

Insurance, Entrepreneurial Start-Up and Performance

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15 Nov 2013
TI CEPR Entrepreneurship Conference

INTRODUCTION & OVERVIEW

Motivation

- entrepreneurs as source of innovation and growth
- self-employment/entrepreneurship associated with considerable risk
- income insurance programs: self-employed not covered (or less than employees)

EX pensions, ▶ unemployment insurance , health insurance etc.

- lack of private insurance mechanisms (market failure)
- ▶ workers enter self-employment possibly at a lower rate than otherwise
at least, they may shun entry if not insured
- literature:
insurance helps individuals to start up—but how do they fare?

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This Paper In a Nutshell

- self-employment entry in Denmark over 30 years
- use variation in voluntary unemployment insurance (UI) status
- use exogenous policy variation that induces UI participation (controls UI choice) ▶ illustration of main change
- based on 3 similar reforms at different points in time, hitting different cohorts differently, good for 6 instruments
- ▶ isolate causal effect of insurance on self-employment entry through joint modeling of both insurance decisions and occupation transition
- study in detail post-start-up performance of new firms
- punchline: insurance 'opens doors' to entrepreneurship, but does not select on quality

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LITERATURE

Two Insurance Mechanisms

■ bankruptcy

- US bankruptcy code allows failed firm (or its proprietor) to keep some assets after debt discharge ('fresh start')
- Fan & White (2003): exploit state-specific asset exemption-levels
- Paik (2013): 2005 debt discharge more cumbersome (BAPCPA)
- other papers: Primo and Green (2011), Akyol and Athreya (2011), Lee et al (2011), Jia (2011)

■ health insurance

- lack of employer-sponsored private health insurance reduces job-to-job mobility: 'job lock', Madrian (1994)
- may also hold as 'entrepreneurship lock', Fairlie et al (2011)
- *Journal of Human Capital*, 2013, 7(1), 1-28
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- lack of employer-sponsored private health insurance reduces job-to-job mobility: 'job lock', Madrian (1994)
- may also hold as 'entrepreneurship lock', Fairlie et al (2011)
 - identification: DiD (spouses), and RDD at age 65 (medicare)
 - health insurance access triggers transition into entrepreneurship
- other papers: Gruber & Poterba (1994), Perry & Rosen (2004), De Cicca (2010), Velamuri (2012)

MODEL

–skipped–

▸ 1 , ▸ 2 , ▸ pic

DATA AND INSTITUTIONS

Population of Interest

- prime aged (25-59) Danish (Denmark-born, Danish citizens) males, outside agriculture
- all wage employed in week 48 (late Nov.) of year $t - 1$ and not unemployed during year $t - 1$
- ▶ about 1m individuals per year
[estimation: 100%, 25%, and 1% sample]
- years 1980-2009
- estimate transition probability into self-employment between $t - 1$ and t (▶ **descriptives**)
- ▶ **raw data**: transition probability WE → SE 1%
insured: 0.8%, uninsured: 1.5%
- further descriptives
 - ▶ **LM status** , ▶ **UI entry and ER incentive**

Voluntary Unemployment Insurance (UI)

■ UI funds

- #: ~ 35, typically sector specific
- access for self-employed possible
- regulation
 - no refusal of applicants
 - no price discrimination
- ▶ high subsidization from taxpayer

■ Insurance

- fixed parameters (pooling)
- cover: according to part/full time (SE: only full time)
- drawing benefits: unemployed and member > 12 months
- benefit=90% of previous earnings/income as SE s.t. ceiling & floor
- max benefit duration between 36 and 60 months
- workers: have worked > 6 months
- SE: have run business > 36 months and terminated it

