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"Economic Recovery and Self-employment: The Role of Older Americans"

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Abstract: Older workers in America have experienced rapidly growing unemployment rates. In addition, these unemployment spells tend to be significantly higher than those for younger workers. These individuals possess a wealth of work experience and institutional knowledge, but some face limited opportunities in the wage and salary sector, possibly due to their proximity to traditional retirement age. Older Americans also sustained large losses in their real estate and stock portfolios over the past several years. The combination of wealth reductions and limited wage and salary opportunities likely increased the attractiveness of self-employment or business ownership. Given their high levels of human capital and industry knowledge, older Americans have the potential to contribute substantially to economic recovery. Although small businesses are thought to contribute most of the job growth in recessionary periods, little is known about the contributions of older households. Using the Health and Retirement Study (HRS), we examine whether older individuals were more likely to enter self-employment during the economic recession using a difference-in-differences (DID) approach where we compare entries over time within individuals. Entries into self-employment are also considered separately for those who begin in wage and salary employment, unemployment, retirement, and those who are out of the labor force.

Introduction

It is often assumed that self-employed individuals are comprised of young workers only. While it is true that the majority of self-employed workers are under the age of 55, this composition is changing. As seen in Figure 1, the total number of self-employed individuals in the United States has fallen from 10.3 million in 2003 to 9.8 million in 2009, but the number of self-employed individuals aged 55 and over has increased from 2.8 million in 2003 to 3.2 million in 2009. As a result, the percentage of self-employed that are aged 55 and over has increased from 27.4 percent to 32.7 percent. Even with more of the self-employed being older, the percentage of older workers who are self-employed has actually fallen over this time period (from 13.3 percent to 11.9 percent)

Like workers from all age groups, the unemployment rate for Americans ages 55 and over has increased during the current recession. According to the Bureau of Labor Statistics (BLS), the unemployment rate among workers age 55 and over was 3.2 percent in December 2007 and has climbed to 7.3 percent in August 2010. While the unemployment rate remains lower for older workers (as seen in Figure 2), older workers have struggled with longer unemployment spells than other individuals. As calculated by the BLS, in February 2010 the average number of weeks unemployed for workers ages 55 and over was 35.5 weeks while workers between the ages of 25 and 54 had unemployment spells on average of 30.3 weeks. Similarly 49.1 percent of workers aged 55 and over had unemployment spells 27 weeks or longer versus 41.3 percent of workers between the ages of 25 and 54 (see Table 1). Self-employed individuals in the United States have also suffered during this recession. The unemployment rate of self-employed rose from 5.3 percent in August 2009 to 6.1 percent in August 2010.

In addition to increased unemployment rates and unemployment spells, Americans have experienced considerable declines in household wealth during recent recessions. Using data from the Survey of Consumer Finances (SCF) we can see in Figures 3 and 4 that both self-employed and older workers experienced significant declines in household wealth during economic recessions (1990/1991 and 2001 recessions included).

As is clear from aggregate data, older Americans comprise a significant portion of the self-employed and these workers typically suffer in the labor market as well as financially during recessions. Using the Health and Retirement Study (HRS), we examine whether older individuals were more likely to enter self-employment during economic recessions using a difference-in-differences (DID) approach where we compare entries over time within individuals. Results for men indicate that older men are generally more likely to exit self-employment than those who are younger but in a recession the exit probabilities are almost identical. In combination with the result indicating that entry is not different during recessions, results suggest that self-employment among older men increases in a recession relative to other periods because of a reduction in exits. At this point we can attribute this result as occurring due to reduced opportunities in the wage and salary sector, wealth reductions, or other factors.

Literature

Many factors are critical to the decision of whether to become self-employed. Consequently, there is a relatively large body of literature on factors that influence the decision to become self-employed. In addition, another strand of literature has examined this decision exclusively for older workers. Both of these areas of literature are important in guiding our research.

Research on Self-employment

A sizable literature is devoted to understanding the factors that cause individuals to choose self-employment over wage and salary jobs. Much of the research distinguishes between factors that push individuals into self-employment versus factors that pull individuals into self-employment. The push factors are attributes of an individual's situation, such as poor job prospects or little flexibility of wage and salary job, that cause self-employment to be a more attractive option. Pull factors are characteristics of self-employment that an individual finds optimal. Much of the empirical literature has looked at the influences of these factors on an individual's entry into self-employment.

Empirical research on the determinants of self-employment has found that demographic characteristics are important factors. Research has found that minority groups and women are potentially attracted to self-employment because the opportunities are substantial relative to the difficulties faced in wage and salary sectors (Fairley and Meyer (1996)). Women often choose self-employment because of the flexibility of the job relative to wage and salary jobs (Hundley (2001), Lombard (2001) and Gurley-Calvez, Biehl, and Harper (2009)).

Perhaps of particular importance to older workers during a recession is the finding that individuals with poor job market prospects are pushed into self-employment (Blanchflower and Oswald (1998) and Manser and Picot (1999)). As shown above, unemployment rates are not only high for Americans ages 55 and over, but unemployment spells are also longer than those of most Americans.

Research has also found that educational attainment, marital status, age, and number of dependents are important factors. Increases in educational attainment increase entry into self-employment, as does being married (Zissimopoulos and Karoly (2007 and 2009)). For males, the

more children in the household the more likely the individual will be self-employed (Blanchflower (2000)). Research appears to have shown that entry into self-employment is high at young ages, decreases as the age increases before increasing again at older ages (Bruce (1999)).

Other important determinants of self-employment are tax policy (Schuetze (2000) and Bruce (2000)); liquidity constraints, access to capital, and inheritance (Evans and Jovanovic (1989), Evans and Leighton (1989), Holtz-Eakin, et al (1994)); and health insurance availability (Holtz-Eakin, et al (1994), Lombard (2001), and Gurley-Calvez (forthcoming)).

