The Unobserved Returns in Entrepreneurship*

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Abstract

This paper presents an alternative perspective to a longstanding empirical puzzle: that most entrepreneurs persevere despite persistently low earnings. Since entrepreneurial earnings are notoriously difficult to measure, instead of focusing solely on individual labor income, I approach the question from a household welfare angle. I look at how the switch into self-employment corresponds to changes in reported earnings and hours worked at the individual level, and also in expenditure and wealth at the household level. Using longitudinal data from the PSID that spans 47 years, I find that while individuals report earning on average 26% *less* in self-employment, their household expenditure is in fact 3.6% *higher*. This expenditure premium accrues with experience in self-employment, and is not offset by lower savings, higher uncertainty or longer work hours. Restricting the analysis to two different subsamples: a) those with at least sixteen years of schooling and b) those who go on to incorporate, yields the same qualitative results.

Keywords: occupational choice; self-employment; entrepreneurship; consumption; savings; risk-return tradeoff

JEL Classification: E21, E24, E26, G11, H26, J2

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1 Introduction

What individuals get out of becoming entrepreneurs is an empirical mystery. On the one hand, standard occupational choice models in economics (Jovanovic, 1982; Roy, 1951) predict that individuals will choose the employment type wherein they stand to gain the highest financial return. While this theoretical prediction is broadly consistent with choices made by wage workers, the self-employed seem to defy this neoclassical forecast. Findings from Hamilton (2000) suggest that most long term self-employed individuals earn significantly less than what is seemingly available in their wage alternative. This mystery is further intensified as the data suggests that entrepreneurs not only earn less, but also appear to be doing so while incurring greater risk (Moskowitz and Vissing-Jørgensen, 2002; Hall and Woodward, 2010).

Such a risk-return tradeoff is not easily rationalized within the neoclassical framework. As such, scholars have looked to explanations beyond the wealth maximizing one to justify the entrepreneurial choice. These explanations can be broadly categorized into heterogeneity in individual preferences over employment types, risk and time, and differences in beliefs (Kraus and Litzenberger, 1976; Cooper et al., 1988; Camerer and Lovallo, 1999; Bernardo and Welch, 2001; Blanchflower et al., 2001; Puri and Robinson, 2013; Koudstaal et al., 2014). In other words, rather than maximizing wealth while minimizing risk exposure, entrepreneurs may be genetically or environmentally predisposed, prefer working for themselves, have a higher risk tolerance or be over-optimistic.

This stream of findings has presented academics and policy-makers with a conundrum. On the one hand, it is common belief that entrepreneurs are critical to the generation of innovation, employment and economic growth (Schumpeter (1912), Knight (1951), King and Levine (1993)). This is however difficult to reconcile with the prevailing empirical finding that most entrepreneurs do not gain financially and may not even seek to do so (Hurst and Pugsley, 2010), especially in light of the high risks inherent to entrepreneurship. If most entrepreneurs do not expect or stand to be financially better off in entrepreneurship, how then do they go on to generate growth and employment? Are entrepreneurial returns so skewed that economic gains are available solely to those far in the right tail?

Given these stark implications, the debate surrounding entrepreneurial motivations remains lively and there is no clear consensus that non-financial factors dominate. Entrepreneurship remains a complex occupational choice to unpack. This complexity is in part due to the tensions involved in defining entrepreneurship, and also because of the unique and relatively understudied relationship between earnings, wealth accumulation and business ownership. In addition, entrepreneurship is not a fixed state of employment. Individuals

can, and do switch in and out of entrepreneurship, presumably in ways that are endogenous to realized and expected gains. Given these factors, recent work has approached the study of entrepreneurial returns from various new perspectives, now accounting for the different ways to classify entrepreneurs (Levine and Rubinstein, 2017) and also for the option value of experimenting in entrepreneurship (Manso, 2016; Dillon and Stanton, 2017). Accounting for these factors, entrepreneurial earnings now become less of a puzzle, aligning better with neoclassical predictions. First, entrepreneurs when defined as those who incorporate their business (versus just the self-employed) are more highly skilled and report earning more (Levine and Rubinstein, 2017). Second, accounting for the option value of entrepreneurship and also wages in subsequent employment corresponds to lifetime earnings that make more sense within a pecuniary framework

The current paper also studies the returns in entrepreneurship, distinguishing across different entrepreneur classifications and also implicitly accounting for the option value of experimentation. However, rather than explicitly modeling how each of these elements manifests in the entrepreneur's lifecycle income, I employ an exclusively reduced form approach. Instead, the key innovation in my analysis is to focus on realized welfare - namely, how household consumption and household wealth evolve inter-temporally, or with time in entrepreneurship. My focus on household welfare, and the accompanying longitudinal analyses are the key features setting this paper apart from the literature, which has primarily emphasized the study of reported labor income at the individual level.

Using longitudinal data from the Panel Study of Income Dynamics (PSID) that spans forty-seven years, I test how expenditure and savings patterns evolve for individuals switching between wage work and self-employment including sole-proprietors and, incorporated and unincorporated business owners. I find that while individuals report earning on average 26.4 percent *less* in self-employment than in wage-employment, they in fact consume 3.6 percent *more*. This 3.6 percent differential accrues over time: expenditure is not statistically different upon entry into self-employment, but grows by 1.2 percent with each additional year survived. Individuals also accrue more wealth in self-employment with average non-business wealth being 10 percent higher than in wage-employment. Once again, persistence in self-employment is the driver of this finding with non-business wealth increasing by 1.3 percent with each additional year. When accounting for the value of the business, wealth increases become even more striking, hitting 35 percent. The results are qualitatively similar when the analysis is restricted to entrepreneurs who are highly educated or who eventually go on to incorporate their business, and even when inheritances and spousal income are accounted for.

Why focus on expenditure and wealth, and why do so at the household rather than the

individual level? First, the decision to undertake any employment switch is likely a joint one made at the household level. This is especially the case when one member chooses to start a business, given the direct impact of this decision on the allocation of household wealth, expected volatility in household income and the resulting tax consequences for dual income households. Whether or not non-pecuniary gains stand to enter for the entrepreneur, the household – especially ones comprising spouses and children – is less able to make hefty compromises that exchange non-pecuniary gains for consumption. Rather, the household likely seeks to maintain some baseline level of consumption including such items as housing, food, healthcare, transportation and access to amenities. As such, analyzing how the welfare of the household evolves with entrepreneurship is meaningful, perhaps more so than assessing individual earnings. Taking this welfare approach, first gets around various mismeasurement and underreporting issues that plague reported income. Unlike with income, there is no incentive to systematically misreport expenditure or wealth for survey purposes. Second, changes in expenditure and wealth patterns capture expected gains/losses, be it directly from the business or from compensation in subsequent wage work that reflects human capital changes resulting from the entrepreneurial stint. Simply put, the combination of expenditure and wealth capture 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.

While this is not the first paper to use household expenditure in the study of self-employment earnings (Pissarides and Weber, 1989; Hurst et al., 2014; Åstebro and Chen, 2014), my approach differs from prior work.[1] In contrast to these papers, I do not rely on cross-sectional comparisons of reported income and expenditure between wage and salary workers to infer self-employment earnings and, 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 re-asserting that for the self-employed it is inaccurate. Instead, I estimate individual fixed effects over 47 years of longitudinal data, which allows me to compare the expenditure and wealth patterns of the same household in self-employment to itself in other employment states. As such, the main contribution of this paper is to document that household financial *welfare* increases with time in entrepreneurship. Whether or not this welfare increase is a direct consequence of increased earnings is less conclusive. However, logical inference suggests so 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

[1] In addition, there exists a body of work that provides evidence for the role of financial determinants in the entrepreneurial choice using non-expenditure related arguments (Fairlie, 2005; Lowe and Ziedonis, 2006; Dushnitsky, 2010; Berkhout et al., 2011; Hyytinen et al., 2013).

for increased earnings in self-employment. In addition, estimations controlling for spousal income and inheritances present similar results. Nonetheless, it remains plausible that a sudden increase in wealth is what causes both the switch into entrepreneurship and increased expenditure and savings. However if this was the sole mechanism, one would expect level increases in expenditure and savings upon immediate entry into entrepreneurship, whereas the data shows that significant shifts in welfare accrue with time in entrepreneurship.

The welfare findings in this paper combined with the vast literature on non-pecuniary returns suggests that households that persist in entrepreneurship fare well on all consequent margins. They consume more, save more, do not put in increased hours and appear to be more fulfilled than they are in other employment states.

