

Does Working for Oneself, not Others, Improve Older Adults' Health?

An Investigation on Health Impact of Self-Employment

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Self-Employment: An Increasingly Popular Alternative to Retirement in Later Life

- **Popular alternative** (Cahill, Giandrea, & Quinn, 2013); 18% of 65+ employed persons are self-employed (Hipple, 2010).
- **“Pull” mechanisms**: flexibility, work-life balance, control, life fulfillment, human capital, (Zhang, 2008),
- **“Push” mechanisms**: Snyder, & Brown (2013) suggest that older workers were hit harder by the recent economic downturn than any other age group. Rather than being pushed out of the labor force completely, when faced with difficult options, some older workers choose self-employment.

The Influence of Health on Employment in Later Life--unclear

- **Positive impact of Employed vs. Retiring** on cognitive performance (Bonsang et al, 2010; Rohwedder and Willis, 2010; Coe and Zamorro, 2011); negative health impact of retirement (Drentea, 2007); retirement is bad for one's health, leading to decreased cognitive engagement and by extension, worsening cognitive performance (Finkel, Andel, Gatz, & Pedersen, 2009). the benefit of bridge employment versus retirement on health (Zhan et. al, 2009),
- **(Physical) health benefit of retirement** (Ostberg and Samuelsson, 1994; Singh, 2006; Litwin & Shiovitz-Ezra, 2006; Dave, et al, 2008)
- **No or little health benefit to working** vs. retiring in later life, perhaps due to differences in baseline health (e.g., Coe & Zamorro, 2011). Different types of employment are likely to be related to different types of health changes. Health indices that are not labor-market relevant could produce a downward health bias, whereas justification bias, or state-dependent reporting in survey data, may lead to an upward bias of the estimated effect of health (Bound, 1991).
→ **need a reasonable and widely acceptable balance between mental and physical health, with focus on a specific type of employment** (Zhan et. al, 2009).

Older Adults' Health and Self-Employment-- unclear

- **Health barriers to self-employment** are comparable to wage-and-salary jobs in later life (Cahill, Giandrea, & Quinn, 2013)
- **Self-employment is related to health gains** (Tetrick et al., 2000; Bradley and Roberts, 2004; Stephan and Roesler, 2010).
- **Self-employed**→their **health** either **worsens or stays the same** over time even when controlling for typical age-related health decline (Buttner, 1992; Jamal, 1997; Lewin-Epstein and Yuchtman-Yaar, 1991; Parslow et al., 2004; Dahl et al., 2010; Rietveld, Kippersluis, & Thurik, 2013).
- **Confounding Factors**: stress, occupations, health measure, other physical and mental activities related to self-employment

Theoretical Framework

- Wang's (2007) **theory of retirement adjustment**: decisions related to work force **engagement** in later life involves a constellation of resources that influence the opportunities and the motivations for working and the impact of these factors on health. If **remain** employed, probably **adjust well** to continued employment. If retire, she is not likely to adjust well because the **change** in the balance of social and fiscal resources that would come with retirement would decline. A subsequent response to retirement may also involve a **decline** in health resources.
- **Continuity** theory
- **Self-employed vs wage-and-salary employment**: more control, flexibility, but potentially less colleague interaction—marriage helps (Zhang, 2008).

Research Hypotheses

- *Self-employment provides a health benefit compared to those with a wage-and-salary job in later life.*
- *A health benefit associated with self-employment is influenced by industry sectors. Specifically, we hypothesize that knowledge-based sectors that are less labor intensive and require higher-level skills produce the greatest health benefit*

Methodology

Data

- 7 biannual waves of data from the Health and Retirement Study (1998 to 2010).
- Aged 51+ in 1998.

