Employment Transitions among the Self-Employed during the Great Recession

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Abstract: Entrepreneurs base their decision to start a business on a range of factors, from age, education and assets to macroeconomic conditions. While the majority of these factors have a well-understood impact on entering and exiting self-employment, the effect of macroeconomic conditions is less clear. During periods of recession, self-employment may increase due to its attractiveness as an alternative to unemployment. However, the difficulty of maintaining a business through the downturn can lead to a decrease in the self-employed. Understanding the transitions in and out of self-employment would help us better appreciate how entrepreneurs experience recessions. We use a robust set of longitudinal data from the Survey of Income and Program Participation (SIPP) to analyze the movements between self-employment, unemployment and wage-work during the Great Recession. The results suggest that the probability of entering self-employment depends on characteristics of the individual while movements out of self-employment are contingent on characteristics of the business. Furthermore, transitions from unemployment to self-employment increased during the recession months and transitions from self-employment to wage-work increased in the post recession months.

JEL Classification: L26, J01, J60, C23

Key words: Self-employment, unemployment, longitudinal data

[2] The views expressed in this article are those of the authors and are not necessarily those of the US Census Bureau. All comparative statements in this report have undergone statistical testing, and, unless otherwise noted, all comparisons are statistically significant at the 10 percent significance level.

Introduction

Entrepreneurs base their decision to start a business on a range of factors, from age, education and assets to macroeconomic conditions. While the majority of these factors have a well-understood impact on entering and exiting self-employment, the effect of macroeconomic conditions is less clear (Carrasco, 1999; Blanchflower, 2004). This is especially true during downturns in the business cycle. During a recession, the low supply of wage-jobs often pushes workers into self-employment. Self-employment can be a means to avoid prolonged unemployment and financial hardship. However, due to the personal investment involved and the decreased demand for goods and services, starting and retaining a business is an especially risky endeavor. Self-employment would initially increase during a recession, but those business owners may find it difficult to succeed in the long term. These increases in self-employment are offset when established business owners have to shut down due to lack of demand and access to capital.

According to the Bureau of Labor Statistics (BLS), the self-employed have comprised a steady 10.9 percent of total employment since 2004 (Hipple, 2010). While this percent remained nearly constant through the Great Recession, the total number of self-employed actually fell from 16,148,000, in 2007, to 15,297,000, by the end of 2009.[3] Even after the recession was officially over, the number continued to decrease until 2011, reaching 14,576,000.[4] This net decrease reflects the general characteristics of the recession: permanent job loss, long-term unemployment, and labor force separation.

[3] According to the National Bureau of Economic Research, the Great Recession occurred between December, 2007 and June, 2009.

[4] Data retrieved from the BLS website, Table A-9 "Selected employment indicators," which reports Current Population Survey (CPS) data. The tables only report the estimates so we are unable to confirm any statistical difference between the numbers.

The suffering economy took its toll on the labor market, causing layoffs and making wage employment difficult to find. The economy lost over five million jobs (Hipple, 2010). At the peak of the recession, the unemployment rate reached 10 percent – more than double that of pre-recession levels (4.4 percent in May 2007).[5] Even six years later, the unemployment rate remains high (7 percent in November, 2013). Similarly, the long-term unemployment rate was 43 percent in 2010 compared to about 18 percent in 2006 (Congressional Budget Office, 2012).

In addition to the labor market, the housing and stock market experienced a decline: between October 2007 and October 2008, the S&P500 dropped by 37 percent and the Case-Shiller 20-city average housing price index fell by 18 percent (Katz, 2010). As a result, business owners and households both suffered. Businesses were not able to obtain the necessary loans to operate. Households saw their assets and equity diminish. Uncertainty about the future rose steeply. The severity of the recession forced many workers to look at alternative modes of income in order to avoid prolonged unemployment or financial distress.

One possible way for workers to avoid or shorten stints of unemployment was self-employment. Starting a business can be a viable alternative to wage work. Selling your own goods or services creates a source of income that could grow over time. Owning a business has the additional benefits of independence and increased job satisfaction over wage work (Taylor, 1996; Millán, et al., 2013). A number of studies have shown a propensity for the unemployed to become entrepreneurs (Evans and Leighton, 1989; Carrasco, 1999). In addition, as the length of unemployment increases, so does the probability of self-employment (Alba-Ramirez, 1994). These findings would imply a rise in workers entering self-employment during the Great Recession.

[5] Unemployment data retrieved from the BLS website (series Id: LNS14000000) "labor force statistics from the Current Population Survey." The table does not report standard errors or margin of errors so we are unable to confirm any statistical difference between the numbers.