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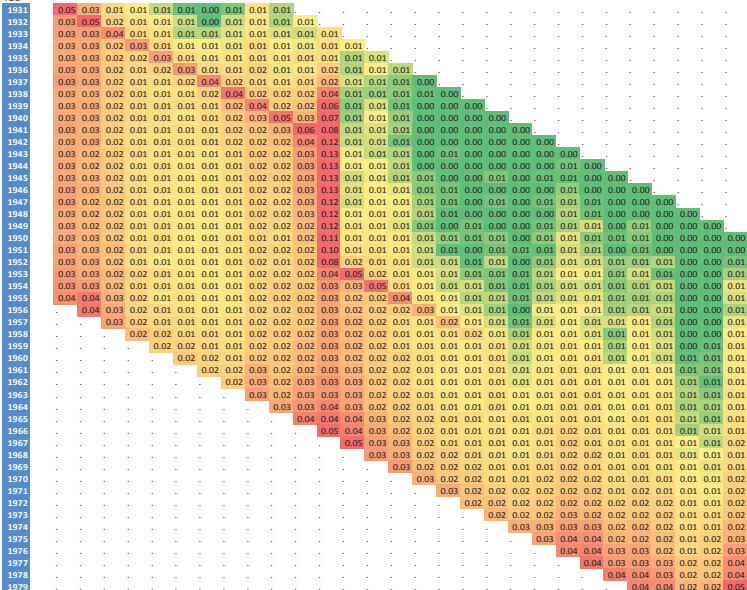
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Heat map: UI Enrollment Probabilities by Cohort and Year (Age)

YEAR 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

YOB



Early Retirement (ER)

- ER part of UI system, not of old-age pension system
- ER: age 60 (62) until standard retirement age 67 (65)
- anyone desiring ER cover must be UI enrolled
- open to both wage earners and self-employed
- heavily subsidized
- ER eligibility: those continuously enrolled in a UI fund before a certain age-threshold
- ▶ additional aspects ER reforms

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Reforms of Early Retirement Eligibility and Instruments

YEAR	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
YOB																														
1930	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
1931	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78
1932	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77
1933	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76
1934	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
1935	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
1936	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73
1937	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72
1938	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
1939	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
1940	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69
1941	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
1942	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
1943	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66
1944	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
1945	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
1946	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
1947	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62
1948	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
1949	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
1950	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59
1951	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58
1952	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57
1953	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
1954	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
1955	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
1956	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
1957	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52
1958	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1959	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
1960	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
1961	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
1962	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
1963	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
1964	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
1965	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
1966	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
1967	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
1968	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
1969	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1970	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39
1971	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
1972	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1973	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1974	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
1975	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
1976	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1977	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1978	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
1979	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

LEGEND

sample exclusions

not in sample (likely not participating in the labor market or potentially eligible for early retirement)

not in sample, eligible for old-age pension

minimum required insurance ages to qualify for early retirement at the earliest age (60-62 depending on cohort and year)

initial situation, valid from 1980

those unaffected by the 1992 reform, but affected by the contribution requirements from 1999 on

those affected by the 1992 reform

Instrument sets

ER regime < 1992

ER regime 92-98

ER regime 99-06

ER regime > 2006

contr.years

RESULTS

LPM Specifications

$$\begin{aligned}
 (\text{insurance}) \quad y_{1it} &= \gamma z_{it} + \beta_1 x_{it} + \tau_{1t} + f_1(a_{it}) + \eta_{1i} + \varepsilon_{1it} \\
 (\text{start-up}) \quad y_{2it} &= \alpha y_{1it} + \beta_2 x_{it} + \tau_{2t} + f_2(a_{it}) + \eta_{2i} + \varepsilon_{2it}
 \end{aligned}$$

- FE (for comparison): regress SE entry y_2 on UI dummy y_1
- FE-IV: SE entry regressed on instrumented UI dummy;
first stage: UI y_1 as function of ER reforms z
- regressors
 - sets of dummies
 - year: τ_{jt} ; individuals/cohorts: η_{ji}
 - region; industry
 - polynomials
 - age: $f_{jt}(a_{it})$
 - experience
 - demographics; health
 - ▶ unused insurance capacity afforded by wife's potential earnings
- lags

Probability to Start Up: Linear Fixed Effects Models

	lag	Uninstrumented		Instrumented			
		self-employed		First Stage insured		Second Stage self-employed	
		coeff.	p-value	coeff.	p-value	coeff.	p-value
UI insured ▶ raw	$t - 1$	-0.0015	0.000			0.0175	0.000
ER regime < 1992	$t - 1$			0.0527	0.000		
ER regime 92 – 98	$t - 1$			0.0550	0.000		
ER regime 99 – 07	$t - 1$			0.0343	0.000		
ER regime > 2007	$t - 1$			0.0218	0.000		
# contr.years	$t - 1$			0.0010	0.000		
sign up late option	$t - 1$			0.0190	0.000		
age & experience polyn.		yes		yes		yes	
wage earnings (10k DKK)	$t - 2$	8.5e-6	0.346	0.0003	0.000	1.7e-6	0.845
net worth (10k DKK)	$t - 2$	-4.1e-9	0.627	-5.2e-8	0.006	-3.1e-9	0.671
home owner	$t - 2$	0.0026	0.000	0.0154	0.000	0.0023	0.000
various partner chars		yes		yes		yes	
unused earnings capacity	$t - 1$	0.0022	0.000	-0.0246	0.000	0.0027	0.000
earnings frontier	$t - 1$	-0.0001	0.000	-0.0007	0.000	-0.0001	0.000
region, industry, year dums		yes		yes		yes	
F-test instruments (6 df)				1979.95	0.000		
J-test OI restrictions (5 df)				6.46	0.264		