Model

- Generalized 2-stage least-square random-effects instrumental variable panel data regression model

$$F_{it} = \alpha + \beta_1 S_{i(t-1)} + \beta_2 F_{i(t-1)} + \beta_3 C_{it} + \beta_4 I_{it} + \sum_{j=1}^7 \Gamma_j J_{i(t-1)j} + \sum_{k=1}^3 \sigma_k E_{itk} + \sum_{l=1}^5 \lambda_l D_{itl} + \varepsilon_{it} \quad (1)$$

$$S_{i(t-1)} = \Omega + \theta_1 WE_{i(t-2)} + \theta_2 SH_{i(t-2)} + \theta_3 SS_{i(t-2)} + \theta_4 IR_{i(t-2)} + \varepsilon_{it} \quad (2)$$

i, t denote individual person and time period (with 2 years' interval) respectively.

F: Frailty index (FI), ranging [0,1], **higher scores mean poorer health** conditions. FI is a composite measure of health incorporating diseases, neurological conditions, and impairments in cognition, mood, mobility, and function measures using 29 questions based on 8 chronic illnesses, 5 disabilities in ADL, 7 disabilities in instrumental ADL, 8 depressive symptoms, and BMI.

S: Self-employed binary variable with 1 for self-employed, 0 for working for others.

C: Cognitive score, **higher score representing better cognitive skills**.

I: With health insurance covered by current or previous employer.

$\sum_{j=1}^7 \Gamma_j J_{i(t-1)j}$ is a summation of seven job related variables, including :

whether the current job requires much physical effort, (2) whether the current job requires much stress, (3) years of tenure of longest reported job, (4) self-reported years worked, (5) total weekly numbers of hours worked, (6) whether work part-time, and (7) whether partially retired.

$\sum_{k=1}^3 \sigma_k E_{itk}$ is a summation of three socioeconomic variables, including: years of education, (2) whether married, (3) individual earnings.

$\sum_{l=1}^5 \lambda_l D_{itl}$ is a summation of five demographic variables, including: Age, (2) gender, (3) race of white, (4) race of black, (5) ethnicity of Hispanics

WE: wealth scale with higher value indicating more wealth.

SH: self-reported health scale, higher score indicating better health.

SS: Whether spouse is self-employed where 1 means yes 0 means no.

IR: whether employer provided health plan covers retirees, 1 for yes 0 for no.

