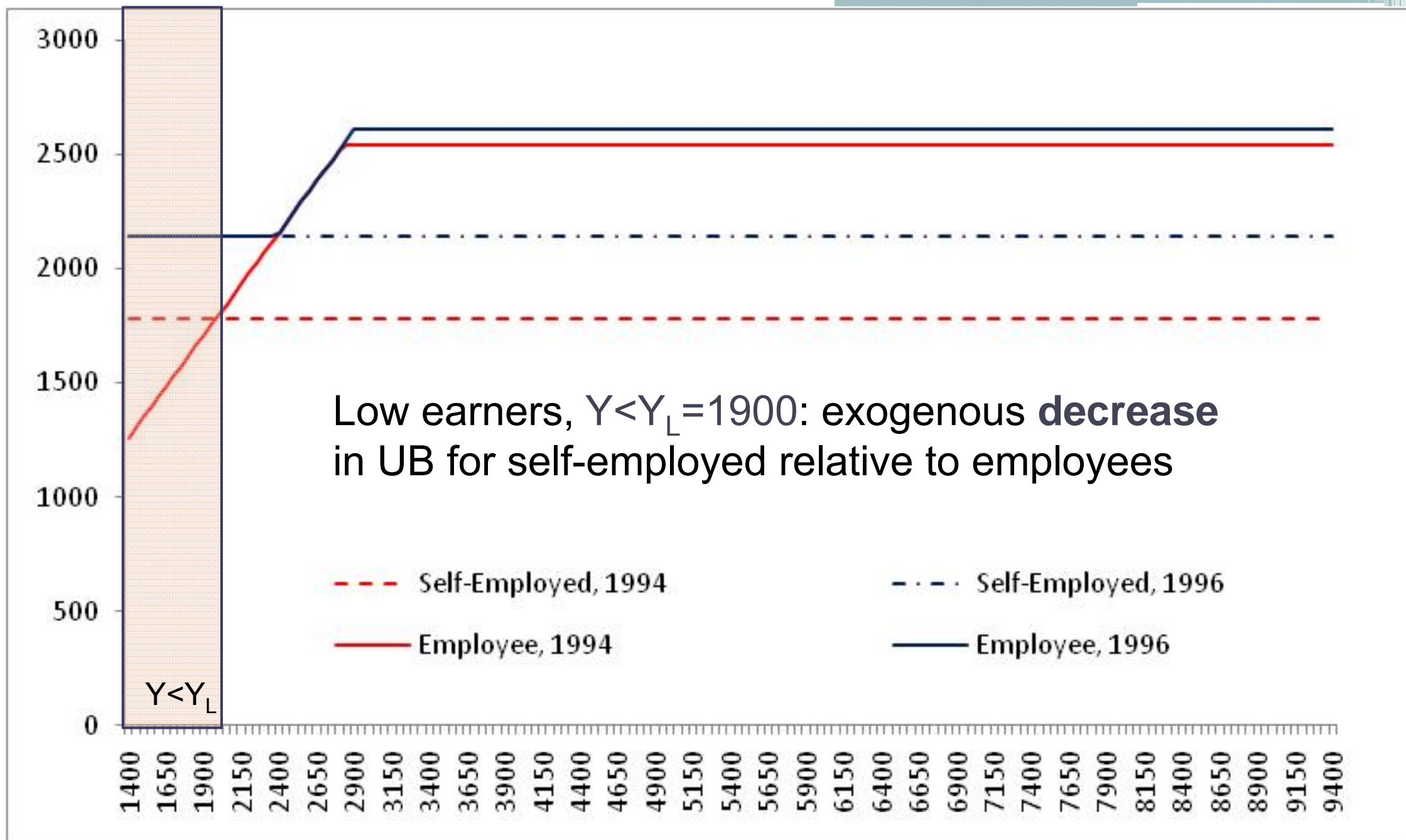


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- **Self-Employed** are owners or co-owners of a company
- only companies with **unincorporated associations**, i.e. owner personally liable for company:
 - Sole proprietorships ($\approx 70\%$)
 - Business partnerships (I/S)
 - Partnership shipping companies (“partrederi”)
 - Limited partnership company
- owners of **private limited companies** (ApS) are *not* classified as self-employed, but employees. Shareholders whose liability is limited by shares (Ltd) hence personal assets are distinct from company assets

Figure 1. Weekly Unemployment Benefits (UB) as function of past Weekly Earnings.



Identification



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- Low earners, $Y < Y_L = 1900$: exogenous **decrease** in UB for self-employed relative to employees

- Value of self-employment ($SE=1$) vs. employment

$$V(s_t) = U(C_t) + \beta E[\max\{V^0(s_{t+1}), V^1(s_{t+1})\}]$$

- main uncertain component of expected occupation-specific value is occupation-specific income:

$$Y_{t+1}^0(s_t) = p_U^0 UB_t(W_t) + (1 - p_U^0) W_{t+1}^0$$

$$Y_{t+1}^1(s_t) = p_U^1 UB_t^1 + (1 - p_U^1) W_{t+1}^1$$

~~UB_{t+1}^1~~ $SE=1$ $\downarrow\downarrow$

Table 5. Effect of UB Decrease on Self-Employment Choice.

		Parameter estimate (standard error)					
Effect of UB reform on Self-Employment:		(1)	(2)	(3)	(4)	(5)	(6)
Self-Employed							
AFTER1996	7.4 - 11% ↓	-0.0046 *** (0.0012)	-0.0035 *** (0.0012)	-0.0031 *** (0.0012)	-0.0049 *** (0.0015)	-0.0037 ** (0.0015)	-0.0025 * (0.0015)
Unemployment Diff in Industry					-0.0017 *** (0.0000)	-0.0015 *** (0.0000)	-0.0014 *** (0.0000)
AFTER1996 * Unemployment Diff in Industry					-0.0001 ** (0.0000)	-0.0001 *** (0.0000)	-0.0001 * (0.0000)
Additional control variables:							
<i>Time controls:</i>							
Year trend		+	+	+	+	+	+
<i>Industry controls:</i>							
Expected difference in return at age 30					+	+	+
Expected difference in return at age 55					+	+	+
<i>Regional controls:</i>							
Municipality fixed effects			+	+		+	+
<i>Individual controls:</i>							
Female			+	+		+	+
Married			+	+		+	+
Actual labor market experience				+			+
Level of Education				+			+
Field of Education				+			+
Self-Employed fraction					0.0418		
Number of Observations					381,487		