Based on a 25% sample, size: 3,899,162 observations from 331,227 individuals. Deflated to 2005.

Sensitivity Analyses

Coefficient on UI fund

Variation		coeff.	Variation		coeff.
Linear Fixed Effects model					
— baseline		−0.0015			
Linear Fixed Effects IV model					
— baseline		0.0175	5	— 3rd order age polynomial	0.0154
1	— net worth dummies replace net worth level	0.0184	6	— age dummies replace age polynomial	0.0168
2	— exclude net worth	0.0175	7	— only age and year dummies	
3	— partner income instead of frontier	0.0178		and instruments, no other regressors	0.0173
4	— partner income variables in logs	0.0176	8	— only 4 'ER regime' instruments	0.0176

Firm Performance Measures for Firms Starting Up in Year t by Insurance Status in $t - 1$

	Insured	Unins.	Δ	N
Survival until $t + 3$ (%)	44.82	37.54	7.28***	179,581
Conditional on survival until $t + 3$: (all measurements at $t + 3$)				
Mean profit (in k DKK)	408	454	-46***	67,742
Median profit (in k DKK)	307	282	25***	67,742
Fraction with profit ≤ 0 (%)	9.22	14.12	-4.9***	67,742
Sales Revenues (in k DKK)	3349	5652	-2303***	42,447
Value added (in k DKK)	1520	3033	-1513***	42,447
Fraction with employees (%)	46.33	40.20	6.13***	39,543

Firm Performance Measures: IV Regression Analysis

		Survival until $t + 3$		Profit $t + 3$		Employer $t + 3$	
	lag	coeff.	p-value	coeff.	p-value	coeff.	p-value
UI insured	$t - 1$	0.2627	0.198	42.18	0.860	0.2568	0.363
wage earnings (10k DKK)	$t - 2$	-0.0002	0.600	5.1616	0.001	0.0024	0.000
net worth (10k DKK)	$t - 2$	-3.8e-7	0.003	-7.3e-4	0.005	-2.0e-7	0.782
home owner	$t - 2$	0.0456	0.005	44.28	0.012	0.0443	0.013
various partner chars		yes		yes		yes	
unused earnings capacity	$t - 1$	0.0054	0.808	7.9245	0.823	0.0296	0.399
earnings frontier	$t - 1$	2.7e-5	0.963	0.3469	0.501	-0.0007	0.120
education dummies		yes		yes		yes	
year of birth dummies		yes		yes		yes	
Sample		25%		100%		100%	
NT		30,794		59,151		37,853	
N		26,690		57,430		37,259	
F test (statistic, p-value)		8.10	0.000	15.07	0.000	6.40	0.000
J test (statistic, p-value)		13.128	0.004	0.251	0.969	0.451	0.798

Sensitivity Analyses on Firm Performance I

Survival and Employees; UI fund coefficient

Variation		IV?	coeff.	p-value
Survival				
	— survival until $t + 3$	yes	0.2627	0.198
1	— survival until $t + 3$, full-time	yes	0.3003	0.134
2	— survival until $t + 5$	yes	0.2219	0.237
3	— joint prob. of entry and survival until $t + 3$	yes	0.0103	0.000
4	— joint prob. of entry and survival until $t + 5$	yes	0.0085	0.000
5	— survival until $t + 3$	no	0.0930	0.000
6	— survival until $t + 5$	no	0.0766	0.000
Employees				
	— have employees $t + 3$	yes	0.2568	0.363
7	— number of employees $t + 3$	yes	5.9699	0.422
8	— have employees $t + 3$	no	0.0211	0.001