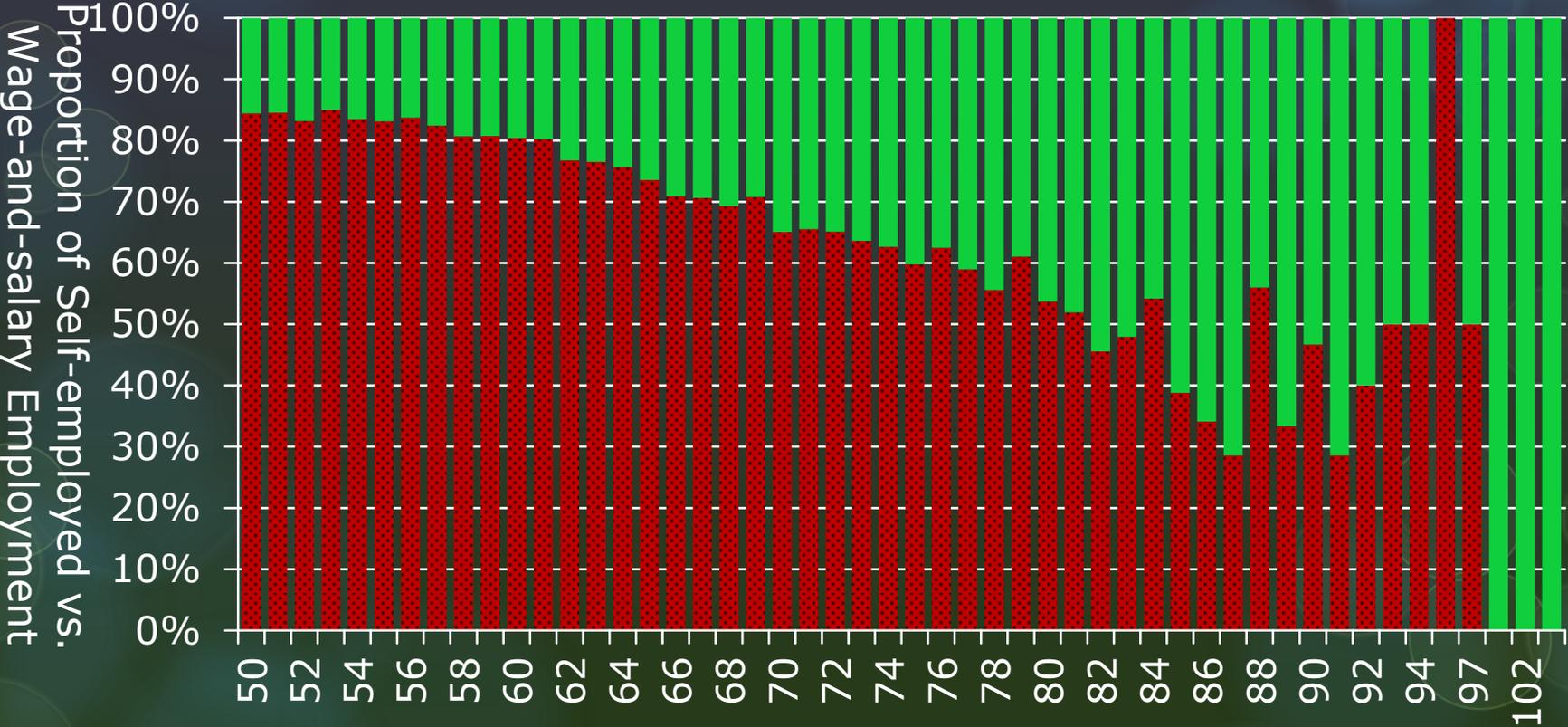
Descriptive Statistics

Group	All				Wage-and-Salary		Self-Employed	
Observation	6168				4979		1710	
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
Health Variables								
Frailty Index	0.12	0.09	0	0.82	0.12	0.09	0.11	0.09
Frailty Index (t-1)	0.10	0.09	0	0.76	0.11	0.09	0.10	0.09
Cognitive Score	16.60	3.95	0	27	16.63	3.95	16.49	3.96
Demographics								
Age	65.86	6.69	53	107	65.2	6.34	68.1	7.33
Female	0.53	0.50	0	1	0.57	0.49	0.40	0.49
Hispanic	0.06	0.24	0	1	0.06	0.25	0.04	0.20
White	0.84	0.37	0	1	0.83	0.38	0.89	0.31
Black	0.13	0.33	0	1	0.14	0.35	0.08	0.27
Socioeconomic Status								
Years of Education	13.19	2.79	0	17	13.11	2.76	13.46	2.89
Married	0.68	0.47	0	1	0.67	0.47	0.73	0.45
Earnings	25096	38236	0	800000	29556	37947	10079	35270

