THE UNOBSERVED RETURNS FROM ENTREPRENEURSHIP*

Sarada†

Duke University

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Abstract

This paper resolves a longstanding empirical puzzle: that most entrepreneurs persist despite lower initial earnings and earnings growth. I hypothesize that expenditure is a better measure of self-employment returns than reported income, suffering from fewer biases. Using 38 years of longitudinal data, I find that while individuals report earning *26.2% less* in self-employment, their expenditures are *4.5% higher* than in their observed alternative. This increase comes from those who persist in self-employment, where expenditure is no different upon initial entry but grows by 0.8% with each additional year of survival. Savings are also higher for those who persist where wealth goes up by $25,000 with each additional year of survival. The combined findings of increased expenditure and savings that coincide with time in self-employment indicate higher earnings for those who remain so. These gains do not appear

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†sarada.x@duke.edu; 100 Fuqua Drive, Durham, NC 27708; (919) 660 7964; *http://people.duke.edu/~sx19/*

to be offset by higher uncertainty. In studying the consumption and wealth dynamics prior to entry, I find that the switch into self-employment is not driven by sudden gains (or losses) in wealth. This lends further credence to the use of changes in expenditure and wealth to proxy for changes in self-employment earnings. The findings in this paper are consistent with standard occupational choice models and show that for those who make the choice, the decision to remain self-employed can be rationalized using just financial motivations. Other findings are that hours worked also grow with time in self-employment, and that post-self-employment, labor market outcomes vary by skill level.

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1 Introduction

Entrepreneurial activity is a key generator of economic development. Individuals and firms involved in such undertakings innovate on both the product and process margins, creating new technologies and organizational novelties. Entrepreneurs are willing to internalize the risk involved in implementing new ideas, thereby bringing about positive externalities. The macroeconomic returns to entrepreneurial activity are clear; entrepreneurs modernize, create employment, bring about positive spillovers, and engender economic growth. However, these positive returns do not translate quite so seamlessly at the microeconomic, individual level.

While standard occupational choice models (Jovanovic (1982), Roy (1951)) predict, that individuals will attach themselves to the employment type wherein their skills are best compensated, empirical evidence seems to suggest otherwise. It is not clear that individuals engaging in entrepreneurial activity always yield higher, or even equivalent returns to what they could otherwise receive in wage employment. Specifically, Hamilton (2000) finds that in her tenth year, the median self-employed individual makes 35 percent less than her wage-employed counterpart. This finding gives rise to the question: what, if not financial returns, propels individuals to remain self-employed?

The literature currently proposes a few explanations to rationalize the curious observation, that individuals choose self-employment despite the low returns. These explanations can be broadly categorized into heterogeneity in individual preferences over employment types, risk and time, and differences in beliefs (Camerer and Lovallo, 1999; Cooper et al., 1988; Hamilton, 2000; Blanchflower et al., 2001; Moskowitz and Vissing-Jørgensen, 2002; Puri and Robinson, 2013). In other words, rather than just maximizing wealth in the safest possible way, the self-employed may simply prefer working for themselves, have a higher risk tolerance or be over-optimistic.

In this paper, I employ data from the Panel Study of Income Dynamics (PSID) and show, without alluding to any preference arguments, that this empirical puzzle can be explained by measuring

the returns to self-employment using household expenditure and savings, rather than reported earnings. The findings are easily rationalized within standard occupational choice models of wealth maximizing agents (Jovanovic (1982), Roy (1951)). Using 38 years of longitudinal data, I find that while individuals report earning 26.2 percent *less* in self-employment than in wage-employment, they in fact consume 4.5 percent *more*. This 4.5 percent expenditure increase comes from those who persist in self-employment where expenditure upon initial entry is the same as before but grows by 0.85 percent with each additional year survived. Individuals also save more in self-employment with average wealth being $138,000 higher than in wage-employment. Once again, persistence in self-employment is the driver of this finding with wealth being no different upon initial entry, but increasing by $25,000 with each additional year. Since income can only be used in two ways, to consume and to save, the combined findings of higher expenditure and savings provides compelling evidence for increased earnings in self-employment.

The results above are derived by having changes in household expenditure surrogate for changes in the true financial return from work, which for the self-employed, does *not* equal reported earnings. Self-reported income is not a reliable measure of the financial returns to self-employment for a variety of reasons, ranging from tax avoidance and the misclassification of income in survey data, to failure in capturing expected future gains.[1] Expenditure on the other hand, captures all avenues of current financial gains and the permanent income hypothesis tells us that, so long as future gains are anticipated and credit markets function, they should reflect in current expenditure. Furthermore, unlike income, there is no incentive to systematically misreport expenditure for survey purposes.

While this is not the first paper to use household expenditure in the study of self-employment earnings (see Pissarides and Weber (1989) and Hurst et al. (2010)), my approach differs from prior work. I estimate individual fixed effects over 38 years of longitudinal data, which allows me to compare the expenditure and wealth patterns of the same individual in self-employment to

[1] Section 3 details four specific sources of this mis-measurement.

herself in other states. Thus, I do not rely on cross-sectional comparisons of reported income and expenditure between wage and salary workers to infer self-employment earnings. Consequently, I do not need to make assumptions about income elasticities. In fact, I largely do away with the use of reported income, aside from showing that for the self-employed it is wildly inaccurate. This approach allows me to answer, at least in part, what the financial returns *from* self-employment are for those who make the switch, and in particular, persist. One obvious limitation to bear in mind is that I only observe realized outcomes and cannot observe counterfactual earnings had one not entered self-employment. Regardless, the results are striking and show that those who persist in self-employment are financially better off than they were prior to entry.

In addition to the findings on increased expenditure and savings, the empirics also show that individuals who move into self-employment *do not* experience significant increases in uncertainty, in either expenditure or savings. Insofar as increased variance in expenditure and savings capture volatility in business earnings, this finding indicates that the self-employed are not necessarily trading off higher earnings with higher risk. In fact, the results in this paper confirm Moskowitz and Vissing-Jørgensen (2002)'s finding that business owners highly concentrate their investments within their own businesses. However, increased expenditure and savings at no observable cost in *realized* uncertainty, suggests that the risk-return tradeoff may not be as difficult to rationalize as previously thought.

This paper also finds, consistent with previous work (Hurst et al. (2010), Puri and Robinson (2013)), that the self-employed work longer hours. What is especially interesting and up until now undocumented, is the finding that this increase in work hours also accrues from time in self-employment; upon entry, hours worked are about six percent lower, but with each additional year of persistence grows by 1.15 percent. This suggests that with each additional year of survival, one receives positive news about the viability of their business, which then induces more effort, especially since the returns to effort are fully internalized by the entrepreneur.

While the results on expenditure, savings and uncertainty indicate that those who choose to

remain self-employed are financially better off, this increase in hours worked constrains the interpretation that overall utility also goes up. However, given the previous literature on non-pecuniary returns,[2] one could argue that those who choose to persist in self-employment are better off, both financially and non-financially.

Since the majority of those who try self-employment leave within 3 years, it is useful to look at their economic outcomes, especially since this paper seeks to document the returns from self-employment. The results show that post self-employment, low skilled workers suffer from worse labor market outcomes, while high skilled workers appear to experience wage gains.This suggests the presence of "necessity" and "opportunity" entrepreneurs, where the former group suffers from weak labor market outcomes both in and out of self-employment, while the latter group enters voluntarily and has the potential to reap subsequent wage gains from self-employment experience.

This paper is one of few (Evans and Leighton, 1989), to look at self-employment returns in a long panel setting, which enables the tracking of individuals over time and across employment spells. The three main contributions of the paper are that first, I propose a variety of avenues for earnings amongst the self-employed that may evade reported income which enables me to define the total financial return to self-employment. Second, I theoretically describe how this newly defined total financial return maps to consumption and savings, and use these new measures to estimate the financial returns from self-employment. Third, I exploit 38 years of longitudinal data to study a variety of features relating to pre, during and post self-employment outcomes.

The rest of the paper is organized as follows. The next section goes over predictions from two relevant occupational choice models. Section 3 documents the various avenues for financial gains in self-employment, defines the total return to self-employment and then explains how this return maps to changes in household expenditure and savings. Section 4 describes demographic, employment and expenditure data from the PSID, and presents summary statistics. Section 5,

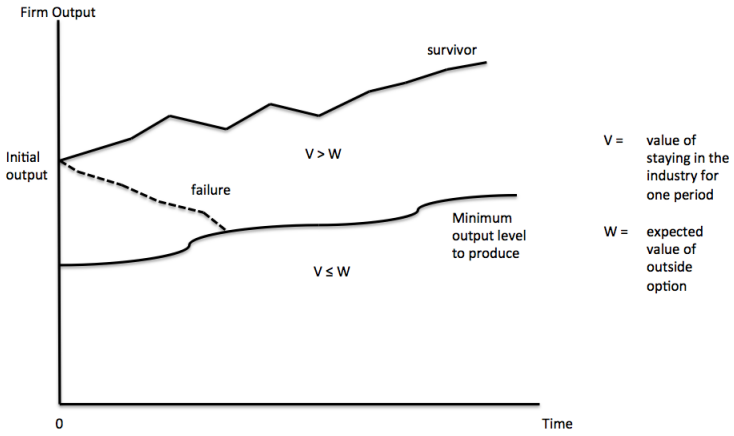
[2]More recent work by Hurst and Pugsley (2010) convincingly shows that business owners do in fact enjoy non-pecuniary benefits.

outlines my estimation strategies and discuss the empirical findings. Lastly, section 6 posits some implications that arise from the empirical findings, and concludes.

2 Theoretical Predictions

In this section, I focus on two occupational choice models that describe the decision wealth maximizing individuals make when attaching themselves to a given occupation. The first model is a "matching model" proposed in Roy (1951), and the second model is a "learning model" proposed in Jovanovic (1982). While I will not formally develop the arguments in these two models, the predictions from both are so intuitive that they can be summarized in a few sentences. In his 1951 work entitled, "Some Thoughts on the Distribution of Earnings," Roy, without alluding to a single equation, lucidly outlines an occupational choice model. Roy's model predicts that when individuals have unobserved time invariant, sector specific skills of which they are fully aware, they will accordingly attach themselves to the sector wherein they have a comparative advantage. Thereby, matching themselves to the employment type in which they will yield the highest financial return.[3] Jovanovic's model on the other hand begins from the premise that individuals have imperfect information about their industry compatibility and success likelihood, but learn this with time. "Figure 1" from Jovanovic (1982) illustrates the predictions of his model beautifully. Below, I present a variant of this figure, where the only difference is that here, the variables are labeled in a manner that should make the predictions more obvious to any reader who might be unfamiliar with his work. The figure shows that individuals enter when the expected return from the venture is greater than the expected return in the outside option. Over time, as the actual success of the venture is revealed, low ability entrepreneurs will drop out and those who persist will have higher earnings that should overtake the alternative with experience.

[3]From p.137 of Roy 1951, "In the long run, then, the proportion of the total number of adult males in each occupation will be equal to the chance that the annual earnings of any male, chosen at random, will be higher in that occupation than in the other."



"Figure 1" from Jovanovic (1982)

Simply put, these models imply that when individuals seek to maximize wealth, the empirical researcher should observe that they are better off financially in the employment choice they voluntarily choose and persist in. In a longitudinal assessment of outcomes, we should observe that over the long run, individuals will persist in the employment type wherein they have a comparative advantage, resulting in higher financial gains as compared to that in the feasible alternative. However, as described in Jovanovic (1982), if individuals do not have perfect information about their industry compatibility, but are able to learn over time, we should then see some individuals entering self-employment and then leaving once they learn where their skills are better compensated.[4] Those remaining in self-employment should continue to be financially better off.

The empirical results presented in this paper are consistent with both these models. While intuitive, this result is not not easily obtained. The key innovation in establishing this consistency between the theories described here and the empirics, is my use of fixed effects estimations and of changes in household expenditures and wealth, rather than reported earnings. In the next sec-

[4]For the truly low skilled, this may even mean returning to unemployment or employment with very low returns since these might be the only options available to them. It is important to bear in mind that there will be empirical differences in post-self-employment outcomes for those who enter voluntarily (i.e. those who have competitive outside options) versus those who enter involuntarily.

tion, I will go into detail on what the financial returns to self-employment are, and how income maps to expenditure and savings, which I then argue are superior measures of the returns to self-employment.

3 The total financial return to self-employment, and expenditure as its measure

In this section, I detail reasons for why household expenditure is a more accurate representation of the returns to self-employment, than reported earnings. Before I delve into this discussion, I will first document the avenues for compensation in self-employment that may evade reported earnings (section 3.1), and then explain how these avenues can manifest in expenditures. The remainder of this section will describe how expenditure maps to income, thereby warranting its use as a proxy for earnings in the empirical estimations.

Self-employed individuals are financially compensated in multiple ways. Some of these are easily observed while others are less obvious, and yet others are totally unobserved in any report of earnings, be they personal or business. Reported personal and business income are the easily observed components of self-employment earnings. However, unlike most wage employees, the self-employed have in addition, a variety of ways to compensate themselves. Here I will discuss the four main avenues for additional compensation. These four avenues include: tax evasion, different forms of income, reclassification of employment, and human capital accumulation. Tax evasion is simply the phenomenon of understating income to avoid tax payments, while the use of different forms of income is more subtle yet still unlikely to appear as self-employment earnings in survey data. Reclassification of employment occurs when exceptional entrepreneurs get bought-out or fully incorporate, thereby reclassifying as wage-employed (or retired), *prior* to receiving the bulk of their payout. Human capital accumulation refers to the possibility of gaining skills, even from failed entrepreneurial ventures, that may result in increases in productivity and earnings in post

self-employment wage work. These four thus far unobserved (or at least, less well measured) avenues for financial returns to self-employment render reported earnings a less effectual measure of the true monetary returns to entrepreneurship. Each of these four components is more thoroughly described below, and section 3.3 expounds on how using expenditure captures these additional avenues for gains that elude reported income.