The rest of the paper is organized as follows. Section 2 explores why expenditure and wealth might be more informative of financial health than reported income, especially for entrepreneurs. Section 3 describes demographic, employment and expenditure data from the PSID, and presents summary statistics. Section 4, outlines my estimation strategies and discusses the empirical findings. Lastly, section 5 posits some implications that arise from the empirical findings, and concludes.

2 Financial returns in self-employment, and expenditure and wealth as proxies

The self-employed are financially compensated in multiple ways, some of which are easily observed as reported earnings while others are less obvious, and yet others are totally unobserved in any report of earnings, be they personal or business. Reported personal income is the easily observed component of self-employment earnings.[2] However, unlike most wage employees, the self-employed have in addition, a variety of ways to compensate themselves. Below I discuss the four main avenues for less easily observed compensation. These four avenues include: tax evasion, different forms of income, reclassification of employment, and human capital accumulation.

[2]Businesses also report business earnings, which could perhaps be an alternate way to back out the true earnings of the business-owning self-employed, especially in light of the incentive to retain earnings within the business. This method also presents additional complexities and is beyond the scope of this paper.

2.1 Four avenues for compensation that do not turn up in reported earnings

2.1.1 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,[3] depending on the business classification, with non-farm proprietor income having both the largest tax gap and the highest rate of underreporting.[4] Business owners also have the incentive to pay their family members salaries or consulting fees in excess of productivity when the tax rate is higher for the business than it is for that individual. While IRS audits are a risk, this risk varies by policy environment and may still favor tax evasion in expectation.

[3]This excludes farm businesses.

[4]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 Pissarides and Weber (1989). 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. (2014) 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, yet continue to find support for the entrepreneurial earnings puzzle.

2.1.2 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 business and rather then draw a salary, compensate herself instead in firm shares. 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.[5] [6] 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 long duration 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.

2.1.3 Reclassification of employment type

A third source of mis-measurement emerges when firms that perform particularly well incorporate, get bought out, merge with other firms, or become publicly listed. When this happens, the successful entrepreneur who founded the firm may no longer appear in the data as self-employed. Instead they take on job titles such as CEO or director, or become board

[5]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.

[6]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 unincorporated business owner, everything is taxed as ordinary income.

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.[7]

2.1.4 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 or useful connections when they run their own business even if the venture eventually fails. The entrepreneur could go from being say a data scientist, an accountant or a gardener in their wage job to also becoming proficient in employee management, customer relationship management and investor relations as an entrepreneur. Such skills are ones that might take years to acquire at a wage job, but could be quickly amassed in entrepreneurship. 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 and therefore wage in employment to be different, possibly higher than that in the alternative path. Alternatively, if there is a stigma to being a failed entrepreneur or if the skills acquired are not valuable in her industry, it is plausible that a stint in entrepreneurship yields a lower subsequent wage path relative to what might have been realized otherwise.[8]

[7]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.

[8]This complementarity between self-employment and future returns in employment likely holds 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 might see no gain in market

In this paper, I neither attempt to estimate the degree of tax evasion nor seek to attribute the observed difference between income and expenditure solely to tax evasion. Instead, I propose reasons, including but not exclusive to tax evasion, for why reported income is a weak measure and pivot to focusing on expenditure and wealth changes in entrepreneurship as proxies for household financial welfare. This distinction sets this paper apart from the literature.

2.2 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 $R_{se,i,t}$.

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

where $D_{i,t}$ is declared earnings, including reported salary/wage and reported investment earnings, that are subject to income tax rate τ. $U_{i,t}$ 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 present value (discounted at rate δ) of the after-tax (at rate τ^c) 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 is not clear what income tax rate, τ an individual faces, even on just the declared portion of earnings. $U_{i,t}$ is completely omitted from any reported information. The IRS does provide some estimates of underreporting, but the ranges are large (see section 2.1.1) 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[9] amongst others, collect information on business value less business debt. The problem here is that businesses are notoriously hard to value, especially

value for her experience.

[9]PSID: Panel Study of Income Dynamics, SIPP: Survey of Income and Program Participation, NSSBF: NationalSurvey of Small Business Finances

in their nascent stages even when the entrepreneur may have private information on the viability of her business investments. In addition, the significantly lower, relative to τ, (capital gains) tax rate τ^c incentivizes the entrepreneur to retain earnings in the business to grow it. Therefore, simply looking at the current reported market value, which is the number observed by the empirical researcher, does not necessarily capture the true present value of the business. In light of tax advantages to equity, this becomes even more difficult to value. Lastly, while $HC_{we,i,t}$ is 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.

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 and wealth capture more information on the financial state of the self-employed than any other measure we currently have.

2.3 Consumption and savings to measure the financial welfare of entrepreneurial households

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 consumption and savings – in particular, the longitudinal dynamics thereof are informative of financial welfare in self-employment.

First, unlike that for reported income,[10] there is no incentive for individuals to *s*ystematically misreport household expenditure (Meyer and Sullivan, 2003), particularly for survey purposes. A second benefit of focusing on expenditure is that the dynamics capture both realized and anticipated financial gains. The permanent income hypothesis states that current consumption 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.

[10]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 respondent may be apprehensive of.

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 and the distinction between the two is based on measurement per se.[11]

Below I walk through a simple budget constraint that relates income to consumption in any given period and discuss to what extent changes in consumption can be attributed to changes in self-employment earnings. Consumption is a function of income (both labor and non-labor), wealth and expectations about future earnings (i.e. borrowing and lending).

In any given period, the following identity must hold:

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

where C_{it} is household consumption, I_{it} is labor income, N_{it} is non-labor (i.e. asset) income and S_{it} is savings, for individual i at time t. $S_{it} > 0$ implies a net increase in wealth (savings) 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 is total compensation from being self-employed - i.e. comprising reported and unreported labor income plus the change in principle business value - and is equal to $R_{se,i,t}$ from equation (1). While the change in the principle business value, $\Delta B_{i,t}$, is a result of labor, it is not directly internalized by the self-employed individual until the business is sold. Rather, the individual can borrow against this value, either from their own stock of wealth or from an external source at some interest rate. In any given period, this borrowing and lending behavior will technically manifest as a decrease or increase in savings, S_{it}. 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 and non-employment related (i.e. 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 a few things are clear. First, consumption will capture current and expected financial gains (or losses) from employment. These expectations contain information on business viability and how taxes influence the different components (i.e.

[11] One qualification: if the loss in income during self employment was anticipated, then consumption 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.

earning draws versus equity gains and losses) of income available for consumption. This is especially important for the self-employed given the variety of ways in which they can compensate themselves and the complex and opportunistic tax environment they face - an environment that can significantly influence the magnitude of their financial welfare. These factors render 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? Below, I outline how looking at changes in, rather than levels of, consumption can more clearly map the financial returns from self-employment to consumption while circumventing contamination from the non-labor related 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 and 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 **scenario A** where entry into self-employment is unanticipated, based on some flash of insight, and is *not* driven by changes (or expected changes) in other sources of 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[12] 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

[12]There is a large literature relating income to consumption devoted to understanding whether the rational expectations life cycle model holds. See Modigliani and Brumberg (1954), Friedman (1957), Hall (1978), Flavin (1981), Hall and Mishkin (1982), Altonji and Siow (1987), Carroll (1994) and Jappelli and Pistaferri (2010) to name a few.

consumption/savings would 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 reality however, is that entry into entrepreneurship can be planned as well, with individuals saving in anticipation of their business needs. In this scenario, **scenario B**, $\Delta C_{i,t}$ corresponding to entrepreneurship reflects a reversion to "normal" levels of consumption. Regardless, increases with time in $\Delta C_{i,t}$ still reflects that the entrepreneur expects the business to generate financial gains moving forward. However, there exists a **scenario C** where entry into entrepreneurship arises due to a windfall change in non-business related wealth (i.e. lump sum payments from insurance, lottery winnings or inheritances). In this scenario, $\Delta S_{non-emp,i,t}$ could drive at least some part of $\Delta C_{i,t}$, whether or not the business is expected to generate income. Continued growth in consumption, rather than just a level change, would indicate that new information about earnings prospects (business or non-business related) is positive. From the basic neoclassical assumption of preferences for leisure over labor, we should see an individual exit self-employment if all of the the increase in consumption were driven by the non-business wealth. By this logic, observing persistence in entrepreneurship that corresponds to *growth* in consumption suggests some gains in business related wealth as well. However, if the neoclassical labor-leisure preference assumption fails to hold, then an increase in consumption may not necessarily imply increased financial returns from work in self-employment in scenario C.