Sensitivity Analyses on Firm Performance II

Firm Financial Outcomes and Private Net Worth; UI fund coefficient

Variation		instrumented		uninstrumented	
		coeff.	p-value	coeff.	p-value
0	profits $t + 3$	42.18	0.860	-18.02	0.014
1	value added $t + 3$	13206.4	0.167	-954.50	0.001
2	sales $t + 3$	11763.2	0.347	-1560.96	0.000
3	business income $t + 3$	25.90	0.864	-9.394	0.058
4	average profits $t + 3$ through $t + 5$	-312.16	0.127	-45.30	0.000
5	total income $t + 3$	-18.79	0.889	-38.20	0.000
6	net worth $t + 3$	2550.1	0.635	-614.86	0.013
7	change in net worth $t - 1 \rightarrow t + 3$	1332.6	0.845	-390.25	0.187

Surviving Entrepreneurs — Surviving Firms

	Insured $t - 1$	Uninsured $t - 1$
Entrepreneur survival $t + 3$	52.16%	44.37%
Firm survival $t + 3$	70.47%	74.04%
Average no. employees	88	289
Median no employees	6	11
New firms (firms started in t or $t - 1$)	43.35%	30.27%
New firm survival $t + 3$	56.72%	54.25%
Existing firm survival $t + 3$	82.35%	82.63%
No obs	1,437	2,682

CONCLUSIONS

Interpretation and Outlook

- we show, in line with other literature, that insurance provision is instrumental in getting people start their own business
- **first innovation:** large-scale formal (and partial) income insurance mechanism (rather than indirect effects of wealth insurance [bank'cy] or health insurance), with instruments that allow controlling the individual insurance choice
- substantial causal effect: 1.5%, compared to 0.7% raw data
- **second innovation:** the **induced** agents do not fare worse than others
- ▶ since uninstrumented results show a negative effect but control for unobserved heterogeneity, more is going on than simple selection on abilities or risk aversion
- complementary analysis on the moral hazard from insurance in Ejrnaes and Hochguertel (2013)

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ADDITIONAL MATERIAL

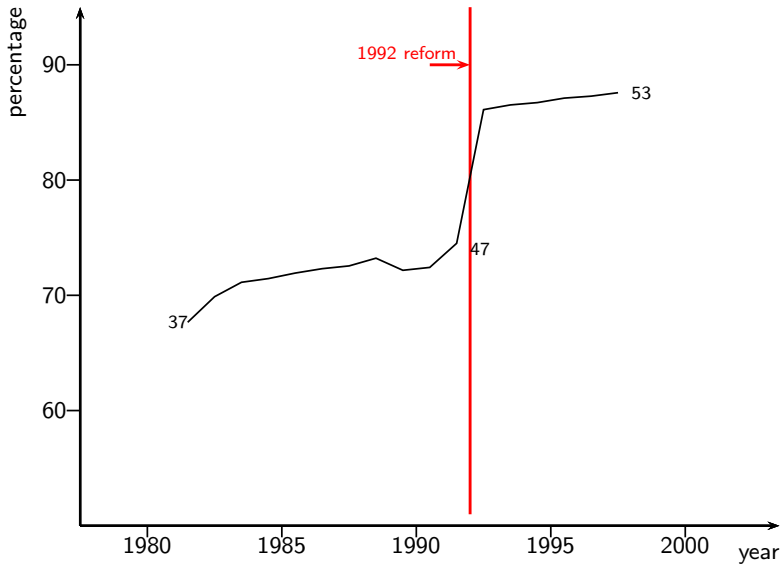
A Quote

“

... self-employed workers cannot, by definition, become unemployed and [...] therefore have no need for unemployment protection. They are not bound by a contract of employment with another and if they terminate their own employment, it would seem to be a voluntary act. [...] [Yet], a shrinking demand for the products or services of a self-employed worker may often leave him in about as difficult a position as an unemployed wage earner. [...]