Capital is essential to starting a business. During the Great Recession, banks became very hesitant to loan. Without the option of bank financing, entrepreneurs had to choose to deplete their savings or withdraw from their retirement accounts. Relying solely on one's own financing makes the venture more risky and possibly less likely to happen, especially for those with little savings or retirement**.** In addition to the importance of capital, Fairlie (2012) found housing appreciation to be a significant determinant of self-employment. The failing housing market would have further hindered entrepreneurs.

Not only was starting a business difficult, so was owning one during the Great Recession. Business owners suffered from slow demand, increased costs of equipment and lack of valuable collateral to secure loans (Bernanke, 2010). Small businesses, especially, rely on short-term loans to keep their business running week-to-week. Throughout the recession, many were forced to use personal credit cards or borrow from their retirement. Loans to small business decreased by over $40 billion between 2008 and 2010 (Duygan-Bump, et al., 2010). In addition, many long-standing business owners had their lines of credit closed, hindering normal business operations. These factors would have increased the probability of moving out of self-employment.

In order to better understand how the self-employed faired during the Great Recession, we will use longitudinal data to analyze the transitions into and out of self-employment. Specifically, what factors, socio-economic and macroeconomic, played a role in the decision to enter or exit business ownership? Furthermore, we can determine how the recession impacted these decisions since the survey spanned both recession and recovery years. A series of logit models will estimate the probability of transitioning between self-employment and either wage-work or unemployment. Our first hypothesis is that movements into self-employment will mostly

depend on characteristics of the individual while movements out of self-employment will be contingent on characteristics of the business, e.g., tenure, firm size, and business income, instead of the characteristics of the business owner. The models include variables to capture the effects of the Great Recession. Our second hypothesis is that transitions from unemployment to self-employment will increase during the recession years but because these movements are out of necessity, transitions from self-employment to wage-work will increase in the post recession years.

This paper is organized as follows. From the introduction, we provide a background on the factors influencing transitions into and out of self-employment. Next, we describe the dataset and how we take advantage of its many features. Then we analyze the results of the regression models. In the last section, we summarize and conclude our findings.

Background

The decision to become an entrepreneur is an economic one. A person chooses to start his or her own business if the expected utility from self-employment is greater than that of the alternatives – wage-work, unemployment, or leaving the labor force. Expected utility is a function of personal and economic characteristics, preferences and current macroeconomic conditions. The impact of each of these variable types will depend on which alternatives the worker faces. For example, personal wealth has a stronger positive impact on the probability of self-employment for an unemployed person relative to a wage-worker (Fairlie and Krashinsky 2012). Therefore, it is important to analyze the transitions separately by the source state of employment.

From the unemployed point of view, self-employment is a means of income. It removes the cost of searching for wage-work and provides feelings of independence and self-confidence. As the spell of unemployment increases, the searcher's reservation wage falls, decreasing their expected income, and therefore their expected utility, from wage-work (Alba-Ramirez 1994). In addition, unemployment insurance benefits typically run out after a certain number of months. When expected income from wages and unemployment compensation fall low enough, self-employment becomes a feasible alternative. When estimating the probability of entering self-employment instead of wage-work, researchers find that the length of unemployment spells are positively correlated (Evans and Leighton 1989, Carrasco 1999). Similarly, Carrasco (1999) and Ala-Ramirez (1994), both found a negative relationship between unemployment benefits and the probability of entering self-employment from unemployment.

Along with income, personal characteristics are also a function of expected utility. Starting and running a business requires a significant investment of one's time and capital. It is also helpful to have some labor market experience. Due to these constraints, young people who are just entering the labor market, have young children, and not many assets would be less likely to take the risk. The unemployed are more likely to choose self-employment if they are older, male, married, have some college education, and not covered by health insurance (Alba-Ramirez 1994, Carrasco 1999). In a series of papers, Fairlie analyzed the effects of race on entry into self-employment. He noted significant variation in entry rates by race with more advantaged races (measured by average total income) having the highest rates. In additon, Zimmerman (2004) found that home ownership and the respondent's father's self-employment increase the probability of self-employment.

Expected utility from wage-work is higher for those currently employed than unemployed. This is largely due to higher expected wages. Those who transition to self-employment typically have strong preferences for the non-monetary benefits of business ownership (Hamilton 2000). Taylor (1996) found a positive correlation between workers' use of initiative and probability of self-employment and a negative correlation between preferences for job security and self-employment. Similarly, the desire to become self-employed couples with inclinations towards risk-taking and preferences for independence (Douglas and Shepherd 2002). Dunn and Holtz-Eakin (2000) found positive intergenerational affects between parents' wealth and human capital and the probability of self-employment. The role of personal characteristics in the decision between wage-work and business ownership are similar to that between unemployment and self-employment (Blanchflower 1996; Taylor 1996). The probability of self-employment increases with being older, male, and not an ethnic minority.