In light of the avenues for financial returns as described, what then should we expect to empirically observe when contrasting expenditure to income in self-employment for those who make the switch? In the absence of credit constraints and only accounting for unobserved income sources in self-employment – both contemporaneous and expected – we should expect expenditure to increase for those who persist and to continue growing with time as business prospects (including a viable exit) become better. In the presence of extreme credit constraints, households are limited to drawing on their own savings to fund consumption, so this effect will be attenuated. In either case, given that some individuals might sink their own wealth into their personal businesses, we could in effect see an initial dip in expenditure upon initial entry and subsequent growth thereafter. Households that fare poorly in self-employment will see a drop in consumption over time and will exit if they experience sustained losses. It is plausible that some households will remain in entrepreneurship even if they stand to earn more in wage work, so long as they view some elements of self-employment

as leisure (or a consumption good). In this case, we can expect to see a dip in consumption at a sustained lower level, but as consumption continues its decline, these households will likely exit. There is only one circumstance in which we can expect growth in consumption over time to correspond to lower labor earnings, and that is scenario C as described above.

Understanding which patterns dominate in the aggregate requires a longitudinal analysis of household consumption and wealth patterns over time and across shifts from wage work into self-employment. The sections that follow address and estimate precisely this.

3 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. The PSID contains a core representative sample (SRC) and one that over-samples socio-economically disadvantaged households (SEO). In this paper, I use data from the core sample (SRC) covering a span of 47 years (1968-2015) with data from 39 specific time periods (1968 - 1997, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013 and 2015). 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 hypotheses 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.[13] In this paper, I limit the study to both male and female household heads participating in the labor force[14] between the ages of 18 and 65.

The final sample considered includes 11848 unique household heads of whom 2437 (or 20 percent) have ever been self employed. Each individual appears in the data for an average

[13]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.

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

of 10.3 time periods with a standard deviation of 6.6 time periods. Individuals report being self employed for up to 20 periods and conditional on trying it spend on average 3 time periods in self-employment with a standard deviation of 3.8 time periods. Of these 2437 individuals who report being self-employed, 274 have always been self-employed while 2163 have switched between wage work and self-employment. 789, or 32 percent of the self-employed (i.e. 6.7 percent of the full sample) have at some point owned an incorporated business. The remaining 1648 (or 68 percent) are classified as sole-proprietors or owners of unincorporated (i.e. pass-through taxed) businesses (i.e. LLCs and LPs). Individuals can, and do, switch in and out of self-employment. Each switch into self-employment is referred to as a "spell" and any given individual can have multiple spells. On average, any individual who tries self-employment has 1.5 spells with standard deviation of 1.6 and a maximum of 10 spells in the data.

3.1 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 are 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)). However, the dynamics of food consumption may differ in a critical manner from that of non-durable consumption and it is unclear to what degree food expenditure generalizes to total expenditure (Skinner (1987), Blundell et al. (2004)). In addition, food expenditure is fairly income inelastic and as such, using food alone may understate the degree to which consumption responds to income changes.[15] Therefore, I use a more representative measure of consumption as proposed in Skinner (1987).[16]

3.1.1 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

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

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

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:[17]

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

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 use in computing my main measure of expenditure and are exactly those found in Table 1, column 3 of Skinner (1987).[18] These estimates are stable over time (Guo (2010)) and explain up to 78 percent[19] 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.[20]

3.1.2 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,[21] and second, that the self-employed (or those who are ever self-employed) are not simply different in how their consumption changes with income (i.e. their consumption is not more or less sensitive to income changes than that of those who are never self-employed).

Looking at how the budget share of each expenditure component changes upon entry

[17]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).

[18]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.

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

[20]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.

[21]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).

into self-employment will to some extent address the first assumption. For example, if individuals are simply reclassifying food expenses that were previously covered by employers into a household expense when they switch into self-employment, then we will expect to see food expenses increase as a share of the household budget upon the switch into self-employment. Table 8 shows how the budget share[22] of each of the individual expenditure component changes with entry into self-employment. The results indicate that budget share changes for each individual expenditure component are tiny in magnitude and not statistically meaningful upon entry into entrepreneurship.[23] This provides some evidence that the first assumption, that the consumption components used in this paper are not systematically misreported, holds. In addition, the analysis that follows focuses not just on level changes in expenditure but rather on the pattern (growth) of expenditure evolution with time in entrepreneurship.

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 1 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.[24] 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.[25,26]

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

[23]Over time, the results suggest some shift from food at home to food outside, and from rentals towards home ownership. These are consistent with increased financial welfare with time in entrepreneurship.

[24]This holds for most of the data with the exception of those who leave self-employment and return to wage employment in the highest income tercile. This observation is in fact consistent with the reclassification hypothesis in section 2.1.3 - 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.

[25]This assertion only holds under the assumption that expenditure is not systematically mis-measured as individuals move across employment types. The assumption is supported by the budget share analysis.

[26]Figure 1 shows that the consumption of higher earners is more responsive to income changes than that for earners in the lower percentiles. This is consistent with changes at upper income levels being more permanent while those at the lower percentiles experience transitory changes more frequently. The income-consumption relationship for low wage earners are also the least precisely measured since these individuals are also likely to receive public assistance and other alternative income sources. This too is consistent with

To test for additional robustness, I compute expenditure using the various combinations proposed by Skinner. The simplest version of expenditure used in this paper is the (unweighted) sum of the dollar value of food eaten at home and away. Table 7 shows that the main results from section 4, table 4 are consistent even when using the most basic expenditure component, food.

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.

3.2 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 twelve waves of wealth information from the PSID supplemental wealth files, including data from 1984, 1989, 1994, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013 and 2015. Total wealth (in 1990 dollars) is the sum of one's, equity in real estate, business value,[27] vehicle value, equity in stock, transaction account balances, value of other assets and IRA, less debt. Debt[28] includes the dollar value of the main home mortgage, vehicle loan, credit card charges, student loans, medical or legal bills and loans from relatives. Wealth information is available for 9534 household heads.

3.3 The inheritance measure from the PSID

The inheritance measure used in this paper is measured in the years 1984, 1989, 1994, 1999, 2001, 2003, 2005, 2007, 2009, 2011, 2013 and 2015. The PSID questionnaire asks households whether or not they received an inheritance in the past two to five years, and if so how much. In some years, the PSID broadly asks if an inheritance was received and its value, and other years, the PSID specifies an inheritance as money or property valued over $10,000. The paper uses the reported value of inheritance received regardless of which survey question was asked. Inheritance information is available for 9519 household heads.

the weak relationship between income changes and consumption changes documented in the plot.

[27] 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?"

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

3.4 Summary Statistics

Table 1 summarizes various demographic and household characteristics of the sample. The self-employed, especially those who own incorporated businesses are more likely to be older, male, white, educated, married, have larger families and work longer hours. At the household level, they spend more and are also wealthier, and secondary earners have higher earnings than in non-self-employed households. Amongst the self-employed, those who are unincorporated report earning less than the wage-employed while those who own incorporated businesses report higher earnings. Sole-proprietors and unincorporated business owners report earning 0.85 times of what wage earners make while their expenditure is about 1.3 times and wealth, 2.65 times. Incorporated business owners report earning and spending about double that of wage earners while their reported wealth is about 7.5 times that of the same. The longitudinal aspect of the data (not reported) shows that those who ever try entrepreneurship look relatively similar to those who survive as captured in the cross section with the exception that the survivors tend to be older and wealthier. While twenty percent of the sample attempts self employment at some point, ten percent are self-employed at any given time.

4 Results

4.1 Empirical specification

Below I outline the main estimating equation 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, wealth and hours worked.[29] $SE_{i,t}$ 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 period one appears as self-employed in

[29]Even though wealth takes on both positive and negative values, it is log transformed (+ 1). To account for households who report negative wealth, robustness analyses include the cube root of wealth.

the PSID.[30] $X_{i,t}$ are controls for experience,[31] experience squared, education, race,[32] marital status, spouse's income and family composition. A_i and B_t are individual and time fixed effects respectively.

The main analyses are conducted for the full sample and additional results are presented for two different subsamples, (1) the highly educated (i.e. $\geq$ 16 years of education) and (2) those who at some point incorporate their businesses. For (1), the analysis only keeps household heads who report 16 years or more of education (self-employed or otherwise) in the sample. For (2), the full sample is used for the analysis but here, the self-employed are defined as household heads who both report being self-employed and who also report owning an incorporated business while being self-employed at some point in their tenure in the PSID. The purpose of these additional breakdowns is to acknowledge and account for different types of sorting into the occupation. In particular, it is arguable that the highly skilled face a higher opportunity cost of self-employment, or that those who go on to incorporate are different (i.e. more successful as evidenced having chosen to incorporate, or subject to external capital needs) and therefore face different incentives to draw an income versus invest in the business.