ILO, *Unemployment Insurance Schemes*, 1955

Unemployment Insurance Incidence, Men Born 1945



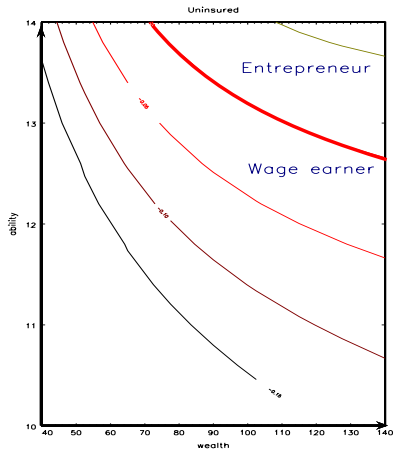
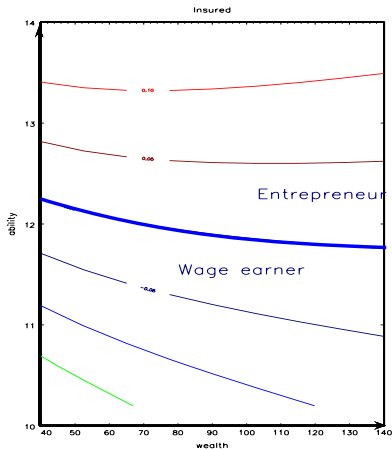
Aspects of Modeling, I

- occupational choice under uncertainty when formal insurance is available; **risk-averse** agents; entrepreneurship is **riskier**
- Evans & Jovanovich (1989), Kanbur (1979), Kihlstrom & Laffont (1979)
- ★ main idea: agents choose entrepreneurship and insurance ex ante; entrepreneurs can use private wealth for either investment or self-insurance; costly insurance leaves less to invest, but no need to self-insure
- ▶ insurance choice depends on risk, benefit level, premium, wealth, [ability], and future discounted benefits ('ER')
- ▶ occupational choice depends on insurance status, as well as wealth, and incomes

Aspects of Modeling, II

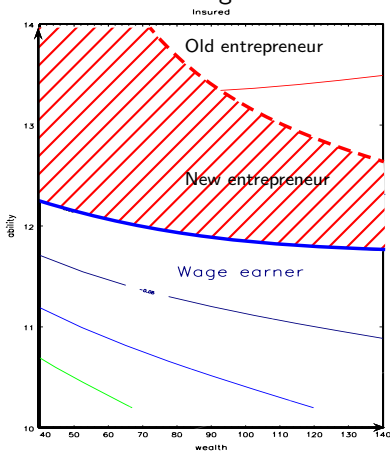
- possible outcome: if premium sufficiently high, demand for insurance is larger for high- than for low-ability entrepreneurs
 - return to investment larger for high ability types
 - these invest more, have larger income gap between employment and unemployment state
 - insurance decreases this gap and may allow for higher investment
- ▶ insurance may not necessarily attract low-ability entrepreneurs

Occupational Choice as a Function of Wealth and Ability by Insurance Status [I/r]

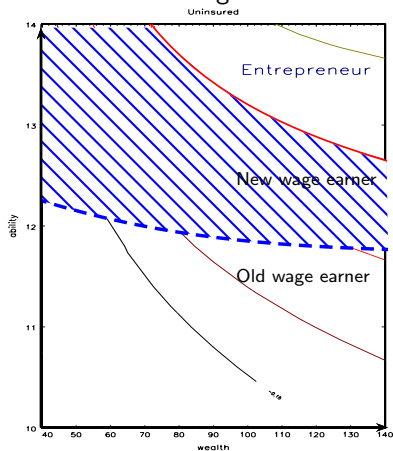


Occupational Choice as a Function of Wealth and Ability by Insurance Status [I/r]

Introducing Insurance



Abolishing Insurance



Self-employment Entry by Insurance Status, Estimation Population of Wage Earners

wage earners ($t - 1$) that become/are ...

Self-employed (t)	UI fund member ($t - 1$)		Total
	no	yes	
no	3,748,876	15,173,588	18,922,464
	98.46	99.21	99.06
yes	58,649	120,932	179,581
	1.54	0.79	0.94
total	3,807,525	15,294,520	19,102,045

Note: column percentages.

Labor Market Status (Per Cent)

Selected Years

year	SE	WE	UE	Totals
1980	10.25	79.97	9.78	934,155
1985	8.89	83.43	7.68	953,843
1990	8.12	81.20	10.67	985,972
1995	7.81	82.59	9.60	1,009,485
2000	7.35	85.26	7.39	1,028,332
2005	6.46	85.57	7.98	995,255
2009	6.81	81.10	12.09	952,401
Total	7.91	82.83	9.26	29,611,937
per cent				
insured	61.17	82.18	61.94	78.65

Note: Population of Denmark-born Danish prime aged (25-59) men never in agriculture by labor market status.