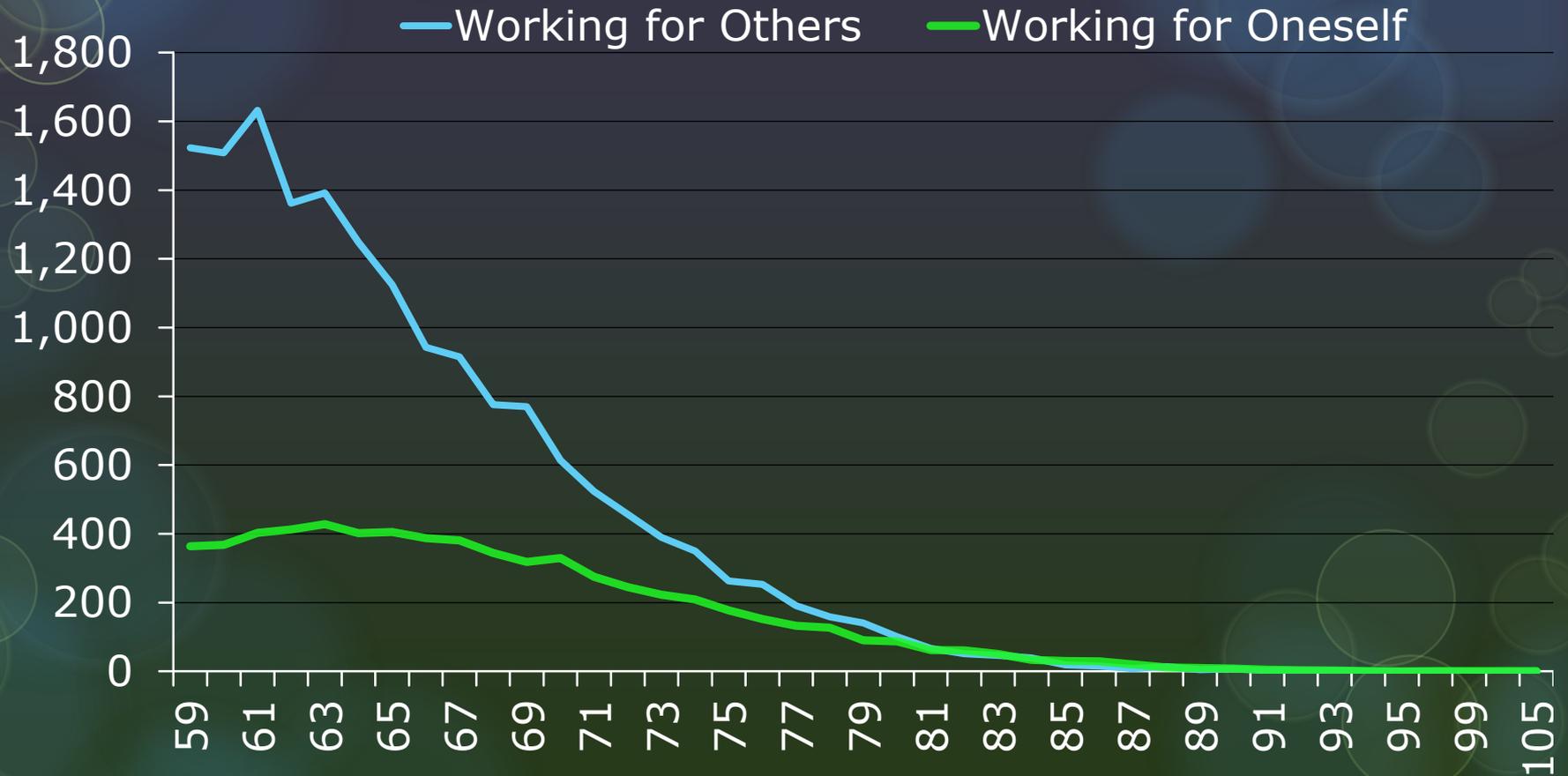
Variable	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Mean	Std. Dev.
Work Intensity and Related Job Attributes								
Longest Job Tenure	21.34	11.28	0	75	20.69	10.49	23.52	13.36
The Job Taken (t-1) Involve much Physical Labor	3.09	1.10	1	5	3.08	1.09	3.11	1.13
The Job Taken (t-1) Involve much Stress	3.54	0.82	1	5	3.57	0.83	3.43	0.81
Self-reported Years Worked Up to (t-1)	40.39	11.09	1	81	39.39	10.78	43.75	11.48
Total Weekly Number of Hours Worked (t-1)	33.97	15.87	0	168	34.4	14.18	32.51	20.49
Work Part-time (t-1)	0.14	0.34	0	1	0.13	0.34	0.16	0.36
Partly Retired (t-1)	0.29	0.45	0	1	0.26	0.44	0.41	0.49
Instrumented (Endogenous) and Instrumental Variables								
Self-Employed (t-1)	0.23	0.42	0	1	0.00	0.00	1.00	0.00
Household Wealth Deciles (t-2)	5.93	2.71	1	10	5.58	2.61	7.13	2.69
Self-Rated Health Scale (t-2)	2.39	0.96	1	5	2.41	0.96	2.31	0.99
Spouse's Self-Employment status (t-2)	0.11	0.31	0	1	0.08	0.27	0.20	0.40
Employer Offered Health Insurance Coverage (t-2)	0.55	0.50	0	1	0.62	0.49	0.32	0.47