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 financial welfare in self-employment and for this purpose, selection will not bias the coefficients.

4.2 Main results

Figures 2 and 3 capture the essence of the mis-measurement problem that motivates this paper. These figures show that the self-employment wage distribution is centered to the left of that for wage-employment, while the corresponding expenditure distribution for the self-employed lies to the right of that for wage workers. Kolmogorov-Smirnov tests for the differences in the distributions confirm the statistical validity of the observed patterns. While this cross sectional depiction is notable, it does not address issues of selection of wealth or ability into entrepreneurship that may influence the observed patterns. This omitted variable bias problem is considerably alleviated by running fixed effects estimations that exploit the

[30] 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.

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

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

panel aspect of the data. The fixed effect framework, as described in equation 5, effectively compares the income, expenditure and wealth components of individuals in self-employment to themselves in other employment states. As such, arguably time invariant individual characteristics such as IQ, pre-existing wealth, consumption and leisure preferences etc., are accounted for. In light of the fixed effects analysis and the log-log nature of the estimation described in equation 5, the self-employment coefficients are interpreted as the average percent change in the outcome variable of interest when individuals are self-employed, versus in other states. When the regressions in addition include the interaction of self-employment with time in self-employment, the standalone self-employment coefficient now captures the average percent change in the outcome variable of interest upon entry into self-employment, while the interaction term captures the average growth the same with each additional period in self-employment.

Table 2 presents a summary of the main coefficients for income, expenditure, wealth and hours worked for the full sample, the highly educated sample and the incorporated self-employed sample. This table easily facilitates comparisons across the different measures of welfare (income, expenditure, wealth and hours worked) and is a summary of the findings across fifteen separate sets of estimations. The full results are presented in tables 3 through 17.

Column 1 in table 2 show that across the full sample, while individuals report earning 25.6 percent less in self-employment, their expenditures are 3.6 percent percent higher. Column 2, row "Exp" shows that this increase in expenditure accrues from time in self-employment, where expenditure is not statistically different upon entry into self-employment but grows by 1.2 percent with each additional period. This increase in expenditure is accompanied by an increase in wealth as well, where total wealth increases 35 percent in self-employment. Much of this is driven by reported increases in business value. Since businesses are notoriously hard to value, looking at non-business related wealth gives some added insight into the degree to which this wealth increase is driven by other, more diverse asset sources. Columns 1 and 2 in row "Wlth-Bus" show that non-business wealth increases by 10 percent in self-employment, where this too accrues with time. Non-business wealth is not statistically different upon entry into self-employment but grows by 1.3 percent in each additional period. Finally, columns 1 and 2, row "Hrs" show that the self-employed report working about 3 percent less, but that this reduction in hours is immediately realized but does not evolve with time in entrepreneurship. Effectively, an individual in self-employment for 10 periods[33] reports earning 20 percent less than themselves in other states while they report spending 12

[33]The term "period", rather than "year" is used since the PSID is not always collected annually. Between 1968 and 1997, data is collected annually and then biennially thereafter.

percent more and saving 42 percent more with business value contributing to the bulk of this increase. However, in these 10 periods non-business wealth increases by 13 percent as well. Hours worked are reported to be slightly lower. Taken together, the long-term self-employed individual experiences significant increases in financial welfare at no observable increase in hours worked.

Columns 3 and 4 in table 2 show that limiting the analysis to the highly educated sample does not yield significantly different findings. The highly educated self-employed have a broadly similar experience to the average self-employed individual. One somewhat notable difference is that they experience a slightly higher decline in hours worked in self-employment.

Columns 5 and 6 in table 2 show that while the self-employed who go on to incorporate are similar to their non-incorporated counterparts, there are notable differences. The incorporated self-employed too report earning less in self-employment, but by a smaller extent, while they report spending markedly more. The incorporated self-employed report earning 9.3 percent less (versus 25.6 percent less in the full sample) while they report spending 8.3 percent more (versus 3.6 percent more in the full sample). The divergence between reported income and expenditure remains large. While a significant component of increased expenditure and wealth accrues with time in self-employment, the incorporated self-employed also appear to consume more and experience non-business related wealth increases that coincide with entry into self-employment. This suggests that the financial circumstances, either related or unrelated to the business, surrounding entry into incorporated self-employment are different, perhaps more favorable. One possibility is that individuals who switch into incorporated business ownership do so while accessing external capital (i.e. angel, VC, private equity investment). This could incentivize them to take a larger salary draw since they ultimately share profits and losses with investors rather than being the sole residual claimants of their efforts.[34] Receiving external capital might also capture viability of the business which in turn could alter ones' permanent income prospects immediately (both from the signaling value of being a externally backed company, and the actual value creation from that added capital), leading to immediate higher expenditure upon entry into entrepreneurship. Alternatively, it is plausible that some fraction of incorporated business owners are bequeathed the business. If the bequeathment of this business is not reported as an inheritance,[35] then

[34]If the entrepreneur stands to cede control to the investor as is often stipulated in investment contracts, then it would be rational for the entrepreneur to draw a higher salary that is realized immediately, rather than retain earnings in the company since that can ultimately be worthless given vesting schedules and the difference between preferred stock (owned by the investors) and common stock (held by the entrepreneur).

[35]Since the inheritance question as described in section 3.3 does not specifically ask about business bequeathment, it is up to the respondent to report the inherited business as property. This may not be given since the business does not clearly fall into the cash or property category as specified in the survey question, nor may an individual view this as a bequeathment since it is associated with employment.

we could observe an increase in expenditure upon entry into entrepreneurship (since wealth effectively increases), and sustained expenditure growth with time as the business remains viable.

Additional specifications account for spousal earnings and reported inheritances since both factors can lead to increased household spending and arguably influence the household head's self-employment decision. Columns 3[36] and 4 in table 3 show that in the full sample, spousal earnings do influence household expenditure, but do not change the effect of self-employment. Likewise, columns 5[37] and 6 show that while recent inheritances influence household expenditure, they do not change the effect of self-employment on expenditure. Finally, column 7 shows positive selection on unobservables into self-employment. Factors like higher ability and pre-existing wealth that also correspond to higher expenditure are correlated with participation in self-employment. These patterns hold in the wealth and hours worked specifications as well, and they broadly hold for the highly educated and incorporated business owning subsamples as well. Overall, these additional specifications suggest that in the aggregate, spousal earnings and (non-business) inheritances are not what drive the growth in expenditure and wealth that is observed when the household head makes the switch into self-employment.

4.3 Removing house equity from the expenditure measure to focus on food expenditure

The main expenditure measure described in section 3.1.1 combines food expenditures, rent and imputed rent. Imputed rent is derived from home value which includes the value of home equity (home value less mortgage). This is not of particular concern to Skinner (1987)'s expenditure measure since all that measure is capturing is the fact that spending on food, rent and imputed rent corresponds to overall consumption in meaningful ways. However, given that the current paper seeks to understand the financial returns in self-employment, it is important to account for the reality that both the switch into self-employment and consumption while self-employed might be influenced by home equity. In fact, evidence from Adelino et al. (2015), Corradin and Popov (2015) and Schmalz et al. (2017) suggest the exis-

[36]Since the sample of households reporting spousal earnings is significantly smaller than the full sample, column 3 simply restricts the analysis of column 1 to those who report any spousal income (including a zero income). This then allows the self-employment coefficients to be meaningfully compared to those in column 4 where spousal earnings are controlled for.

[37]Since the sample of households reporting inheritances is significantly smaller than the full sample, column 5 simply restricts the analysis of column 1 to those who report any inheritance at all (including a zero inheritance). This then allows the self-employment coefficients to be meaningfully compared to those in column 6 where inheritances are controlled for.

tence of financial constraints to entrepreneurship that are alleviated with increases in house value (which serve as collateral for borrowing). Kerr et al. (2015) on the other hand, finds this constraint to be less binding and argues that the correlation between entrepreneurship and house prices is plausibly driven by local demand for entrepreneurship. As such, the role of house equity in entrepreneurship remains open to debate and despite the current paper being agnostic as to whether housing is an investment or consumption good (it is likely some combination of the two) it remains important to account for how home equity relates to expenditure and wealth in entrepreneurship.