3.1 Four additional avenues for compensation

3.1.1 Tax evasion

That the self-employed understate income and overstate expenditures has been widely acknowledged in both the tax enforcement and self-employment literatures. As documented in Andreoni et al. (1998) and Slemrod (2007), reported income is not a good measure of the true financial returns to self-employment due to the different avenues for reporting, or lack thereof, available to the self-employed but not the wage employed. The self-employed have a greater degree of discretion than the wage employed in where and whether to report income and expenses. So long as tax rates on earnings are positive, business owners have an incentive to underreport their business income. Andreoni et al. (1998) find that taxpayers who have derived income from farms or sole proprietorships tend to understate their taxes by considerably more than other taxpayers. They find, using 1985 US data, that sole-proprietors are likely to understate taxes between between 16 and 39 percent, depending on occupation. More recent evidence from Slemrod (2007) corroborates this finding. Slemrod reports that wage income is underreported by 1 percent, while business income is underreported by between 18 and 57 percent,[5] depending on the business classification, with non-farm proprietor income having both the largest tax gap and the highest rate of underreporting.

The study of tax evasion as it relates to returns in self-employment long predates the current wave of papers on self-employment, and was first formally studied in this specific context by Pis-

[5]Excluding farm businesses.

sarides and Weber (1989). In their paper, the authors estimate the relationship between income and consumption for the wage-employed, and use the coefficients obtained on income to predict consumption for the self-employed. The difference between this predicted and observed consumption is attributed to tax evasion amongst the self-employed. Using this methodology, the authors conclude that on average, self-employment income in the UK is 1.55 times greater than that which is reported. Using a similar strategy, but this time with US data, Hurst et al. (2010) find a 30 percent difference between predicted and actual consumption amongst the self-employed, which they attribute to underreporting. While these two papers formally address the problem of tax evasion, many papers, including both Hamilton (2000) and Moskowitz and Vissing-Jørgensen (2002), acknowledge and attempt to account for this in their respective estimations.[6]

In this paper, I neither attempt to estimate the degree of tax evasion nor seek to attribute the observed difference between income and expenditures solely to tax evasion. Instead, I propose reasons, including but not exclusive to tax evasion, for why income is a weak measure and then proceed to measure the returns to, and characterize the environment of, self-employment using expenditures. It is my use of this new measure to rationalize the risk-return tradeoff being made in the decision to persist in self-employment that, to the best of my knowledge, distinctly sets this paper apart from other work in the literature.

3.1.2 Different forms of income and retained earnings

Another source of mis-measurement arises since the self-employed have the ability to pay themselves in different, less easily quantifiable forms. For example, the entrepreneur may choose to retain her earnings within the business, especially if she learns that the venture has good prospects. If the business is incorporated, the entrepreneur has the option of pumping liquidity back into the

[6] Hamilton (2000) argues that one of the alternative measures he uses, "Equity Adjusted Earnings" is not reported to tax authorities and may therefore suffer less from underreporting issues while Moskowitz and Vissing-Jørgensen (2002) add a 20 percent underreporting adjustment to total corporate profits in their estimations.

business and rather than draw a salary, compensate herself instead in firm shares.[7] She can declare a very low value for these firm shares on which she will pay current income tax. As the business matures and she cashes these shares, she will only pay capital gains taxes (substantially lower than income tax) on the appreciated value of those shares.[8] Business owners may also receive income through dividends, interest, annuities, rents and royalties. These various different forms of income are also known as investment incomes and are not necessarily imputed into a business owner's salary income.

Note that the premise here is different from that of tax evasion. Having access to different compensation mechanisms is independent of whether or not individuals deliberately underreport earnings. In fact, much of the income discussed in this section is indeed reported on tax returns, but not in a way that shows up as easily as self-employment income. If an individual cannot be tracked for a long enough time and/or we cannot with confidence parse out the origin of their non-wage income, as empirical researchers we may never fully observe and correctly classify these additional avenues for financial gains. As such, most datasets, even long panel surveys like the PSID, may not track individuals for a sufficiently large number of years so as to enable us to qualify all financial gains from self-employment. Furthermore asset returns in this dataset are for the most part agglomerated across all sources, be they business or personal. Since we may not be able to confidently identify the provenance of the income source, it then becomes difficult to consider these returns as business income. As a result, any reported income statistic we observe, may be an underestimate.

[7] This example, where the entrepreneur can pay herself in firm shares, only relates to incorporated businesses. In the case of sole proprietorships and partnerships, earnings can be retained in the anticipation that they will yield a higher return if reinvested in the business. When these returns are realized and cashed out by the business owner, everything is taxed as ordinary income so long as the business is not incorporated.

[8] Note that there are also special capital gains provisions for small businesses with capital gains taxed at half of the standard rate, but capital losses treated as ordinary losses that become fully deductible up to a reasonably high limit.

3.1.3 Reclassification of employment type

A third source of mis-measurement emerges when firms that perform particularly well incorporate,[9] get bought out, merge with other firms, or become publicly listed. When this happens, the successful entrepreneurs who founded these firms may no longer appear in the data as self-employed. Instead they take on job titles such as CEO or director, or become board members. This results in them being reclassified as wage-employed or retired in the data after some time. When evaluating the longer term returns to self-employment, this could lead to underestimation since the most successful self-employed individuals are those who are most likely to be reclassified as wage-employees so as to ensure accountability to either shareholders or firm partners. Some entrepreneurs may even choose to retire (or receive a "golden parachute" if bought out) upon realizing high levels of success. Whether an individual is reclassified as wage-employed or retires as a result of entrepreneurial success, the financial return they reap will be missed in the empirics, especially if a lump sum payout occurs upon the sale or public listing of the firm at which point these individuals no longer appear as self-employed in the data. While this may not impact the vast majority of small businesses, the omitted financial returns may be sufficiently high such that not accounting for this will unduly bias downward the returns to entrepreneurship.

3.1.4 Human Capital Accumulation

A fourth issue to consider is that the returns to self-employment may manifest beyond those periods when an individual is self-employed. It is conceivable that individuals gain some skills when they run their own business even if the venture eventually fails. Wage-workers are generally subject to performing specific tasks while the self-employed, in order to run all aspects of their businesses

[9] From a survey perspective, it is unclear whether founders of incorporated firms will report themselves as employees (CEO) or as self-employed. Ideally the returns to entrepreneurship (or being a business owner) should include all firm founders, regardless of incorporation status. Since incorporated entities are usually the more successful ones, if some fraction of incorporated firm founders do not report themselves as being self-employed, the results in this paper are then most likely providing a lower bound for the true returns to entrepreneurship.

have to multi-task. Consider the following two scenarios. Scenario 1: Take an accountant working for a wage at a firm who only needs to have expertise in the specific tasks she is required to perform. When this same individual owns her own accounting business instead, she has to acquire (or is at least exposed to) the various different managerial and organizational skills that are necessary to run her business. Even if the business were to go bust, the individual is still in possession of the multi-faceted skills she had picked up. As such, the wage-employee who attempts entrepreneurial activity becomes a "jack-of-all-trades" (Lazear, 2004). Upon returning to wage-employment, these new skills in addition to those she originally had, could cause her marginal productivity to be different, presumably higher all else equal. Scenario 2: In this case individuals may already posses multi-faceted capabilities and enter self-employment simply to signal to future employers that they are able to or are at least familiar with managing a business which will hopefully alter their wage path. This effect changes the true return to self-employment to a more lasting one that survives beyond one's tenure in self-employment. This argument is akin to that of investment in education so as to boost future employment returns. If in fact this is the case, and ever having entered self-employment influences future wage outcomes positively then one need not be much less risk averse to justify entry into self-employment.[10]

3.2 Putting it all together: What are the financial returns to self-employment?

Given the avenues documented so far, what then are the financial returns to self-employment? Below I specify the total financial return to self-employment for individual i at time t, denoted by

[10]This complementarity between self-employment and future returns in employment most likely holds for the highly skilled, rather than unskilled workers. Anecdotally, tech companies in the likes of Silicon Valley see "failed" high skilled entrepreneurs as assets, while the "failed" self-employed gardener probably has less of a market value for his self-employment experience. Owning a business signals different things to different employers. The results in the paper suggest that high skilled individuals are more likely to either gain human capital or signal quality that is valued by future employers, while low skilled individuals, if anything, perform much worse in post-self-employment wage work.

$R_{se,i,t}$.

$$R_{se,i,t} = D_{i,t} + U_{i,t} + \Delta B_{i,t} + E(HC_{we,i,t}) \tag{1}$$

where $D_{i,t}$ is declared earnings, including reported salary/wage and reported investment earnings, that are subject to income tax. $U_{i,t}$ is undeclared earnings. This includes underreported earnings, overstated business expenses and the value of personal consumption that is deducted as a business expense. $\Delta B_{i,t}$ is the change in business value between between periods $t-1$ and t, and $E(HC_{we,i,t})$ is the annuity value of the expected gain (or loss) in future wage employment that is attributed to the incremental experience in self-employment.

From this very simple equation, it is clear that most datasets surveying both personal and business income will not capture the full financial return to self-employment accurately. $D_{i,t}$ can be identified with some confidence, but for sole proprietors and partnerships, it is still difficult to attribute the investment income components as returns from self-employment. Disposable income then becomes even harder to pin down since to the empirical researcher using survey data, it isn't clear what tax rate an individual faces, even on just the declared portion of earnings. Needless to say, $U_{i,t}$ is completely omitted from any reported information. The IRS does provide some estimates of underreporting, but the ranges are large (see section 3.1.1) and more importantly, for any given individual, it is impossible to tell where in this range they may fall. $\Delta B_{i,t}$ is to some extent observable in survey data. Various datasets, including PSID, SIPP and NSSBF[11] amongst others, collect information on business value less business debt. The problem here is that businesses are notoriously hard to value, especially in their nascent stages. The entrepreneur may have private information on the viability of her business investments. Therefore simply looking at the current reported market value, which is the number observed by the empirical researcher, is not necessarily commensurate with the true present value of the business. Lastly, while $HC_{we,i,t}$ is

[11] PSID: Panel Study of Income Dynamics, SIPP: Survey of Income and Program Participation, NSSBF: National-Survey of Small Business Finances

not observed for an individual when self-employed, the empirical researcher can attempt to parse this out in longitudinal data. Evans and Leighton (1989) allude to this by showing that on average self-employment experience is not associated with lower returns in future wage work. However, skills acquired from self-employment that are compensated in future wage work have largely been ignored as an avenue of financial returns within the literature.

While in this section, I have gone into significant detail on the various modes for financial returns in self-employment, parsing them out in the empirics is beyond the scope of the paper. Rather, the point of discussing them is to first, document the financial returns to self-employment and second, to sketch the logic for why a new measure is necessary. The next subsection goes into how expenditure captures more information on the financial state of the self-employed than any other measure we currently have.

3.3 How does expenditure capture the financial returns to self-employment?

Ideally, the empirical researcher would like to observe each component of the financial returns to self-employment from equation (1). However, this is not easily feasible, and even in the hypothetical situation that it were, one would need to follow individuals for a long enough period of time, in order to capture some of these returns that do not manifest immediately. I propose that household expenditure, and in particular, the longitudinal dynamics of household expenditure, will capture much more information on the financial returns to self-employment than any other measure currently at our disposal.[12]

First, unlike that for reported income,[13] there is no incentive for individuals to systematically misreport household expenditures (Meyer and Sullivan, 2003), particularly for survey pur-

[12]These other available measures include reported personal and business income from survey data, W-2 filings for self-employment earnings and tax filings for business income.

[13]It is reasonable to assume that methods used to underreport income for tax purposes will lead to an underreporting for purposes of the survey, since maintaining consistency across tax filings and survey responses involves easier recall and avoids any perceived tax enforcement complications that the responded may be apprehensive of.

poses.[14,15,16]

Second, expenditures capture all the various avenues for both realized and anticipated financial gains. I justify the use of expenditure as a reflection of current income since according to the permanent income hypothesis, current consumption (expenditure) is a reflection of contemporaneous income and expected future income (Friedman, 1957; Hall, 1978). New information about future income that arises during entry into self-employment shows up both as an unexpected change in income and consumption. The change in consumption should theoretically equal some fraction of the present value of the change in future income, and will be equal to the change in current income only when this change is permanent. Therefore, measurement aside, income and consumption measure the same thing, but in different ways.[17] and the distinction between the two is based on measurement per se.

Below I provide an informal sketch of how income maps to consumption in any given period and then walk through how, and to what extent changes in consumption can be attributed to changes in self-employment earnings. I will begin from the premise that consumption in any given period is a function of income (both labor and non-labor), wealth and expectations about future earnings.

[14]The measure of expenditure used in this paper mainly comprises of food, rent and imputed rent. These basic components of expenditure are especially unlikely to suffer for misreporting incentives, unlike large purchases such as fine jewelry and luxury boats, which the respondent may deem as risky to report if they were in fact underreporting income. See section 4.2 for a more detailed description of the expenditure measure.