Self-employment of Older Americans

For a variety of reasons, the decision to become self-employed may differ for older workers. Older Americans have potentially accumulated years of experience in their careers, which could increase their likelihood of success in self-employment but also raise the opportunity cost of leaving the wage and salary sector. They have also potentially accumulated more wealth, which means self-employment may be more plausible financially, but it also means there are potentially greater losses. If job market prospects are not as attractive for older workers, there may be an increased attraction to self-employment. While older workers may not have younger dependents at home, poorer health status of the individual or a spouse may make the entry into self-employment more difficult if it means losing access to employer-provided health insurance.

An early investigation into the self-employment decision of older workers was conducted by Quinn (1980). Quinn (1980) found that the older workers sometimes choose self-employment and use it as a transition into (or out of) retirement because of the flexibility that self-employment offers. Fuchs (1982) found that older males who become self-employed are more

likely to have been self-employed before and they are less likely to receive a pension from their previous job. Much like the literature on the self-employment of all workers, the literature examining self-employment of older workers finds that liquidity constraints reduce entry into self-employment (Bruce, Holtz-Eakin and Quinn (2000) and Zissimopoulos and Karoly (2007)). Using the HRS, Zissimopoulos and Karoly (2007) find that poor health and the absence of pension coverage push older workers into self-employment.

Of particular importance to our study is Zissimopoulos and Karoly (2009), which focuses on the labor force status that an older worker leaves to become self-employed. Specifically, Zissimopoulos and Karoly (2009) look at the differences in the decision to become self-employed across those who transition from not working (unemployed, retired, or disabled) compared to those who transition from wage and salary jobs. As older workers become unemployed during recessions, it is important to understand the factors that drive individuals into self-employment.

Data

First collected in 1992, the HRS is a biennial survey of about 22,000 Americans over the age of 50 and their spouses. The files used in this analysis are those provided by the RAND Corporation, Center for the Study of Aging, which compiles public-use HRS data from various survey years into a panel of individual-level data available for download on the HRS website. The RAND HRS data contain all cohorts of interviewees beginning with the baseline group (born 1931 to 1941) through the Early Baby Boomer cohort (born 1948 to 1953). The HRS follows individuals over time and contains detailed information about work, income, health and health care, retirement savings, and assets.

A challenge in any study of small businesses, entrepreneurs, or the self-employed is deciding how to measure the outcome of interest. We follow much of the survey-based literature in creating an indicator for self-employment that takes a value of one if the respondent answers 'self-employed' when asked 'do you work for someone else, are you self-employed, or what?'. We define entry into self-employment as a respondent who indicates they are self-employed in the current survey wave but not the previous survey wave.[1] Exit from self-employment is defined analogously. We measure 'recession' using an indicator variable for whether the response was collected in survey wave 6 (2002) or 9 (2008).

Respondents with the potential to enter self-employment are those who were not self-employed in the previous wave (the vast majority are employed in the wage and salary sector). Respondents with the potential to exit self-employment are those who reported being self-employed in the previous wave. Thus, comparisons between the entry and exit samples provide interesting insights into differences between the self-employed and those working in the wage and salary sector. Summary statistics for those 'at risk' of entering or exiting self-employment are presented by gender in Tables 2 and 3. Corresponding to the DID analysis described below, we restrict the sample to those aged 55 to 64.

Overall, about 4 percent of men and women respondents entered self-employment between waves 2 and 9 (1994 to 2008).[2] About 9 percent of self-employed male respondents and 11 percent of self-employed female respondents exited self-employment over the time period. More than 20 percent of our observations are from a recessionary period and roughly half of these respondents were aged 60 to 64. Examining the first two columns of Table 2, men who

[1] Indicating not self-employed can include individuals who are employed in the wage and salary sector, unemployed, retired, or out of the labor force. Also, we exclude missing and "don't know" responses in constructing our self-employment and entry variables.

[2] Because entry is defined using the previous wave's employment status, we do not have the information necessary to calculate entry or exit for wave 1 (1992-1993).

entered self-employment were older, much more likely to have a college degree, and much more likely to be in the top wealth quartile in any given wave than those who were 'at risk' but did not enter. Considering the three most common industries for each group, men who entered were more likely to be in the mining and construction industry, and less likely to be in the manufacturing and professional services industries than those who did not enter self-employment.

Consistent with findings in the literature that men and women are motivated to be self-employed for different reasons, patterns are significantly different for women. Women who entered self-employment were more likely to be white (men were slightly less likely to report being white), much more likely to have less than a high school education, more likely to be foreign born (men were less likely to be foreign born), much more likely to be married (men were somewhat less likely to be married). Like men, women who entered self-employment were about 10 percentage points more likely to be in the top wealth quartile. Women entrants were much more likely to be in the personal services and retail industries and far less likely to be in the professional services industry then those who did not enter.

Relative to those that remain in self-employment, men who exit have similar characteristics except that they are less likely to be foreign born, more likely to be in the manufacturing and professional services industries, and far less likely to be in the top wealth quartile. The differences are larger for women. Women who exit self-employment are younger, more likely to be white, less likely to be married, and far less likely to be in the top wealth quartile. Women who exited self-employment were much more likely to be in the professional services industry and less likely to be in the retail or personal services industries.

The means presented in Tables 2 and 3 indicate entry rates are higher during recessions for men in the 60 to 64 age group, relative to the 55 to 59 age group. Exit rates are lower for men in the older age group during recessions. Once again, patterns are different for women, with older women entering and exiting self-employment less during recessions. This evidence suggests that there might be a causal effect of recessions on the self-employment decisions of older Americans and motivates our regression analysis outlined below.