The decision to exit self-employment is also based on comparing expected utility. The expected utility functions being compared now include attributes of the business, as well as personal characteristics and preferences. Businesses cannot continually operate with negative profits and owners will be compelled to shut down if they fail to earn any business income. The owner's management ability and other characteristics contribute to the successfulness of the business (Zimmerman 2004). For example, Blanchflower and Meyer(1996) found a negative relationship between probability of exiting self employment for respondents who are older, white or male. Robinson (1994) noted that business earnings increase with owner's level of formal education. The owner's experience also plays an important role (Carrasco 1999, Blanchflower and Meyer 1996). Older businesses are more established and the owners would have more experience with adapting to changes in the macroeconomy.

Of course, the condition of the macroeconomy itself influences business profits. Slow demand and constrained credit markets hurt daily operations. Haapanen (2009) found that rising unemployment rates increase the probability of exiting self-employment. The constrained capital markets in the recent Great Recession had a negative impact on small businesses (Duygan-Bump, Levkov and Montoriol-Garriga 2010).

Data and Methods

For our analysis, we employ the Survey of Income and Program Participation (SIPP),[6] a nationally representative, longitudinal survey that provides comprehensive information on demographic and labor force characteristics, sources and amount of income, and program participation. The 2008 panel of the SIPP began interviews in September 2008 with a sample of 52,301 households. The interviews occurred in waves where each household responded to questions regarding the past four months. As a result, each household was interviewed every four months for the duration of the panel. We will use data from the first ten waves in order to follow respondents through the Great Recession, June 2008 to June 2009,[7] and two and a half years afterwards - through November 2011.

The SIPP collects detailed employment data for persons 16 years and over on up to two jobs and two businesses each reference period. We use the respondents' reported start and end dates for each job and/or business to assign their monthly employment type: wage-worker, self-employed, or both. For any period without a job or business, the respondent is asked a series of questions to determine their weekly employment status (employed, unemployed or not in the

[6] Statistics from surveys are subject to sampling and nonsampling error. For further information on the source of the data and accuracy of estimates, including standard errors and confidence intervals, see http://www.census.gov/programs-surveys/sipp/tech-documentation/source-accuracy-statements.html.

[7] The National Bureau of Economic Research determines official recession dates: http://www.nber.org/cycles/cyclesmain.html.

labor force). We then compare each respondent's employment type and employment status from one month to the next to determine possible transitions.[8] While there are many types of transitions, we focus on those between self-employment, wage-work, and unemployment.[9]

With ten waves, each having three transitions per wave and one transition between waves, there are 39 possible transitions.[10] Table 1 displays the total frequency of transitions between employment types split into two periods, during and post Great Recession. For the majority of transitions, employment type does not change. Over 99 percent of the possible transitions out of self-employment or wage work remain in self-employment or wage work, respectively. Similarly, 97 percent of transitions out of unemployment remain in unemployment.

<Table 1 about here>

The recession did have some impact on the movement out of unemployment. Post-recession, the percent of transitions from unemployment to self-employment fell by 41.8 percent, from 0.49 to 0.28 percent. Instead of transitioning to self-employment, these workers moved instead to wage-work or remained unemployed, investing more time in their job search. Figure 1 displays the transitions out of unemployment and shows the percent of those transitions moving to wage-work or unemployment between 2008 and 2011. Over the period, transitions to wage-worker increased while those to self-employment decreased. These data illustrate the argument

[8] In order for a respondent to be classified as a wage-worker, self-employed, or both, they must have worked in that job or business for the entire month and have an employment status of employed. A respondent is categorized as both a wage-worker and self-employed if they work equal hours at both. If the respondent has more than two jobs/businesses, we use the job/business where they worked the most hours.

[9] For our analysis, we omit transitions in and out of the labor force, contingent work, and respondents classified as both wage-workers and self-employed.

[10] Due to seam bias, transitions are more frequent between waves than within waves. This is due to respondents incorrectly reporting a transition in the last month of the reference period (typically the month before the interview). Moore (2007) suggests that respondents over report the fourth reference month when they cannot remember the actual date within the four month period or as a "strategy to simplify a difficult reporting task." We include the variable *seam* in our models to account for this bias.

that as the supply of wage jobs grow, so does expected utility from wage-work and unemployed workers become less likely to enter self-employment.