[15]Issues of recall may be an issue, but so long as this isn't a systematic problem amongst the self-employed in a way that is different from that for the wage-employed, this is not of great concern.

[16]However, there still exists the possibility that expenditure for the self-employed may occur in part through business expenses. For example, transport charges, food consumed during work hours, conferences in resorts etc are not reported as personal expenses, but rather as business expenses. This then leads to an understatement of expenditure for the self-employed. I partly address this issue in section 4.2, by looking at how budget shares of the various elements in the expenditure measure change upon switching from wage to self-employment.

[17]One qualification: if the loss in income during self employment was anticipated, then expenditure was already lower prior to self-employment, and remains lower on entry to self-employment even though earnings in fact fall with self-employment. The two measure the same thing only if entry into self-employment was unanticipated, occurring in response to some flash of insight about a potential new business. Empirically, I do not find evidence for precautionary changes in consumption or savings, prior to entry into self-employment. This is consistent with unanticipated entry into self-employment on average.

In any given period, the following identity must hold:

$$C_{it} = I_{it} + N_{it} - S_{it} \tag{2}$$

where C_{it} is consumption, I_{it} is after-tax labor income, N_{it} is after-tax non-labor income and S_{it} is savings, for individual i at time t. $S_{it} > 0$ implies a net increase in wealth and $S_{it} < 0$ implies borrowing, either from an external source, or from one's own previous stock of wealth.

For simplicity, consider a household with only one individual who is a self-employed adult. I_{it} here will comprise of observed income, unobserved income and the realized change in business value (reflected in $D_{i,t}$, $U_{i,t}$ and $\Delta B_{i,t}$ from equation (1)). Any expectations of future gains (or losses) should turn up in S_{it}. These expectations of future gains or losses can be both employment related (future business gains from retained earnings and potential human capital gains as reflected in $B_{i,t}$ and $E(HC_{we,i,t})$ from equation (1)) and non-employment related (expected inheritances, legal settlements etc. and returns from various non-self-employment/ business related assets and investments). $S_{it} < 0$, or dissaving can also result from consumption smoothing of existing stocks of wealth.

From the simple sketch above, two things are clear. First, consumption will capture current and expected financial gains (or losses) from employment. This is especially important for self-employment given the serious weaknesses standard income measures suffer from for this particular subset of the labor market. This makes consumption more useful in measuring the returns to self-employment. On the flip side, it is clear that consumption *levels* in any given period are determined by factors beyond just current and future labor income. Current consumption is a function of current and future labor income, current and future non-labor income, and pre-existing wealth. While consumption captures all these factors, only the first two, current and future labor income, can be attributed to self-employment. As such, it is not obvious how exactly labor income maps to current consumption *levels*.

Given this complication, how then can one empirically relate consumption to gains (or losses) that are specific to returns from self-employment? I will argue here that looking at changes in, rather than levels of, consumption will connect the financial returns to self-employment and consumption with less contamination from the non-labor components described above. The equation below illustrates this:

$$\Delta C_{i,t} = \Delta I_{i,t} + \Delta N_{i,t} - \Delta S_{emp,i,t} - \Delta S_{non-emp,i,t} \tag{3}$$

where Δ implies a change in the variable between period t and period $t-1$ when the individual is self-employed at t wage-employed at $t-1$. Here, I have further disaggregated savings into changes that are employment related, $\Delta S_{emp,i,t}$, and savings that are not related to employment, but rather to changes external wealth sources, $\Delta S_{non-emp,i,t}$. Under some empirically testable assumptions, looking at how consumption changes with employment type can be more precisely related to financial returns from that employment type.

Assume for a moment that entry into self-employment is unanticipated, based on some flash of insight, and is *not* driven by changes (or expected changes) in wealth. In this case, as I explain below, both $\Delta N_{i,t}$ and $\Delta S_{non-emp,i,t}$ should be zero, and the entirety of $\Delta C_{i,t}$ can be attributed to returns, both realized and expected, from self-employment. The permanent income hypothesis tells us that, so long as non-labor income and wealth changes were anticipated at the start of time $t-1$ then the associated behavioral changes in consumption/savings should have been updated at the start of that period and remain the same between periods $t-1$ and t. This implies that so long as changes in non-wage income and wealth are anticipated and unrelated to entry into self-employment, then the impact of N_i and $S_{non-emp,i}$ should be the same in periods t and $t-1$. This then results in $\Delta N_{i,t}$ and $\Delta S_{non-emp,i,t}$ being zero. Since entry into self-employment is unanticipated, the entirety of the change in consumption can then be attributed to changes in

self-employment income, $\Delta I_{i,t}$ and $\Delta S_{emp,i,t}$.

The scenario outlined above is the only one wherein $\Delta C_{i,t}$ can be perfectly attributed to self-employment earnings. While the assumption that entry into self-employment is unanticipated while changes in non-labor income are fully anticipated is restrictive, it is somewhat testable. In the empirics, I test for changes in consumption and wealth prior to entry into self-employment and show that on average, the data is consistent with these assumptions. As such, we can with some degree of confidence, attribute changes in consumption that coincide with the switch into self-employment, to returns from self-employment, especially after the more volatile early years.

In light of the avenues for financial returns described above, what then should we expect to empirically observe when using expenditure to measure the returns to self-employment? In the absence of credit constraints, and only accounting for unobservable income sources, we expect to see the earnings difference between the wage and the self employment shrink when using expenditure rather than income. Specifically, given that individuals have to sink some of their own wealth into their personal businesses, we could in effect see an initial dip in expenditure upon entry into self-employment and then a faster growth rate in expenditure that follows. Furthermore, in each year while self-employed, one learns that one's business hasn't failed, leading to positive news and a further increase in expenditure.

The sections that follow describe the demographic and expenditure data, and the empirics that seek to understand the returns from self-employment.

4 PSID Data

This section provides a description of both the cross sectional and longitudinal environment of self-employment. I use data from the Panel Study of Income Dynamics (PSID) which is a dynamic longitudinal database (unbalanced panel) that tracks a nationally representative sample of individuals and families across time. In this paper, I use data from 1968 - 2005, covering a span of

38 years with data from 34 specific time periods (1968 - 1997, 1999, 2001, 2003, 2005). Between 1968 and 1996, surveys were conducted annually and then biennially after. This dataset contains vast amounts of economic and demographic data, and detailed information on income sources and amounts, employment, family composition changes, and residential location. The longitudinal nature of the data and the availability of a wide variety and quantity of income and employment information renders this dataset ideal for addressing the hypothesis outlined above. The unit of observation for wage and employment variables is at the individual level. Specifically, the current analysis only uses household heads since the data on employment and income variables are far more detailed, and therefore useful, for this subset of individuals. Expenditure is measured at the household level since this is the level at which it is available for most of the panel.[18] In this paper, I limit the study to both male and female household heads participating in the labor force[19]and with non-zero earnings, between the ages of 18 and 62. [20]

The final sample considered includes 23142[21] unique individuals of whom 4261 have ever been self employed. Of these 4261 individuals, 3373 have switched either in (2951), or out (2851), of self-employment in the time they appear in the PSID. Each individual appears in the data for an average of 16.5 years. 18.5 percent of the sample has engaged in self-employment at some point in the course of being surveyed by the PSID. Individuals are classified as being "self-employed" if they report only working for themselves in any given period.[22] These individuals spend on average

[18]In studying occupational choice with respect to tolerance towards risk, Rosen and Willen (2002) find using the PSID that results don't change substantively when using the income of just the household head versus that of the entire family, showing that results are not very sensitive to changes in the definition of income.

[19]Individuals in agriculture and mining are excluded since these industries face distortionary incentives that may bias the results.

[20]Sixty two is the minimum retirement age at which individuals can draw on social security, which may alter their behavior, particularly with regards the decision to be self-employed.

[21]This is the relevant sample in consideration. Most estimations use considerably less observations than that in the full sample. This is due to limitations in data availability for the full set of controls.

[22]In the analysis, I do not treat individuals who report being both self and wage employed specially. Thus, in comparing wage and self-employment these individuals are treated as if they are wage-employed; i.e. in regressions, when the self-employed take on a dummy value of 1, both the wage-employed and the wage and self-employed take on values of 0. Slightly over 1 percent of observations enter this category and 5 percent of individuals have ever been in this category.

6 years in self employment with the majority (68.32 percent) appearing as self-employed for 3 years or less. About 11 percent of these individuals who have ever been self employed [23] remain in self-employment for 10 years or more. [24]

4.1 Summary Statistics

Table I provides a summary of various productivity and demographic characteristics in two cross sections, 1984 and 2005, and across the full panel. It is interesting to look at how the environment of self-employment compares across two snapshots in time and to the panel of those who ever enter. The 1984 characteristics displayed in columns 1 and 2 are similar to those found in Hamilton (2000).[25] Specifically, in the 1984 cross section, the self-employed have a higher average level of potential labor market experience, longer average job tenure, work longer hours, and are more likely to be white, married and have completed higher education than wage-employees. In 2005, most of these patterns continue to persist, but the magnitude of the differences between the wage and self-employed appear to have shrunk, especially for higher education and work hours.

Even though about twenty percent of the population tries self employment (see above) while only ten percent are self-employed at any given time, the longitudinal characteristics of the self-employed have been less thoroughly explored in the literature. In columns 5 and 6 of table I, I provide some summary statistics that describe those who have ever attempted self-employment. As with the cross section, individuals who try self-employment are more likely to be white, married, male and college educated, and work longer hours than those who don't. However, unlike that in the cross section, those who ever attempt self-employment look very similar to those who

[23] i.e. of the 18.5 percent who ever try self-employment. This amounts to 470 individuals.

[24] Table A.1 in the appendix shows the breakdown of time spent in self-employment for those who ever appear as such in the PSID.

[25] Particularly, comparing the summary statistics from the PSID in 1984 yields similar averages to those in Hamilton (2000). This helps in establishing the external validity of the results. Even though the two datasets, SIPP and PSID, are different where the PSID over samples low income households, baseline characteristics across the two datasets are very similar. This is especially important since I do not use longitudinal weights as they aren't computed for the entire time period. In addition, given the dynamic nature of both the PSID panel and the population comprising the US economy, it is not clear to me how to fruitfully employ these longitudinal weights.

don't in terms of experience and average tenure. This implies that of all individuals to try self-employment, the more experienced are the ones to persist. This observation loosely indicates that entrepreneurial success, at least in terms of survival, is positively correlated with experience. Another notable feature not included in table I, is that individuals who have ever been self-employed hold a larger number of jobs (5.3 vs 3.8) over their tenure in the PSID than those who have only ever try wage-employment. Of those who try self-employment, highly educated individuals (i.e. college graduates and up) are most likely to survive in self-employment, while high school dropouts are the most likely to drop out.[26]The data also shows that individuals who are wage-employed in any given period are the least likely to enter self employment the next period, with a transition probability of 2.28 percent. Individuals who are either unemployed or not in the labor force have a 3.3 percent likelihood of engaging in self-employment in the following period, while individuals who are already self employed have a 73 percent probability of staying on. Those individuals who are both simultaneously self and wage employed in a given period have a 26 percent likelihood of moving fully into self-employment in the next period.[27]

4.2 The expenditure measure from the PSID

Ideally, the empirical researcher would like to measure the total dollar amount spent in a household in any given year. However, the PSID only collects expenditure information for a small number of variables across the entire panel. Expenditure data on food, both at home and away, and rent is consistently collected for the entire survey length (with gaps in 1973, 1988 and 1989). These variables can themselves be useful proxies for overall expenditure patterns. In fact, a number of papers studying consumption use just the sum of food expenditures at home and away (Hall and Mishkin (1982), Altonji and Siow (1987) and Pissarides and Weber (1989) to name a few). However, the dynamics of food consumption may differ in a critical manner from that of non-durable

[26]See appendix, table A.2
[27]See appendix, table A.3

consumption and it is unclear to what degree food expenditures generalize to total expenditures (Skinner (1987), Blundell et al. (2004)). In addition, food expenditures are fairly income inelastic and as such, using food alone may understate the degree to which consumption responds to income changes.[28] Therefore, I use a more representative measure of consumption as proposed in Skinner (1987).[29]

4.2.1 Construction of the main expenditure measure

In order to exploit the maximal number of years possible, I measure expenditure a la Skinner (1987), where expenditure is a linear combination of food expenditures (at home and away), rent and housing value. In Skinner's paper, these inputs explain over 70 percent of variation in expenditure. Skinner (1987) provides a simple technique to estimate total household expenditure using the limited available expenditure components in the PSID. The technique involves regressing various expenditure components from the PSID on total expenditure as computed from the Consumer Expenditure Survey (CEX). The main estimating equation I use (Table 1, Column 3 in Skinner (1987)) is as follows:[30]

$$C_{it} = 2.25 FoodHome_{it} + 3.401 FoodOut_{it} + 1.702 Rent_{it} + 0.125 HomeValue_{it} \tag{4}$$

This equation simply says, that every \$1 of food consumed at home, represents \$2.25 of actual consumption for the average household. The same logic applies to the remaining variables, where every dollar of expenditure on food eaten outside, rent and of the reported home value, respectively represent \$3.401, \$1.702 and \$0.125 of actual expenditure. The coefficients in equation 4 are what I

[28] Looking at just food expenditures alone also suffers from potentially understating true consumption if home production substitutes for purchases and vice versa. See Aguiar and Hurst (2005).

[29] An alternative possible way to get at a more representative measure of consumption is proposed in Blundell et al. (2004).