Empirical Methods

Given the sometimes striking differences by gender, which are largely consistent with earlier research, we conduct our regression analysis separately for men and women. The above summary statistics suggest that, at least for men, self-employment entries are higher and exits are lower for older Americans during recessionary periods and is consistent with a case where wage and salary opportunities are more limited for older individuals during recessions. To test the hypothesis of higher entry rates and lower exit rates, we employ a DID regression framework. Because many associate traditional retirement with age 65, we posit that the effects of limited job opportunities will be more pronounced for those aged 60 to 64 than those aged 55 to 59. In our initial regressions we limit the sample to those aged 55 to 64 as we would expect the similarity of individuals within age groups to be a more reasonable assumption when the age range is small.

Thus we compare self-employment outcomes for respondents when they are aged 55 to 59 versus 60 to 64 in a panel data model:

$$y_{it} = \lambda_t + \eta Older_{it} + \delta Recession_{it} * Older_{it} + \boldsymbol{X'\beta} + \Theta_i + \varepsilon_{it}$$

where γ represents entries or exits from self-employment and λ is a set of indicators for survey wave (including recessionary waves 6 and 9). Older is a binary variable, which takes a value of 1 if the individual is the in 60-64 age group and zero when they are in the 55 to 59 age group.

*Recession*Older* is the interaction term for the age 60 to 64 indicator and an indicator for recession, wave 6 or 9. X is a set of individual-level controls including marital status, wealth quartile, and industry. Θ is an individual-specific fixed effect and ε_{it} is an error term. We estimate the above using a fixed effects model where the effects of recession on the self-employment decisions of older individuals are identified using only within individual variations. A clear advantage of this approach is that unobserved factors, such as ability or family history with self-employment, are included in the fixed effect and will not bias our estimates. Other factors that do not change over time for the individual, such as race and education level are also captured in the fixed effect, unfortunately limiting the precision of our estimates.[3]

Wealth quartiles are based on non-housing wealth as a wealth measure inclusive of housing is not available for survey wave 3. Testing indicates that our results are not sensitive to the specific measure of wealth used. Industry categories include agriculture, forestry, and fishing, mining and construction, manufacturing, transportation and utilities, wholesale, retail, finance, insurance and real estate, repair service, personal services, entertainment and recreation services, professional services, and public administration. For these variables and marital status, estimated coefficients represent the effects of within-individual changes in the variables.

As mentioned above, we estimate regressions separately by gender. In addition, we include the full set of age groups (51 to 54, 55 to 59, 60 to 64, and 65 to 69) and estimate the regressions for those who enter (or exit) full-time self-employment. We also explore the factors that affect entry conditional on employment section (wage and salary, unemployed, not in labor force) in the previous wave. Unfortunately, our data end in 2008, missing much of the most

[3] We strongly prefer the fixed effects model over the random effects model as the assumption of zero correlation between included covariates and the individual-specific effect is unlikely to be met. For this reason, we estimate linear probability models instead of a random effects probit model (the fixed effects probit model is not available because of computational difficulties).

recent recession. Preliminary analyses of the effects of recession-related wealth shocks (i.e. large losses in real estate or stocks) or spousal employment shocks (i.e. spouse becomes unemployed) indicate that the examination of these factors, likely to be more prominent in the recent recession, are better left until more data are available.

Results

Results for entries into and exits from self-employment are presented in Table 4. We find a negative coefficient on entry for individuals aged 60 to 64 in the entry results for men, presented in the first column. This result is consistent with findings from the previous literature that self-employment decreases with age, at least to a point (Bruce, 1999). The coefficient on the interaction term is positive, suggesting that although respondents aged 60 to 64 were less likely to enter self-employment in general, the probability of entry increased during recessions, consistent with the suggestive evidence presented in Tables 2 and 3. However, in both cases, we do not reject the null of zero coefficients separately or jointly. Other results from the entry estimation indicate that recessions reduced the probability of entry, being in the top two wealth quartiles increased the probability of entry, and relative to agriculture, forestry and fishing, other sectors where generally less likely to entry.

For female respondents, we again fail to reject the joint null of a zero coefficients on the interaction term and age 60 to 64 indicator. However, in this case the interaction term has the opposite sign. Interestingly, upper wealth quartile is not a significant predictor of entry for women.

Exit results for men (column 3) indicate that an individual is more likely to exit when he is in the 60 to 64 age group, but this increased probability is almost completely offset in a recession (coefficients are joint significant at the 10 percent level). That is, older men are

generally more likely to exit self-employment than those who are aged 55 to 59 but in a recession the exit probabilities are almost identical. In combination with the results above, these estimates suggest that self-employment among older men increases in a recession relative to other periods because of a reduction in exits. At this point it is unclear whether this is due to reduced opportunities in the wage and salary sector, wealth reductions, or other factor. Once again, wealth seems to be a major factor in the self-employment decisions of men, as those in the top three wealth quartiles are less likely to exit than men in the bottom quartile.

For women (column 4), we find no evidence that exit rates of older individuals are differentially affected by recession. In general, recessions increase the probability of exit for those aged 60 to 64 and 55 to 59. Again, like the entry regression for women, we fail to reject the null of a zero coefficient on all wealth quartiles.

There is an ongoing debate in the literature and the policy arena regarding which small business ventures are truly entrepreneurial, innovative, or have the greatest potential to add new jobs to the economy. We re-estimate our regressions redefining self-employment as full-time, part-time, hobby (individual enters self-employment in an industry in which they do not have work experience), and family (in the context of the HRS family is limited to spouse). As in the above results, we find no evidence of differential recession effects for older women or for older men entering self-employment. Older men are more likely to remain in full-time self-employment during a recession. Results for part-time, hobby, and family self-employment are omitted for brevity as there was no evidence of a differential recessionary effect for entries or exits by men or women. Thus, the affects of recessions on older men's exit rates appear to be driven by full-time self-employment.