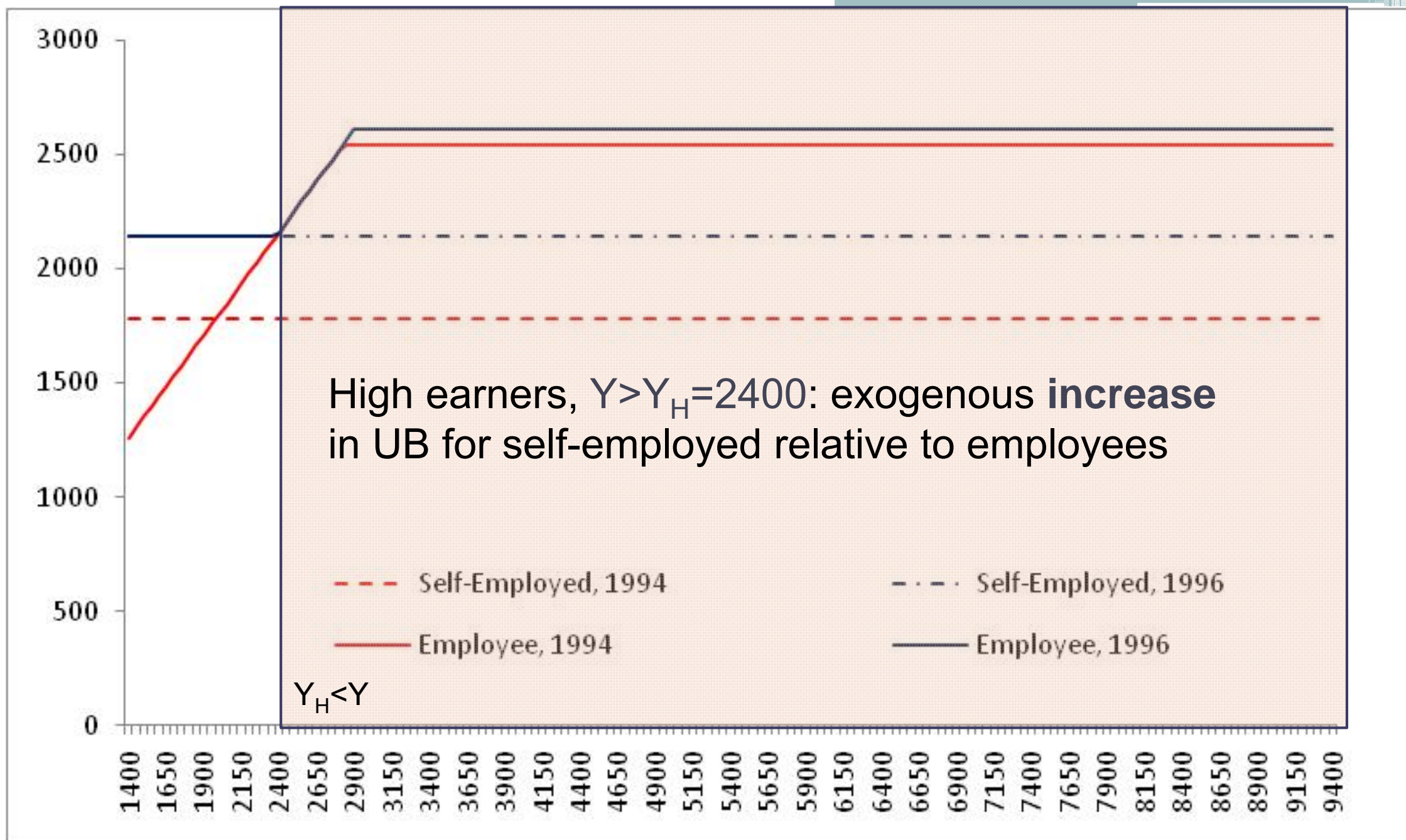
Table 1. Descriptive Statistics: Balancing of “Before” and “After” samples.

Individual variables	Before 1996	After 1996	Diff
Primary Occupational Classification: (%)			
Self Employed	2.02	2.31	0.29
Entry into Self Employment	0.60	0.63	0.03
Background variables:			
Female	0.46	0.46	0.00
Married / Cohabiting	0.79	0.79	-0.01
30-40 years old	0.40	0.40	0.00
40-50 years old	0.41	0.39	-0.02
50+ years old	0.19	0.22	0.02
Labor market experience (years)	11.54 (4.28)	12.65 (5.25)	1.11
Earnings _{t-1}	270,385 (114,458)	276,001 (131,454)	5,616
Highest completed education:			
Length of education (years)	12.45 (2.75)	12.54 (2.75)	0.10
Educational level grouping:			
Basic schooling	0.25	0.23	-0.02
High school	0.45	0.45	0.01
Short higher education	0.05	0.05	0.00
Medium higher education (incl. BSc/BA)	0.18	0.18	0.00
Long higher education (incl. MSc/MA, PhD)	0.08	0.08	0.00
Educational field grouping:			
General	0.31	0.30	-0.01
Humanities / Art / Education	0.10	0.10	0.00
Health Sciences	0.09	0.09	0.00
Life Sciences	0.05	0.05	0.00
Social Science	0.02	0.02	0.00
Business / Commercial	0.19	0.20	0.00
Natural Science / Engineering	0.23	0.23	0.00
Number of Individuals	1,410,489	1,592,530	
Number of Observations	2,557,473	4,065,382	

Table 1. Descriptive Statistics: Balancing of “Before” and “After” samples, Self-Employed.