<Figure 1 about here>

Tables 2 and 3 show the summary statistics by transition type. We include five categories of characteristics: demographic, educational, economic/employment, geographic, and macroeconomic. We include the variable's value from the starting month of the transition period. We omit observations where the respondent was enrolled in school or serving on active duty in the Armed Forces during either month of the transition. The total number of unweighted transitions varies widely by transition type with the smallest number moving from unemployed to self employed, 325, and the largest remaining a wage-worker, 1.2 million.[11]

Models 1 and 2 include transitions into self-employment from unemployment and wage-work, respectively. Compared to workers who do not transition, those who transition into self-employment are more likely to be older, married, male, and white, nonhispanic, have at least a bachelor's degree, have a lower total household income, and have previous experience in self-employment. Within the transitions from unemployment to self-employment, those who remain unemployed are more likely to receive unemployment compensation while those who start a business do so when the unemployment rate is lower. Among wage-workers, those who transition to self-employment have had a shorter tenure at their job but have a lower rate of health insurance. In reference to the Great Recession, transitions to self-employment were more

[11] Although the unweighted counts are provided in tables 2 and 3, all descriptive statistics and model estimates are obtained using replicate weights provided in the SIPP datasets.

likely to occur in this period; however, there was no significant difference between transitions from wage-work and unemployment.

Summary statistics for the variables in model 3, transitions out of self-employment, are displayed in table 3. The unweighted number of transitions is lowest for self-employment to unemployment, 231, and highest for remaining self-employed, over 168,000. The characteristics of transitions with no change are what we would expect from the literature and from table 2. Those who remain self-employed are more likely to be older, married, white, nonhispanic, and have no kids. The businesses that do not fail tend to be older, smaller (fewer than 25 employees), incorporated, and provide twice as much income to the owners. Age and incorporation make these companies more robust to macroeconomic shocks. Transitions from self-employment to unemployment occurred when the unemployment rate was higher, reflecting the general state of the economy at the time. Businesses are more likely to fail when consumers experience higher rates of unemployment and demand is low.

In all three models, we also include dummy variables for geographic region and residing in a metropolitan area. We hope to capture any region-specific characteristics that may influence the transition decision. Haapanen and Tervo (2009) found that living in a rural area increases the duration of self-employment. Due to low employment opportunities in those areas, we believe the probability of entering self-employment would also be higher.

Results

We estimated three separate models and displayed the estimated coefficients and their standard errors in table 4. In order to estimate the probability of entering self-employment from unemployment or wage-work, we used two binomial models where the reference state was

remaining unemployed or in wage-work. The first two columns of table 4 display these results, where model 1 estimates the probability of entering self-employment from unemployment and model 2 estimates the probability of entering self-employment from employment. In model 3, we use a multinomial logit regression to estimate the probability of exiting self-employment to either wage-work or unemployment, where remaining self-employed is the reference category.

In model 1, we can see that fewer demographic characteristics significantly impact the decision to open a business from unemployment - only age, sex, and ethnicity. Having a higher education and experience with owning a business positively correlates with transitioning out of unemployment. As expected, self-employment is a more probable alternative to unemployment when not receiving unemployment compensation and during the Great Recession. The negative impact of the unemployment rate implies that self-employment becomes less attractive as an alternative to wage-work as the economy worsens. If the business fails, there are even fewer alternative employment options, which increase the risk of self-employment since some amount of capital investment will be involved. The unemployed would be less likely to risk their savings as the labor market weakens.

Among the geographic characteristics, only living in the West has a significant impact on the probability of self-employment. This may be due to the high number of entrepreneurial "hot spots" along the Pacific coast (e.g., Silicon Valley, Seattle). The coefficient on *metro* supports the findings of Haapanen and Tervo (2009) that due to low labor demand and reduced expected income from wages in rural areas the probability of starting a business from unemployment is greater.

The importance of estimating the probability of self-employment separately by transition type becomes apparent when looking at the differences in model 1 and 2. The impact of race,

ethnicity, marriage, and health insurance become important in the decision to leave wage-work for self-employment. Self-employment is no longer seen as a necessary means of income as it is for an unemployed person. In order for a wage-worker to leave the security of paid employment, they must consider many other factors (e.g., whether they have a spouse who can also contribute to household income or help with the business). When their wage-job provides healthcare then leaving that security for self-employment is less likely. We see a similar negative relationship with job tenure. Surprisingly, transitioning from wage-work to self-employment was more likely during the recession. Perhaps these workers knew that they would eventually lose their job or assets and took the opportunity to open a business.

For model 3, we estimate a multinomial logit model to analyze the probability of exiting self-employment to either unemployment or wage-work. Personal characteristics play a much less significant role than in transitions into self-employment. As we hypothesized, the characteristics of the business itself determine the probability of the transition. Business owners with businesses that are smaller, older, incorporated, or provide more income have a greater probability of remaining business owners. Owning a home also corresponds to remaining in business. If the business struggles, the owner has additional assets in order to acquire loans or other capital.

Living in the Western region had a positive impact on the probability of leaving self-employment for unemployment but no significant impact on moving to wage-work. It seems that while entrepreneurs were more likely to start a business if they lived in the West, they were also more likely to fail. Metropolitan status does not play a significant role in transitioning out of self-employment.