Next, we estimate the regressions with the full HRS sample aged 51 to 69 in order to increase our sample size and test the sensitivity of our results to the inclusion of other age groups (Table 5). Entry results for men are consistent with the two age group sample, the signs of the coefficients are consistent with recessions having a positive effect on the probability of men in entering self-employment, but the magnitudes are quite small. For men, being age 50 to 54 in a recession year increases the likelihood of self-employment. However, as above, the other recession interacted coefficients are not significant at standard levels for men or women. Wealth quartile remains a significantly associated with entry for men but not women.

Interestingly, in the exit regression, men in the 60 to 64 and the 65 to 69 age groups both experience strong recession effects. In a recession men in these age groups are far less likely to exit self-employment compared to those in the younger age groups and the results are statistically significant at the one percent level. Put differently, men aged 60 to 69 are generally more likely to exit self-employment than men aged 51 to 59, but during a recession the difference in exit rates is almost zero. Wealth is also negatively associated with exit, as the top three quartiles have lower exit probabilities than the bottom quartile and the coefficients increase with wealth quartile. Once again, wealth was not a significant factor in women's exit decisions.

Again, we do not find evidence that exit rates for women are influenced by a recession, as none of the recession interacted variables are significant at any traditionally acceptable level. Women age 65 to 69 are less likely to exit self-employment than those age 55 to 59, significant at the 10 percent level.

Conclusions

Recessions that limit wage and salary job opportunities and affect wealth holdings are likely to affect self-employment entry and exit decisions. These effects are likely to be

magnified for older Americans who possess a wealth of work experience and institutional knowledge but might face limited opportunities in the wage and salary sector due to their proximity to traditional retirement age. Wealth losses might also have a greater affect on older Americans who do not have as many years to recoup the losses prior to retirement.

Results of our analysis for men suggest that older Americans are less likely to exit self-employment during a recession relative to recessions experienced at younger ages. This result suggests that older Americans are likely to represent a larger portion of the self-employed during recessions. We did not find differential recession effects for women, consistent with findings in the literature that various factors affect the self-employment decisions of women and men in different ways. Increased wealth holdings were strongly associated with higher probabilities of entry into self-employment and lower exit rates for men, but there was not a strong association for women.

Further research is necessary to identify the mechanism through which recessions affect exits from self-employment for men. Possibilities include age discrimination in hiring practices, limited employment, hour, or earnings possibilities in the wage and salary sector, or a desire to offset wealth losses experienced during the recession. Data from the 2010 HRS is a promising source of additional information to address these issues.

The fixed effect models estimated in our analysis have the advantage of capturing unobservable individual-specific factors that remain constant over time. However, a disadvantage of this approach is the lack of precision in our estimates as a large portion of the variation in our dependent variable is captured in the fixed effect. In addition, all coefficients are identified using only the variation within individuals. Efforts to increase the precision of the

results will include additional explanatory variables (e.g. health status and cognitive ability measures) and estimation of limited dependent variable models (e.g. random effects probit).

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Figure 1: Self employed and older workers