[30] This particular specification from Skinner (1987) enables me to maximally exploit the time dimension of the PSID panel. All years for which consumption data is collected, contains information on these variables. This is not the case for the other specifications in Skinner (1987) which include utilities and the number of automobiles (a durable good).

use in computing my main measure of expenditure and are exactly those found in Table 1, column 3 of Skinner (1987).[31] These estimates are stable over time (Guo (2010)) and explain up to 78 percent[32] of the total variation in expenditure. Guo (2010) repeats Skinner's exercise for the years 1980 - 2003 and finds that the original variables continue to be relevant.[33]

To test for robustness, I compute expenditure using the various combinations proposed by Skinner. The simplest version of expenditure used in this paper is the (un-weighted) sum of the dollar value of food eaten at home and away. Results for the main estimating equations from section 5 hold across all the different measures of expenditure (table A.5).

4.2.2 Robustness of the expenditure measure to self-employment

The claim in this paper, that expenditure suffers less from measurement issues than income, rests on two mechanical yet important assumptions. The first is that expenditure is not systematically mis-measured/ mis-reported in the same way income is,[34] and second, that the self-employed (or those who are ever self-employed) are not simply different in how their consumption changes with income.

Looking at how the budget share of each expenditure component changes upon entry into self-employment will to some extent address the first assumption. Table A.4 (appendix) shows how the budget share[35] of each of the individual expenditure component changes with entry into self-employment. The results indicate that budget share changes are tiny in magnitude, if at all, for each individual expenditure component. This provides some evidence that the first assumption,

[31] Note: I did not redo any of the estimations linking PSID consumption variables to the CEX. Instead, I borrow these coefficients from Skinner (1987) and rely on Guo (2010)'s work which shows that these coefficients are stable across time.

[32] i.e. the R-squared value from the estimations in Table 1, column 3 of Skinner (1987)

[33] Guo (2010) also finds that more than 80 percent of the variance in total non-durable expenditure is sufficiently explained by three expenditure components (food, utilities, and transportation), and that the estimated coefficients as well as predicative power are highly stable for this period.

[34] One particular concern is that individuals reclassify certain consumption goods, like food out, as a home expense once they switch into self-employment (or the other way round, it is not clear what direction the bias may go in).

[35] Budget share of component i, BS_i = dollar value of i / total projected household expenditure.

that consumption is not systematically misreported, holds.[36]

To test the second assumption, that the self-employed aren't just different from the onset, I look at how individuals who ever become self-employed respond to changes in income as compared to those who never do. The rationale underlying this test is as follows: those wage employed individuals who never try self-employment are a good baseline comparison group since they suffer least from income reporting biases. As such, it is worth comparing individuals before, during and after their stint in self-employment to those who are only ever wage-employed to get a better sense for how similar or different they might be. Figure I shows that across the income distribution, those who are ever self-employed display very similar responses to income changes, both before and after their self-employment spells, to those who are only ever wage-employed.[37] The figure also clearly indicates that consumption is distinctly less responsive to income changes while in self-employment than in any other state. This strongly suggests serious measurement issues in reported earnings for the self-employed.[38]

The analyses described above lend credibility to the expenditure measure used in this paper. Both the budget share results and the analysis of how expenditure responds to income are sensible and intuitive, suggesting that the proposed expenditure measure is a reasonable and representative one.

4.3 The wealth measure from the PSID

The PSID provides information on total wealth and its components for a limited number of years. In this paper I use seven waves of wealth information from the PSID supplemental wealth files,

[36] The budget share analysis is clearly detailed in the appendix, section 7.1.

[37] With the exception of those who leave self-employment and return to wage employment in the 75th income percentile. This observation is in fact consistent with the reclassification hypothesis in section 3.1.3. The most successful self-employed who then return to wage-employment most likely have income sources that are also not as easily measured in reported earnings. It then seems reasonable that expenditures are less responsive to income changes for this group due to inaccurate measurement of income for this group.

[38] Under the assumption that expenditure is not systematically mis-measured, as supported by the budget share analysis.

including data from 1984, 1989, 1994, 1999, 2001, 2003 and 2005. The final sample includes 14844 unique individuals of whom 3223 have ever been self-employed and 2787 have switched into (1477) or out of self-employment (1847).

Total wealth (in 1990 dollars) is the sum of one's, equity in real estate, business value,[39] vehicle value, equity in stock, transaction account balances, value of other assets and IRA, less debt. Debt[40] includes the dollar value of the main home mortgage, vehicle loan, credit card charges, student loans, medical or legal bills and loans from relatives.

5 Results

Below I outline the main form of the estimating equations used in this paper.

$$log(Y_{it}) = A_i + B_t + \beta_1 SE_{i,t} + \beta_2 SE * Years_{i,t} + \beta_3 X_{i,t} + \epsilon_{it} \tag{5}$$

where $Y_{i,t}$ is the dependent variable of interest for individual i at time t. The main dependent variables in this paper are labor income, household expenditure and wealth.[41] $SE_{i,t}$ is a dummy that takes on the value 1 if individual i is self employed at time t and 0 for all other periods one participates in the labor force. $SE * Years_{i,t}$ is the interaction between being self-employed and current tenure in self-employment. Current tenure in self employment is the running sum of the number of years one appears as self-employed in the PSID.[42] $X_{i,t}$ are controls for experience,[43]

[39] This is the reported value, and the associated survey question is: "If you sold the business and paid off any debts on it, how much would you realize on it?"

[40] Note that both total wealth and debt are computed in the PSID. The PSID also reports each disaggregated component of wealth and debt.

[41] Since wealth takes on both positive and negative values, they are not log transformed. Instead the main estimations are in levels and robustness tests use a cube root transformation to normalize the data.

[42] This running sum is computed regardless of the self-employment spell. For example, if an individual appears as self-employed in 1985 and then wage-employed in 1986-1990 and then again as self-employed in 1991, $SE*Years_{i,t}$ will take on the value 2 in 1991.

[43] Or more accurately, potential labor market experience. This variable is constructed as the difference between age and education since I do not observe true employment experience.

experience squared, education, race,[44] marital status, spouse's income and family composition. A_i and B_t are individual and time fixed effects respectively.

In interpreting the results from these estimations, one should bear in mind that there will be selection on various margins, both positive and negative that determine who leaves and who stays on in self-employment. However, the purpose of this paper is to evaluate the returns from self-employment and for this purpose, selection will not bias the coefficients.

5.1 Main results

5.1.1 Expenditure vs. Income

Table II reports the results for the impact of self-employment on income and expenditure. The fixed effects results in columns 1 and 4 are estimated off switchers,[45] and show that individuals report earning 26.2% less labor income in self-employment but consume 4.5% more.[46,47,48]Column 5 shows that this increase comes from stayers where expenditure is not different upon initial entry into self-employment but grows by 0.85 percent with each additional year (relative to that in wage employment).[49,50] Comparing the expenditure estimations with and without fixed effects (column 5 to 6), clearly shows that individual specific unobservables[51], such as wealth, determine entry into

[44]Education and race do not vary with time and are only included in the non-fixed effects estimations.

[45]Who switch either into or out of self-employment from some other state of labor force participation.

[46]Note that the number of observations in columns 1 to 3 are smaller than that in columns 4 though 6. This is because, labor income reported in time t links to actual earnings in time $t-1$, while consumption is reported for time t at time t. The results are very similar when the sample is restricted. However, I shall report the unrestricted expenditure results since the rest of the analysis will proceed using just expenditure and the larger sample size will increase precision.

[47]Note also that the number of individuals in the estimations are about half that in the total sample used. This is due to data availability for the various controls.

[48]Note that the estimations control for the log of the spouses wage. This imposes that only households with positive spousal wages are included. Estimations using untransformed spouse wage show that the coefficient on self-employed become even stronger. This makes sense since consumption is probably more responsive to income changes of the main earner when there is no secondary earner.

[49]Adding the interaction term, "SE*Years in SE" results in the insignificance of the "Self-employed" dummy which suggests that the 4.5% average expenditure increase in self-employment is accrued with time in self-employment.

[50]Reported income also grows with each additional year, but at a slower pace of 0.6% (column 2). At this growth rate, it would take close to 40 years for reported income to catch up to that in wage-employment.

[51]That covary positively with self-employment.

self-employment.[52,53]

Robustness tests using various definitions including the most basic measure, food expenditures, are shown in table A.5.[54,55,56] The estimations show that the main expenditure result discussed here is robust to differences in measurement.

5.1.2 Wealth

Table III shows how wealth changes with self-employment. Column 1 shows that those who switch into self-employment, experience an average wealth increase of $137,576. As with expenditure, all the action comes from stayers. Column 2 shows that wealth does not change upon entry into self-employment but increases by $24,469 with each additional year of persistence.[57] Comparing column 1 to column 3 (and 6 to 4) confirms positive selection on individual specific unobservables, such as ability, into self-employment. Columns 4 to 6 look at how wealth changes when business value is excluded from the total wealth measure. Comparing the coefficients in columns 4 and 1 shows, consistent with Moskowitz and Vissing-Jørgensen (2002), that wealth is highly concentrated in the business.The results show that non-business related wealth increases by $37084 with self-employment, on average. Here as well, the action comes from persistence, with non-

[52] See Evans and Jovanovic (1989), Quadrini (2000), Gentry and Hubbard (2000), Hurst and Lusardi (2004) for a discussion on wealth and entry into self-employment.

[53] Comparing the income estimations with and without fixed effects (column 2 to 3) indicates a negative covariance between between self-employment and individual specific unobservables that determine reported labor income.

[54] Robustness tests also control for hours worked (columns 1 and 2 in table A.5), since an increase in hours worked may result in the substitution of expenditure for home production a la Aguiar and Hurst (2005). The coefficients do in fact become smaller when controlling for hours which is consistent with the idea that some portion of increased expenditure in self-employment results from substitution away from home production due to higher hours worked.

[55] Table A.7 drops all individuals who were only in self-employment for 1 year, since there is a large exit rate after year 1 as shown in table A.1. The results don't change.

[56] Columns 6 and 7 in table A.5 use the underreporting adjustment proposed in Pissarides and Weber (1989) to understand if that adjustment alone is sufficient to close the gap. The results show that this adjustment is not sufficient.

[57] Since wealth takes on positive and negative values, log transforming the data would not make sense. I discuss level results here to facilitate interpretation. Robustness tests in table A.6 apply a cube root transformation (to normalize the distribution) to the data. Estimations using this transformed data confirms that wealth increases with self-employment. One difference as compared to the level estimations is that business related wealth increases immediately upon entry into self-employment and continues to grow with time. Consistent with the level estimations, non-business related wealth does not change upon entry and grows with time. These findings should be interpreted bearing in mind the long lag between the survey years collecting wealth information.

business wealth remaining unchanged upon initial entry into self-employment and then increasing by $11540 with each additional year in self-employment.

From these results, it does not appear that the self-employed are simply substituting consumption for savings. Instead, both business related and non-business savings increase for those who survive in self-employment. Increased business investment with time suggests that self-employed individuals reinvest wealth into their firms, especially as they gain new information about how likely it is to succeed as it survives. While wealth is highly concentrated in the business, the self-employed do not remain fully undiversified, and increasingly invest in non-business related assets as their businesses succeed.

5.1.3 Variance in expenditure and wealth

Showing that average consumption and savings are higher in self-employment provides a very reasonable financial rationalization for the decision to remain so. However, to better understand the risk-return tradeoff in self-employment, one must look at the degree of uncertainty faced by the entrepreneur. While the greatest risk faced by the self-employed is that of failure, where the payoff can be zero or even negative (Hall and Woodward, 2010) , none of the estimations in this section are intended to capture this. Instead the goal of this paper is to understand what the returns *from* self-employment are, and as such I seek to understand the uncertainties *realized* by those who persist in self-employment. To do this, I look at the conditional heteroskadasticity, or the variance in the unpredictable components, of expenditure and savings as they relate to self-employment. Specifically, I use the residuals obtained from column 3, table II, column 2, table III and column 2, table A.6, and on each of these residuals, separately run the following estimation:

$$u_{it}{}^2 = A_i + B_t + \theta_1 SE_{it} + \theta_2 SE_{it}/Tenure_{it} + \theta_3 X_{it} + \eta_{it} \tag{6}$$

where ${u_{it}}^2$ is the squared residual from the relevant estimation and $SE_{it}/Tenure_{it}$ is intended to capture the resolution of variance with time in self-employment.

The results from table IV show that uncertainty in expenditure is not statistically different in self-employment as compared to that in the alternative. When looking at how variance in wealth relates to self-employment, the level estimations in column 2 indicate an increase. However, correcting for the right skew in the data (using a cube root transformation) results in the insignificance of the coefficient on the self-employment dummy as shown in column 3. Comparing the level estimations in column [2] to the transformed wealth results in column [3] suggests that while variance may increase for the wealthiest of the self-employed, most individuals do not appear to be exposed. [58] Variance in wealth less business value (not shown), both in level terms and cube-root transformed is not statistically different in self-employment than in other states, either.