In order to determine the influence of the Great Recession on transitions out of self-employment, we included a dummy variable to indicate whether a transition occurred in that period and the national monthly unemployment rate. Interestingly, there was no significant impact if the transition occurred during the months of the Great Recession. Similarly, the unemployment rate did not significantly influence the probability of transitions from self-employment to unemployment. However, it did have a significant negative impact on the probability of moving to wage work. This result further supports the argument that the supply of wage-jobs influences self-employment transitions. If wage jobs are available, workers generally prefer them to self-employment.

Conclusion

We took advantage of a complex longitudinal dataset to analyze the transitions into and out of self-employment. Our data include employment transitions from June 2008 through 2011. Our hypotheses were two-fold. First, movements into self-employment will mostly depend on characteristics of the individual while movements out of self-employment will be contingent on characteristics of the business. We confirm this hypothesis using the results from comparing models 1 and 2 to model 3. The only significant personal characteristics influencing the probability of exiting self-employment are sex and higher education while the age, size, corporate status, and income of the business all have a significant impact. Personal and geographic characteristics have more influence on the probability of entering self-employment.

Our second hypothesis focused on the impact of the recession. We tested whether transitions from unemployment to self-employment increased during the recession months and whether transitions from self-employment to wage-work increased in the post-recession months.

Results from model 1 and 2 confirmed that, during the recession months, the probability of transitions to self-employment increased for both the unemployed and wage-workers. One impact of the recession was lower expected income from wage-work due to increased rates of long-term unemployment and the large amount of layoffs throughout the economy (Hipple 2010; CBO 2012). As expected wages fell so did expected utility from wage-work. Once it fell beyond the expected utility of self-employment, workers had incentive to transition. The estimation results of model three did not clearly prove our hypothesis that the probability of transitions between self-employment and wage work increase post-recession. The recession months had no significant impact in model 3. However, the results indicate that as the unemployment rate fell, the probability of moving to wage-work increased. We can confirm our more general argument that since many of the transitions to self-employment were out of necessity, these workers would move back to wage-work if possible. These movements back to wage-work do not correspond with the official recession dates, but instead with decreases in the unemployment rate.

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Table 1. Percent of total weighted observations in each source state moving to a particular destination state during and post Great Recession.

	Great Recession (June 2008 to June 2009)				Post Great Recession (July 2009 to November 2011)						
	Destination State:				*Destination State:*						
Source State:	Self-employed	Wage-worker	Unemployed	Total	Self-employed	Wage-worker	Unemployed	Total	Percent change in self-employed	Percent change in wage-worker	Percent change in unemployed
Self-employed	99.1	0.77	0.12	191,445,734	99.1	0.74	0.14	390,212,005	0.01%	-4.42%	21.0%
Wage-worker	0.10	99.7	0.18	1,319,716,455	0.09	99.7	0.17	2,764,526,893	-12.8% *	0.01%	-0.85%
Unemployed	0.49	2.27	97.2	87,044,994	0.28	2.05	97.7	232,775,845	-41.8% *	-9.88% *	0.44% *

* Denotes that the change is statistically significant

Source: U.S. Census Bureau, Survey of Income and Program Participation (SIPP), 2008 Panel Waves 1 to 10.