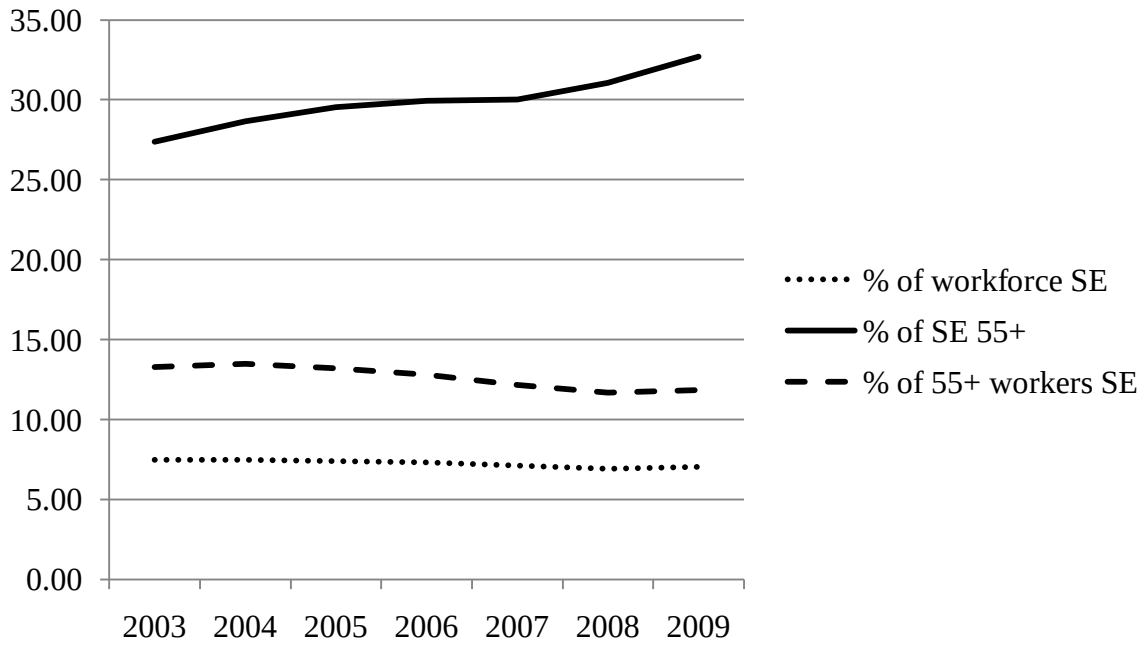

Figure 2: Unemployment Rate (Seasonally Adjusted), 1948-2010

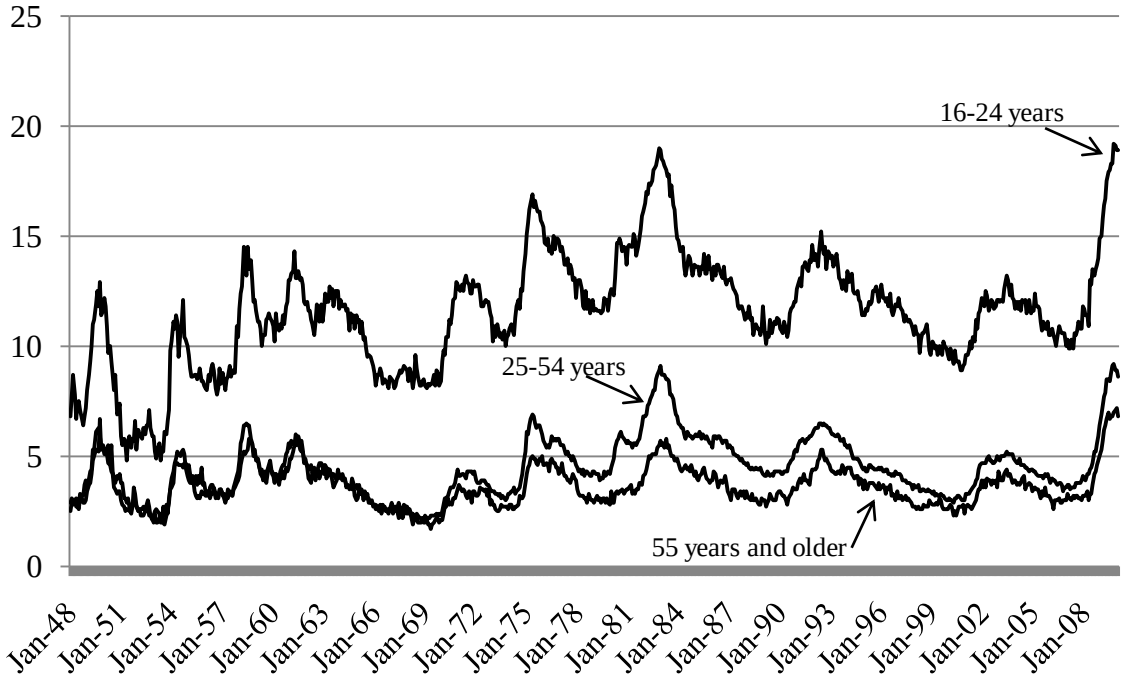

Figure 3: Percentage change in mean family net worth of self employed

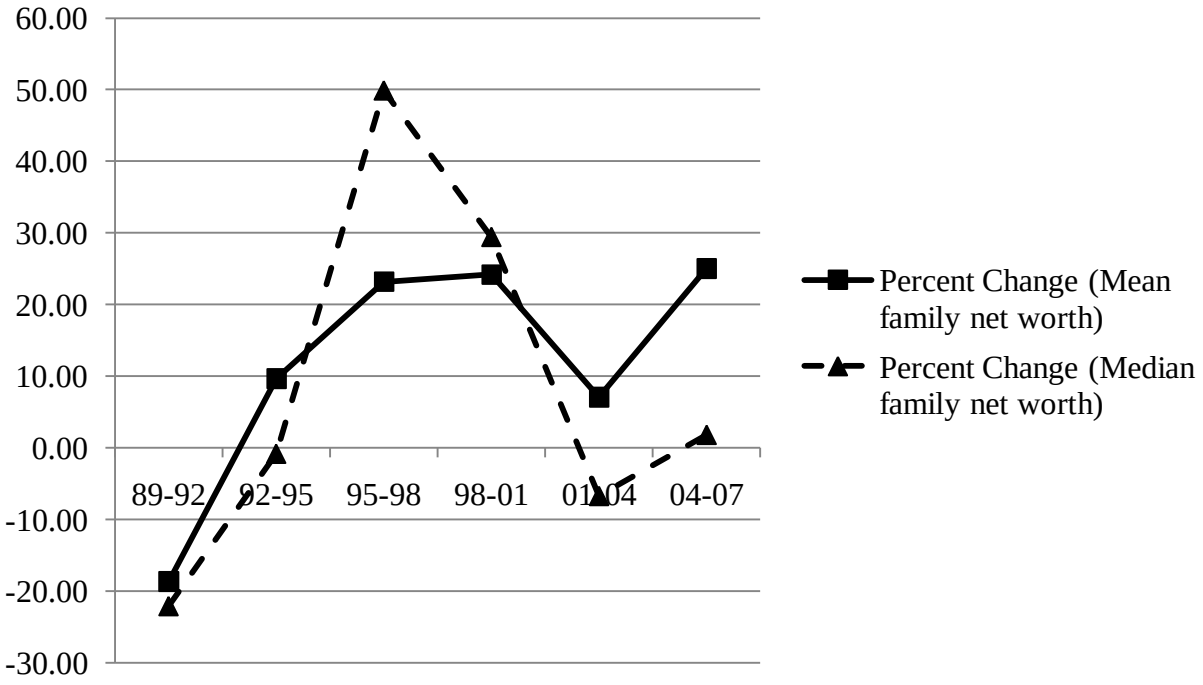

Figure 4: Percentage change in mean family net worth, by age

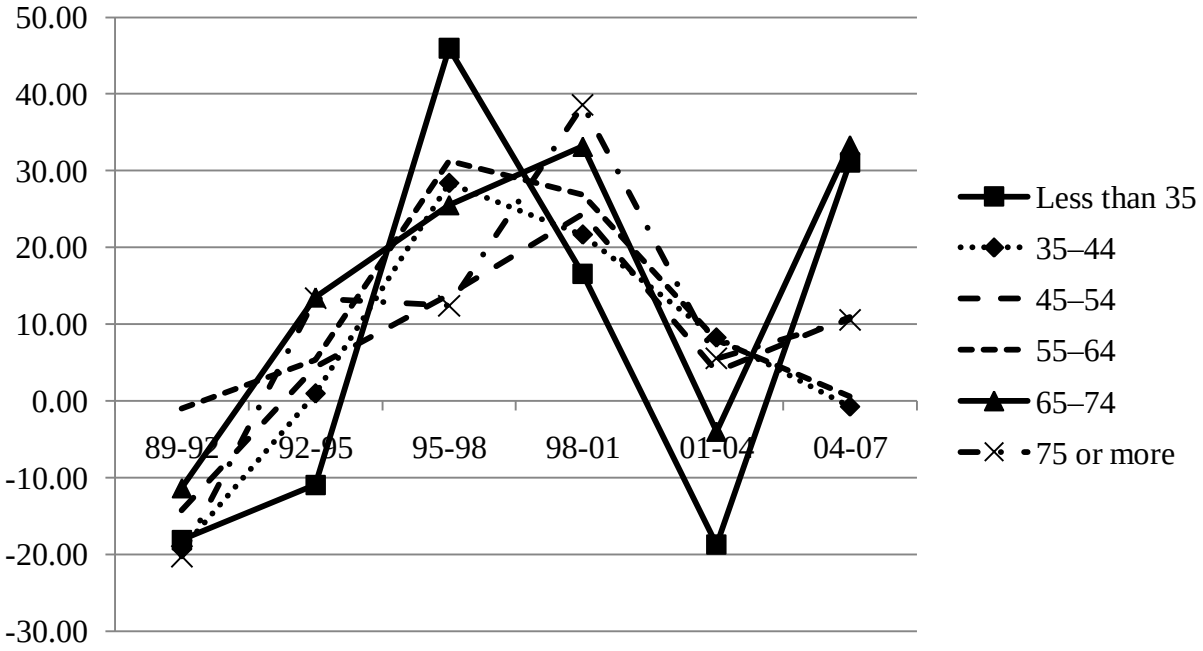

Table 1. Selected labor force measures, by age, February 2010, not seasonally adjusted

Characteristic	Total, 16 years and older	16 to 24 years	25 to 54 years	55 years and older
Total unemployed (in thousands)	15,991	3,888	9,843	2,260
Percentage unemployed 27 weeks or longer	39.3	28.5	41.3	49.1
Median number of weeks unemployed	19.6	14.4	20.6	26.7
Average number of weeks unemployed	29.3	23.3	30.3	35.5

Table 2. Summary Statistics for Entry Samples, by Gender

	Men				Women			
	Entry Sample		Enter Self-Employment		Entry Sample		Enter Self-Employment	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Enter Self-employment	0.041	0.197	1.000	0.000	0.040	0.196	1.000	0.000
Affected by a Recession	0.101	0.302	0.112	0.316	0.102	0.303	0.091	0.288
Age 60-64	0.457	0.498	0.515	0.500	0.421	0.494	0.450	0.498
White	0.841	0.366	0.831	0.375	0.797	0.402	0.848	0.360
Black	0.114	0.318	0.127	0.334	0.164	0.370	0.123	0.328
Highest Education								
high school	0.276	0.447	0.230	0.421	0.347	0.476	0.322	0.468
some college	0.222	0.415	0.230	0.421	0.249	0.433	0.220	0.414
college graduate	0.285	0.452	0.343	0.475	0.214	0.410	0.205	0.404
Foreign Born	0.101	0.301	0.088	0.284	0.091	0.288	0.115	0.320
Married	0.838	0.368	0.808	0.394	0.637	0.481	0.703	0.458
Wealth Quartiles (by wave)								