Individual variables	Before 1996	After 1996	Diff
Background variables:			
Female	0.27	0.26	-0.01
Married / Cohabiting	0.82	0.81	0.00
30-40 years old	0.38	0.40	0.02
40-50 years old	0.42	0.38	-0.04
50+ years old	0.19	0.21	0.02
Labor market experience (years)	8.07 (4.58)	9.22 (5.21)	1.16
Earnings _{t-1}	290,653 (206,814)	293,635 (210,507)	2,982
Highest completed education:			
Length of education (years)	12.84 (2.92)	12.84 (2.88)	0.00
<i>Educational level grouping:</i>			
Basic schooling	0.21	0.20	-0.01
High school	0.44	0.45	0.01
Short higher education	0.07	0.07	0.01
Medium higher education (incl. BSc/BA)	0.14	0.13	-0.01
Long higher education (incl. MSc/MA, PhD)	0.14	0.14	0.00
<i>Educational field grouping:</i>			
General	0.29	0.29	0.00
Humanities / Art / Education	0.06	0.06	0.00
Health Sciences	0.10	0.09	-0.01
Life Sciences	0.10	0.10	0.00
Social Science	0.03	0.03	0.00
Business / Commercial	0.18	0.18	-0.01
Natural Science / Engineering	0.24	0.25	0.01
Number of Individuals	25,256	33,554	
Number of Observations	60,847	108,594	

Figure 1. Weekly Unemployment Benefits (UB) as function of past Weekly Earnings.



Identification



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- High earners, $Y > Y_H = 2400$: exogenous **increase** in UB for self-employed relative to employees

- Value of self-employment ($SE=1$) vs. employment

$$V(s_t) = U(c_t) + \beta E[\max\{V^0(s_{t+1}), V^1(s_{t+1})\}]$$

- main uncertain component of expected occupation-specific value is occupation-specific income:

$$Y_{t+1}^0(s_t) = p_U^0 UB_t(W_t) + (1 - p_U^0) W_{t+1}^0$$

$$Y_{t+1}^1(s_t) = p_U^1 UB_t^1 + (1 - p_U^1) W_{t+1}^1$$

~~UB_{t+1}^1~~ ($SE=1$) $\uparrow \uparrow$

Identification



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- Impact of past earnings, W_t , and replacement rate:

$$p_U^1 UB_t^1 - p_U^0 UB_t(W_t) + (1 - p_U^1)W_{t+1}^1 - (1 - p_U^0)W_{t+1}^0$$

- where $UB_t^1 = 0.70UB_{\max} + 0.12UB_{\max} \text{After}_{96}$
 $UB_t(W_t) = 0.90W_t + (UB_{\max} - 0.90W_t)I[W_t > W_{\text{kink}}]$

- UB increase less important for those with high W_t

$$\frac{\partial P(SE = 1|W_t)}{\partial UB \partial W_t} = \frac{\partial v(p_U^1 UB_t^1 - p_U^0 UB_t(W_t), \cdot)}{\partial UB \partial W_t} < 0$$

Figure 2. Replacement Rate (RR) as a function of past Weekly Earnings.

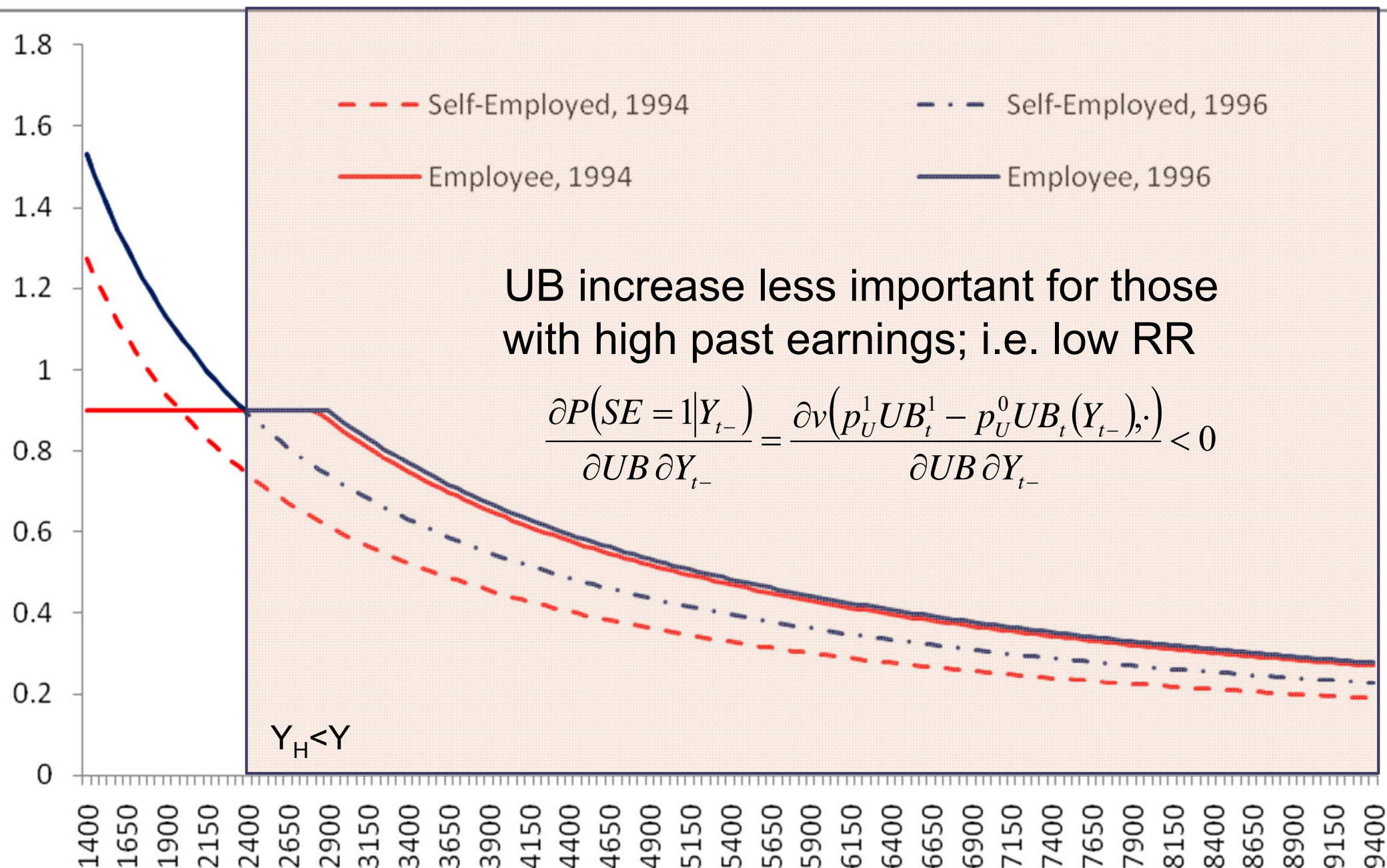


Table 2. Effect of UB Increase on Self-Employment Choice.

