Self-Employed Women and Time Use

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for

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Executive Summary

The 20th century saw a dramatic increase in the number of women in the labor force. This increase in labor force participation represents a striking change in the allocation of women's time between work and home activities. The flexibility afforded by self-employment is often regarded as a way to better balance work and home activities. However, just as little is known about the nonmarket activities of women, little is known about the differences in time allocations between self-employed women and women employed in other organizations.

The number of self-employed women has increased steadily over the past three decades. Self-employment rates for women also show a proportional increase over the last 35 years, compared with men's self-employment. Whereas the self-employment rate for women was 42 percent of the rate for men in 1979, it remained near 55 percent from 1994 to 2003. In 2003, 6.8 percent of women in the labor force were self-employed, compared with 12.4 percent of men.[1] These trends persist despite widespread policies to encourage business ownership among subgroups such as women. A better understanding of what motivates self-employed women and how they balance work and family time could increase the effectiveness of these policies.

Time-use data from 2003 to 2006 provide convincing evidence that the time-use patterns of self-employed women differ substantially from those of men and wage-and-salary- employed women. Self-employed women spent less time in work-related activities and more time providing child care, especially "secondary" child care, in which a parent is at the same location as the child but is primarily engaged in another activity (e.g., work or household activities).

The results also suggest that the factors affecting entry into self-employment differ for men and women. Based on U.S. Current Population Survey data for 1996 to 2006, and controlling for a number of factors including marital status, age, and education, women are about 57 percent less likely than men to enter self-employment. Entry rates are lowest among African-American and foreign-born women, relative to men. Women with more advanced degrees are more likely to enter self-employment, especially those in the financial industries, education and health sectors, and other service categories.

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[1] See Fairlie (2004) for more detailed statistics.

Contrary to results in previous studies, this study finds that, relative to men, higher-earning women are slightly more likely to enter self-employment than their lower-earning peers. Further, entry rates do not differ between women who are not in the labor force and those previously employed in wage-and-salary jobs. Weak evidence also supports the claim that women are less likely to enter from unemployment.

The results suggest that the development of policies that enhance work-life balance, focus on offsetting racial disparities in self-employment, and increase human capital through the accumulation of education would serve to encourage women to enter into self-employment. Relative to men, women who have high earnings in the wage-and-salary sector enter self-employment at higher rates than women with lower earnings in the wage-and-salary sector. This is not definitive evidence that women and men are equally motivated by earnings factors, but it does suggest that the lower rates of self-employment among women are not more severe for high-ability women, as suggested by the previous literature. However, further research is needed to establish the earnings of these women after they enter self-employment.

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Introduction

Entrepreneurs play a vital role in stimulating economic growth through innovation and job creation. Researchers and policymakers have long been interested in the factors that determine entrepreneurship, but until recently, little was known about differences between male and female entrepreneurs. Women are far less likely than men to become self-employed, and recent research suggests that women enter self-employment for different reasons than their male counterparts. For example, women appear to base their decisions on lifestyle and family factors, whereas men are motivated by earnings potential. The authors analyze detailed time-use information and subgroups of women to shed light on how policy options might be best targeted to encourage entrepreneurship.

Despite the growing body of literature examining self-employed women, little is known about how self-employed women divide their time between work and other life activities and whether there are important subgroups of women with different goals and motivations for self-employment. To address the first question, the authors examine time-use patterns to investigate the differences between self-employed women and other individuals. The American Time Use Survey (ATUS) and corresponding Current Population Survey (CPS) files are used to compare the daily activities of self-employed women with those of self-employed men and wage-and-salary workers of both genders.

The ATUS provides detailed information on the daily activities of about 13,000 respondents per year for years 2003 to 2006. These data include time spent in work activities, household production (including child care), leisure activities, and sleeping. The ATUS data are linked with CPS files from 1996 to 2006 to obtain a panel of data with a rich set of control variables. The CPS is a monthly survey containing employment and demographic information for about 50,000 households. Households cycle through the survey twice (four consecutive months each time), producing observations roughly nine months to a year apart. This study uses month four and month eight observations from outgoing respondents in a given year. The observations are roughly one year apart.