2nd Quartile	0.255	0.436	0.199	0.400	0.274	0.446	0.203	0.402
3rd Quartile	0.296	0.457	0.268	0.443	0.276	0.447	0.255	0.436
4th Quartile	0.308	0.462	0.402	0.491	0.257	0.437	0.346	0.476
Waves								
Wave 2 (1994)	0.168	0.374	0.188	0.391	0.139	0.346	0.123	0.328
Wave 3 (1995/1996)	0.169	0.374	0.184	0.388	0.142	0.349	0.156	0.363
Wave 4 (1998)	0.140	0.347	0.121	0.326	0.135	0.342	0.139	0.347
Wave 5 (2000)	0.133	0.340	0.109	0.313	0.135	0.341	0.091	0.288
Wave 6 (2002)	0.111	0.315	0.112	0.315	0.121	0.326	0.128	0.335
Wave 7 (2004)	0.089	0.285	0.128	0.335	0.106	0.308	0.138	0.345
Wave 8 (2006)	0.095	0.293	0.101	0.301	0.112	0.315	0.134	0.341
Wave 9 (2008)	0.095	0.293	0.056	0.230	0.111	0.314	0.091	0.289
Industry								
Agriculture	0.046	0.210	0.076	0.266	0.012	0.107	0.032	0.175
Mining and Construction	0.107	0.310	0.181	0.385	0.012	0.109	0.022	0.148
Manufacturing	0.205	0.404	0.071	0.257	0.101	0.301	0.039	0.194
Transportation and Utilities	0.095	0.293	0.061	0.240	0.031	0.175	0.028	0.165
Wholesale	0.059	0.236	0.041	0.198	0.020	0.141	0.011	0.105
Retail	0.085	0.279	0.117	0.322	0.133	0.339	0.184	0.388
Finance, Insurance and Real Estate	0.060	0.238	0.095	0.293	0.081	0.274	0.076	0.266
Business and Repair Services	0.079	0.269	0.155	0.362	0.058	0.234	0.115	0.320
Personal Services	0.017	0.131	0.022	0.148	0.077	0.267	0.238	0.426
Entertainment and Recreation Services	0.017	0.130	0.015	0.121	0.015	0.121	0.013	0.113
Professional and Related Services	0.181	0.385	0.158	0.365	0.416	0.493	0.238	0.426
Public Administration and National Security	0.048	0.214	0.007	0.086	0.044	0.205	0.004	0.061
Observations	13,242		537		13,510		538	