Transitions Into and out of Self-employment

from/to	entry		exit		stock	GDP
	WE	UE	WE	UE	SE	growth
1980/2009	0.95	3.14	8.47	3.58	7.91	1.8
1980/1981	0.92	2.75	6.80	3.67	10.25	-0.9
1981/1982	0.89	2.53	6.70	3.82	9.81	3.7
1982/1983	0.91	2.53	6.94	3.49	9.41	2.7
1983/1984	0.94	2.34	6.90	2.94	9.11	4.2
1984/1985	1.05	3.07	7.67	2.41	8.94	4.0
1985/1986	1.13	3.46	6.95	2.11	8.89	4.9
1986/1987	1.11	2.91	7.57	2.69	9.02	0.3
1987/1988	1.05	2.91	7.95	3.16	8.98	-0.1
1988/1989	1.07	2.99	7.77	4.90	8.80	0.6
1989/1990	0.86	3.04	8.83	4.32	8.53	1.6
1990/1991	1.05	5.64	8.32	3.97	8.12	1.3
1991/1992	1.05	3.51	9.22	4.66	8.30	2.0
1992/1993	0.91	2.99	8.14	5.12	8.13	-0.1
1993/1994	0.85	3.11	8.63	4.12	7.92	5.5
1994/1995	0.87	3.62	7.86	3.38	7.77	3.1
1995/1996	0.87	3.63	7.52	3.39	7.81	2.8
1996/1997	0.85	3.40	8.96	4.07	7.78	3.2
1997/1998	0.84	3.29	8.27	2.19	7.52	2.2
1998/1999	0.88	3.24	8.56	2.67	7.50	2.6
1999/2000	0.96	3.03	9.07	2.98	7.42	3.5
2000/2001	0.90	3.27	9.59	2.31	7.35	0.7
2001/2002	0.95	2.06	9.69	5.28	7.26	0.5
2002/2003	0.72	2.89	9.86	3.42	6.89	0.4
2003/2004	0.80	3.16	8.83	3.89	6.62	2.3
2004/2005	0.85	2.48	9.33	3.24	6.54	2.4
2005/2006	0.90	3.16	9.84	2.50	6.46	3.4
2006/2007	0.90	3.23	10.20	2.90	6.49	1.6
2007/2008	1.43	4.29	9.83	3.16	6.45	-0.8
2008/2009	0.89	3.07	9.88	4.64	6.97	-5.7
% correl. w.						
GDP growth	-14.38	-3.86	-33.63	-36.80	15.24	

Note: Real GDP growth per capita from Eurostat, series nama_gdp_k, PCH_PRE.

Joining UI Fund by Labor Market Status and Force of ER Incentive, 1992 Reform

UI fund entry between $t - 1$ and t	labor market status, year $t - 1$		
	self- employed	wage earner	unem- ployed
all years before ER eligibility			
no	91.00	90.99	92.54
yes	9.00	9.01	7.46
last year to sign up in order to be ER-eligible			
no	75.58	78.20	93.75
yes	24.42	21.80	6.25
years after eligi- bility incentive (no ER gain from joining)			
no	92.55	93.42	96.15
yes	7.45	6.58	3.85

Note: column percentages.

Additional Aspects 1999 and 2007/8 Reforms

1999 reform

- introduction ER contribution
- standard retirement age from 67 \searrow 65 \rightarrow max ER period shortened by 2 years
- benefit formula takes into account amount of private pension eligibility
- tax-free bonus for those not using ER or postponing take-up beyond age 62
- removal cap on hours-worked during ER benefit receipt

Additional Aspects 1999 and 2007/8 Reforms

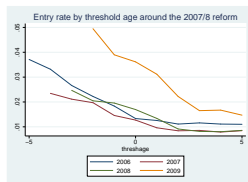
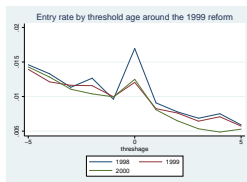
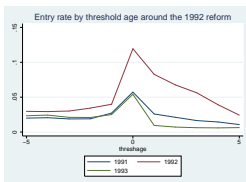
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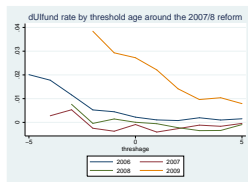
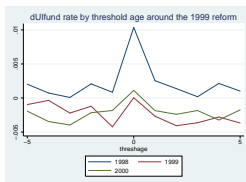
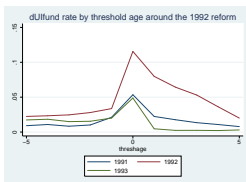
2007/8 reform

