

# The Unobserved Returns from Entrepreneurship

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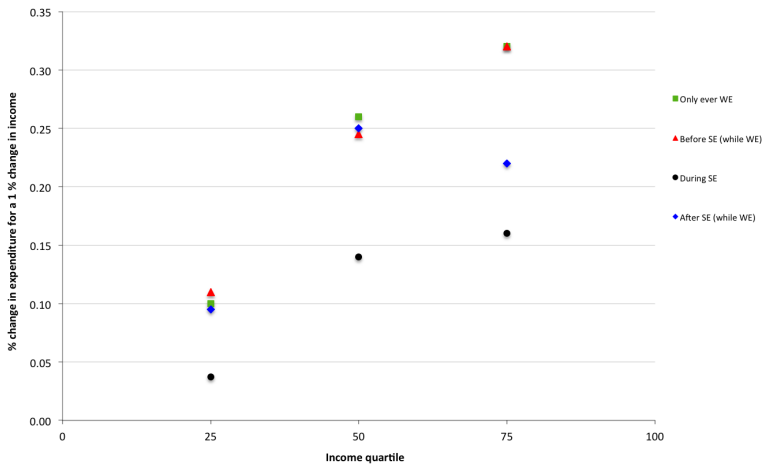
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# Motivation

- Why do individuals choose to remain self-employed?
  - Occupational choice theory: Roy, 1951 and Jovanovic, 1982
  - Individuals should select into SE on comparative advantage and that those who stay on, should be doing so as this is wealth maximizing.
- What *should* the empirics show?
- What *do* the empirics show?

## What this paper does

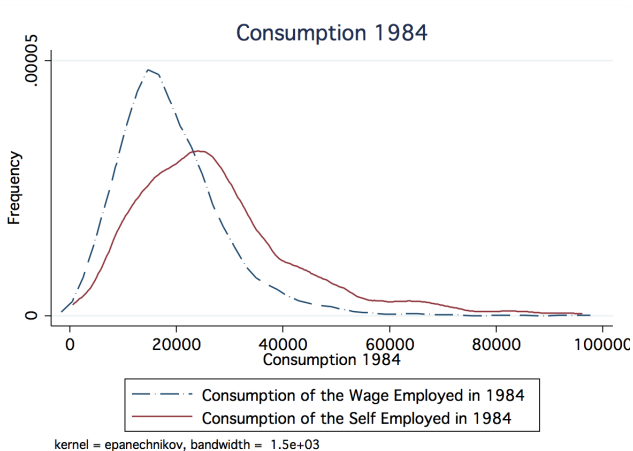
- I document why measurement using personal or business earnings is a huge problem when trying to ascertain the financial returns to self-employment. (See Slemrod 2007, Adreoni Erard and Feinstein 1998, Pissarides and Weber 1989, Hurst Pugsley and Li 2013)
- I then propose expenditure (and savings) as a better measure for the financial returns to self-employment.
- Unlike prior work, I do not compare those in WE to SE or make assumptions about income elasticities. Instead I exploit the panel dynamics of changes in consumption and wealth as they relate to switching into self-employment.
- The results show that measurement is in fact a serious problem, and using my proposed measure, the risk-return tradeoff for those who persist in self-employment is rationalizable using just financial returns.



## Preview of Results I



## Preview of Results II



## Preview of Results III

- Those who switch into self-employment:
  - ① Report earning 26% less BUT
  - ② Consume 4.5% more, save more and work more
  - ③ These increases come from stayers, where each element grows with time in SE
  - ④ Realised uncertainty in consumption and savings are no higher in SE than other states
- These findings suggest that wealth maximizing individuals optimally select into SE given the risk-return tradeoff.
- No evidence that the results are mechanically generated by changes in consumption and savings behavior prior to self-employment.
- Post self-employment, labor market outcomes vary, with high skilled workers appearing to suffer no losses unlike low skilled workers, who perform poorly both in and out of SE.

## Earnings as a weak measure I

Reported income is not a good measure of the financial returns to self-employment. Why?

### ① Income Underreporting & Overstating Business Expenses : Tax Evasion

(Andreoni, Erard and Feinstein 1998, Engstrom and Holmlund 2006, Slemrod 2007)

- 1% underreporting in wage employment
- 18 - 57% underreporting in self employment

### ② Business income is often not realised instantaneously, unlike wage income.

- Retained earnings
- Notoriously difficult to value businesses



## Earnings as a weak measure II

- ③ Different forms of income: shares and investment incomes
  - Firm shares, especially when business is incorporated
  - Investment incomes : royalties, dividends
  - These are reported, but not necessarily as salary income
  
- ④ Reclassification of Employment Type
  - When firm merges, gets bought out or is publicly listed, founders are reclassified as a employee
  - CEO, director, board members, gold parachute
  - Most successful entrepreneurs are the ones who most likely reclassify
  