Columns 1 and 2 in table 7 show that expenditure on food alone increases by 2 percent in self-employment with this increase accruing with time in entrepreneurship. While this magnitude is smaller (relative to the 3.6 percent increase with the main expenditure measure that incorporates home equity), the pattern remains the same as that in the main estimations.[38] This reassures that the increase in self-employment expenditure is not simply a mechanical consequence of an increase in home equity. Additional expenditure measures suggested in Skinner (1987) and Guo (2010) that include utility and transportation (not shown) confirm the findings from the main expenditure measure.

Column 4 shows that wealth less home equity also increases and grows in self-employment and column 5 shows that wealth less business value and less home equity also follow the same patterns. Given that home equity and businesses comprise a large fraction of household wealth, especially for business owning household, it is not surprising that the precision of the estimates in column 5 goes down. The patterns observed in the full sample broadly hold in the high education and incorporated business subsamples.

In sum, the findings in table 7 suggest that increases in expenditure and wealth are not solely driven by housing. It is worth noting that increased home equity values can either cause increased consumption or be caused by increased earnings. The budget share analysis in column 4 table 8 suggests that increased home equity is not the main driver of entry into self-employment, though it may play some part in survival or alternatively be the result of business success with time.

5 Conclusion

This paper finds that individuals who persist in self-employment, regardless of education or incorporation status, experience higher levels of consumption and amass more wealth, both of which grow with time in the occupation. This marked increase in financial welfare is not

[38] In addition, we would expect a smaller effect on food expenditures since food expenses alone are likely to be less influenced by changes in earnings than would the full consumption basket.

offset by greater work intensity either, suggesting overall welfare gains. These findings are especially important given the prevailing empirical puzzle surrounding low entrepreneurial earnings. In fact, the data in this paper confirm that individuals report earning significantly lower amounts in self-employment while simultaneously spending and saving more.

To what extent can the increase in consumption and savings in self-employment be attributed to higher income versus some other coincident increase in wealth? This remains a tricky question, but the observation that expenditure and non-business wealth grow with time in self-employment (rather than jump immediately upon entry) combined with controls for spousal income and inheritances suggests increased earnings for those who persist. Those who incorporate do however appear to face favorable financial circumstances that are not necessarily business related, upon entry into self-employment.

These results present stark implications. First, the entrepreneurial earnings puzzle may not be such a puzzle after all. Households that persist in self-employment are better off financially - they consume more and they save more. However, this very finding presents a new puzzle – why is there such a sizable divergence between the earnings and, expenditure and wealth of the self-employed? Is tax policy so favorable to entrepreneurs that they are incentivized to retain value in the business, or is this divergence driven by tax avoidance? Regardless, are the positive externalities of employment and economic growth generated by entrepreneurs sufficient to justify this broad consumption subsidy or might a targeted tax policy approach be more effective? Finally, the results present 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 which could lead to a significant underestimate of income inequality.

The findings in this paper advocate for a focus on identifying the degree to which entrepreneurship is a mode of wealth creation versus one of wealth shielding and transfer.

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6 Figures

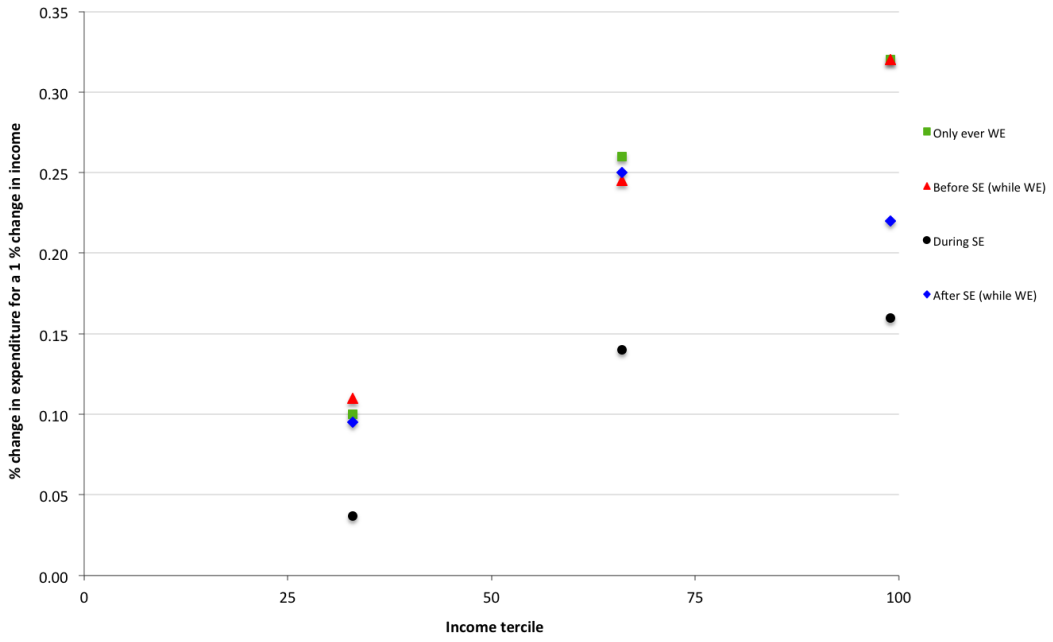

Figure 1: Responsiveness of Expenditure to Reported Income

Notes: This graph plots the responsiveness of expenditure to reported income (household head's labor income) by income tercile 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 highest tercile. 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 terciles are defined by cutting household head's labor income (in 1990 dollars) into the 0 - 33rd, 34 - 66th and 67 - 100th terciles using only individuals who have ever been wage employed between 1968 - 1997. These tercile 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 terciles as defined above. All coefficients from these estimations are significant at the five percent level, and most are significant at the one percent level.

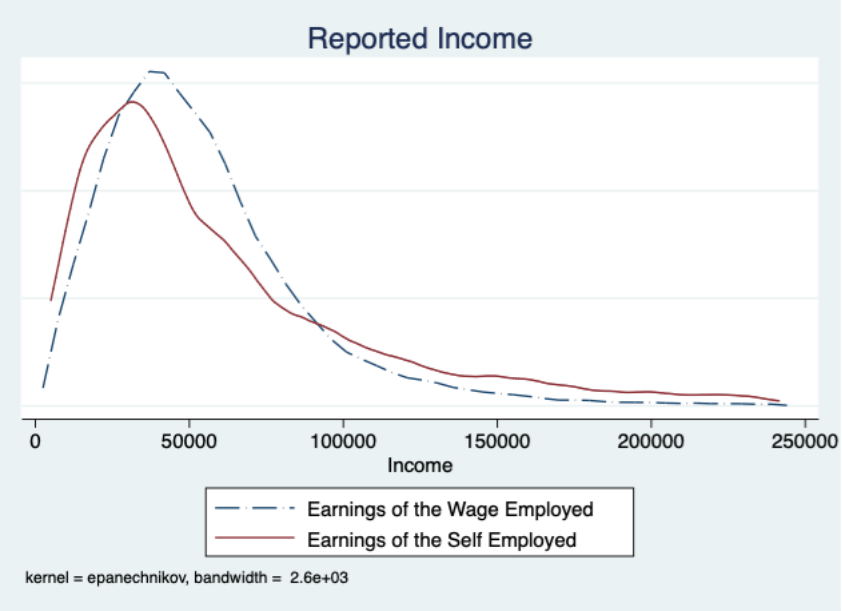

Figure 2: Kernel Density Plot of Annual Earnings

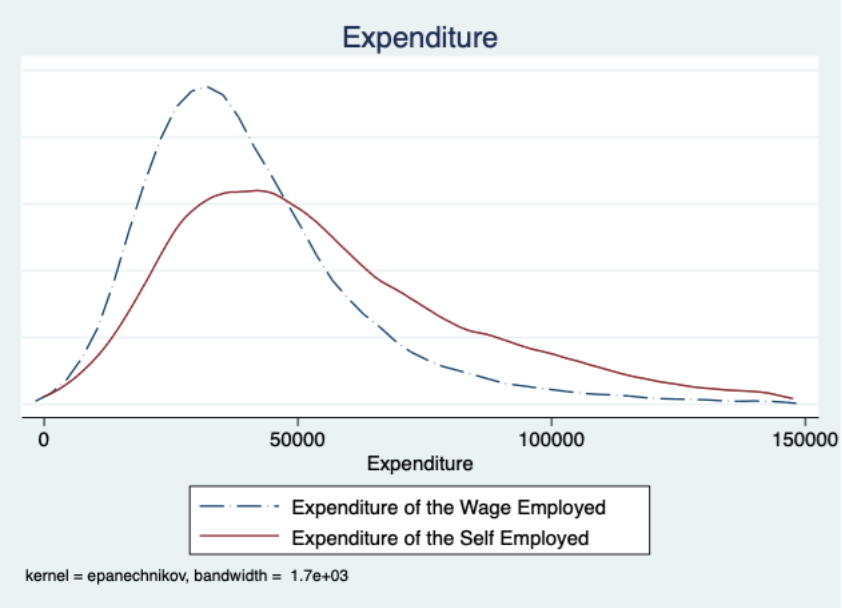

Figure 3: Kernel Density Plot of Expenditure

Note: The figures above are the income and expenditure distributions respectively for the wage and self-employed over the entire sample period, 1968 - 2015. The distributions in each of the figures are statistically different as shown using the Kolmogorov-Smirnov test.