The results here relate to the finding in Moskowitz and Vissing-Jørgensen (2002), that entrepreneurial investment is highly concentrated despite a seemingly worse risk-return tradeoff. To the extent that volatility in business returns trickle into variance in expenditure and savings, the combined findings of higher expenditure and savings in self-employment, alongside weak evidence for offsetting increases in uncertainty suggests thinking through the conventional wisdom on the risk-return tradeoff in business ownership, in particular, for those who persist.[59,60] However, it should be noted that the expenditure measure used in this paper is partly comprised rudimentary goods (food) which are likely the first components of consumption that are smoothed, and may therefore be less impacted by volatility in earnings. Consequently, the variance in expenditure results should be interpreted as capturing volatility in the most basic levels of consumption, and

[58] Re-running all estimations and omitting negative wealth observations in level terms yields the same coefficient signs as in column 2. Log transforming wealth (which drops negatives and zeros), in line with the cube root transformation, does not show increased uncertainty in wealth.

[59] Business owners have private information on their true business earnings and the riskiness of their ventures. This knowledge will manifest in their expenditure and savings decisions but may be difficult to capture when using other methods of business valuation. In addition, the use of longitudinal rather than cross sectional data, may be driving some of the differences found here.

[60] See Kartashova (2011) for further discussion on the robustness of the "private-equity premium puzzle" to various time periods.

not on more discretionary aspects, such as vacations and luxury purchases. Measurement error in reported consumption in the PSID could also bias downward the impact of self-employment on uncertainty in consumption. The wealth measure suffers less from these potential measurement issues.[61] The results, however, still suggest that realized uncertainty in self-employment is *not* high enough to be captured in these estimations.

5.2 Secondary results

5.2.1 What happened before self-employment?

The expenditure and wealth analysis done thus far presumes that entry into self-employment is unanticipated. Therefore, any increase in expenditure and savings comes from either new revenue or from expectations of future success. However, if individuals anticipate entry into self-employment, they may then change their behavior and cut back on expenditures prior to entering. Alternatively, entry into self-employment could be endogenous to changes in wealth, where some cash windfall such as an inheritance or lottery winnings induces both entry into self-employment and increases in consumption. The tests here are intended to address the possibilities described above, since the use of changes in consumption and savings as proxies for changes in labor income is predicated on the assumption that these are solely attributable to employment related earning changes as described in section 3.3.

In order for the results on expenditure and savings changes to be interpreted as resulting from financial gains in self-employment, it must be the case that neither expenditure, nor wealth is substantially different just prior to entry into self-employment as compared to all other periods prior to self-employment. Columns 2, 3, 5, 6, 8 and 9 in table V show that neither expenditure nor wealth (both business and non-business related) are statistically different in the one and two years prior to entry into self-employment as compared to all other prior years. These results do not

[61] However, wealth data is not available continuously across the panel and is available across 7 waves, in 4 year and then 2 year intervals, which might make capturing variance over short intervals difficult.

suggest anomalous changes in expenditure behavior or wealth prior to entry into self-employment. This lends credibility to the use of changes in expenditure and wealth as surrogates for labor income changes associated with self-employment.

Columns 1, 4 and 7 compare expenditure and wealth in all periods prior to entry into self-employment to all those periods after entry (including those while in self-employment and after leaving). The results from columns 1 and 7 show that expenditure and non-business related wealth before and after self-employment are not significantly different for those who make the attempt. Column 7 shows that business related wealth is significantly lower in those years prior to entry into self-employment even when accounting for those periods after self-employment. This is consistent with substantial increases in business related wealth[62] for those who remain in self-employment. Given the findings of increased consumption and savings while self-employed (from tables II and III), the results in columns 1 and 7 indicate a drop in both expenditure and non-business related wealth for "failures". To get a better sense of what happens to these leavers, the next section looks at post self-employment outcomes.

5.2.2 What happens after self-employment?

Table A.1 shows that about 70% of individuals who try self-employment leave within three years. What happens to these individuals once they leave? This section explores whether these so called "failed" entrepreneurs do better or worse after self employment than they did before. It is important to note that none of this discussion will causally identify the impact of self-employment on subsequent labor market outcomes. Ultimately, individuals enter self-employment for different reasons, some out of their own volition and others for lack of choice. This selection into self-employment makes it very difficult to identify the impact of self-employment on wage outcomes. The results presented here nonetheless provide some insight into what these outcomes look like.

The estimations in table VI look at the economic outcomes of those who ever try self-employment

[62] Either from true increases in business value or from business owners over-estimating the reported business value.

after they leave. Column 1 includes all individuals who ever try self-employment and the "After SE" variable takes on a value of 1 in all time periods after entry into self-employment where one does not appear as self-employed (including being wage-employed, unemployed and leaving the labor force). Columns 2, 3 and 4 include only those periods where one is wage-employed, both before and after self-employment. Column 1 shows that those who leave, regardless of whether they go back to wage work, are unemployed or leave the labor force, spend on average 5% less after having left self-employment than they did prior to ever having entered. Column 2 shows that those who leave self-employment and return to wage work spend on average 3.8% less after having left self-employment than they did while in wage-work, prior to entry into self-employment.

This latter result is better understood by looking at the wage earnings for these individuals. Column 3 shows that individuals who leave self-employment and return to wage work make on average 25% less than they did in wage work prior to entering self employment. Column 4 however, shows that these losses are greatest for individuals with low education and experience. Future wage employment seems to rebound to earlier levels for individuals with approximately a high school degree and 10 years of experience in the labor market. In fact, a college educated individual with 10 years of experience does not suffer any observable losses from having tried self-employment, and earns 15% more in subsequent wage work than before.[63]

These findings indicate that the returns to skills gained in self-employment differ by initial human capital as measured by education and experience. There could well be "necessity" and "opportunity" entrepreneurs, the former who suffer from weak labor market outcomes altogether, and do not enter of their own volition, and the latter who make the choice. The results suggest that for those making the choice, and presumably have reasonable outside wage options due to their skill level, attempting self-employment could lead to human capital accumulation that is compensated in future wage work (Evans and Leighton (1989), Lazear (2004)).

[63] Since the counterfactual wage path is not observed, we should be careful in interpreting this number.

5.2.3 Do people work more while self-employed?

In order to have a better sense for how self employment impacts utility, it is important to not only evaluate how individuals fare financially but also how much they work for these financial rewards. Column 1 in table VII shows that individuals work on average 3.2 percent more per year in self-employment than wage-employment. Column 2 shows that this increase in hours worked comes from time spent in self-employment. In fact, hours worked drops by 6.4% upon entry into self-employment and then grows by 1.15% with each additional year. One explanation for this finding is that the marginal return to each hour worked increases as an individual learns about the viability of their venture. Alternatively, this finding could simply reflect that those who spend very short amounts of time in self-employment may simply be between jobs or taking time off by working privately and therefore put in less time when they initially appear as self-employed in the data. A third interpretation of this finding is that the more hardworking entrepreneurs are the ones to survive and succeed. Comparing the estimate in column 3 to column 2 which controls for individual fixed effects implies a positive covariance between the choice to become self-employed and work hours.

5.3 Interpreting the results

The combined findings of higher expenditure and savings with no offsetting increases in realized uncertainty, suggests that the decision to persist in self-employment can be rationalized using just financial returns. That expenditure, savings and hours worked grow with time in self-employment indicates that each additional year of survival brings forth good news in terms of venture viability which induces more hard work resulting in further financial gains. There is no evidence that these findings are mechanically induced from a cut in expenditure prior to entry into self-employment. Those who leave self-employment fare differently, depending on skill level. Post self-employment, low skilled workers suffer from worse labor market outcomes, while high skilled workers appear

to experience wage gains.[64]

Overall, the results suggest that those who choose to remain in self-employment are financially better off as such. The increase in work hours makes the impact on utility less clear, but given the prior literature on non-pecuniary returns, one could argue that the self-employed are better off altogether. Evidence from post self-employment outcomes suggests the presence of "necessity" and "opportunity" entrepreneurs, where the former group suffers from weak labor market outcomes while the latter group potentially gains from experience in self-employment.

6 Conclusion

This paper sheds some new insight on the returns from self-employment. The literature has for many years viewed the decision to persist in self-employment as anomalous, due to the low observed earnings and high risk exposure faced by business owners. In light of this, the decision to persist has primarily been rationalized, using heterogeneity in preferences and beliefs. The main result of this paper shows that this empirical puzzle can be resolved by simply using a better measure of financial returns, than reported income. The empirical analysis finds that individuals experience higher consumption and savings levels with no offsetting increases in uncertainty while self-employed relative to wage-employment. In fact, these results are driven by those who persist, for whom consumption and savings grow with time in self-employment. With each additional year, the self-employed also work more, suggesting that the return from effort also grows with time. The combined findings of increased expenditure and savings suggests financial betterment from self-employment. The higher work hours constrains a clear interpretation with regards utility. However, given previous work on non-pecuniary returns, one could argue that for those who make the choice to persist, self-employment has a positive impact on overall well-being.

These results present a few of implications that deserve further attention. First, a substantial

[64] Not causally attributable to self-employment.

part of the discrepancy between expenditure and reported earnings could well be driven by tax avoidance. This then implies that consumption is being subsidized for the self-employed. If this is in fact the case, then we would be better served understanding whether the positive externalities generated by them is sufficient to justify this. Second, the findings in this paper have serious implications for the measurement of income inequality. The self-employed comprise about 10% of the labor market at any given time and largely appear to earn less than the wage employed. Given the discrepancy between reported earnings and actual financial well being, this could lead to underestimating income inequality.

While I do not go into welfare analyses, the findings in this paper suggest seriously rethinking how the returns to self-employment are measured. 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.

Author affiliation: Duke University, Fuqua School of Business

7 Appendix

Figure A.1: Kernel Density Plot of Annual Earnings in 1984

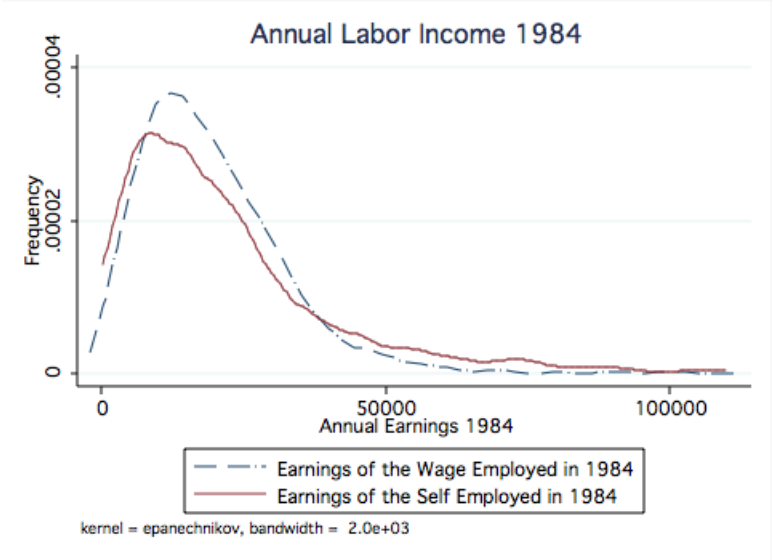
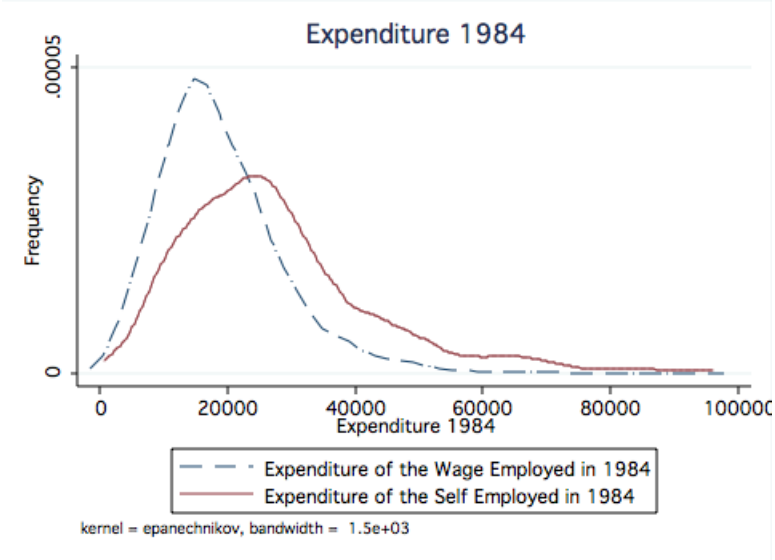


Figure A.2: Kernel Density Plot of Expenditure in 1984



Note: The figures above are a snapshot of the income and expenditure distributions for the wage and self-employed at a single point in time, 1984. Figure 1 shows that the income distributions in 1984 using the PSID display the same pattern as that from the SIPP in 1984, as shown in Hamilton (2000).