- ⑤ Human Capital Accumulation: Reflected in future wage income
  - “Jack of all trades” (Lazear, 2004), Evans and Leighton, 1989

## What are the financial returns to self-employment?

- Declared earnings (wage, royalty, dividends etc)
- Undeclared earnings
- Value of consumption that is deducted as business expense
- Change in the value of the firm
- Remuneration for human capital gains were one to return to wage employment

## Expenditures as a stronger measure

- ① No incentive to systematically misreport/ underreport expenditures for survey purposes. (See Pissarides and Weber 1989, Hurst et al 2013)
- ② PIH tells us that - current consumption is a reflection of contemporaneous income and expected future income.
  - New information about future income that arises from self-employment shows up both as an unexpected change in income and consumption.
  - Change in consumption should theoretically equal some fraction of the present value of the change in future income.
  - Measurement aside, income and consumption measure the same thing, but in different ways.
- ③ All the avenues of income gains, both realized (observed and unobserved) and anticipated (hard to observe), are reflected in expenditures.
  - Retained earnings, expected - golden parachute/ firm sale, future wage gains

## Empirical strategy: using expenditures to understand the returns to self-employment I

- ① Focus on impact of self employment on household expenditures
  - Expenditures capture the change in the present value of future earnings, regardless of the form these earnings take.
  - Measure the time pattern of changes in expenditure, saving etc. to capture the time pattern of new information about the success of the firm.
- ② Make use of 38 year long panel dataset (PSID)
  - Longitudinal data follows a group of individuals across time and employment spells.
  - PSID contains employment, demographic and consumption data.

## Data : Panel Study of Income Dynamics

Longitudinal dataset (unbalanced) tracking individuals from 1968 - 2005

- Employment and demographic:
  - Household heads (non-farm) aged 18 - 62
  - Final sample includes 23142 unique individuals
  - 4261 have ever been self employed
  - Each individual appears in the data for an average of 17 years, 6 years in self-employment
  - 3373 individuals have switched between wage and self-employment (2951 in and 2851 out)
- Wealth:
  - 7 waves of wealth data from PSID supplemental wealth files
  - 14844 unique individuals, 3223 ever self-employed, 2787 switchers (1477 in and 1847 out)
  - Wealth comprises of: business value, checking/ savings value, value of stocks, value of other assets, value of other real estate, value of vehicles, value of annuity/ira and home equity net of debt.

## Expenditure data construction

- Linking limited PSID expenditure components to the CEX data
- Taking weights for different components of consumption from Skinner 1987
- Skinner 1987: Linear prediction of total consumption using food at home, food away, utilities, number of automobiles, rent, imputed rent which explain about 70% of variation in consumption
- Idea here is that increases in food eaten at home and outside, correspond in some way to increases in total hh consumption. For example, \$1 increase in food outside corresponds to \$3.4 incase in total consumption on average.
- Guo 2010: Updates Skinner 1987 and finds weights to be robust over time.
- Robustness checks use various definitions of consumption

## Empirical Specification

Testing the impact of self-employment on income versus the impact of self-employment on outcome measures (expenditure and wealth).

$$\log(Y_{it}) = A_i + B_t + \beta_1 SE_{it} + \beta_2 SE_{it} * Years_{it} + \beta_3 X_{it} + \epsilon_{it} \quad (1)$$

Controls ( $X_{it}$ ): experience, experience squared, marital status, family size, spouse wage, education, race and year fixed effects

## Reported Income and Expenditure Results

	[1]	[2]	[3]	[4]
	Annual Income	Expenditure	Expenditure	Expenditure
Self Employed	-0.262*** [0.0216]	0.0449*** [0.00805]	0.00849 [0.00930]	0.0572*** [0.00823]
SE*Years in SE			0.00845*** [0.00161]	0.0158*** [0.00106]
Individual Fixed Effects	Yes	Yes	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	69,115	73,916	73,916	73,916
R-squared	0.07	0.195	0.196	0.3
No. Individuals	9,717	11,700	11,700	



**Interpretation:** Reported income gives a very different picture of the financial returns of the self-employed than expenditure. Given the explanations provided earlier, reported earnings are arguably a weaker measure. Using expenditure instead, the self-employed, especially those who persist are better off.

## Savings Results

	[1]	[2]	[3]	[4]	[5]
	Wealth	Wealth	Wealth	Wealth-Business	Wealth-Business
Self Employed	137,576** [58,048]	33,982 [59,083]	249,872*** [22,927]	37,084* [19,062]	-11,772 [20,224]
SE*Years in SE		24,469*** [5,577]			11,540*** [3,149]
Individual Fixed Effects	Yes	Yes	No	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	19,850	19,850	19,850	19,850	19,850
R-squared	0.028	0.034	0.078	0.038	0.042
No. Individuals	7,402	7,402		7,402	7,402

## Savings

**Interpretation:** Individuals save more in self-employment than wage employment. These savings grow with time in self-employment. This is evidence that the self-employed aren't simply dissaving to finance consumption.