Table 3. Summary Statistics for Exit Samples, by Gender

	Men				Women			
	Exit Sample		Exit Self-Employment		Exit Sample		Exit Self-Employment	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Exit Self-employment	0.090	0.286	1.000	0.000	0.106	0.308	1.000	0.000
Affected by a Recession	0.111	0.314	0.110	0.313	0.119	0.324	0.099	0.300
Age 60-64	0.515	0.500	0.513	0.501	0.451	0.498	0.392	0.490
White	0.891	0.312	0.886	0.318	0.869	0.337	0.823	0.383
Black	0.078	0.269	0.088	0.284	0.090	0.286	0.127	0.334
Highest Education								
high school	0.239	0.427	0.230	0.421	0.324	0.468	0.232	0.423
some college	0.247	0.432	0.274	0.447	0.268	0.443	0.331	0.472
college graduate	0.336	0.472	0.326	0.470	0.221	0.415	0.243	0.430
Foreign Born	0.097	0.296	0.059	0.237	0.096	0.294	0.110	0.314
Married	0.843	0.364	0.832	0.375	0.714	0.452	0.635	0.483
Wealth Quartiles (by wave)								
2nd Quartile	0.141	0.348	0.242	0.429	0.183	0.387	0.243	0.430
3rd Quartile	0.239	0.426	0.271	0.445	0.255	0.436	0.276	0.448
4th Quartile	0.530	0.499	0.271	0.445	0.440	0.497	0.282	0.451
Waves								
Wave 2 (1994)	0.167	0.373	0.165	0.372	0.128	0.334	0.105	0.307
Wave 3 (1995/1996)	0.173	0.378	0.179	0.384	0.134	0.341	0.122	0.328
Wave 4 (1998)	0.146	0.353	0.150	0.358	0.140	0.347	0.182	0.387
Wave 5 (2000)	0.134	0.341	0.136	0.343	0.136	0.342	0.138	0.346
Wave 6 (2002)	0.107	0.310	0.106	0.309	0.121	0.327	0.122	0.328
Wave 7 (2004)	0.085	0.279	0.051	0.221	0.114	0.318	0.122	0.328
Wave 8 (2006)	0.094	0.292	0.110	0.313	0.110	0.313	0.116	0.321
Wave 9 (2008)	0.094	0.291	0.103	0.304	0.117	0.321	0.094	0.293
Industry								
Agriculture	0.105	0.306	0.015	0.121	0.041	0.199	0	0
Mining and Construction	0.171	0.377	0.143	0.351	0.024	0.153	0.011	0.105
Manufacturing	0.074	0.261	0.154	0.361	0.058	0.235	0.039	0.193
Transportation and Utilities	0.052	0.223	0.077	0.267	0.027	0.162	0.028	0.164
Wholesale	0.053	0.225	0.044	0.205	0.018	0.131	0.028	0.164
Retail	0.101	0.302	0.110	0.313	0.182	0.386	0.149	0.357
Finance, Insurance and Real Estate	0.099	0.299	0.081	0.273	0.110	0.313	0.088	0.285
Business and Repair Services	0.136	0.343	0.088	0.284	0.111	0.314	0.099	0.300
Personal Services	0.027	0.163	0.022	0.147	0.223	0.416	0.138	0.346
Entertainment and Recreation Services	0.009	0.094	0.015	0.120	0.020	0.142	0.022	0.147
Professional and Related Services	0.167	0.373	0.212	0.410	0.180	0.384	0.370	0.484
Public Administration and National Security	0.005	0.072	0.040	0.197	0.005	0.072	0.028	0.164
Observations	3,042		273		1,712		181	

Table 4. Difference-in-Differences Self-Employment Transitions

DID Self-Employment Transitions

	Entry		Exit	
VARIABLES	Male	Female	Male	Female
Affected by a Recession	0.015	-0.007	-0.031	-0.019
(Year 2002 or 2008 and age 60 to 64)	(0.010)	(0.009)	(0.025)	(0.032)
Age 60 to 64	-0.002	-0.009	0.036*	-0.006
	(0.007)	(0.007)	(0.017)	(0.024)
Married	-0.004	0.010	0.007	-0.039
	(0.015)	(0.012)	(0.042)	(0.042)
Wealth Quartiles (by wave)				
2nd Quartile	0.006	-0.009	-0.119***	-0.029
	(0.008)	(0.007)	(0.024)	(0.031)
3rd Quartile	0.019*	0.001	-0.129***	0.032
	-0.01	(0.009)	(0.026)	(0.036)
4th Quartile	0.022*	0.001	-0.136***	-0.006
	-0.012	(0.010)	(0.028)	(0.038)
Waves				
Wave 3 (1995/1996)	-0.001	0.003	0.023	0.025
	(0.007)	(0.007)	(0.015)	(0.024)
Wave 4 (1998)	-0.011	-0.002	0.025	0.099***
	(0.008)	(0.008)	(0.019)	(0.028)
Wave 5 (2000)	-0.010	-0.001	0.035	0.114***
	(0.010)	(0.010)	(0.023)	(0.034)
Wave 6 (2002)	-0.012**	0.025**	0.048	0.130**
	(0.013)	(0.012)	(0.031)	(0.044)
Wave 7 (2004)	0.007	0.027**	0.023	0.169***
	(0.014)	(0.013)	(0.033)	(0.048)
Wave 8 (2006)	-0.020	0.025	0.020	0.166***
	(0.017)	(0.015)	(0.040)	(0.054)
Wave 9 (2008)	-0.048**	0.009**	0.092*	0.207**
	(0.020)	(0.018)	(0.048)	(0.065)
Industry				
Mining and Construction	-0.016	0.072	0.109**	-0.054
	(0.027)	(0.055)	(0.051)	(0.125)
Manufacturing	-0.137***	0.058	0.225***	0.111
	(0.025)	(0.049)	(0.052)	(0.096)
Transportation and Utilities	-0.131***	0.085	0.147**	0.058
	(0.028)	(0.053)	(0.058)	(0.143)
Wholesale	-0.058**	0.015	0.144***	0.059
	(0.028)	(0.055)	(0.053)	(0.115)
Retail	-0.039	0.084*	0.216***	0.042
	(0.027)	(0.047)	(0.052)	(0.086)
Finance, Insurance and Real Estate	-0.040	0.090*	0.147***	0.120
	(0.029)	(0.049)	(0.055)	(0.105)
Business and Repair Services	0.003	0.152***	0.150***	0.080
	(0.026)	(0.049)	(0.049)	(0.093)
Personal Services	0.020	0.253***	0.261***	0.003
	(0.040)	(0.049)	(0.072)	(0.092)
Entertainment and Recreation Services	-0.011	-0.028	0.172**	0.200
	(0.038)	(0.057)	(0.077)	(0.125)
Professional and Related Services	-0.073***	0.053	0.279***	0.216**
	(0.026)	(0.047)	(0.054)	(0.092)
Public Administration and National Security	-0.164***	-0.034	0.627***	1.119***
	(0.032)	(0.053)	(0.108)	(0.249)
Observations	13,242	13,510	3,042	1,712
R-squared	0.021	0.030	0.074	0.094
Number of Individuals	5,162	5,339	1,335	802