Figure A.3: Kernel Density Plot of Annual Earnings in 2005

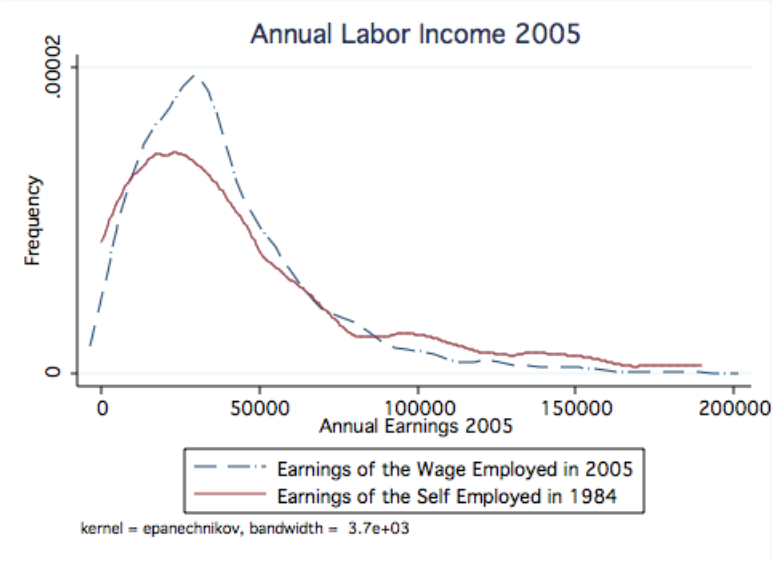
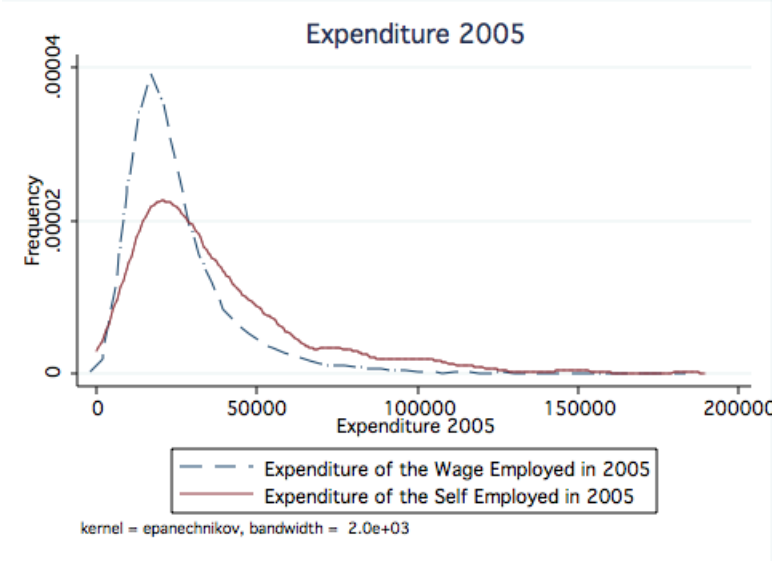


Figure A.4: Kernel Density Plot of Expenditure in 2005



Note: The figures above show that the the income and expenditure distributions in 2005 are very similar to those in 1984 as displayed in Figures 1 and 2. Snapshots of various other points in time display a similar pattern.

Figures A.1 and A.3 above provide a graphical depiction of the puzzle that motivates this paper. These figures show the distribution of annual labor income for the wage and self-employed in 1984 and 2005. In both years, the self-employment wage distribution is centered to the left of that for wage-employment and is more positively skewed. Figures A.2 and A.4 show that the opposite pattern holds for expenditures, where the self-employment expenditure distribution is centered to the right of that for wage-employment.[65] Using a Kolmogorov-Smirnov test for the differences in the distributions, I find that the distributions of annual labor income and expenditures for the self-employed are significantly different, at the 1 percent level, from those of the wage-employed in both 1984 and 2005. These figures re-establish the puzzle that majority of the self-employed earn less than the seemingly available alternative in wage employment. Household expenditures on the other hand, paint a very different picture of the financial welfare of the self-employed, at least in the cross section.

[65] As an aside, note how consumption inequality has increased in 2005 as compared to that in 1984 (skewness in figure 3 vs figure 6). This is consistent with in Aguiar and Bils (2011) who show that the CEX does not pick this increase in consumption inequality up due to measurement error.

Table A.1: Summary of time spent in self-employment

[1] Years In Self Employment	[2] Number of individuals	[3] Percentage
1	1794	42.1
2	683	16.03
3	434	10.19
4	291	6.83
5	173	4.06
6	150	3.52
7	98	2.3
8	94	2.21
9	74	1.74
10	47	1.1
11	62	1.46
12	50	1.17
13	43	1.01
14	39	0.92
15	47	1.1
16	29	0.68
17	23	0.54
18	16	0.38
19	20	0.47
20	17	0.4
21	16	0.38
22	10	0.23
23	13	0.31
24	8	0.19
25	6	0.14
26	7	0.16
27	6	0.14
28	5	0.12
29	2	0.05
30	2	0.05
31	1	0.02
33	1	0.02
Total	4261	100

Note: Column 2 counts the number of individuals who have ever been self-employed for the corresponding number of years in column 1. Column 3 divides column 2 by the total number of individuals who have ever tried self-employment.

Table A.2: Education and Time in SE

		[1] HS Dropout	[2] HS Grad	[3] College Dropout	[4] College Grad	[5] Grad School	[6] N/A	[7] **Total**
	Total Years in SE							
[1]	1 to 3	23.26	33.18	24.36	9.52	6.94	2.75	100
[2]	4 to 9	18.98	28.18	23.18	16.14	12.05	1.48	100
[3]	10 and up	14.04	22.77	28.72	16.38	18.09	0	100

Time spent in self-employment by education category. Each cell is the proportion of individuals from the column category who spend a total of the row category number of years in self-employment. The rows sum to 100 percent. For example, 23.26 percent of individuals who spend a total of between 1 and 3 years in self-employment are high school dropouts.

Table A.3: Transition Probabilities

		[1] Wage	[2] Wage & Self	[3] Self	[4] Other
[1]	Wage	90.49	0.72	2.28	6.44
[2]	Wage & Self	45.55	23.13	26.63	4.55
[3]	Self	16.41	3.22	73.78	6.55
[4]	Other	25.61	0.33	3.30	70.72

Transition probabilities from years 1968 to 2005. Probability of going from row category of employment in period t to column category in period t+1. This is annual from 1968 to 1997 and the biennial thereafter. The "other" category refers to individuals who are either outside the labor force or unemployed.

Table A.4: Budget Shares

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Budget share: Food at Home	Budget share: Food Out	Budget share: Rent	Budget share: Home Value	Budget share: Food at Home	Budget share: Food Out	Budget share: Rent	Budget share: Home Value
Self Employed	-0.00231	0.00187**	-0.00399*	0.0561	-0.00481***	0.00153**	-0.000176	0.0597
	[0.00148]	[0.000849]	[0.00226]	[0.0431]	[0.00130]	[0.000700]	[0.00200]	[0.0374]
SE*Years in SE	-0.000580**	-7.75E-05	0.000884***	0.000867				
	[0.000238]	[0.000154]	[0.000288]	[0.00719]				
Experience	0.000128	-0.000116	-0.00453***	0.0553***	0.000137	-0.000114	-0.00455***	0.0553***
	[0.000440]	[0.000224]	[0.000739]	[0.0117]	[0.000440]	[0.000224]	[0.000740]	[0.0117]
Experience Sq	-5.03E-06	2.15E-06	0.000114***	-0.00140***	-5.45E-06	2.09E-06	0.000115***	-0.00140***
	[4.08e-06]	[2.08e-06]	[6.56e-06]	[0.000116]	[4.06e-06]	[2.07e-06]	[6.56e-06]	[0.000116]
Married	-0.0109	0.00138	-0.0247*	0.524***	-0.011	0.00138	-0.0247*	0.524***
	[0.00811]	[0.00505]	[0.0137]	[0.162]	[0.00810]	[0.00505]	[0.0137]	[0.162]
Log spouse Wage	-0.00118***	0.00128***	-0.000848**	-0.00549	-0.00118***	0.00128***	-0.000850**	-0.00549
	[0.000235]	[0.000120]	[0.000387]	[0.00579]	[0.000235]	[0.000120]	[0.000387]	[0.00579]
Family Size	0.0116***	-0.00452***	-0.00985***	0.0398***	0.0116***	-0.00452***	-0.00985***	0.0397***
	[0.000427]	[0.000206]	[0.000720]	[0.0121]	[0.000427]	[0.000206]	[0.000721]	[0.0121]
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	73,916	73,916	73,916	63,728	73,916	73,916	73,916	63,728
R-squared	0.17	0.04	0.121	0.178	0.169	0.04	0.121	0.178
No. Individuals	11,700	11,700	11,700	10,171	11,700	11,700	11,700	10,171

Note: Dependent variableis the budget share of the consumption component specified in each column. For example, in column 1, the budget share of food at home is expenditure of food at home in 1990 dollars divided by total projected household expenditure (as computed a la Skinner 1987: 2.25*Food at Home + 3.401 Food Out + 0.1253 Home Value + 1.702 Annual Rent) in 1990 dollars. Standard errors are in parentheses. All standard errors are heteroskadastic consistent.

7.1 Budget Shares

Interpreting the budget share results:

Before ever becoming self-employed, those who eventually do so spend on average (in 1990 dollars):

- Food at home: 4033.255 (BS: 19.8%)
- Food out: 1018.356 (BS: 5%)
- Rent: 1667.218 (BS: 8.2%)
- Home value: 41282.91 (200%)
- Average consumption in 1990 dollars is: 20384.46

Relative to the results in table A.4, this tells us (roughly) that when an individual switches from wage into self-employment:

- Share of food at home does not change immediately but on average goes from 19.8% to 19.3%
- Share of food out changes immediately from 5% to 5.187%. Over time this averages to 5.15%
- Rent and home value shares do not change observably.

What does this mean? This means holding income constant, consumption changes are extremely small due to the possible reclassification of food out as a home expense. Basically the tiny changes in budget shares upon entry into SE indicate that reporting of consumption is largely consistent between wage and self-employment.

Table A.5: Income and Expenditure Robustness

	[1] Expenditure	[2] Expenditure	[3] Expenditure (v2)	[4] Expenditure (v3)	[5] Total Food	[6] Annual Income	[7] Annual Income
Self Employed	0.0362***	-0.0986**	0.0190*	0.00117	0.0104	-0.0759***	-0.111***
	[0.00817]	[0.0389]	[0.0106]	[0.0168]	[0.00960]	[0.0217]	[0.0250]
SE*Years in SE			0.00690***	0.00827***	0.00303**		0.00852**
			[0.00181]	[0.00265]	[0.00141]		[0.00351]
SE*Years of School		0.0101***					
		[0.00295]					
Annual Hours Worked	0.0637***	0.0637***					
	[0.00424]	[0.00424]					
Experience	0.0191***	0.0199***	0.0210***	0.0259***	0.0216***	0.0394***	0.0396***
	[0.00259]	[0.00260]	[0.00252]	[0.00433]	[0.00290]	[0.00439]	[0.00440]
Experience Sq	-0.000487***	-0.000486***	-0.000477***	-0.000519***	-0.000541***	-0.00118***	-0.00118***
	[2.42e-05]	[2.42e-05]	[2.41e-05]	[4.30e-05]	[2.54e-05]	[5.15e-05]	[5.20e-05]
Married	0.248*	0.247*	0.242*	0.213	0.185***	0.0477***	0.0476***
	[0.131]	[0.131]	[0.140]	[0.182]	[0.0546]	[0.0142]	[0.0142]
Log spouse Wage	0.0248***	0.0247***	0.0236***	0.0271***	0.0172***	0.00462	0.0047
	[0.00187]	[0.00187]	[0.00208]	[0.00323]	[0.00165]	[0.00572]	[0.00572]
Family Size	0.0626***	0.0625***	0.0542***	0.0637***	0.0933***	0.00924**	0.00922**
	[0.00251]	[0.00252]	[0.00255]	[0.00423]	[0.00278]	[0.00423]	[0.00423]
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	69,104	69,104	42,798	27,076	74,009	69,115	69,115
R-squared	0.214	0.214	0.28	0.182	0.123	0.069	0.07
No. Individuals	10,789	10,789	8,584	7,128	11,717	9,717	9,717

Note: Dependent variable is the log of expenditure (various versions) in 1990 dollars. Expenditure in columns [1] and [2] is the same as that used throughout the paper so far (i.e. the weighted sum of food at home, food out, rent and imputed rent). Expenditure in column [3], v2, uses weights proposed in Skinner 1987 and computes expenditure using food at home and outside, home value, annual rent and vehicles owned. Expenditure in column [4], v3, uses weights proposed in Skinner 1987 and computes expenditure using food at home and outside, home value, annual rent, utilities and vehicles owned. Column [5] is the simple sum of food at home and away. In columns [6] and [7], the labor income measure of the household head is adjusted by the average underreporting estimate (1.55) from Pissarides and Weber (1989). Standard errors are in parentheses. All standard errors are heteroskadastic consistent.

Table A.6: Wealth Cube Root Transformed

	[1]	[2]	[3]	[4]	[5]	[6]
	Wealth Transformed	Wealth Transformed	Wealth Transformed	Wealth-Business Transformed	Wealth-Business Transformed	Wealth-Business Transformed
Self Employed	7.565***	5.357***	15.66***	2.748***	1.315	8.418***
	[1.016]	[1.159]	[0.662]	[0.840]	[0.984]	[0.577]
SE*Years in SE		0.521***			0.338**	
		[0.153]			[0.138]	
Age	0.403	0.4	0.977***	0.351	0.349	0.962***
	[0.401]	[0.401]	[0.0168]	[0.387]	[0.387]	[0.0161]
HS Dropout			-10.39***			-9.587***
			[0.536]			[0.521]
HS Graduate			-2.925***			-2.686***
			[0.389]			[0.371]
College Grad			5.370***			5.460***
			[0.575]			[0.549]
Grad Sch			7.340***			7.535***
			[0.683]			[0.652]
Married	8.286*	8.110*	10.51***	7.732*	7.618*	10.01***
	[4.302]	[4.362]	[3.881]	[4.379]	[4.421]	[3.833]
Log spouse Wage	0.348	0.362	2.961***	0.317	0.326	2.881***
	[0.233]	[0.233]	[0.178]	[0.218]	[0.219]	[0.172]
Family Size	1.671***	1.686***	0.415***	1.709***	1.719***	0.387***
	[0.217]	[0.215]	[0.136]	[0.204]	[0.204]	[0.131]
White			5.838***			5.524***
			[0.602]			[0.592]
Black			-3.568***			-3.458***
			[0.636]			[0.623]
Constant			-45.24***			-44.04***
			[4.295]			[4.228]
Individual Fixed Effects	Yes	Yes	No	Yes	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,850	19,850	19,850	19,850	19,850	19,850
R-squared	0.156	0.158	0.301	0.157	0.158	0.284
No. Individuals	7,402	7,402		7,402	7,402	

Note: Dependent variable is the cube root of wealth in 1990 dollars. The wealth measure in columns [1] to [3] is the sum of the value of business, checking and savings, stocks and bonds, other assets, vehicles, annuity and IRAs (1999 onward) and home equity less debt. The wealth measure in columns [4] to [6] is the same as that in the previous columns, but less business value. Standard errors are in parantheses. All standard errors are heteroskadastic consistent. Ommited education category is college dropouts, and omitted race category is "other".