- introduction of reduced benefits for 'latecomers' (requires 15 years of membership)
- implementation partly from 2008 on

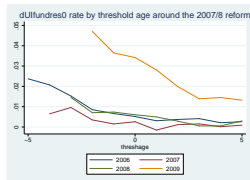
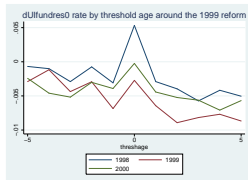
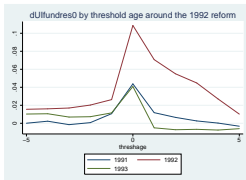
Change in UI Fund Enrollment (Data)



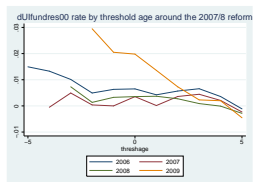
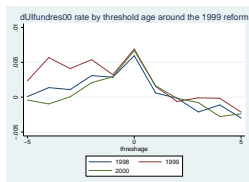
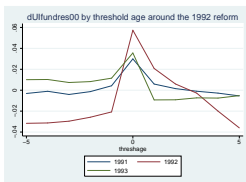
Change in UI Fund Enrollment (Data, inc leavers)



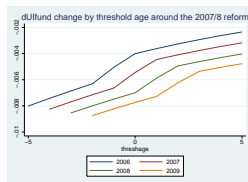
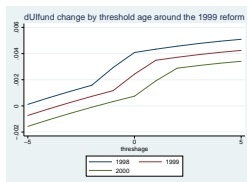
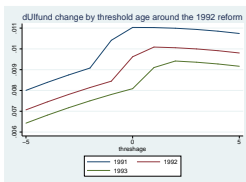
Change in UI Fund Enrollment (Residuals, ex age/coh/year, polyn)



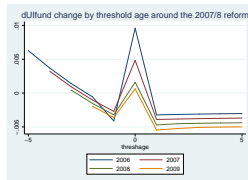
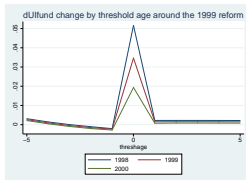
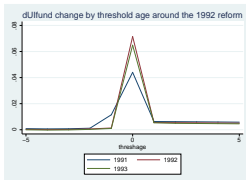
Change in UI Fund Enrollment (Residuals, ex age/coh/year, dummies)



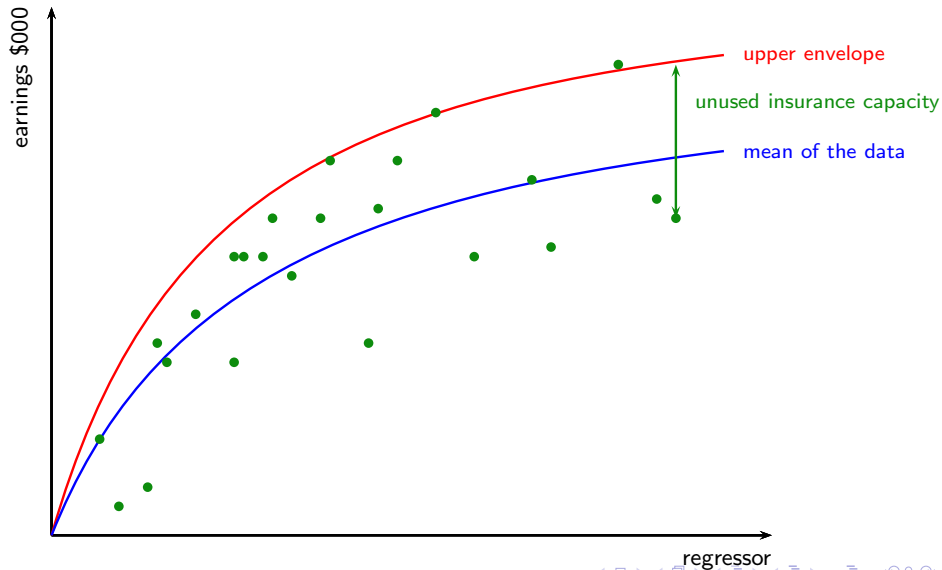
Change in UI Fund Enrollment (Predicted w/o reform)



Change in UI Fund Enrollment (Predicted w/ reform)



Unused insurance capacity afforded by wife's potential labor earnings (illustrative sketch not based on data)



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