Proportions of Self-Employment vs. Wage-and-Salary Employment

Working for Others Working for Oneself



Number of Self-employed vs. Wage-and-Salary Older Adults



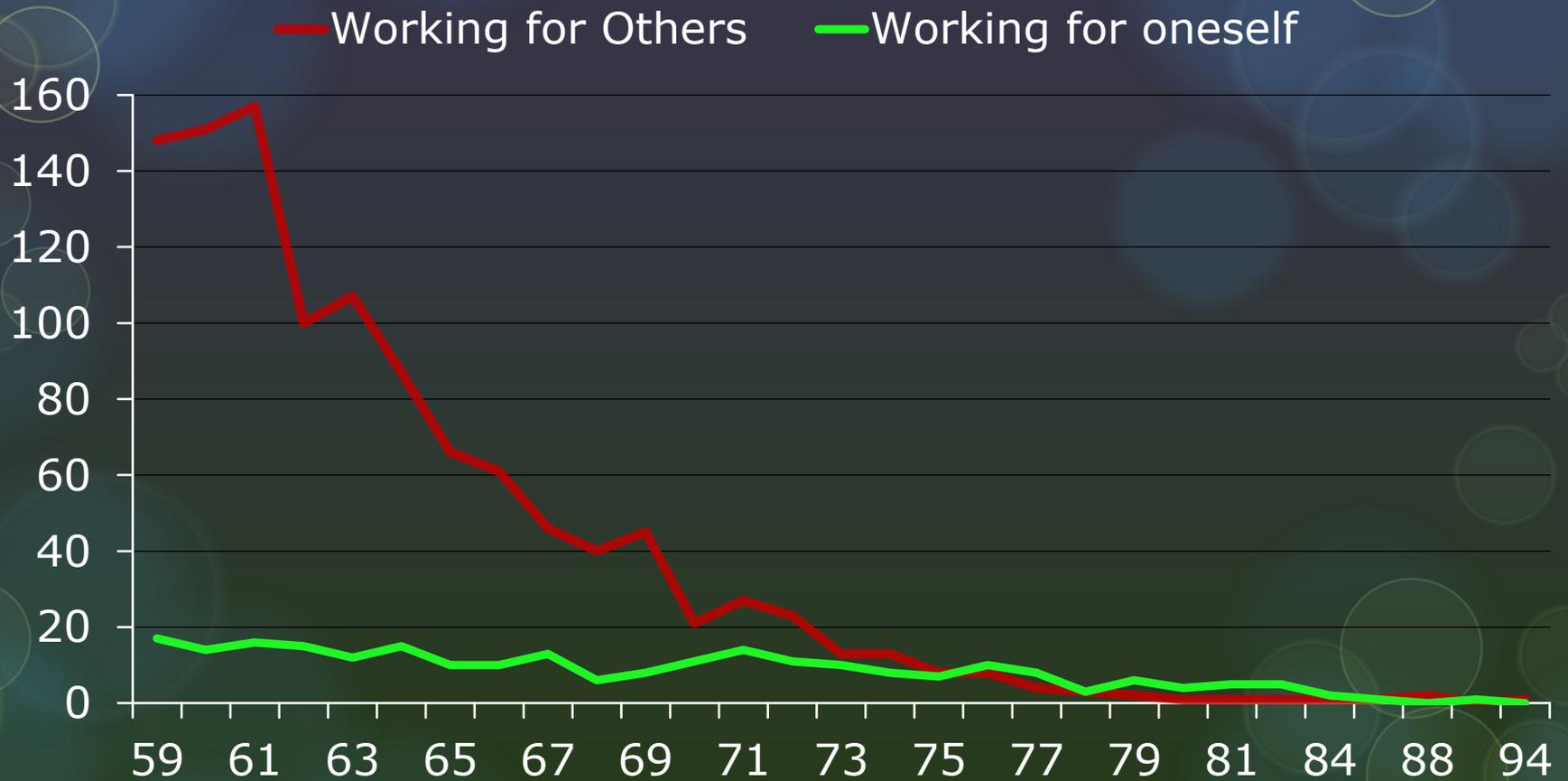
G2SLS random-effects IV regression (DV: Frailty Index)