Table A.7: Excluding Individuals in SE for 1 year

	[1] Annual Income	[2] Expenditure	[3] Wealth	[4] Wealth-Business	[5] Hours
Self Employed	-0.288***	0.0123	51,822	-14,546	-0.0465**
	[0.0270]	[0.0103]	[82,651]	[26,473]	[0.0205]
SE*Years in SE	0.00661*	0.00817***	23,334***	11,732***	0.0102***
	[0.00354]	[0.00165]	[5,910]	[3,201]	[0.00182]
Experience	0.0400***	0.0217***			0.0123***
	[0.00462]	[0.00264]			[0.00255]
Experience Sq	-0.00115***	-0.000538***			-0.000417**
	[5.41e-05]	[2.40e-05]			[3.32e-05]
Age			3,453	5,999	
			[8,290]	[5,580]	
Married	0.0462***	0.206***	78,876***	61,140***	0.0116
	[0.0146]	[0.0575]	[20,404]	[11,536]	[0.00967]
Log spouse Wage	0.00505	0.0159***	-6,441	-3,775	-0.00718***
	[0.00615]	[0.00146]	[8,311]	[4,274]	[0.00239]
Family Size	0.00971**	0.0615***	-2,851	3,751	0.00175
	[0.00440]	[0.00246]	[8,074]	[3,508]	[0.00283]
Individual Fixed Effects	Yes	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	63,237	67,778	18,129	18,129	64,323
R-squared	0.072	0.201	0.038	0.054	0.028
No. Individuals	8,911	10,725	6,754	6,754	8,946

Note: All specifications are identical to the main income, expenditure, wealth, wealth less business value and hours regressions. The sample however, excludes all individuals who only spent 1 year in self-employment.

References

Aguiar, Mark A and Mark Bils, "Has Consumption Inequality Mirrored Income Inequality?," Technical Report, National Bureau of Economic Research 2011.

Aguiar, Mark and Erik Hurst, "Consumption versus Expenditure," *Journal of Political Economy*, 2005, *113* (5), pp. 919–948.

Altonji, Joseph G. and Aloysius Siow, "Testing the Response of Consumption to Income Changes with (Noisy) Panel Data," *The Quarterly Journal of Economics*, 1987, *102* (2), pp. 293–328.

Andreoni, James, Brian Erard, and Jonathan Feinstein, "Tax Compliance," *Journal of Economic Literature*, 1998, *36* (2), pp. 818–860.

Blanchflower, David G., Andrew Oswald, and Alois Stutzer, "Latent entrepreneurship across nations," *European Economic Review*, 2001, *45* (4-6), 680 – 691.

Blundell, Richard, Luigi Pistaferri, and Ian Preston, "Imputing consumption in the PSID using food demand estimates from the CEX," *The Institute for Fiscal Studies, UCL (University College London), The Institute for Fiscal Studies*, 2004.

Camerer, Colin and Dan Lovallo, "Overconfidence and Excess Entry: An Experimental Approach," *The American Economic Review*, 1999, *89* (1), pp. 306–318.

Cooper, Arnold C., Carolyn Y. Woo, and William C. Dunkelberg, "Entrepreneurs' perceived chances for success," *Journal of Business Venturing*, 1988, *3* (2), 97 – 108.

Evans, David S and Boyan Jovanovic, "An estimated model of entrepreneurial choice under liquidity constraints," *The Journal of Political Economy*, 1989, pp. 808–827.

Evans, David S. and Linda S. Leighton, "Some Empirical Aspects of Entrepreneurship," *The American Economic Review*, 1989, *79* (3), pp. 519–535.

Friedman, Milton, *A Theory of the Consumption Function* number frie57-1. In 'NBER Books.', National Bureau of Economic Research, Inc, June 1957.

Gentry, William M and R Glenn Hubbard, "Tax policy and entrepreneurial entry," *The American Economic Review*, 2000, *90* (2), 283–287.

Guo, Sheng, "The superior measure of PSID consumption: An update," *Economics Letters*, 2010, *108* (3), 253 – 256.

Hall, Robert E., "Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence," *The Journal of Political Economy*, 1978, *86* (6), pp. 971–987.

_ **and Frederic S. Mishkin**, "The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households," *Econometrica*, 1982, *50* (2), pp. 461–481.

_ **and Susan E. Woodward**, "The Burden of the Nondiversifiable Risk of Entrepreneurship," *The American Economic Review*, 2010, *100* (3), pp. 1163–1194.

Hamilton, Barton H., "Does Entrepreneurship Pay? An Empirical Analysis of the Returns of Self-Employment," *The Journal of Political Economy*, 2000, *108* (3), pp. 604–631.

Hurst, Erik and Annamaria Lusardi, "Liquidity constraints, household wealth, and entrepreneurship," *Journal of political Economy*, 2004, *112* (2), 319–347.

_ **and Ben Pugsley**, "The Non Pecuniary Benefits of Small Business Ownership," *University of Chicago, working paper*, 2010.

_ **, Geng Li, and Benjamin Pugsley**, "Are Household Surveys Like Tax Forms: Evidence from Income Underreporting of the Self Employed," Working Paper 16527, National Bureau of Economic Research November 2010.

Jovanovic, Boyan, "Selection and the Evolution of Industry," *Econometrica: Journal of the Econometric Society*, 1982, pp. 649–670.

Kartashova, Katya, "The private equity premium puzzle revisited," Technical Report, Bank of Canada Working Paper 2011.

Lazear, Edward P., "Balanced Skills and Entrepreneurship," *The American Economic Review*, 2004, *94* (2), pp. 208–211.

Meyer, Bruce D. and James X. Sullivan, "Front Matter," *The Journal of Human Resources*, 2003, *38*.

Moskowitz, Tobias J. and Annette Vissing-Jørgensen, "The Returns to Entrepreneurial Investment: A Private Equity Premium Puzzle?," *The American Economic Review*, 2002, *92* (4), pp. 745–778.

Pissarides, Christopher A and Guglielmo Weber, "An expenditure-based estimate of Britain's black economy," *Journal of Public Economics*, 1989, *39* (1), 17–32.

Puri, Manju and David T Robinson, "The Economic Psychology of Entrepreneurship and Family Business," *Journal of Entrepreneurship and Management*, 2013.

Quadrini, Vincenzo, "Entrepreneurship, saving, and social mobility," *Review of Economic Dynamics*, 2000, *3* (1), 1–40.

Rosen, Harvey and Paul Willen, "Risk, Return and Self-Employment," *Chicago/Priceton University Discussion Paper*, July 2002.

Roy, Andrew Donald, "Some thoughts on the distribution of earnings," *Oxford economic papers*, 1951, pp. 135–146.

Skinner, Jonathan, "A superior measure of consumption from the panel study of income dynamics," *Economics Letters*, 1987, *23* (2), 213 – 216.

Slemrod, Joel, "Cheating Ourselves: The Economics of Tax Evasion," *The Journal of Economic Perspectives*, 2007, *21* (1), pp. 25–48.

8 Tables

Table I: Summary Statistics

	Cross Sectional Summary				Panel Summary	
	[1]	[2]	[3]	[4]	[5]	[6]
	1984		2005			
	Paid Employees	Self Employed	Paid Employees	Self Employed	Only attempted wage-emp	Ever attempted self-emp
Experience	17.08	20.82	19.97	23.82	19.17	19.96
(total years in labor force)	[11.42]	[10.80]	[11.28]	[10.68]	[12.17]	[11.5]
Tenure	10.78	13.43	5.47	6.42	9.06	9.30
(average years in each job)	[7.73]	[12.97]	[5.48]	[6.29]	[6.91]	[6.95]
HS Drop	0.15	0.15	0.10	0.11	0.22	0.18
(proportion of sample)	[0.36]	[0.36]	[0.30]	[0.31]	[0.41]	[0.39]
HS Grad	0.35	0.24	0.35	0.33	0.35	0.29
(proportion of sample)	[0.47]	[0.43]	[0.47]	[0.47]	[0.48]	[0.45]
College Drop	0.27	0.28	0.27	0.24	0.25	0.26
(proportion of sample)	[0.45]	[0.45]	[0.44]	[0.43]	[0.43]	[0.44]
College Grad	0.12	0.17	0.15	0.14	0.10	0.14
(proportion of sample)	[0.32]	[0.37]	[0.36]	[0.35]	[0.29]	[0.34]
Grad School	0.11	0.17	0.08	0.12	0.08	0.12
(proportion of sample)	[0.31]	[0.38]	[0.27]	[0.33]	[0.26]	[0.33]
White	0.62	0.83	0.55	0.63	0.55	0.72
(proportion of sample)	[0.48]	[0.37]	[0.49]	[0.48]	[0.50]	[0.45]
Married	0.64	0.79	0.56	0.68	0.58	0.69
(proportion of sample)	[0.48]	[0.41]	[0.49]	[0.47]	[0.49]	[0.46]
Male	0.78	0.91	0.72	0.84	0.72	0.85
(proportion of sample)	[0.42]	[0.29]	[0.45]	[0.37]	[0.45]	[0.36]
Annual Hours Worked	1891	2190	2079	2097	1952	2109
(average hours worked annually)	[575.23]	[865.28]	[721.94]	[963.09]	[646]	[838]
Observations	4063	425	5571	707	16414	4261

Columns [1] to [4]: Summary of means in the cross sections, 1984 and 2005. Sample standard deviations in parentheses. Note that the number of observations for tenure in colum 1 is 2846, column 2 is 340, column 3 is 5115 and column 4 is 665. Experience and Annual hours worked are estimated off approximately (within 30 observations) the number of observations denoted in the "observations" row. All other variables are estimated from exactly the number of obsevations denoted in the "observations" row. Columns [5] and [6]: Summary of panel means. "Ever attempted self-employment" refers to individuals who have at some point appeared as self-employed in the PSID. "Only attempted wage employment" refers to individuals who have appeared as wage employed at some point in the PSID, but never as self-employed.

Table II: Income and Expenditure Results

	[1] Annual Income	[2] Annual Income	[3] Annual Income	[4] Expenditure	[5] Expenditure	[6] Expenditure
Self Employed	-0.262***	-0.291***	-0.373***	0.0449***	0.00849	0.0572***
	[0.0216]	[0.0248]	[0.0195]	[0.00805]	[0.00930]	[0.00823]
SE*Years in SE		0.00685**	0.0235***		0.00845***	0.0158***
		[0.00349]	[0.00267]		[0.00161]	[0.00106]
Experience	0.0393***	0.0395***	0.0485***	0.0220***	0.0221***	0.0317***
	[0.00442]	[0.00443]	[0.00108]	[0.00260]	[0.00260]	[0.000605]
Experience Sq	-0.00115***	-0.00116***	-0.000957***	-0.000531***	-0.000537***	-0.000511***
	[5.18e-05]	[5.24e-05]	[2.57e-05]	[2.31e-05]	[2.33e-05]	[1.34e-05]
HS Dropout			-0.433***			-0.282***
			[0.00978]			[0.00557]
HS Graduate			-0.166***			-0.135***
			[0.00671]			[0.00393]
College Grad			0.266***			0.188***
			[0.00892]			[0.00516]
Grad Sch			0.334***			0.223***
			[0.00987]			[0.00558]
Married	0.0458***	0.0457***	0.0991***			0.422***
	[0.0142]	[0.0142]	[0.0153]			[0.0194]
Log spouse Wage	0.00384	0.00391	0.0485***	0.0162***	0.0163***	0.0588***
	[0.00570]	[0.00570]	[0.00349]	[0.00141]	[0.00141]	[0.00126]
Family Size	0.00847**	0.00845**	0.00436*	0.0614***	0.0614***	0.0524***
	[0.00423]	[0.00423]	[0.00229]	[0.00245]	[0.00244]	[0.00134]
White			0.133***			0.0122*
			[0.0133]			[0.00707]
Black			-0.106***			-0.210***
			[0.0139]			[0.00752]
Constant			9.140***			8.541***
			[0.0411]			[0.0282]
Individual Fixed Effects	Yes	Yes	No	Yes	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	69,115	69,115	69,115	73,916	73,916	73,916
R-squared	0.07	0.071	0.183	0.195	0.196	0.3
No. Individuals	9,717	9,717		11,700	11,700	

Note: Dependent variable in columns [1] through [3] is the log of annual labor income in 1990 dollars. Dependent variable in columns [4] through [6] is the log of expenditure in 1990 dollars. Standard errors are in parentheses. All standard errors are heteroskadastic consistent. Omitted education category is college dropouts, and omitted race category is "other".