		Parameter estimate (standard error)					
Effect of UB reform on Self-Employment:		(1)	(2)	(3)	(4)	(5)	(6)
Self-Employed							
AFTER1996	2.4% ↑	0.0005 *** (0.0001)	0.0005 *** (0.0001)	0.0005 *** (0.0001)	0.0026 *** (0.0006)	0.0016 *** (0.0003)	0.0023 *** (0.0006)
Earnings _{t-1} / 1,000,000					0.0193 *** (0.0013)	0.0051 *** (0.0016)	0.0191 *** (0.0017)
AFTER1996 * Earnings _{t-1} / 1,000,000					-0.0076 *** (0.0021)	-0.0043 *** (0.0012)	-0.0066 *** (0.0021)
...only highly educated (BSc+)							
AFTER1996	3.3% ↑	0.0007 *** (0.0003)	0.0007 *** (0.0003)	0.0007 *** (0.0003)	0.0043 *** (0.0012)	0.0022 *** (0.0007)	0.0028 *** (0.0008)
Earnings _{t-1} / 1,000,000					0.0236 *** (0.0021)	0.0066 *** (0.0023)	0.0119 *** (0.0025)
AFTER1996 * Earnings _{t-1} / 1,000,000					-0.0111 *** (0.0021)	-0.0047 *** (0.0019)	-0.0066 *** (0.0022)
Additional control variables:							
<i>Time controls:</i>							
Year trend		+	+	+	+	+	+
<i>Regional controls:</i>							
Municipality fixed effects			+	+		+	+
<i>Individual controls:</i>							
Female			+	+		+	+
Married			+	+		+	+
Labor market experience				+			+
Level and Field of Education				+			+
Number of Observations					6,622,812		
...only highly educated (BSc+)					1,695,218		

Table 2E. Effect of UB Increase on Entry into Self-Employment.

Effect of UB reform on Self-Employment:	Parameter estimate (standard error)					
	(1)	(2)	(3)	(4)	(5)	(6)
Flow into Self-Employment; i.e. only employees at t-1						
AFTER1996	0.0003 *** (0.0001)	0.0003 ** (0.0001)	0.0003 *** (0.0001)	0.0013 *** (0.0004)	0.0007 *** (0.0002)	0.0009 *** (0.0003)
Earnings _{t-1} / 1,000,000				0.0102 *** (0.0007)	0.0014 * (0.0007)	0.0064 *** (0.0008)
AFTER1996 * Earnings _{t-1} / 1,000,000				-0.0035 *** (0.0013)	-0.0014 * (0.0008)	-0.0023 ** (0.0010)
...only highly educated (BSc+)						
AFTER1996	0.0007 *** (0.0002)	0.0007 *** (0.0002)	0.0007 *** (0.0002)	0.0029 *** (0.0008)	0.0019 *** (0.0005)	0.0018 *** (0.0004)
Earnings _{t-1} / 1,000,000				0.0140 *** (0.0011)	0.0058 *** (0.0011)	0.0050 *** (0.0012)
AFTER1996 * Earnings _{t-1} / 1,000,000				-0.0068 *** (0.0023)	-0.0036 *** (0.0013)	-0.0033 *** (0.0013)
Additional control variables:						
<i>Time controls:</i>						
Year trend	+	+	+	+	+	+
<i>Regional controls:</i>						
Municipality fixed effects		+	+		+	+
<i>Individual controls:</i>						
Female		+	+		+	+
Married		+	+		+	+
Labor market experience			+			+
Level and Field of Education			+			+
Number of Observations				6,568,728		
...only highly educated (BSc+)				1,678,498		

Unemployment Risk



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- UB increase more important if higher probability of unemployment, p_U :

$$\frac{\partial P(SE = 1)}{\partial UB \partial p_U} = \frac{\partial v(p_U (UB_t^1 - UB_t(Y_{t-})), \cdot)}{\partial UB \partial p_U} > 0$$

- also allow for different unemployment risk for self-employed and employees, $p_U^1 \neq p_U^0$

Unemployment Risk



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- Exploit differences in unemployment risk across industries over the period 1993-2007
- Group industries according to standard I56 grouping (conditional on at least 50 individuals)
- Unemployment risk measures:
 - Average unemployment rate in industry, p_j
 - Difference in average unemployment rate of self-employed and employees in industry, $p_j^1 - p_j^0$

Table 1A. Descriptive Statistics: Industry Unemployment Risk and Return (I56; 1993-2007)

Industry	N Self-Empl	N Empl	Mean Unempl	Difference Mean Unempl SE - Empl	Difference P10 log(Y_e) SE - Empl	Difference P50 log(Y_e) SE - Empl	Difference P90 log(Y_e) SE - Empl
Misc.	11,186	62,416	2	-4	-0.30	0.35	0.56
Financial Intermediation	81	2,568	5	12	-0.25	0.72	0.89
Energy and Water Supply	411	3,288	7	-3	-0.84	0.82	1.32
Activities auxiliary to financial sector	151	1,531	12	-7	10.36	1.28	1.75
Computing and Data Services	3,483	25,498	12	-9	-0.69	0.85	1.25
Post and Telecommunications	820	7,291	12	-2	-2.40	1.13	1.69
Agriculture	28,158	266,057	12	-31	-1.73	0.89	1.66
Health Care	13,599	93,080	13	-11	-0.32	0.47	0.95
Trade with cars, auto repair, service stations	7,391	79,653	15	-16	-0.34	0.70	1.05
Pharmacies, Perfumeries, Drugstores, Department stores	525	5,086	17	-7	-0.57	0.85	1.16
...							
Consulting and Cleaning Services	23,611	191,364	39	-40	-1.26	0.97	1.55
Textile, Clothing, and Leather Industry	1,028	10,943	39	-37	-0.37	0.73	1.20
Retail sale of Clothing and Footwear	3,509	29,623	39	-45	-9.72	1.90	3.07
Construction Company	22,152	182,731	41	-44	-0.27	0.47	0.79
Recreational, Cultural, and Sporting Activities	3,055	23,467	46	-41	-0.45	0.74	1.40
Plant nurseries etc.	2,149	20,658	52	-66	-0.73	0.79	1.38
Fishing	1,787	20,182	54	-89	-0.66	0.78	1.31
Horticulture	1,328	13,498	56	-66	-0.29	0.51	0.91
Hotel and Restaurant Services	10,544	94,919	60	-71	-1.17	0.96	1.45
Waste Management	116	2,385	61	-18	-0.19	0.36	1.04

Table 3. Effect of UB Increase on Self-Employment Choice, Unemployment Risk.