7 Tables

	SE&WE	SE	SE-Incorp	Wage	Total
Age	38.23	42.27	44.45	38.27	38.76
	(12.73)	(11.04)	(9.999)	(11.50)	(11.61)
Male	0.770	0.906	0.951	0.812	0.820
	(0.421)	(0.291)	(0.215)	(0.391)	(0.384)
White	0.882	0.942	0.952	0.895	0.899
	(0.322)	(0.234)	(0.215)	(0.307)	(0.301)
Educ	13.90	13.40	14.42	13.22	13.31
	(2.299)	(2.568)	(2.207)	(2.495)	(2.494)
Married	0.596	0.796	0.872	0.691	0.698
	(0.491)	(0.403)	(0.335)	(0.462)	(0.459)
Family Size	2.650	3.075	3.125	2.883	2.889
	(1.494)	(1.453)	(1.285)	(1.466)	(1.465)
Income	39249.0	47059.0	125589.1	55293.9	56182.1
	(57338.5)	(75642.1)	(241215.1)	(54480.8)	(70874.4)
Expenditure	38126.3	53474.0	80089.9	42020.9	43991.2
	(29659.4)	(34880.7)	(67872.7)	(78158.5)	(74375.1)
Wealth	241573.6	509312.7	1432136.8	192676.5	269185.4
	(1170610.6)	(1344562.9)	(3730805.5)	(938301.8)	(1254550.2)
Wlth-Bus	193774.0	358795.8	799537.3	180024.1	217907.3
	(770346.5)	(1001486.6)	(1826543.2)	(892987.2)	(948212.6)
Hours	1717.9	2295.7	2522.4	2129.8	2125.1
	(1058.2)	(853.0)	(727.9)	(620.4)	(698.4)
Inheritance	5471.6	19360.0	8390.8	6066.7	7016.0
	(81479.6)	(391497.7)	(56220.9)	(170225.2)	(184195.0)
Spouse Inc	20407.7	22832.3	34377.9	21786.5	22314.8
	(27926.3)	(32354.6)	(49580.9)	(25708.7)	(27812.5)
Observations	7589	8628	3060	87279	106556

Table 1: Summary Statistics

Notes: Full sample describing the cross section of the data. "SE&WE" refers to individuals who report being both self and wage employed simultaneously. "SE" refers to individuals who report being self employed but not in an incorporated business. "SE-Incorp" refers to individuals who report being self employed in an incorporated business. "Wage" refers to individuals who report being just wage employed.

		(1) All	(2) All	(3) Educ	(4) Educ	(5) Incorp	(6) Incorp
Inc	SE	-0.256***	-0.298***	-0.209***	-0.266***	-0.093***	-0.064***
		(0.020)	(0.023)	(0.031)	(0.036)	(0.027)	(0.032)
	SE*Yrs		0.009***		0.012**		-0.009***
			(0.003)		(0.005)		(0.003)
Exp	SE	0.036***	-0.011	0.040***	0.007	0.083***	0.042***
		(0.009)	(0.010)	(0.014)	(0.015)	(0.013)	(0.014)
	SE*Yrs		0.012***		0.009***		0.010***
			(0.002)		(0.003)		(0.002)
Wlth	SE	0.350***	0.269***	0.311***	0.237***	0.530***	0.418***
		(0.041)	(0.045)	(0.059)	(0.068)	(0.061)	(0.065)
	SE*Yrs		0.016***		0.016***		0.020***
			(0.005)		(0.007)		(0.005)
Wlth -Bus	SE	0.104***	0.050	0.082	0.030	0.250***	0.193***
		(0.038)	(0.044)	(0.056)	(0.065)	(0.056)	(0.059)
	SE*Yrs		0.013**		0.015**		0.011*
			(0.005)		(0.007)		(0.005)
Hrs	SE	-0.028***	-0.030***	-0.038***	-0.047**	0.012	0.020
		(0.010)	(0.011)	(0.016)	(0.018)	(0.014)	(0.017)
	SE*Yrs		-0.000		0.001		-0.003*
			(0.001)		(0.002)		(0.001)

Table 2: Summary of main regression coefficients

Notes: Table displays coefficients for self-employment dummy (SE) and self-employment interacted with years in self employment (SE*Yrs and SE/Yrs). Columns 1 and 2 are estimates from the full sample (corresponding to the first two columns in tables 3 through 6). Columns 3 and 4 are estimates of the highly educated sample of individuals with 16 years or more of education (corresponding to the first two columns in tables 9 through 12). In columns 5 and 6, SE is defined only for those reporting self-employment and ownership of an incorporated business (corresponding to the first two columns in tables 14 through 17). Dependent variables are log annual head's labor income (Inc), log household expenditure (Exp), log household wealth (Wlth), log household wealth less business value (Wlth-Bus) and log annual head's hours worked (Hrs).

8 Results using the full sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	-0.256***	-0.298***	-0.314***	-0.316***	-0.276***	-0.276***	-0.359***
	(0.020)	(0.023)	(0.027)	(0.027)	(0.036)	(0.036)	(0.027)
SE*Yrs SE		0.009***	0.010***	0.010***	0.015***	0.015***	0.027***
		(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Expr	0.030***	0.028***	0.033***	0.034***	0.031***	0.031***	0.046***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.073***	0.068***			0.058**	0.058**	0.453***
	(0.013)	(0.013)			(0.024)	(0.024)	(0.014)
Family Size	0.007**	0.007*	0.019***	0.014***	-0.002	-0.002	-0.021***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.004)
Spouse Wage				-0.008***			
				(0.001)			
Inheritance					0.003*	0.003*	
					(0.002)	(0.002)	
Educ							0.105***
							(0.003)
Observations	90283	83566	58433	58433	30314	30314	83495
Adjusted R^2	0.599	0.602	0.589	0.590	0.607	0.607	0.230

Table 3: Impact of self-employment on income

Notes: The dependent variable is log annual income. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.036***	-0.011	-0.006	-0.005	-0.037**	-0.037**	0.057***
	(0.009)	(0.010)	(0.010)	(0.010)	(0.018)	(0.018)	(0.015)
SE*Yrs SE		0.012***	0.009***	0.009***	0.009***	0.009***	0.021***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Expr	0.019***	0.018***	0.028***	0.027***	0.018***	0.019***	0.032***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.001)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.197***	0.193***			0.180***	0.180***	0.316***
	(0.011)	(0.011)			(0.018)	(0.018)	(0.010)
Family Size	0.079***	0.079***	0.065***	0.067***	0.075***	0.075***	0.066***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)
Spouse Wage				0.004***			
				(0.001)			
Inheritance						0.003***	
						(0.001)	
Educ							0.080***
							(0.002)
Observations	91935	84486	58502	58502	30752	30752	84375
Adjusted R^2	0.703	0.705	0.725	0.726	0.738	0.738	0.362

Table 4: Impact of self-employment on expenditure

Notes: The dependent variable is log annual expenditure. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.350***	0.269***	0.263***	0.263***	0.271***	0.271***	0.458***
	(0.041)	(0.045)	(0.047)	(0.047)	(0.045)	(0.045)	(0.053)
SE*Yrs SE		0.016***	0.010**	0.010**	0.016***	0.016***	0.055***
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Expr	0.032**	0.024	0.039***	0.039***	0.023	0.025*	0.098***
	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.004)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.479***	0.497***			0.498***	0.492***	0.910***
	(0.052)	(0.053)			(0.053)	(0.053)	(0.039)
Family Size	0.072***	0.070***	0.043***	0.041***	0.070***	0.070***	-0.002
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)
Spouse Wage				-0.002			
				(0.003)			
Inheritance						0.033***	
						(0.003)	
Educ							0.273***
							(0.007)
Observations	31610	29377	20287	20287	29302	29302	29306
Adjusted R^2	0.730	0.731	0.744	0.744	0.731	0.733	0.388