Notes: Entries are coefficients from a linear probability model with fixed effects. Standard errors in parentheses.

Joint significance tests are used for interaction terms.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

Table 5. All Age Groups Self-Employment Transitions

	Entry		Exit	
VARIABLES	Male	Female	Male	Female
Recession Year interacted with age 50 to 54	0.037**	0.009	0.064	-0.031
	(2.068)	(0.806)	(1.479)	(-0.751)
Recession Year interacted with age 60 to 64	0.009	-0.007	-0.039***	-0.004
	(0.907)	(-0.823)	(-1.697)	(-0.145)
Recession Year interacted with age 65 to 69	0.011	0.008	-0.066***	-0.065*
	(0.962)	(0.831)	(-2.788)	(-1.884)
Age 50 to 54	-0.011	0.003	-0.026	-0.005
	(-1.455)	(0.420)	(-1.433)	(-0.199)
Age 60 to 64	-0.002	-0.007	0.043***	-0.037
	(-0.316)	(-1.082)	(2.851)	(-1.627)
Age 65 to 69	0.010	-0.014	0.089***	-0.028*
	(0.796)	(-1.335)	(3.514)	(-0.739)
Married	-0.000	0.003	0.015	-0.080**
	(-0.017)	(0.371)	(0.473)	(-2.569)
Wealth Quartiles (by wave)				
2nd Quartile	0.010	-0.005	-0.099***	-0.014
	(1.437)	(-0.857)	(-4.844)	(-0.523)
3rd Quartile	0.013	0.001	-0.130***	0.012
	(1.576)	(0.163)	(-5.987)	(0.418)
4th Quartile	0.017*	0.002	-0.138***	-0.037
	(1.760)	(0.261)	(-6.028)	(-1.163)
Waves				
Wave 3 (1995/1996)	-0.003	0.005	0.015	0.038*
	(-0.458)	(0.846)	(1.162)	(1.902)
Wave 4 (1998)	-0.009	0.003	0.023	0.082***
	(-1.270)	(0.447)	(1.442)	(3.409)
Wave 5 (2000)	-0.005	0.001	0.012	0.110***
	(-0.571)	(0.158)	(0.624)	(3.869)
Wave 6 (2002)	-0.006	0.021**	0.038	0.134***
	(-0.482)	(2.035)	(1.329)	(3.373)
Wave 7 (2004)	0.011	0.025**	-0.014	0.148***
	(0.891)	(2.262)	(-0.496)	(3.648)
Wave 8 (2006)	0.001	0.028**	-0.022	0.153***
	(0.086)	(2.205)	(-0.692)	(3.362)
Wave 9 (2008)	-0.019	0.013	0.019	0.192***
	(-1.025)	(0.887)	(0.475)	(3.383)
Industry				
Mining and Construction	0.016	0.064*	0.101***	0.128
	(0.825)	(1.684)	(2.601)	(1.265)
Manufacturing	-0.101***	0.056*	0.201***	0.129*
	(-5.398)	(1.689)	(5.042)	(1.746)
Transportation and Utilities	-0.060***	0.026	0.148***	0.045
	(-2.959)	(0.715)	(3.334)	(0.448)
Wholesale	-0.043**	0.022	0.123***	0.152*
	(-2.024)	(0.583)	(2.984)	(1.726)
Retail	-0.027	0.082***	0.139***	0.116*
	(-1.364)	(2.579)	(3.630)	(1.778)
Finance, Insurance and Real Estate	-0.008	0.072**	0.064	0.086
	(-0.370)	(2.142)	(1.537)	(1.042)
Business and Repair Services	-0.004	0.130***	0.100***	0.075
	(-0.224)	(3.952)	(2.747)	(1.078)
Personal Services	0.034	0.182***	0.179***	-0.042
	(1.183)	(5.550)	(3.103)	(-0.590)
Entertainment and Recreation Services	-0.008	0.044	0.199***	0.091
	(-0.281)	(1.131)	(2.866)	(0.924)
Professional and Related Services	-0.057***	0.043	0.282***	0.260***
	(-2.932)	(1.347)	(6.765)	(3.716)
Public Administration and National Security	-0.128***	-0.013	0.593***	0.404***
	(-5.502)	(-0.358)	(8.575)	(3.556)
Observations	19,121	20,660	4,556	2,699
R-squared	0.014	0.018	0.079	0.095
Number of hhidpn	6,002	6,429	1,666	1,064

Notes: Entries are coefficients from a linear probability model with fixed
Joint significance tests are used for interaction terms.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.