Effect of UB reform on Self-Employment:	Parameter estimate (standard error)					
	(1)	(2)	(3)	(4)	(5)	(6)
AFTER1996	0.0004 ** (0.0002)	0.0003 ** (0.0001)	0.0004 *** (0.0002)	0.0008 *** (0.0001)	0.0008 *** (0.0001)	0.0009 *** (0.0001)
Average Unemployment in Industry	0.0102 *** (0.0003)	0.0080 *** (0.0005)	0.0077 *** (0.0005)			
AFTER1996 * Average Unemployment in Industry	0.0014 *** (0.0004)	0.0014 *** (0.0004)	0.0013 *** (0.0004)			
Unemployment Diff in Industry / 100				-0.0618 *** (0.0005)	-0.0603 *** (0.0005)	-0.0595 *** (0.0006)
AFTER1996 * Unemployment Diff in Industry / 100				0.0039 *** (0.0005)	0.0040 *** (0.0005)	0.0047 *** (0.0005)
...only highly educated (BSc+)						
AFTER1996	0.0006 (0.0004)	0.0005 ** (0.0003)	0.0006 ** (0.0003)	0.0014 *** (0.0003)	0.0013 *** (0.0003)	0.0015 *** (0.0003)
Average Unemployment in Industry	0.0033 *** (0.0013)	0.0084 *** (0.0017)	0.0112 *** (0.0018)			
AFTER1996 * Average Unemployment in Industry	0.0048 ** (0.0002)	0.0032 *** (0.0011)	0.0028 ** (0.0011)			
Unemployment Diff in Industry / 100				-0.0855 *** (0.0015)	-0.0851 *** (0.0015)	-0.0869 *** (0.0015)
AFTER1996 * Unemployment Diff in Industry / 100				0.0103 *** (0.0013)	0.0103 *** (0.0013)	0.0111 *** (0.0013)
Additional control variables:						
Time controls: Year trend	+	+	+	+	+	+
Industry controls: Exp. diff. in return at age 30 and 55	+	+	+	+	+	+
Regional controls: Municipality fixed effects		+	+		+	+
Individual controls: Female, Married		+	+		+	+
Experience, Education			+			+
Number of Observations	6,301,762					
...only highly educated (BSc+)	1,628,539					

Table 3E. Effect of UB Increase on Entry into Self-Employment, Unemployment Risk.

	Parameter estimate (standard error)					
	(1)	(2)	(3)	(4)	(5)	(6)
Effect of UB reform on Self-Employment:						
Flow into Self-Employment; i.e. only employees at t-1						
AFTER1996	0.0002 * (0.0001)	0.0002 (0.0001)	0.0002 (0.0001)	0.0004 *** (0.0001)	0.0004 *** (0.0001)	0.0004 *** (0.0001)
Average Unemployment in Industry	0.0061 *** (0.0002)	0.0049 *** (0.0003)	0.0047 *** (0.0003)			
AFTER1996 * Average Unemployment in Industry	0.0011 *** (0.0003)	0.0010 *** (0.0003)	0.0010 *** (0.0003)			
Unemployment Diff in Industry / 100				-0.0290 *** (0.0003)	-0.0281 *** (0.0003)	-0.0283 *** (0.0003)
AFTER1996 * Unemployment Diff in Industry / 100				0.0008 ** (0.0004)	0.0009 ** (0.0004)	0.0012 *** (0.0004)
...only highly educated (BSc+)						
AFTER1996	0.0007 *** (0.0003)	0.0007 *** (0.0002)	0.0007 *** (0.0002)	0.0009 *** (0.0002)	0.0009 *** (0.0002)	0.0009 *** (0.0002)
Average Unemployment in Industry	0.0045 *** (0.0007)	0.0040 *** (0.0009)	0.0049 *** (0.0009)			
AFTER1996 * Average Unemployment in Industry	0.0015 * (0.0009)	0.0015 ** (0.0008)	0.0014 ** (0.0008)			
Unemployment Diff in Industry / 100				-0.0348 *** (0.0008)	-0.0348 *** (0.0008)	-0.0363 *** (0.0008)
AFTER1996 * Unemployment Diff in Industry / 100				0.0028 *** (0.0009)	0.0028 *** (0.0009)	0.0030 *** (0.0009)
Additional control variables:						
Time controls: Year trend	+	+	+	+	+	+
Industry controls: Exp. diff. in return at age 30 and 55	+	+	+	+	+	+
Regional controls: Municipality fixed effects		+	+		+	+
Individual controls: Female, Married		+	+		+	+
Experience, Education			+			+
Number of Observations	6,249,021					
...only highly educated (BSc+)	1.612.137					

- Larger response to UB increase for those facing higher unemployment risk
- How about those with a higher degree of alternative insurance mechanisms?
- UB increases larger effects on unemployment durations for liquidity constrained (Chetty, 2008)
- Measures of liquidity:
 - Liquid Assets_{t-2}
 - $I[\text{Liquid Assets}_{t-2} > 16 \text{ weeks UB}_{\max}]$

Table 4. Effect of UB Increase on Self-Employment, Unemployment Risk and Liquid Assets.