Table 5: Impact of self-employment on wealth

Notes: The dependent variable is log wealth. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	-0.028***	-0.030***	-0.019	-0.019	-0.059***	-0.059***	-0.015
	(0.010)	(0.011)	(0.012)	(0.012)	(0.020)	(0.020)	(0.012)
SE*Yrs SE		-0.000	0.000	0.000	0.001	0.001	0.005***
		(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Expr	0.014***	0.012***	0.014***	0.014***	0.014***	0.014***	0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.001)
Expr Sq	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.035***	0.034***			0.033**	0.033**	0.141***
	(0.008)	(0.008)			(0.014)	(0.014)	(0.006)
Family Size	-0.002	-0.002	0.001	0.001	-0.007*	-0.007*	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.002)
Spouse Wage				-0.001			
				(0.001)			
Inheritance						0.001	
						(0.001)	
Educ							0.008***
							(0.001)
Observations	95030	87894	61062	61062	31297	31297	87811
Adjusted R^2	0.332	0.335	0.306	0.306	0.326	0.326	0.058

Table 6: Impact of self-employment on hours worked

Notes: The dependent variable is log annual hours worked. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1) Food	(2) Food	(3) Wlth-B	(4) Wlth-H	(5) Wlth-B&H	(6) Wlth'
Self Employed	0.019**	-0.002	0.050	0.409***	0.092*	4.965***
	(0.009)	(0.011)	(0.044)	(0.054)	(0.052)	(1.130)
SE*Yrs SE		0.005***	0.013***	0.020***	0.012*	0.825***
		(0.001)	(0.005)	(0.006)	(0.007)	(0.174)
Expr	0.019***	0.018***	0.027*	0.003	0.002	0.270
	(0.003)	(0.003)	(0.015)	(0.018)	(0.017)	(0.304)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Married	0.140***	0.136***	0.507***	0.415***	0.432***	6.371***
	(0.011)	(0.011)	(0.052)	(0.057)	(0.056)	(0.990)
Family Size	0.116***	0.117***	0.072***	0.015	0.013	1.217***
	(0.003)	(0.003)	(0.013)	(0.015)	(0.014)	(0.264)
Observations	92192	84718	29197	27958	27704	34078
Adjusted R^2	0.601	0.600	0.727	0.657	0.644	0.684

Table 7: Impact of self-employment on expenditure and wealth, robustness

Notes: The dependent variable in columns 1 and 2 is the log of total food expenditures (at home and away), and in column 3 it is the log of wealth less business value, and in column 4 it is the log of wealth less home equity, and in column 5 is the log of wealth less the sum of business value and home equity, and in column 6 it is the cube root of wealth (to include households with zero or negative wealth). Standard errors are clustered at the household level. All regressions include individual and year fixed effects.

	(1) Food Home	(2) Food Out	(3) Rent	(4) House Value
Self Employed	-0.001	0.001	-0.003	0.007
	(0.001)	(0.001)	(0.002)	(0.039)
SE*Yrs SE	-0.001***	-0.000	0.000	0.012**
	(0.000)	(0.000)	(0.000)	(0.006)
Expr	0.000	0.000	-0.003***	0.029**
	(0.000)	(0.000)	(0.001)	(0.014)
Expr Sq	0.000	0.000**	0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.014***	-0.025***	-0.041***	0.986***
	(0.002)	(0.001)	(0.003)	(0.050)
Family Size	0.013***	-0.005***	-0.010***	0.045***
	(0.000)	(0.000)	(0.001)	(0.012)
Observations	84486	84486	84486	84486
Adjusted R^2	0.569	0.412	0.541	0.618

Table 8: Budget Shares

Notes: The dependent variables in columns 1 - 4 are the shares of the household budget on each of the respective expenditure categories, food at home, food outside, rent and housing value. Standard errors are clustered at the household level. All regressions include individual and year fixed effects.

9 Appendix

9.1 High Education Sample ($\geq$ 16 years of education)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	-0.209***	-0.266***	-0.263***	-0.264***	-0.281***	-0.281***	-0.291***
	(0.031)	(0.036)	(0.040)	(0.039)	(0.059)	(0.059)	(0.047)
SE*Yrs SE		0.012**	0.013**	0.014**	0.013*	0.013*	0.029***
		(0.005)	(0.006)	(0.006)	(0.007)	(0.007)	(0.009)
Expr	0.039***	0.038***	0.040***	0.041***	0.044***	0.044***	0.061***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.003)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.096***	0.096***			0.068	0.068	0.414***
	(0.024)	(0.025)			(0.047)	(0.047)	(0.025)
Family Size	0.010	0.007	0.026***	0.016*	-0.015	-0.015	-0.007
	(0.007)	(0.007)	(0.008)	(0.009)	(0.012)	(0.012)	(0.008)
Spouse Wage				-0.010***			
				(0.002)			
Inheritance					0.002	0.002	
					(0.002)	(0.002)	
Educ							0.126***
							(0.008)
Observations	31237	29181	20437	20437	11911	11911	29133
Adjusted R^2	0.571	0.580	0.581	0.583	0.578	0.578	0.190

Table 9: Impact of self-employment on income (high education sample)

Notes: The dependent variable is log annual income. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.040***	0.007	0.003	0.003	-0.013	-0.013	0.091***
	(0.014)	(0.015)	(0.016)	(0.016)	(0.025)	(0.025)	(0.024)
SE*Yrs SE		0.009***	0.006**	0.005**	0.006	0.006	0.017***
		(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Expr	0.026***	0.025***	0.032***	0.032***	0.029***	0.029***	0.037***
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.008)	(0.002)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.218***	0.215***			0.214***	0.214***	0.355***
	(0.018)	(0.018)			(0.027)	(0.027)	(0.019)
Family Size	0.074***	0.073***	0.064***	0.066***	0.064***	0.064***	0.066***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.006)
Spouse Wage				0.002*			
				(0.001)			
Inheritance						0.002	
						(0.001)	
Educ							0.073***
							(0.006)
Observations	31690	29437	20468	20468	12142	12142	29360
Adjusted R^2	0.735	0.735	0.737	0.737	0.765	0.765	0.366

Table 10: Impact of self-employment on expenditure (high education sample)

Notes: The dependent variable is log annual expenditure. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.311***	0.237***	0.240***	0.239***	0.245***	0.248***	0.462***
	(0.059)	(0.068)	(0.070)	(0.070)	(0.068)	(0.067)	(0.084)
SE*Yrs SE		0.016**	0.011	0.011	0.015**	0.015**	0.044***
		(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.010)
Expr	0.095***	0.090***	0.076***	0.077***	0.089***	0.090***	0.122***
	(0.018)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)	(0.008)
Expr Sq	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.622***	0.624***			0.627***	0.618***	0.931***
	(0.080)	(0.081)			(0.081)	(0.081)	(0.066)
Family Size	0.032*	0.032*	0.047***	0.043**	0.032*	0.033*	-0.019
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.018)	(0.021)
Spouse Wage				-0.005			
				(0.004)			
Inheritance						0.029***	
						(0.003)	
Educ							0.231***
							(0.021)
Observations	12236	11440	8231	8231	11406	11406	11395
Adjusted R^2	0.748	0.747	0.739	0.739	0.747	0.750	0.371

Table 11: Impact of self-employment on wealth (high education sample)

Notes: The dependent variable is log wealth. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	-0.038**	-0.047***	-0.037*	-0.037*	-0.079**	-0.079**	-0.009
	(0.016)	(0.018)	(0.019)	(0.019)	(0.033)	(0.033)	(0.019)
SE*Yrs SE		0.001	0.001	0.001	-0.000	-0.000	0.003
		(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Expr	0.007*	0.007	0.009*	0.009*	0.010	0.011*	0.010***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.001)
Expr Sq	-0.000***	-0.000***	-0.000***	-0.000***	-0.001***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.033**	0.034**			0.044**	0.044**	0.114***
	(0.013)	(0.013)			(0.022)	(0.022)	(0.011)
Family Size	-0.001	-0.002	0.004	0.004	-0.007	-0.007	0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.006)	(0.004)
Spouse Wage				-0.000			
				(0.001)			
Inheritance						0.002	
						(0.001)	
Educ							0.011***
							(0.003)
Observations	33024	30803	21422	21422	12394	12394	30748
Adjusted R^2	0.328	0.327	0.308	0.308	0.298	0.298	0.053