Next, the authors examine the reasons for entering self-employment to determine if factors affect women and men differently. Previous research has treated women as one homogeneous group or looked only at differences between married and single women.

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However, it is possible that significant differences exist across, for example, earnings and industry groups. It may also be important whether one enters self-employment from a wage-and-salary job, from unemployment, or from not being in the labor force.[2] Differences in motivating factors might indicate the need for policies that encourage the self-employment of women in general, and particularly target innovative, high-earning women. For instance, policies that encourage better work-family management strategies (see Shelton, 2006) may make self-employment more attractive for lifestyle reasons, but do little to address earnings or risk deterrents, which might be greatest for high-earning or innovative women. Other policies, such as those that reduce risk (i.e, more affordable health insurance), provide loans to ease liquidity constraints, or use education/ information campaigns, might be better for attracting higher-earning women into self-employment and stimulating economic growth. Using probit estimation, the authors examine the importance to entrepreneurial entry of individual and family characteristics, as well as earnings, industry, and previous employment sector.[3]

The remainder of the report summarizes the previous literature, data sources, and empirical methodology. Results are followed by conclusions and policy implications.

Literature Review and Policy Context

The twentieth century saw a dramatic increase in the number of women in the labor force. This increase in labor force participation represents a striking change in the allocation of women's time between work and home activities. The flexibility afforded by self-employment is often regarded as a way to better balance work and home activities. However, just as little is known about the nonmarket activities of women, little is known about the differences in time allocation between self-employed women and women employed in organizations (Bianchi, 2000) or between women and men.[4]

In addition to the overall increase in the number of women in the labor market, the steady increase in the number of self-employed women over the past three decades is

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[2] See for example, Fairlie and Krashinsky (2006) and Wennberg, Folta, and Delmar (2007).
[3] The authors chose a probit model over the similar logit model as it is the convention used in recent literature on self-employment transitions (e.g., Gurley-Calvez and Bruce, 2008) and there would not be large differences between the two models (Long, 1997)
[4] 'Nonmarket' refers to work done outside the paid labor market, including household chores and volunteering.

well documented (Fairlie, 2004). Devine (1994) reports a 145 percent increase from 1975 through 1990 and Lowrey (2006) reports a 19.8 percent increase from 1997 through 2002. However, self-employment rates of women remain 50-60 percent lower than those of men (Fairlie, 2004). In addition, a more recent index that measures new business ventures suggests no increase in new women-owned businesses from 2004 to 2005 (Fairlie, 2006). These trends persist despite widespread policies to encourage business ownership among women (Aspen Institute, 2002; Kosanovick et al., 2001).

However, inconsistent treatment of the incorporated and unincorporated self-employed makes comparisons across the literature difficult. Incorporated and unincorporated self-employed are included here in an effort to seek a better understanding of what motivates self-employed women and how they balance work and family time to possibly increase the effectiveness of these policies.

A number of recent studies have examined the factors that affect women's entry into self-employment, but none have addressed time-use patterns or considered the importance of subgroups. Several authors find that women appear to enter self-employment for reasons other than an increase in their earnings (Devine, 1994; Hundley, 2000; Boden, 1999; Caputo and Dolinsky, 1998; Matthews and Moser, 1996). The evidence suggests that lifestyle factors are more significant than earnings in the decision to become self-employed.

Comparing the income of wage-and-salary workers with estimates of wage-and-salary income for self-employed women, Devine (1994) finds that the rise in female self-employment from 1975 to 1987 does not seem to be driven by earnings factors. Those at the low end of the skill distribution did not seem to enter self-employment to escape falling wages and those at the high end did not appear to be earning higher wages than those who stayed in the wage-and-salary sector.