	Parameter estimate (standard error)		
	(1)	(2)	(3)
Effect of UB reform on Self-Employment:			
AFTER1996	0.0014 *** (0.0002)	0.0014 *** (0.0002)	0.0015 *** (0.0002)
Unemployment Diff in Industry / 100	-0.0764 *** (0.0007)	-0.0766 *** (0.0007)	-0.0734 *** (0.0008)
AFTER1996 * Unemployment Diff in Industry / 100	0.0062 *** (0.0007)	0.0063 *** (0.0007)	0.0072 *** (0.0007)
Liquid Assets _{t-2} / 1,000,000	0.0007 * (0.0004)	0.0007 * (0.0004)	0.0007 * (0.0004)
AFTER1996 * Liquid Assets _{t-2} / 1,000,000	-0.0010 *** (0.0002)	-0.0010 *** (0.0002)	-0.0010 *** (0.0002)
AFTER1996 * Liquid Assets _{t-2} * Unempl Diff in Industry / 1,000,000	-0.0006 *** (0.0001)	-0.0006 *** (0.0001)	-0.0006 *** (0.0001)
...only highly educated (BSc+)			
AFTER1996	0.0021 *** (0.0003)	0.0020 *** (0.0003)	0.0023 *** (0.0003)
Unemployment Diff in Industry / 100	-0.1247 *** (0.0022)	-0.1210 *** (0.0022)	-0.1280 *** (0.0023)
AFTER1996 * Unemployment Diff in Industry / 100	0.0188 *** (0.0018)	0.0186 *** (0.0018)	0.0208 *** (0.0018)
Liquid Assets _{t-2} / 1,000,000	0.0003 (0.0003)	0.0003 (0.0002)	0.0003 (0.0002)
AFTER1996 * Liquid Assets _{t-2} / 1,000,000	-0.0010 *** (0.0002)	-0.0010 *** (0.0002)	-0.0009 *** (0.0002)
AFTER1996 * Liquid Assets _{t-2} * Unempl Diff in Industry / 1,000,000	-0.0007 *** (0.0001)	-0.0007 *** (0.0001)	-0.0007 *** (0.0001)
Additional control variables:			
<i>Time controls:</i> Year trend	+	+	+
<i>Industry controls:</i> Exp. diff. in return at age 30 and 55	+	+	+
<i>Regional controls:</i> Municipality fixed effects		+	+
<i>Individual controls:</i> Female, Married		+	+
Experience, Education			+
Number of Observations		5,511,807	
...only highly educated (BSc+)		1 425 487	

Table 4UB. Effect of UB Increase on Self-Employment, Unemployment Risk and Liquid Assets.

Effect of UB reform on Self-Employment:	Parameter estimate (standard error)		
	(1)	(2)	(3)
AFTER1996	0.0021 *** (0.0002)	0.0020 *** (0.0002)	0.0021 *** (0.0002)
Unemployment Diff in Industry / 100	-0.0763 *** (0.0007)	-0.0737 *** (0.0007)	-0.0732 *** (0.0008)
AFTER1996 * Unemployment Diff in Industry / 100	0.0120 *** (0.0007)	0.0121 *** (0.0007)	0.0131 *** (0.0007)
I[Liquid Assets _{t-2} > 16 weeks UB _{max}]	0.0066 *** (0.0002)	0.0058 *** (0.0002)	0.0065 *** (0.0002)
AFTER1996 * I[Liquid Assets _{t-2} > 16 weeks UB _{max}]	-0.0021 *** (0.0002)	-0.0021 *** (0.0002)	-0.0015 *** (0.0002)
AFTER1996 * I[Liquid Assets _{t-2} > 16 weeks UB _{max}] * Unempl Diff in Industry / 100	-0.0214 *** (0.0012)	-0.0213 *** (0.0012)	-0.0215 *** (0.0012)
Flow into Self-Employment; i.e. only employees at t-1			
AFTER1996	0.0007 *** (0.0001)	0.0007 *** (0.0001)	0.0007 *** (0.0001)
Unemployment Diff in Industry / 100	-0.0366 *** (0.0004)	-0.0348 *** (0.0004)	-0.0349 *** (0.0004)
AFTER1996 * Unemployment Diff in Industry / 100	0.0026 *** (0.0005)	0.0027 *** (0.0005)	0.0031 *** (0.0005)
I[Liquid Assets _{t-2} > 16 weeks UB _{max}]	0.0021 *** (0.0001)	0.0017 *** (0.0001)	0.0018 *** (0.0001)
AFTER1996 * I[Liquid Assets _{t-2} > 16 weeks UB _{max}]	-0.0004 *** (0.0002)	-0.0004 *** (0.0002)	-0.0002 *** (0.0002)
AFTER1996 * I[Liquid Assets _{t-2} > 16 weeks UB _{max}] * Unempl Diff in Industry / 100	-0.0041 *** (0.0007)	-0.0041 *** (0.0007)	-0.0042 *** (0.0007)
Additional control variables:			
Time controls: Year trend	+	+	+
Industry controls: Exp. diff. in return at age 30 and 55	+	+	+
Regional controls: Municipality fixed effects		+	+
Individual controls: Female, Married		+	+
Experience, Education			+
Number of Observations		5,511,807	
...only employees at t-1		5 466 611	

First-Stage Results



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- Increase (decrease) in UB for self-employed, increases (decreases) probability of self-employment
- Smaller UB response for those with a lower value of unemployment insurance:
 - Individuals with lower replacement rates
 - Individuals facing lower unemployment risk
 - Individuals with more liquid assets
- Seems to be a role for UI to induce individuals into entrepreneurial activity

Longer Term Effects?