Table 12: Impact of self-employment on hours worked (high education sample)

Notes: The dependent variable is log annual hours worked. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1) Food	(2) Food	(3) Wlth-B	(4) Wlth-H	(5) Wlth-B&H	(6) Wlth'
Self Employed	0.011	0.003	0.030	0.378***	0.091	6.831***
	(0.013)	(0.015)	(0.065)	(0.078)	(0.077)	(1.808)
SE*Yrs SE		0.002	0.015**	0.015*	0.013	0.650**
		(0.002)	(0.007)	(0.009)	(0.010)	(0.262)
Expr	0.019***	0.018***	0.094***	0.077***	0.076***	1.606***
	(0.005)	(0.005)	(0.019)	(0.024)	(0.023)	(0.440)
Expr Sq	-0.001***	-0.001***	-0.002***	-0.002***	-0.001***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
Married	0.152***	0.148***	0.646***	0.522***	0.523***	8.153***
	(0.017)	(0.018)	(0.081)	(0.085)	(0.084)	(1.764)
Family Size	0.121***	0.122***	0.037**	-0.025	-0.020	1.049**
	(0.005)	(0.005)	(0.018)	(0.023)	(0.023)	(0.463)
Observations	31789	29523	11368	10900	10805	13262
Adjusted R^2	0.642	0.639	0.745	0.661	0.653	0.728

Table 13: Impact of self-employment on expenditure and wealth, robustness (high education sample)

Notes: The dependent variable in columns 1 and 2 is the log of total food expenditures (at home and away), and in column 3 it is the log of wealth less business value, and in column 4 it is the log of wealth less home equity, and in column 5 is the log of wealth less the sum of business value and home equity, and in column 6 it is the cube root of wealth (to include households with zero or negative wealth). Standard errors are clustered at the household level. All regressions include individual and year fixed effects.

9.2 Incorporated Business Owning Sample: household heads who at some point own an incorporated business and report being self-employed

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	-0.093***	-0.064**	-0.070**	-0.073**	-0.077	-0.077	0.155***
	(0.027)	(0.032)	(0.035)	(0.035)	(0.059)	(0.059)	(0.041)
SE*Yrs SE		-0.009***	-0.008**	-0.008**	-0.000	-0.000	-0.014***
		(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)
Expr	0.028***	0.026***	0.032***	0.033***	0.030***	0.030***	0.046***
	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.067***	0.066***			0.054**	0.054**	0.450***
	(0.013)	(0.013)			(0.024)	(0.024)	(0.014)
Family Size	0.007*	0.006	0.018***	0.013***	-0.003	-0.003	-0.021***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)	(0.006)	(0.004)
Spouse Wage				-0.008***			
				(0.001)			
Inheritance					0.003	0.003	
					(0.002)	(0.002)	
Educ							0.104***
							(0.003)
Observations	90283	83566	58433	58433	30314	30314	83495
Adjusted R^2	0.594	0.597	0.582	0.584	0.604	0.604	0.223

Table 14: Impact of self-employment on income (incorporated & SE)

Notes: The dependent variable is log annual income. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.083***	0.043***	0.029**	0.030**	0.041*	0.040*	0.200***
	(0.013)	(0.014)	(0.014)	(0.014)	(0.023)	(0.023)	(0.023)
SE*Yrs SE		0.010***	0.008***	0.008***	0.006***	0.006***	0.016***
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Expr	0.020***	0.018***	0.028***	0.027***	0.018***	0.018***	0.032***
	(0.003)	(0.003)	(0.004)	(0.004)	(0.005)	(0.005)	(0.001)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.197***	0.193***			0.180***	0.179***	0.315***
	(0.011)	(0.011)			(0.018)	(0.018)	(0.010)
Family Size	0.079***	0.079***	0.065***	0.067***	0.075***	0.075***	0.066***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.003)
Spouse Wage				0.004***			
				(0.001)			
Inheritance						0.003***	
						(0.001)	
Educ							0.080***
							(0.002)
Observations	91935	84486	58502	58502	30752	30752	84375
Adjusted R^2	0.703	0.705	0.725	0.726	0.738	0.738	0.365

Table 15: Impact of self-employment on expenditure (incorporated & SE)

Notes: The dependent variable is log annual expenditure. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.530***	0.418***	0.389***	0.389***	0.426***	0.419***	0.852***
	(0.061)	(0.065)	(0.068)	(0.068)	(0.065)	(0.065)	(0.072)
SE*Yrs SE		0.020***	0.015***	0.015***	0.020***	0.021***	0.056***
		(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.006)
Expr	0.032**	0.024	0.038***	0.039***	0.023	0.024*	0.099***
	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.004)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.481***	0.499***			0.499***	0.493***	0.907***
	(0.052)	(0.053)			(0.053)	(0.053)	(0.039)
Family Size	0.073***	0.070***	0.043***	0.042***	0.071***	0.071***	-0.004
	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)
Spouse Wage				-0.002			
				(0.003)			
Inheritance						0.033***	
						(0.003)	
Educ							0.271***
							(0.007)
Observations	31610	29377	20287	20287	29302	29302	29306
Adjusted R^2	0.730	0.731	0.744	0.744	0.731	0.733	0.393

Table 16: Impact of self-employment on wealth (incorporated & SE)

Notes: The dependent variable is log wealth. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Self Employed	0.012	0.020	0.012	0.011	-0.028	-0.029	0.062***
	(0.014)	(0.017)	(0.019)	(0.019)	(0.031)	(0.031)	(0.017)
SE*Yrs SE		-0.003*	-0.001	-0.001	-0.002	-0.002	0.001
		(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
Expr	0.014***	0.012***	0.014***	0.014***	0.014***	0.014***	0.009***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.001)
Expr Sq	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Married	0.035***	0.034***			0.032**	0.032**	0.140***
	(0.008)	(0.008)			(0.014)	(0.014)	(0.006)
Family Size	-0.002	-0.002	0.001	0.001	-0.008**	-0.008**	-0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.002)
Spouse Wage				-0.001			
				(0.001)			
Inheritance						0.001	
						(0.001)	
Educ							0.008***
							(0.001)
Observations	95030	87894	61062	61062	31297	31297	87811
Adjusted R^2	0.332	0.335	0.306	0.306	0.326	0.326	0.059

Table 17: Impact of self-employment on hours worked (incorporated & SE)

Notes: The dependent variable is log annual hours worked. Standard errors are clustered at the household level. All regressions include year fixed effects. Columns 1 - 6 include individual fixed effects. Columns 3 and 4 are restricted to households that report some spousal wage, including zero spousal wage. Columns 5 and 6 are restricted to households that report some inheritance receipt in the past two to five years, including zero inheritance. The estimation in column 7 controls for race (not reported). Spousal wage and inheritances are measured in logs (plus one).

	(1) Food	(2) Food	(3) Wlth-B	(4) Wlth-H	(5) Wlth-B&H	(6) Wlth'
Self Employed	0.044***	0.024*	0.193***	0.556***	0.189**	10.674***
	(0.012)	(0.014)	(0.059)	(0.080)	(0.076)	(1.778)
SE*Yrs SE		0.004***	0.011**	0.029***	0.012*	0.845***
		(0.001)	(0.005)	(0.006)	(0.006)	(0.169)
Expr	0.019***	0.018***	0.027*	0.002	0.002	0.266
	(0.003)	(0.003)	(0.015)	(0.018)	(0.017)	(0.304)
Expr Sq	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
Married	0.140***	0.136***	0.506***	0.417***	0.432***	6.364***
	(0.011)	(0.011)	(0.052)	(0.057)	(0.056)	(0.989)
Family Size	0.116***	0.117***	0.072***	0.016	0.013	1.224***
	(0.003)	(0.003)	(0.013)	(0.015)	(0.014)	(0.263)
Observations	92192	84718	29197	27958	27704	34078
Adjusted R^2	0.601	0.600	0.727	0.657	0.644	0.684

Table 18: Impact of self-employment on expenditure and wealth, robustness (incorporated & SE)

Notes: The dependent variable in columns 1 and 2 is the log of total food expenditures (at home and away), and in column 3 it is the log of wealth less business value, and in column 4 it is the log of wealth less home equity, and in column 5 is the log of wealth less the sum of business value and home equity, and in column 6 it is the cube root of wealth (to include households with zero or negative wealth). Standard errors are clustered at the household level. All regressions include individual and year fixed effects.