Table III: Wealth

	[1] Wealth	[2] Wealth	[3] Wealth	[4] Wealth-Business	[5] Wealth-Business	[6] Wealth-Business
Self Employed	137,576**	33,982	249,872***	37,084*	-11,772	103,226***
	[58,048]	[59,083]	[22,927]	[19,062]	[20,224]	[10,027]
SE*Years in SE		24,469***			11,540***	
		[5,577]			[3,149]	
Age	6,565	6,440	6,516***	9,118	9,059	
	[8,384]	[8,381]	[358.5]	[6,124]	[6,107]	
HS Dropout			-75,539***			-52,260***
			[9,442]			[6,561]
HS Graduate			-39,214***			-26,687***
			[7,574]			[3,370]
College Grad			57,038***			61,527***
			[13,736]			[8,997]
Grad Sch			84,636***			91,993***
			[16,499]			[10,981]
Married	66,595**	58,340**	73,181***	45,687*	41,794	60,841***
	[26,304]	[29,150]	[17,058]	[25,617]	[27,371]	[14,886]
Log spouse Wage	-11,503	-10,861	15,064***	-8,974	-8,671	11,875***
	[9,044]	[9,079]	[3,394]	[6,407]	[6,433]	[2,894]
Family Size	-1,885	-1,193	-2,222	4,417	4,743	-907.8
	[7,450]	[7,398]	[2,725]	[3,457]	[3,425]	[1,664]
White			48,877***			35,040***
			[6,962]			[4,680]
Black			-10,334			-16,861***
			[6,755]			[4,829]
Constant			-384,726***			-315,901***
			[37,190]			[29,559]
Individual Fixed Effects	Yes	Yes	No	Yes	Yes	No
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,850	19,850	19,850	19,850	19,850	19,850
R-squared	0.028	0.034	0.078	0.038	0.042	0.099
No. Individuals	7,402	7,402		7,402	7,402	

Note: Dependent variable is wealth in 1990 dollars. The wealth measure in columns [1] to [3] is the sum of the value of business, checking and savings, stocks and bonds, other assets, vehicles, annuity and IRAs (1999 onward) and home equity less debt. The wealth measure in columns [4] to [6] is the same as that in the previous columns, but less business value. Standard errors are in parantheses. All standard errors are heteroskadastic consistent. Ommited education category is college dropouts, and omitted race category is "other".

Table IV: Variance in expenditure and wealth

	[1] Residual Squared Expenditure	[2] Residual Squared Wealth	[3] Residual Squared Wealth (trans)
Self Employed	9.89E-05	4.972e+11*	-5.786
	[0.00511]	[2.891e+11]	[58.90]
SE/Tenure	0.0115	-5.909e+11*	23.62
	[0.00736]		
Experience	-0.00393***		
	[0.00145]		
Experience Sq	8.44e-05***		
	[1.10e-05]		
Age		5.71E+10	17.97
		[3.573e+10]	[13.28]
Married	-0.139*	7.28E+10	-73.62
	[0.0714]	[6.707e+10]	[47.14]
Log spouse Wage	-0.00231***	-4.73E+10	-4.779
	[0.000791]	[3.801e+10]	[7.942]
Family Size	-0.0015	-1.09E+10	-11.23*
	[0.00121]	[2.003e+10]	[6.144]
Individual Fixed Effects	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes
Observations	73,916	19,850	19,850
R-squared	0.007	0.002	0.004
No. Individuals	11,700	7,402	7,402

Note: Dependent variables are the squared residuals from the main fixed effects expenditure regression(column [5] of Table 5), wealth regression(column [2] of Table 6) and wealth transformed regression (column [2] of Table 13). Standard errors are in parentheses. All standard errors are heteroskadastic consistent.

Table V: Precautionary Behavior

	[1] Expenditure	[2] Expenditure	[3] Expenditure	[4] Wealth	[5] Wealth	[6] Wealth	[7] Wealth-Business	[8] Wealth-Business	[9] Wealth-Business
Before SE	-0.00588			-5.117***			-0.981		
	[0.0109]			[1.334]			[1.129]		
Two Year Prec		-0.0184			0.811			0.695	
		[0.0139]			[2.811]			[2.805]	
One Year Prec			-0.018			3.756			3.671
			[0.0133]			[2.562]			[2.524]
Log Spouse Wage	0.0214***	0.0193***	0.0195***	0.569	0.417	0.324	0.543	0.701	0.61
	[0.00278]	[0.00532]	[0.00532]	[0.514]	[1.609]	[1.593]	[0.457]	[1.640]	[1.626]
Family Size	0.102***	0.0923***	0.0922***	2.011***	3.084***	3.004***	2.227***	2.837***	2.757***
	[0.00403]	[0.00763]	[0.00762]	[0.485]	[0.999]	[1.004]	[0.427]	[0.991]	[0.997]
Married	0.187**	0	0	10.67	0	0	7.112	0	0
	[0.0918]	[0]	[0]	[11.58]	[0]	[0]	[11.36]	[0]	[0]
Individual Fixed Effects	Yes	Yes	Yes						
Time Fixed Effects	Yes	Yes	Yes						
Observations	23,370	8,553	8,553	5762	1264	1264	5762	1264	1264
R-squared	0.207	0.177	0.177	0.143	0.12	0.123	0.154	0.114	0.118
No. Individuals	2,883	1,716	1,716	1973	757	757	1973	757	757

Note: Dependent variable in columns [1] - [3] is log of total expenditures, columns [4] - [6] is wealth cube root transformed and columns [7] - [9] is wealth less business value cube root transformed. All dependent variables are in 1990 dollars. Columns 1, 4 and 7 include all observations before, during and after SE. "Before SE" takes on a dummy value of 1 for all periods prior to entering SE for the first time for individuals who eventually switch into SE and a 0 in all periods thereafter, including while self-employed and after leaving self-employment. Columns 2, 3, 5, 6, 8 and 9 only include observations from those years prior to entry into self-employment. "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 parantheses. All standard errors are heteroskadastic consistent.

Table VI: Switching Out of Self-Employment

	[1] Expenditure	[2] Expenditure	[3] Annual Income	[4] Annual Income
After SE	-0.0520***	-0.0382**	-0.256***	-0.664***
	[0.0161]	[0.0174]	[0.0286]	[0.139]
After SE*Yrs Sch				0.0307***
				[0.0105]
Experience			0.0212***	0.0338***
			[0.00399]	[0.00737]
Experience Sq			-0.000495***	-0.00111***
			[5.55e-05]	[0.000107]
Log spouse Wage	0.0277***	0.0279***	-0.00835	-0.00815
	[0.00379]	[0.00402]	[0.00710]	[0.00708]
Family Size	0.100***	0.102***	0.00341	0.00254
	[0.00488]	[0.00478]	[0.00865]	[0.00856]
Individual Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
Observations	15,292	12,751	13,008	12,983
R-squared	0.188	0.222	0.08	0.083
Number of id	2,354	2,137	1,960	1,953

Note: Dependent variable in columns [1] and [2] is the log of expenditure in 1990 dollars. Dependent variable in columns [3] and [4] is the log of the household head's annual income in 1990 dollars. Fixed effects (FE) are at the individual level. ''After SE'' takes on a value of 1 in all years after an individual first enters self-employment but does not appear self-employed. Column [1] includes all individuals regardless of whether they return to wage employment or if they leave the labor force. Columns [2], [3] and [4] only include those time periods when one returns to wage work. Standard errors are in parentheses. All standard errors are heteroskadastic consistent.

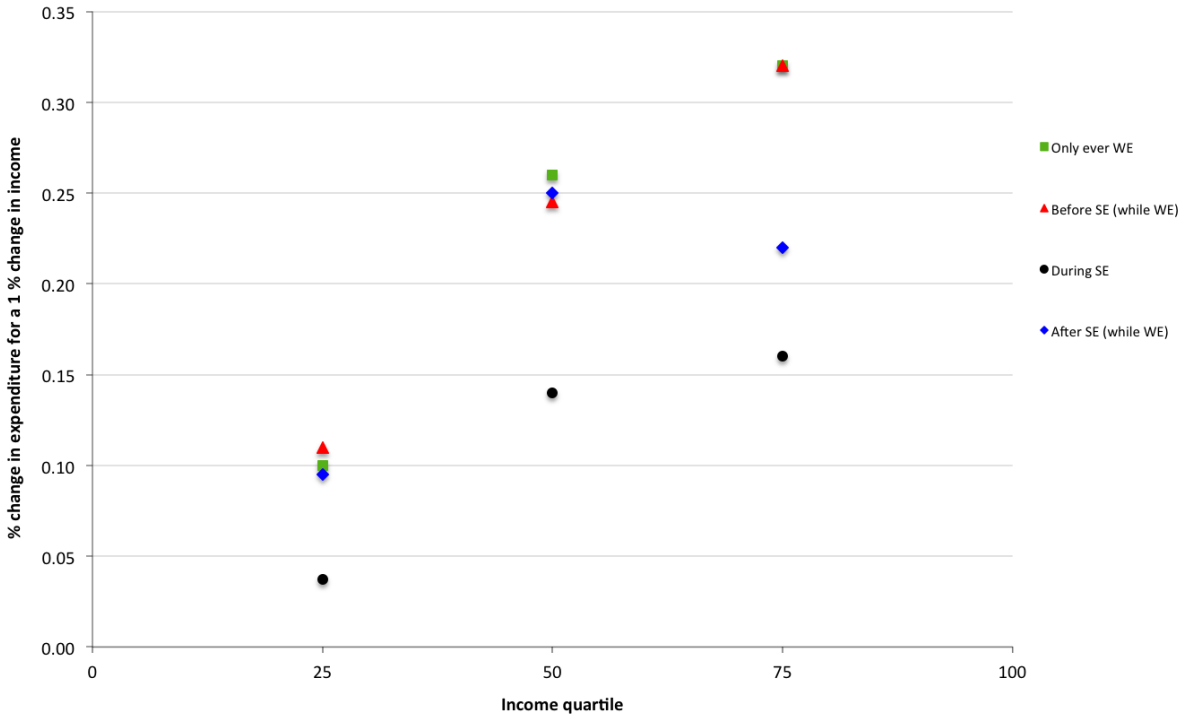
Table VII: Hours Worked

	[1] Hours	[2] Hours	[3] Hours
Self Employed	0.0320***	-0.0642***	-0.0119
	[0.0110]	[0.0182]	[0.0124]
SE*Years in SE		0.0115***	0.00958***
		[0.00170]	[0.000765]
Experience	0.0126***	0.0123***	0.00793***
	[0.00244]	[0.00243]	[0.000677]
Experience Sq	-0.000432***	-0.000426***	-0.000237***
	[3.23e-05]	[3.21e-05]	[1.63e-05]
Married	0.0133	0.0134	0.0304***
	[0.00969]	[0.00967]	[0.00950]
Log spouse Wage	-0.00804***	-0.00799***	0.0015
	[0.00228]	[0.00228]	[0.00159]
Family Size	0.000452	0.000385	0.00403***
	[0.00271]	[0.00270]	[0.00143]
HS Dropout			-0.0484***
			[0.00636]
HS Graduate			-0.0112***
			[0.00408]
College Grad			0.0181***
			[0.00476]
Grad Sch			-0.00557
			[0.00555]
White			0.0156**
			[0.00766]
Black			-0.0442***
			[0.00829]
Constant			7.574***
			[0.0226]
Individual Fixed Effects	Yes	Yes	No
Time Fixed Effects	Yes	Yes	Yes
Observations	70,233	70,233	70,233
R-squared	0.026	0.027	0.034
No. Individuals	9,756	9,756	

Note: Dependent variable is the log of annual hours worked. Standard errors are in parentheses. All standard errors are heteroskadastic consistent. Omitted education category is college dropouts, and omitted race category is "other".

9 Figures

Figure I: Responsiveness of Expenditure to Reported Income



Notes: This graph plots the responsiveness of expenditure to reported income (household head's labor income) by income quartile as defined by wage-earners who have never attempted self-employment. The graph shows that prior to entering self-employment (triangular points), those who eventually do, display expenditure responses to changes in reported income that are almost identical to that of individuals who are only ever wage-employed (square points). Once in self-employment, expenditure becomes substantially less responsive to reported income (circular points). Upon returning to wage-employment (diamond points), expenditure responses once again mirror that of those who are only ever wage employed (square points), with the exception of those corresponding to the 75th percentile. The premise underlying this graph is that wage-employed individuals are least plagued by income measurement problems, and therefore serve as the baseline for comparison. This graph indicates that those who try self-employment respond to income changes in a very similar manner to those who are only ever wage-employed, except for those periods when they are self-employed. This suggests that income measurement in self-employment, rather than differences in preferences and behaviors, is what drives this difference in responsiveness. The quartiles are defined by cutting household head's labor income (in 1990 dollars) into the 25th, 50th and 75th quartiles using only individuals who have ever been wage employed between 1968 - 1997. These quartile values are then applied to those who have "ever been self-employed" where observations are split into"being wage employed prior to self employment" (triangular points), "being

self-employed" (circular points) and "being wage-employed after first entry into self-employment" (diamond points). The points in the plot are obtained from running regressions of the log of consumption against the log of head's annual income (both in 1990 dollars including individual and time fixed effects) for the four separate categories described above, by income quartiles as defined above. All coefficients from these estimations are significant at the five percent level, and most are significant at the one percent level.