Hundley (2000) examines whether married women and men chose self-employment for different reasons. He notes the typical division of household labor along gender lines and suggests that if women marry and have more children, they devote more time to household production and have a lower earnings capacity in the wage-and-salary sector. Women, therefore, might choose self-employment to circumvent lower limits on work effort, hours, and wages in the wage-and-salary sector. Using panel data ending in

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1986 of a cohort beginning with high school seniors in 1972,[5] he found that women's earnings decreased with family size and hours spent doing housework and that women appeared to choose self-employment to engage in more household production, while men became self-employed to increase their earnings.

However, other recent literature seems to contradict the idea that self-employed women typically value career goals less or have higher levels of family satisfaction than their wage-and-salary counterparts or men. One study finds that women entrepreneurs have career/achievement and personal life orientations similar to those of nonentrepreneurial women, but male entrepreneurs are more career- and achievement-oriented than their nonentrepreneur counterparts (DeMartino, Barbato, Jacques, 2006). Further, women executives were motivated to become self-employed by the desire for challenge and self-determination, as well as the desire to balance family and work activities (Buttner and Moore, 1997). In terms of job and family satisfaction levels, self-employed women experience more job satisfaction and flexibility than their counterparts employed in organizations, but have more work-family conflict and less family satisfaction (Parasuraman and Simmers, 2001).

Recent research also suggests that human capital plays an important role in determining self-employment among women. Hackler, Harpel, and Mayer (2008) use CPS data and note that self-employed women have more education and increase their education at higher rates than wage-and-salary employed women. Moutray (2007) uses data from the Panel Study of Income Dynamics (PSID) to examine the effects of human capital on the probability of self-employment in a multivariate context. Results from this study indicate that educational attainment plays an important role in determining self-employment and that the probability of self-employment increases with education level. However, the results are not as robust for wives compared with heads of household.

In summary, results from econometric models seem to indicate that women choose self-employment because of family factors. Yet studies of career and personal life goals and satisfaction seem to indicate that self-employed women are also motivated by career goals and do not necessarily experience more family satisfaction. A source of the

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[5] Data for this study were taken from the National Longitudinal Study of the High School Class of 1972 and the Panel Study of Income Dynamics.

difference might be that the econometric studies use older data and/or focus on an older cohort that might view gender roles differently. Also, individuals might define satisfaction differently, making subjective measures of satisfaction difficult to interpret. Using ATUS data, the authors provide information on the actual time-use patterns of self-employed women and draw comparisons with self-employed men and wage-and-salary workers of both genders.

The finding that women are motivated to become self-employed by different factors than men is not in itself troubling from a policy perspective. It might simply reflect women maximizing their own or family satisfaction. The potentially troubling finding is the lack of high-earning women in self-employment. Previous studies suggest that entrepreneurial men view self-employment as an opportunity to increase earnings, whereas high-earning women tend to stay in wage-and-salary employment (Devine, 1994; Hundley, 2000; Boden, 1999; Caputo and Dolinsky, 1998; Matthews and Moser, 1996). The authors go beyond the previous literature that generally treats women as one homogeneous group to examine whether there are differences in motivation based on employment status, earnings, and industry. The importance of subgroups is highlighted in work by Fairlie and Krashinsky (2006), who use CPS data to show that conclusions about the importance of liquidity constraints in entrepreneurial entry differ substantially if entrants are examined together or in subgroups.[6]

Understanding the factors that affect self-employment among women is essential for determining how to shape policy in areas such as education programs, loans, or lower-cost health insurance premiums. If there are no significant differences in determinants of self-employment across subgroups, perhaps, as seen in the previous literature, women are largely motivated by personal factors. In this case, encouraging better work-family management strategies might be a more effective policy. However, if determinants differ among subgroups, then higher-earning innovative women might be influenced more by policies that address risk (e.g., reducing risk by making health insurance more easily available), liquidity constraints, or human capital transfers. For example, several studies have shown that parental or spousal experience with self-employment has a strong effect