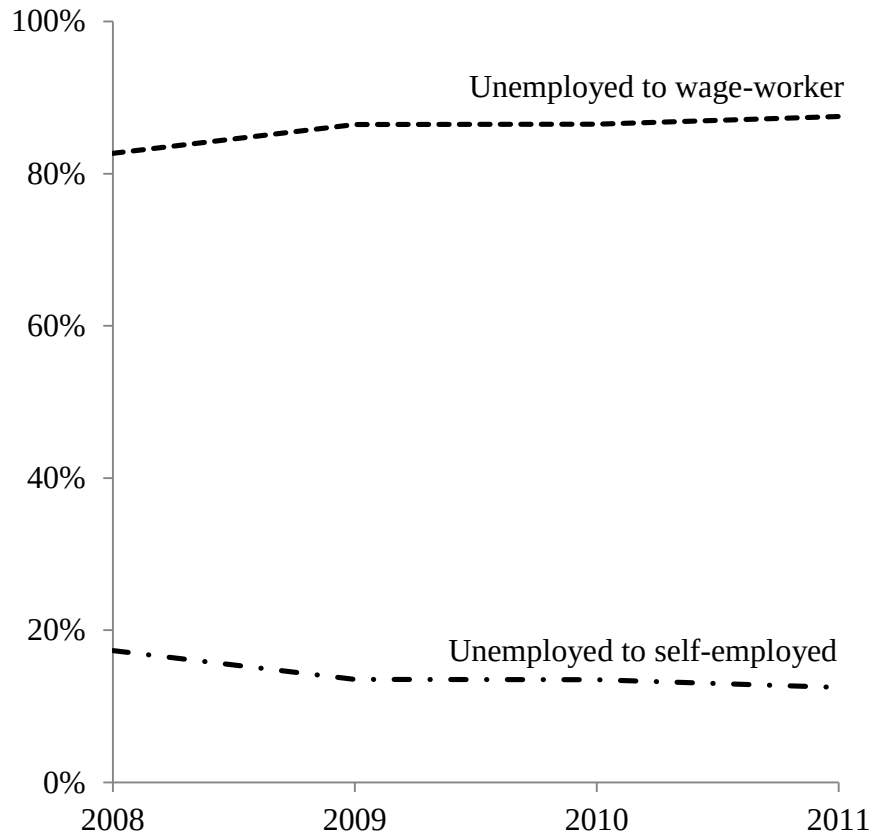

Figure 1. Percent of transitions out of unemployment to wage-work and self-employment. For each line, only the estimates for 2008 and 2011 are statistically different at the 0.10 level.
Source: U.S. Census Bureau, Survey of Income and Program Participation (SIPP), 2008 Panel Waves 1 to 10.

Table 2. Summary statistics for models 1 and 2. These models analyze transitions into self-employment.

Variable	Label	Unemployed, no change	Unemployed to self-employed	Wage-worker, no change	Wage-worker to self-employed
Demographic Characteristics					
age	age of respondent	39.17	41.83 *	42.90	44.33 *, #
		(0.172)	(0.694)	(0.049)	(0.455)
married	=1 if married	0.41	0.51 *	0.60	0.65 *, #
		(0.007)	(0.030)	(0.002)	(0.017)
female	=1 if female	0.43	0.27 *	0.48	0.35 *, #
		(0.007)	(0.025)	(0.002)	(0.016)
white	=1 if white, nonhispanic	0.56	0.61 *	0.69	0.74 *, #
		(0.007)	(0.028)	(0.002)	(0.018)
hisp	=1 if Hispanic/Latino	0.20	0.18	0.14	0.11 *, #
		(0.006)	(0.026)	(0.001)	(0.011)
kids	=1 if has children	0.43	0.42	0.42	0.41
		(0.007)	(0.028)	(0.002)	(0.017)
disl	=1 if has a work-limiting disability	0.11	0.11	0.05	0.06 #
		(0.003)	(0.021)	(0.001)	(0.008)
Educational Characteristics					
lhs	=1 if less than high school diploma	0.17	0.14	0.08	0.07 #
		(0.005)	(0.020)	(0.002)	(0.008)
hs	=1 if has a high school diploma or some college	0.67	0.61 *	0.59	0.55 *, #
		(0.006)	(0.029)	(0.003)	(0.017)
bd	=1 if bachelor's degree or higher	0.15	0.25 *	0.33	0.38 *, #
		(0.005)	(0.026)	(0.003)	(0.018)
vocd	=1 if has a vocational degree	0.17	0.20	0.17	0.19
		(0.005)	(0.024)	(0.002)	(0.015)
Economic/Employment Characteristics					
thtotinc	Household income (in 100$)	33.94	30.61 *	70.14	69.87 #
		(0.444)	(1.953)	(0.408)	(2.109)
uncomp	=1 if receives unemployment compensation	0.40	0.20 *	n/a	n/a
		(0.006)	(0.023)		
ownhome	=1 if the living quarters are owned by a household member	0.55	0.57	0.71	0.71 #
		(0.007)	(0.033)	(0.003)	(0.016)
healthins	=1 if has health insurance	0.31	0.35	0.80	0.69 *, #
		(0.006)	(0.030)	(0.002)	(0.018)
everself	=1 if respondent was ever self-employed in past	0.46	0.54 *	0.46	0.62 *, #
		(0.006)	(0.035)	(0.003)	(0.015)
jbtenure	Job tenure, in years	n/a	n/a	8.34	6.72 *
				(0.050)	(0.306)

Table 2 (cont'd).

Variable	Label	Unemployed, no change	Unemployed to self-employed	Wage-worker, no change	Wage-worker to self-employed
Geographic Characteristics					
metro	=1 if lives in a metropolitan area	0.81	0.78	0.80	0.79
		(0.011)	(0.028)	(0.010)	(0.016)
region1	=1 if lives in the Northwest region	0.18	0.13 *	0.19	0.16 *
		(0.005)	(0.019)	(0.002)	(0.014)
region2	=1 if lives in the Midwest region	0.19	0.16	0.22	0.21 #
		(0.006)	(0.019)	(0.002)	(0.014)
region3	=1 if lives in the South region	0.37	0.39	0.38	0.38
		(0.007)	(0.029)	(0.002)	(0.017)
region4	=1 if lives in the West region	0.26	0.32 *	0.22	0.25 *, #
		(0.006)	(0.028)	(0.002)	(0.016)
Macroeconomic Characteristics					
reces	=1 if transition occurred during the Great Recession	0.27	0.39 *	0.32	0.35 *
		(0.003)	(0.029)	(0.001)	(0.016)
unemploy	National monthly unemployment rate	8.99	8.77 *	8.83	8.84
		(0.006)	(0.069)	(0.002)	(0.038)
seam	=1 if transition occurred in fourth reference month	0.15	0.88 *	0.21	0.76 *, #
		(0.0010)	(0.0192)	(0.0002)	(0.0169)
n	weighted no. of observations	312,393,449	1,090,277	4,083,122,640	3,700,898
	unweighted no. of observations	89,240	325	1,182,799	1,099