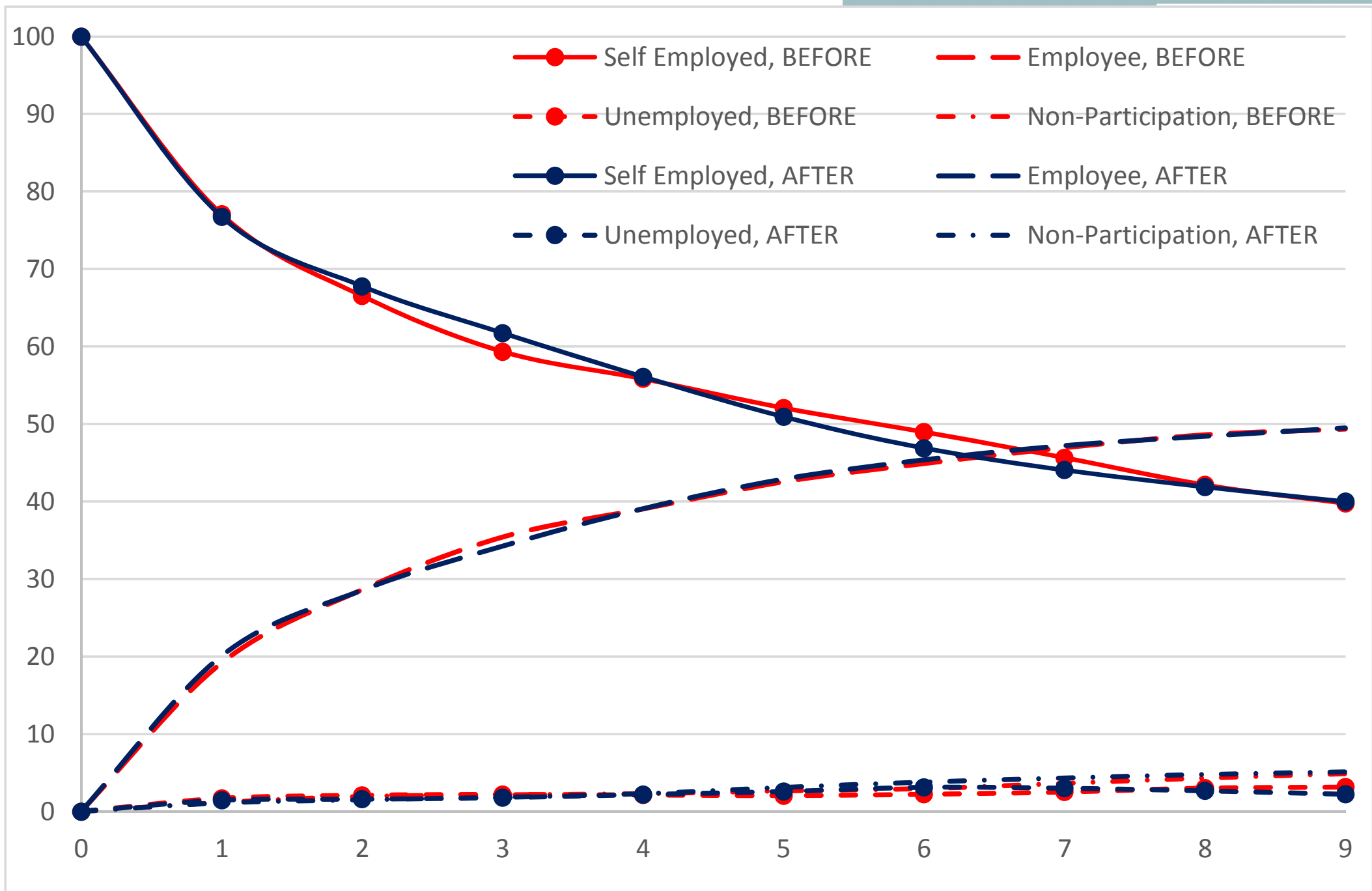


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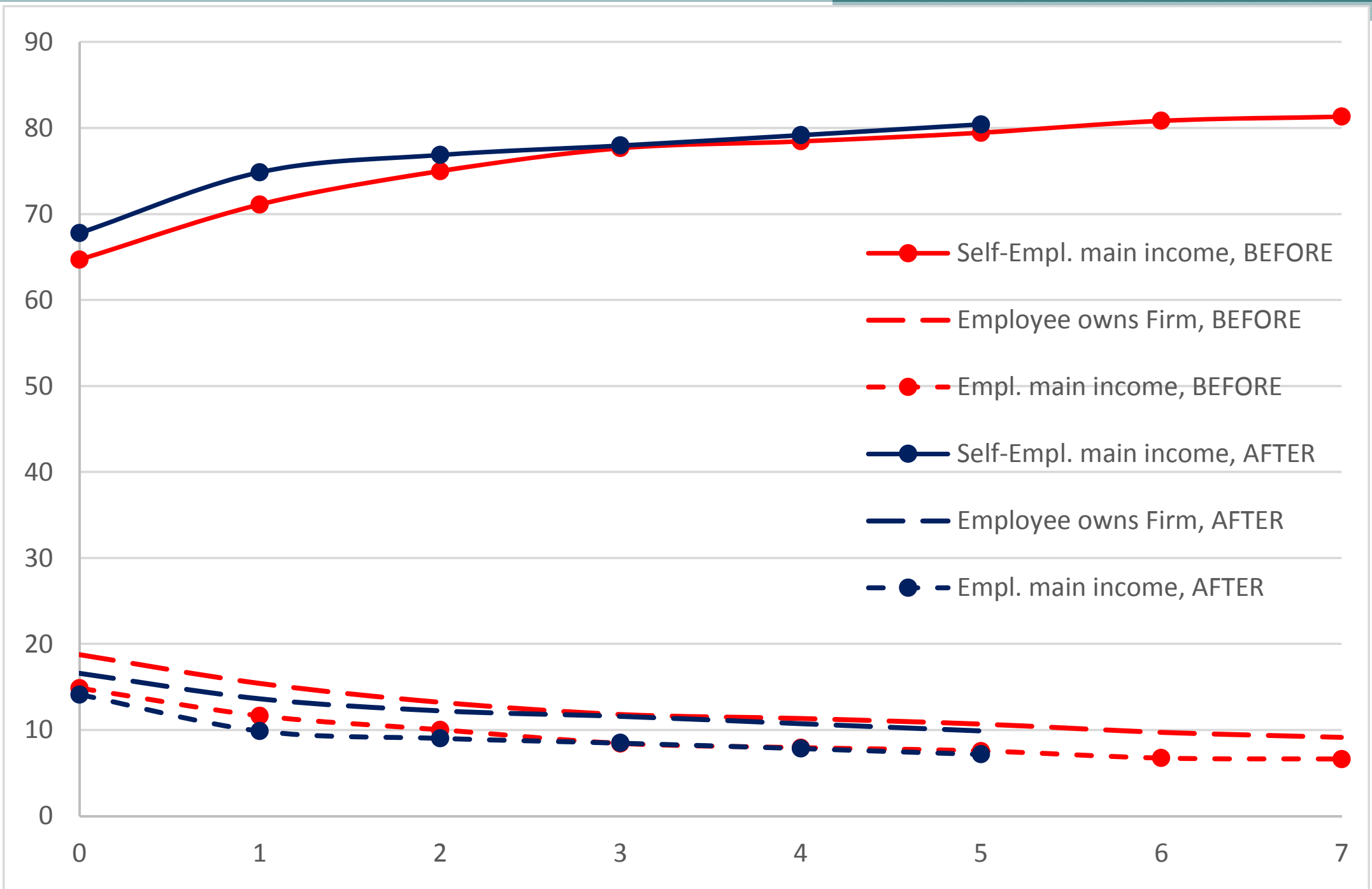
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- Is this efficient?
- Longer term outcomes?
- Observe labor market histories of individuals and their firms until 2007:
 - Occupation, Earnings, Gross Income, Assets, Wealth
 - Entrepreneurs: Number of Employees, FTEs, profits, retained inc.
- Exploit change in UB to estimate long term career impacts of self-employment
- Can we shed some new light on equity vs. efficiency in UI?