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[6] The sample was divided into those entering self-employment from unemployment and those entering from wage-and-salary jobs.

on entry into self-employment (Fairlie and Robb, forthcoming; Georgellis and Wall, 2005; Hout and Rosen, 2000; Dunn and Holtz-Eakin, 2000; Bruce, 1999; Caputo and Dolinsky, 1998). Others find that wealth is a key factor (Fairlie and Krashinsky, 2006; Rybczynski, 2006; Dunn and Holtz-Eakin, 2000), and one recent study suggests that couples match on employment type instead of pooling risk within the household (e.g., one self-employed spouse and one wage-and-salary spouse) (Brown, Farrel, and Session, 2006).

The recurring theme from the literature is that a broader approach is needed to address why women undertake entrepreneurial activities and how they measure success in these activities. For example, Ahl (2006) advocates including issues of family policy, as well as addressing the degree and type of entrepreneurial activity chosen. Langowitz and Minniti (2007) find that perceptions, such as the probability of failure, might play a significant role in entrepreneurial behavior. Wagner (2007) echoes these results, finding that fear of failure is a key factor in explaining different rates of entrepreneurship among men and women in Germany. Krueger and Schkade (2007) use time-use data and find that personality characteristics, demonstrated by off-the-job behavior, are correlated with job type.

Two recent studies have addressed the relative performance of women- and men-owned firms. Kepler and Shane (2007) find no effect of gender on new venture performance after accounting for key differences including reasons for starting a business and types of businesses selected. Consistent with much of the prior literature, Coleman (2007) finds that women and men in the service and retail sectors respond differently to financial incentives for entrepreneurship. Her results suggest that the ability to secure financial capital affects men-owned firms but has no effect on the growth rate of women-owned firms. However, she did find that measures of human capital, including education and experience, have a positive effect on the profitability of women-owned firms.

The authors contribute to this growing literature by providing detailed information on the time-use patterns of self-employed women compared with women not in the labor market, as well as self-employed men, and wage-and-salary workers of both genders. They address whether the self-employed spend more time with their children or in work activities and whether the division of household labor is different in households where

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one or more are self-employed. Existing econometric studies suggest that women choose self-employment based on family factors and are largely unresponsive, or at least less responsive, to earnings factors. The authors investigate whether factors that affect self-employment among women differ by previous employment sector, earnings levels, or industry, and consider transitions into full- or part-time self-employment.

Description of Data

The American Time Use Survey (ATUS) is the first comprehensive, federal government-sponsored time use survey, adding the United States to a list of foreign countries that have been collecting and studying time-use data for years. This new database provides researchers with an innovative way to examine exactly how Americans allocate their hours among a variety of activities such as working (including second or third jobs), eating, providing child care, and sleeping, while also giving a detailed perspective on how characteristics such as education, gender, race, family size, and earnings affect their time-use decisions.

Time spent providing child care is classified into two categories: primary child care and secondary child care. Child care qualifies as primary care if providing child care is the respondent's main activity. The only secondary activity recorded by the ATUS is secondary child care. Defined as care for any household children under age 13 while doing another primary activity (such as cooking dinner or working at home) these secondary child care estimates are derived by summing the durations of activities during which respondents had a child in their care while doing other things. It is restricted to the periods of time when the respondent and a household child under 13 were both awake. If respondents report providing both primary and secondary child care at the same time, the time is attributed to primary care only.

ATUS Data Collection[7]

Data collection for the American Time Use Survey began in January 2003, and the authors utilized microdata from 2003 through 2006.[8] The survey is sponsored by the

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[7] Additional information and references for ATUS data and research can be found in Appendix I.

Bureau of Labor Statistics (BLS) and conducted by the U.S. Census Bureau. Households sampled by the ATUS are chosen from the households that completed their eighth and final interview for the Current Population Survey (CPS). Data in each year are based on about 13,000 individuals interviewed once about their previous day's activities. The BLS provides researchers annual files containing respondent-level information about time use and less detailed information on the respondent's household and other household members, combined with household-level information from the CPS.