* Denotes statistical significance between the transition types in the given model at the 0.10 level.
# Denotes statistical significance between "unemployed to self-employed" and "wage-worker to self-employed," at the 0.10 level.
Source: U.S. Census Bureau, Survey of Income and Program Participation (SIPP), 2008 Panel Waves 1 to 10.

Table 3. Summary statistics for model 3. This model analyzes transitions out of self-employment.

Variable	Label	Self-employed, no change	Self-employed to wage-worker	Self-employed to unemployed
Demographic Characteristics				
age	age of respondent	49.2 *, #	44.1	41.5 **
		(0.170)	(0.431)	(0.799)
married	=1 if married	0.69 *, #	0.65	0.58 **
		(0.006)	(0.016)	(0.037)
female	=1 if female	0.34	0.37	0.30
		(0.006)	(0.017)	(0.035)
white	=1 if white, nonhispanic	0.78 *, #	0.73	0.58 **
		(0.007)	(0.016)	(0.034)
hisp	=1 if Hispanic/Latino	0.10 *, #	0.14	0.23 **
		(0.005)	(0.013)	(0.036)
kids	=1 if has children	0.37 *, #	0.44	0.46
		(0.006)	(0.015)	(0.041)
Educational Characteristics				
lhs	=1 if less than high school diploma	0.09 #	0.08	0.15 **
		(0.005)	(0.010)	(0.025)
hs	=1 if has at least a high school diploma	0.54 #	0.53	0.70 **
		(0.007)	(0.015)	(0.031)
bd	=1 if bachelor's degree or higher	0.37 #	0.39	0.15 **
		(0.007)	(0.016)	(0.025)
vocd	=1 if has a vocational degree	0.18	0.20	0.17
		(0.006)	(0.013)	(0.024)
Economic/Employment Characteristics				
ownhome	=1 if the living quarters are owned by a household member	0.81 *, #	0.70	0.59 **
		(0.006)	(0.015)	(0.040)
healthins	=1 if has health insurance	0.67 *, #	0.63	0.37 **
		(0.007)	(0.016)	(0.038)
everwage	=1 if respondent was ever employed for wages in past	0.92 *	0.95	n/a
		(0.002)	(0.006)	
everunem	=1 if respondent was ever unemployed	0.38 #	n/a	0.49
		(0.005)		(0.033)

Table 3 (cont'd).

Variable	Label	Self-employed, no change	Self-employed to wage-worker	Self-employed to unemployed
Business Characteristics				
bstenure	Business tenure, in years	12.09 *, #	7.44	6.55
		(0.152)	(0.281)	(0.628)
smallbus	Less than 25 employees	0.85 *, #	0.76	0.63 **
		(0.005)	(0.014)	(0.034)
incorp	Incorporated business	0.34 *, #	0.23	0.12 **
		(0.006)	(0.013)	(0.025)
bsinc	Business income (in 100$)	23.96 *, #	10.38	9.28
		(0.616)	(0.893)	(1.251)
Geographic Characteristics				
metro	=1 if lives in a metropolitan area	0.78	0.78	0.81
		(0.013)	(0.017)	(0.030)
region1	=1 if lives in the Northwest region	0.17 #	0.16	0.13
		(0.005)	(0.012)	(0.023)
region2	=1 if lives in the Midwest region	0.21 #	0.21	0.16 **
		(0.006)	(0.014)	(0.023)
region3	=1 if lives in the South region	0.38	0.38	0.35
		(0.007)	(0.016)	(0.032)
region4	=1 if lives in the West region	0.24 #	0.25	0.36 **
		(0.007)	(0.015)	(0.035)
Macroeconomic Characteristics				
reces	=1 if transition occurred during the Great Recession	0.33	0.34	0.29
		(0.002)	(0.014)	(0.034)
unemploy	National monthly unemployment rate	8.83 #	8.82	9.05 **
		(0.005)	(0.0345)	(0.078)
seam	=1 if transition occurred in fourth reference month	0.21 *, #	0.75	0.76
		(0.000)	(0.013)	(0.030)
n	weighted no. of observations	577,988,293	4,352,661	789,379
	unweighted no. of observations	168,654	1,270	231

* Denotes statistical significance between "self-employed, no change," and "self-employed to wage-worker" at the 0.10 level.
# Denotes statistical significance between "self-employed, no change" and "self-employed to unemployed," at the 0.10 level.
** Denotes statistical significance between "self-employed to wage-worker" and "self-employed to unemployed," at the 0.10 level.
Source: U.S. Census Bureau, Survey of Income and Program Participation (SIPP), 2008 Panel Waves 1 to 10.