## Variance in Expenditure and Wealth

Estimating the conditional heteroskedasticity:

$$u_{it}^2 = A_i + B_t + \theta_1 SE_{it} + \theta_2 SE_{it} / Tenure_{it} + \theta_3 X_{it} + \eta_{it} \quad (2)$$

where  $u_{it}^2$  is the squared residual obtained from the main expenditure and wealth estimating equations and  $SE_{it} / Tenure_{it}$  is intended to capture the resolution of uncertainty with time in self-employment.

## Variance in Expenditure and Wealth

	[1] Residual Squared Expenditure	[2] Residual Squared Wealth (trans)
Self Employed	9.89E-05 [0.00511]	-5.786 [58.90]
SE/Tenure	0.0115 [0.00736]	23.62 [66.21]
Individual Fixed Effects	Yes	Yes
Time Fixed Effects	Yes	Yes
Observations	73,916	19,850
R-squared	0.007	0.004
No. Individuals	11,700	7,402

Note: Dependent variables are the squared residuals from the main fixed effects expenditure and wealth regressions. Standard errors are in parentheses. All standard errors are heteroskedastic consistent.

## Variance in Expenditure and Wealth

### Results:

- Individuals do not experience any statistically higher level of uncertainty in terms of expenditure and wealth in self-employment than in wage employment.
- Contrast to the poor risk-return tradeoff to business ownership observed in prior work.
- Business-owning households consume and save more at no observable cost in *realized* uncertainty.
- Resulting differences: timeframe of analysis, households adjusting portfolios with employment to compensate for expected changes in consumption volatility.
- Suggests the need to think more carefully how risk is computed and ultimately, internalized at the household level.

## Precautionary changes in consumption and wealth?

	[1]	[2]	[3]	[4]	[5]	[6]
	Expenditure	Expenditure	Wealth	Wealth	Wealth-Business	Wealth-Business
Two Year Prec	-0.0184 [0.0139]		0.811 [2.811]		0.695 [2.805]	
One Year Prec		-0.018 [0.0133]		3.756 [2.562]		3.671 [2.524]
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,553	8,553	1264	1264	1264	1264
R-squared	0.177	0.177	0.12	0.123	0.114	0.118
No. Individuals	1,716	1,716	757	757	757	757

Note: Dependent variable is log of total expenditures and wealth cube root transformed and wealth less business value cube root transformed. All dependent variables are in 1990 dollars. "One Year Prec" takes on a dummy value of 1 in the one year prior to entry into SE. "Two Year Prec" takes on a dummy value of 1 in each of the two years prior to entry into SE. Standard errors are in parentheses. All standard errors are heteroskadastic consistent.

## Other results

	[1]	[2]	[3]	[4]
	Hours	Hours	Wage After SE	Wage After SE
Self Employed	0.0320*** [0.0110]	-0.0642*** [0.0182]	-0.256*** [0.0286]	
SE/Tenure   SE*Yrs in SE		0.0115*** [0.00170]		
After SE				-0.664*** [0.139]
After SE*Yrs Sch				0.0307*** [0.0105]
Experience			0.0315*** [0.00741]	0.0338*** [0.00737]
Individual Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	70,233	70,233	13,008	12,983
R-squared	0.026	0.027	0.080	0.083
No. Individuals	9,756	9,756	1,960	1,953



## Conclusion I

The literature has long grappled with rationalizing the empirical puzzle that individuals persist in SE despite the substantially lower earnings. This paper resolves this puzzle by using expenditures instead of income, and by exploiting the longitudinal structure of the PSID to get around selection problems and characterize the environment of the self employed.

Main results:

- While individuals report earning 26.2 percent less in SE, they consume 4.5 percent more as compared to that in the alternative.
- Individuals who persist in SE are the ones to reap this increase.
- Individuals save more in SE, with savings growing with time in SE relative to the alternative.
- Risk measured as the variance in the unpredictable component does not appear to be higher in SE than in other states. How is risk internalized at the HH level?

These findings are consistent with predictions from occupational choice models of wealth maximizers (Roy 1951, Jovanovic 1982)

## Conclusion II

- Individuals work longer hours in SE with hours growing with time in SE.
- There appears to be economic losses associated with failure in SE for individuals with low education and experience.
- Well educated individuals with labor market experience appear to gain in future wage employment.

Overall: the expenditure, savings and uncertainty results call into question the prevailing interpretations within the literature on whether individuals optimally select into self-employment given the risk-return tradeoff.

## Implications:

- If a large portion of mismeasurement comes from tax avoidance, then consumption is being subsidized for the self-employed.
- Are the positive externalities generated by them sufficient to warrant this?
- Consumption versus income inequality.

## Follow on research (ongoing)

- High variation in the ratio of consumption to income across time. Why?  
(with Roger Gordon)
- How does the household portfolio correspond to employment decisions?  
How does this keep risk exposure consistent across employment types?  
(with Oana Tocoain)