One individual, age 15 or older, is randomly chosen from each household in the sample to respond to detailed questions on his or her use of time during the previous day. This designated person or respondent is interviewed only once and reports his or her activities for the "diary day," the 24-hour period from 4 a.m. on the day before the interview until 4 a.m. on the day of the interview. Respondents are asked to identify their primary activity if they report doing more than one activity at a time, and data are not collected on secondary activities except for secondary child care. The authors chose to limit the sample to individuals 25 years old and older to focus on working adults.
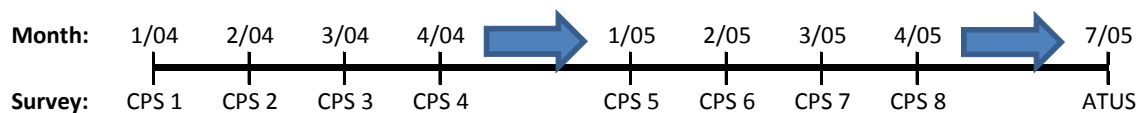
Respondents are preassigned a day of the week about which to report. and are divided approximately equally between weekdays and weekend days. Of the 50 percent of respondents assigned to weekdays, 1/5 are assigned to each day, Monday through Friday, for a total probability of 10 percent per weekday. Of the remaining total respondents, approximately 25 percent are assigned to Saturday and 25 percent to Sunday. The authors opt to include all seven days in the analysis to increase sample sizes and because it is unclear what would constitute "regular" work hours or days, especially for the self-employed. As more years of the ATUS become available, it will be possible to analyze time-use patterns by day of the week.

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[8] A recently updated ATUS weighting method was used to link data across years to form a series of repeated cross-sections. The method used to generate statistical weights on the ATUS files changed each year from 2003 to 2006, and the 2006 weights utilized an improved methodology that more accurately adjusts for differences in the population. These weights adjust for differences in age, sex, race/ethnicity, the presence of children in the household, the respondent's educational attainment, and the day of the week, as well as for nonresponse in the survey, much like the CPS weights. For more information on response rates see Abraham, Maitland, and Bianchi (2005) and O'Neill and Sincavage (2004).

Data Linkage to CPS

The ATUS also includes an update of the household roster information from the last interview of the CPS conducted during the eighth month in the sample. Because the ATUS sample is a subset of households that recently completed the CPS, data on ATUS households and respondents are available for their last month in the CPS (month-in-sample eight). Using the Merged Outgoing Rotation Group files (also referred to as the Annual Earnings File), the authors link the ATUS to both the CPS month-in-sample eight and month-in-sample four. The addition of this earlier response to the CPS gives us information on the individual respondent and their household between 14 and 17 months prior to the collection of ATUS data and their eighth month in the CPS, collected two to five months before the ATUS. This time lag results as households are in the CPS survey sample for four consecutive months, out for eight months, and then return for another four months before leaving the sample permanently. Figure 1 illustrates a hypothetical timeline for a respondent who first answered the CPS in January 2004. The respondent's month four responses were gathered in April 2004 and the CPS month eight responses were collected one year later in April 2005. In this example, the respondent answered the ATUS three months after completing the CPS in July of 2005. This allows three-month and 15-month lags in the CPS variables, useful for addressing endogeneity concerns in the analysis of entry into self-employment.