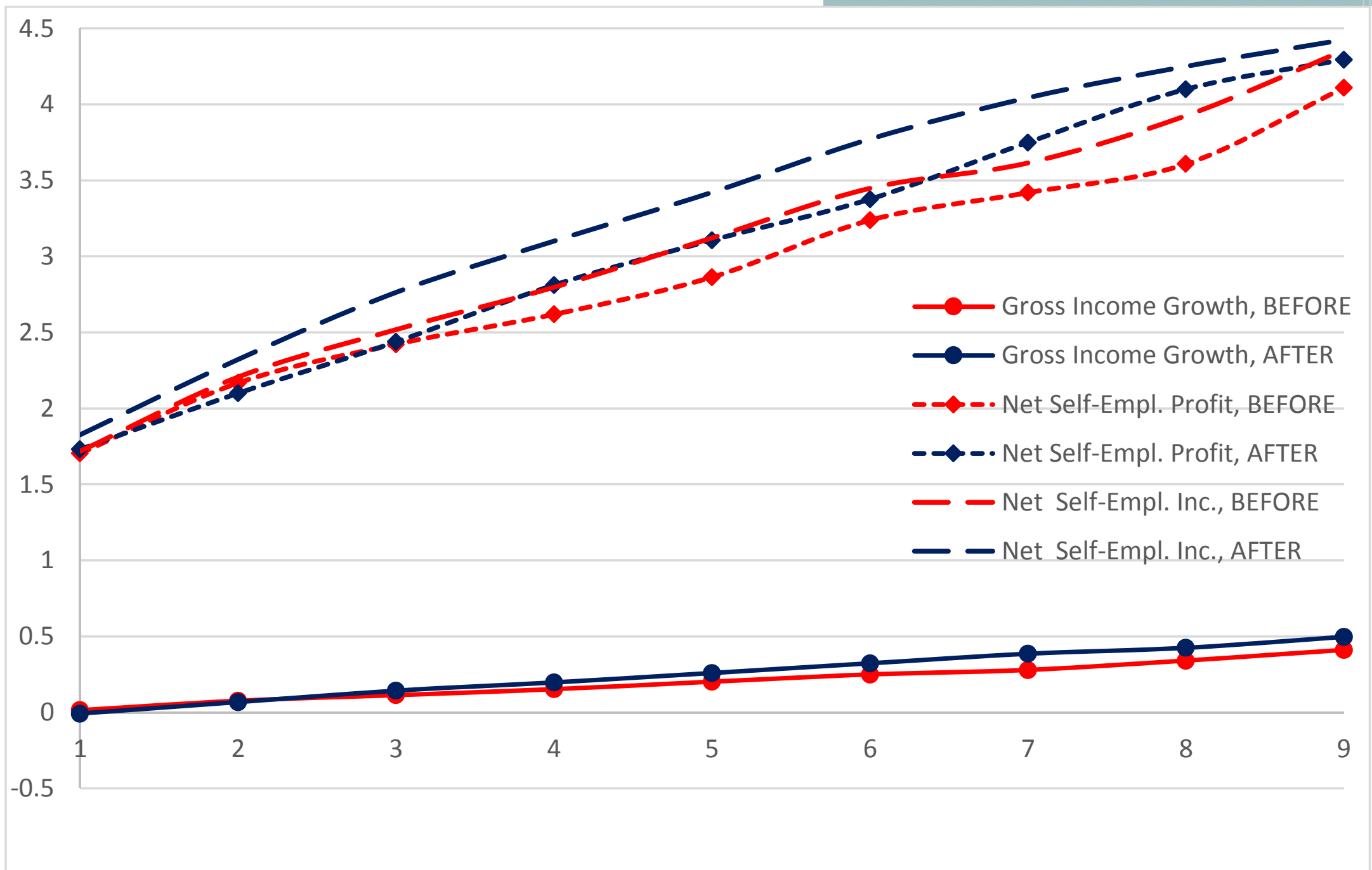
Primary Occupation for $t=0,1,\dots,9$ for those Self-Employed at $t=0$.



Primary Income Source for those who are still Self-Employed at $t=1, \dots, 7$.



Gross Income, Net SE Profits and Income for those still Self-Employed at $t=1, \dots, 9$.



Conclusion



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- Higher UB induces individuals into entrepreneurial activity
- UI may improve efficiency
- Some evidence of better individual longer term outcomes:
 - Small firms (2 FTE, 4 empl. Nov, 8 empl. year)
 - Gross Income
 - Net Profits and Income from self-employment
 - Assets and Wealth
 - Firm histories

Further Research



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- More measures of Liquidity and Alternative Insurance
- Waiting for data on:
 - Received Unemployment Benefits
 - Industry
 - Retained Income
 - Secondary Occupation (part-time self-employed)
- Exploit Industry Differences
- Exploit exogenous variation around "kink" in UB
 - No sorting around "kink" (smooth income distribution)
 - Card, Lee & Pei (2009), Nielsen, Sørensen & Taber (2010), Simonsen, Skipper & Skipper (2010)

Figure 1. Weekly Unemployment Benefits (UB) as function of past Weekly Earnings.