Self-Employed (t-1)		-0.02134***
Frailty Index (t-1)		0.64781***
Cognitive Score		-0.00129***
Age		0.00071***
Years of Education		-0.00144***
Married		-0.00717***
Longest Job Tenure		-0.00016***
Earnings		0.000000098***
Job Taken (t-1) Involve much Physical Labor		0.0005
Job Taken (t-1) Involve much Stress		0.00307***
Self-reported Years Worked (t-1)		0.00012*
Weekly Number of Hours Worked (t-1)		-0.00002
Work Part-time (t-1)		0.00232
Partly Retired (t-1)		0.00356*
Constant		0.03987***
Number of obs , groups	=	17761 ##
Obs per group	=	[1, 5]
R-sq: within	=	0.0003
between	=	0.6847
overall	=	0.5004
Wald chi2(19)	=	11893
Prob > chi2		0.0000

G2SLS Random-Effects IV Regression across Industry Sectors

Industry/ Occupation		Industries		
		MFG: Durable (230-392)	Finan/Ins/RealEst (700-712)	Prof/Related Svcs (812-892)
Sectors				
Self-Employed (t-1)		-0.03**	-0.022*	-0.027*
Frailty Index (t-1)		0.74***	0.618***	0.651***
Age		0.00	0.001**	0.00*
Female		0.003	-0.015**	0.00
Cognitive Score		0.00	0.00	-0.001***
Black		-0.002	-0.008	0.011*
Married		0.003	-0.012**	-0.003
Earnings		0.00	0.00	0.00***
The Job Taken (t-1)		0.004	0.001	0.004***
Involve much Stress				
Number of obs, groups		843, 342	989, 362	3826, 1452
Obs per group =		[1, 5]	[1, 5]	[1, 5]
R-sq: within =		0.002	0.001	0.008
between =		0.678	0.709	0.702
overall =		0.5	0.524	0.475
Wald chi2(19) =		840.9	694.7	3010.6
Prob > chi2		0.0000	0.0000	0.0000

Number of Older Workers in Durable Goods Manufacturing by Age



Conclusion

- The **endogeneity** of health and self-employment: IV & lagged values
- Being **self-employed** vs. working for others results in **better health** over time, controlling for the prior health, impact of prior health on self-employment propensity, physical and mental stress jobs, work intensity, demographic, SES.
- Physical labor requirement does not have a clear impact on health, but more **job stress** results in poorer health. **Self-reporting working longer** and **having higher earnings** was associated with **poorer** health
- Younger age, more years of education, being married, better cognitive skills and **longer historical job tenure** are related to **better** health.
- The health benefit from self-employment varies across **industries**: insignificant in **low skilled & labor intensive** sectors, but positive & significant in **high skilled knowledge-based** sectors, i.e. **FIRE** and **Professional Services**
- However, health benefit was found in **Durable Goods MFG** probably because of more gradual retirement among SE with fewer lifestyle changes facing retirement.
- Future research should include testing the impact of self-employment on health **versus not working** and incorporate **spatial factors**.

Limitations and Future Research

- First, although OLS methods often result in similar results, given the fact that self-employment is a binary variable, equation (2) might be better estimated using logit or probit model with maximum likelihood method. Although a logit (or probit, even tobit) model may fit the conditional expectation function for binary dependent variables more closely than an OLS method estimated linear model, however, the marginal effects matters little (Pohlman and Leitner, 2003; Angrist and Pischke, 2009). We will more carefully consider model choice in future research.
- A second limitation of this study is that it compares the self-employment impact on health to the impact of working for others. To better elucidate the health benefits related to working, future research should take into consideration the remaining group -- those not working. The condition of working, no matter for oneself or others, already reflects certain health situations.
- spatial factors, as well as environment, cultural, and community influence on individuals should be taken into consideration in future research.