Figure 1: Example Timeline for CPS and ATUS Data Collection

Month:	1/04	2/04	3/04	4/04		1/05	2/05	3/05	4/05		7/05
Survey:	CPS 1	CPS 2	CPS 3	CPS 4		CPS 5	CPS 6	CPS 7	CPS 8		ATUS

Current Population Survey

The Current Population Survey (CPS) is a monthly survey of about 50,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics. The survey has been conducted since 1940 and is the primary source of information about the labor force characteristics of the U.S. population, including unemployment. The sample is

scientifically selected to represent the civilian noninstitutional population. One respondent per household is interviewed to obtain information about the employment status of each member of the household aged 15 years and older. Households from all 50 states and the District of Columbia are in the survey for four consecutive months, out for eight, and then in for another four months before leaving the sample permanently (when a subset is subsequently interviewed for the ATUS). Persons in institutions, such as prisons, long-term care hospitals, and nursing homes are, by definition, ineligible to be interviewed in the CPS.

The monthly CPS microdata files permit observations of household members over time. Specifically, the authors rely on two observations 12 months apart, referred to as the Outgoing Rotation Groups (ORG), and use established methods of linking data and controls for multiple observations, following Madrian and Lefgren (2000).[9] The monthly microdata files contain household and respondent-level variables, including employment, unemployment, earnings, hours of work, and other indicators. They are available by a variety of demographic characteristics including age, sex, race, marital status, and educational attainment. They are also available by occupation, industry, and class of worker. Because the CPS underwent a substantial revision in 1994-1995, the authors use data from 1996 to 2006 to analyze the determinants of self-employment and to avoid issues of comparability with earlier years. They opt to use the full CPS, not only those who responded to the ATUS, to analyze the determinants of self-employment so that sample sizes are sufficient to examine subgroups of women.

Basic Summary Statistics

Table 1 contains basic summary statistics for 2003 through 2006 ATUS respondents, broken down by gender and employment sector. As in Hundley (2000), most respondents have at least a high school education. Interestingly, self-employed women are most likely to have some college education (33.0 percent), while self-employed men are most likely

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[9] Additionally, the authors relied on programs and data from the National Bureau of Economic Research (http://www.nber.org/cps) and the Center for Economic Policy Research (http://ceprdata.org/cps/basic_prog.php).

to have only a high school education (29.6 percent).[10] Nearly 2 percent of self-employed women have professional degrees, 42 percent higher than that reported by Hundley (2000) for the 1989 PSID, and the percentage with professional degrees is more than four times higher for organizationally employed women in these data. These statistics suggest that the education levels of women might be changing significantly over time, and it is possible that these differences in human capital might lead to different time-use patterns and different conclusions about what motivates women to become self-employed.

Self-employed men are least likely to have a child under the age of 18 living in the household (40 percent) while wage-and-salary men had the highest rates of children in the home (45.5 percent). Self-employed respondents of both genders are more likely to be married than their wage-and-salary counterparts.[11] The most frequent industry affiliations for self-employed women are professional and business services, educational and health services, and wholesale and retail trade in descending order. Women employed in organizations are most likely to be in the education and health services industry, followed by wholesale and retail trade, and financial services. For self-employed men, the top three industries are professional and business services, construction, and wholesale and retail trade.

Table 2 reports hourly earnings (dollars), hours worked, and weekly earnings (dollars) for the 2005 ATUS respondents. Consistent with Hundley (2000), hourly earnings are lowest for self-employed women and highest for men in organizational employment. Women in organizations work an average of two additional hours per week. On average, men work more hours than women in both sectors and self-employed men work the most. ATUS survey data will shed light on how nonwork activities differ between the groups.

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[10] Comparable statistics on whether some college work was completed were not reported in Hundley (2000).

[11] Hundley (2000) reports households with children, not necessarily children under 18 living in the home, and he reports statistics for married households, not married with spouse present.