Table 4. Estimated coefficients and the standard errors (in parentheses) from two binomial logit models (model 1 and 2) and one multinomial logit model (model 3).

	Model 1	Model 2	Model 3	
Variable	Unemployed to self-employed	Wage-worker to self-employed	Self-employed to unemployed	Self-employed to wage-worker
Intercept	-9.932 ***	-8.524 ***	-6.978 ***	-3.534 ***
	(0.966)	(0.506)	(1.336)	(0.603)
Demographic Characteristics				
age	0.176 ***	0.028 *	0.044	-0.006
	(0.030)	(0.017)	(0.048)	(0.018)
age^2	-0.002 ***	-0.0001	-0.001	-0.0001
	(0.0004)	(0.0002)	(0.001)	(0.0002)
married	0.208	0.297 **	0.096	0.069
	(0.141)	(0.092)	(0.193)	(0.082)
female	-0.786 ***	-0.572 ***	-0.407 **	-0.150 **
	(0.143)	(0.074)	(0.192)	(0.075)
white	0.229	0.241 **	-0.400 *	-0.037
	(0.160)	(0.116)	(0.188)	(0.102)
hisp	0.028 *	-0.268 *	-0.315	0.107
	(0.235)	(0.137)	(0.270)	(0.143)
kids	0.074	-0.024	-0.070	0.028
	(0.131)	(0.078)	(0.198)	(0.077)
disl	0.021	0.076		
	(0.229)	(0.147)		
Educational Characteristics				
lhs	-0.241	-0.309 **	-0.164	-0.185
	(0.196)	(0.136)	(0.246)	(0.151)
bd	0.543 **	0.321 ***	-0.748 ***	0.296 ***
	(0.171)	(0.087)	(0.204)	(0.085)
vocd	0.046	0.122	-0.182	0.156
	(0.169)	(0.104)	(0.180)	(0.097)
Economic/Employment Characteristics				
thtotinc	-0.003	0.00002		
	(0.002)	(0.001)		
uncomp	-1.559 ***			
	(0.155)			
ownhome	-0.042	0.017	-0.392 *	-0.345 ***
	(0.166)	(0.092)	(0.201)	(0.079)
healthins	0.168	-0.955 ***	-0.432 *	0.247 **
	(0.171)	(0.099)	(0.235)	(0.088)
everself	0.417 **	0.738 ***		
	(0.151)	(0.071)		
everwage			0.104	0.336 **
			(0.312)	(0.157)
everunemp			0.257 *	-0.062
			(0.135)	(0.078)
jbtenure		-0.030 ***		
		(0.006)		

Table 4 (cont'd)

	Model 1	Model 2	Model 3	
	Unemployed to self-employed	Wage-worker to self-employed	Self-employed to unemployed	Self-employed to wage-worker
Business Characteristics				
bstenure			-0.028 **	-0.034 ***
			(0.014)	(0.004)
smallbus			-1.062 ***	-0.560 ***
			(0.158)	(0.086)
incorp			-0.682 **	-0.229 **
			(0.279)	(0.107)
bsinc			-0.006 *	-0.011 ***
			(0.003)	(0.002)
Geographic Characteristics				
metro	-0.339 **	-0.048	0.162	-0.048
	(0.161)	(0.082)	(0.206)	(0.081)
region2	0.062	0.109	0.118	0.054
	(0.213)	(0.126)	(0.248)	(0.129)
region3	0.283	0.102	0.018	-0.024
	(0.194)	(0.111)	(0.232)	(0.111)
region4	0.592 **	0.283 **	0.439 *	-0.040
	(0.203)	(0.124)	(0.234)	(0.124)
Macroeconomic Characteristics				
reces	0.511 **	0.363 ***	0.151	-0.127
	(0.172)	(0.089)	(0.219)	(0.097)
unemploy	-0.155 **	-0.053	0.129	-0.115 **
	(0.069)	(0.035)	(0.107)	(0.039)
seam	3.784 ***	2.473 ***	2.587 ***	2.480 ***
	(0.184)	(0.093)	(0.174)	(0.073)
Log-likelihood	3,798,008	6,822,396		9,728,967
Wald-chi2	695.36	1,806.09		3,267.77

*, **, *** Denotes statistical at the 0.10, 0.01 and 0.001 level, respectively.

Source: U.S. Census Bureau, Survey of Income and Program Participation (SIPP), 2008 Panel Waves 1 to 10.