Table 1: Education, Family and Industry Statistics by Employment Sector

	Wage and Salary		Self-Employed	
	Female	**Male**	**Female**	**Male**
Highest Level of Educational Attainment				
High School Diploma	0.297	0.313	0.284	0.296
Some College	0.287	0.245	0.330	0.238
Bachelor's Degree	0.221	0.214	0.215	0.226
Master's Degree	0.114	0.104	0.099	0.091
Professional Degree	0.013	0.018	0.017	0.061
Characteristics				
Presence of Children in Household	0.449	0.455	0.444	0.400
Age	43.756	42.732	47.421	48.757
Married	0.612	0.685	0.753	0.751
Industry of Main Job				
Agriculture, forestry, fishing and hunting	0.003	0.008	0.044	0.047
Mining	0.000	0.005	0.000	0.001
Construction	0.007	0.057	0.023	0.118
Manufacturing	0.083	0.175	0.037	0.037
Wholesale and retail trade	0.119	0.142	0.155	0.111
Transportation and utilities	0.026	0.084	0.022	0.041
Information	0.027	0.030	0.013	0.016
Financial activities	0.087	0.055	0.086	0.087
Professional and business services	0.082	0.096	0.193	0.208
Educational and health services	0.379	0.109	0.187	0.061
Leisure and hospitality	0.061	0.047	0.073	0.058
Other services	0.017	0.022	0.107	0.058
Public Administration	0.058	0.061	0	0

Entries are weighted means from ATUS-CPS, years 2003-2006.

Research Methodology

The authors use a combination of descriptive statistics and multivariate analysis to examine two main issues: 1) time-use patterns among self-employed women and how these patterns differ from workers of both genders; and 2) determinants of self-employment across gender, earnings, industry, and previous employment categories

Table 2: Earnings and Hours Worked by Employment Sector

	Wage and Salary		Self-Employed	
	Female	Male	Female	Male
Hourly Earnings	13.99	15.99	10.24	13.91
Hours Worked per Week	37.26	42.26	35.26	45.00
Weekly Earnings	651.52	946.78	579.23	777.58

Entries represent means for 2005 ATUS Respondents, age 25 or older,
weighted to population totals.
Hourly earnings and hours worked are reported for the respondent's main job.
Hourly earnings for only workers paid at an hourly rate. Subject to topcoding
such that the usual hours worked x hourly wage < 2884.61.
Weekly earnings for all workers, regardless of pay frequency. Subject to
topcoding such that the usual hours worked x hourly wage < 2884.61.

They examine time spent working, in primary/secondary child care activities, and in off-
the-job activities such as volunteering and socializing. The analysis of the determinants
of self-employment focuses on the entry decision, as the data are richest for examining
this outcome (although exit decisions are also explored).

Time Use

Newly available American Time Use Survey data are used to address differences in time
use patterns across groups, shown by gender, employment sector, education level, and
industry. Given the novelty of the data, the authors begin by presenting means of time use
across categories. These summary statistics are augmented with multivariate analyses to
determine if differences by gender are robust when a variety of demographic
characteristics are controlled for, including age, marital status, number of children, and
education. The authors examine time use using OLS estimation (linear probability
model). The dependent variable in this analysis is the percentage of time spent in a given

category, such as time spent working. More precisely, the daily amount of hours spent in each category is divided by 24 hours.

A control is included for the incorporated self-employed. The treatment of incorporated and unincorporated self-employed is inconsistent in the literature, as some research has included both groups as self-employed (see Fairlie, 2004) while other reports, such as those from the Bureau of Labor Statistics (BLS) include only the unincorporated self-employed (Hipple, 2004). Some likely advantages to incorporating a sole proprietorship may include limiting liability, potentially reducing tax burden, gaining easier access to credit, and facilitating the sale of the business. On the other hand, incorporating also generally means an increase in recordkeeping and effort required to maintain incorporated status. Both the incorporated and unincorporated self-employed are included in the analysis because incorporated status is likely to be chosen for legal or accounting reasons and there is no reason to suspect that time use would differ systematically for those who are incorporated. However, it seems likely that incorporated status might be a proxy for other factors that affect time use. For example, the incorporated self-employed might be wealthier (i.e. have more assets to protect under the limited liability benefits of incorporation) or have more successful or longer-lived business ventures if the decision to incorporate is made after the business is established. A dummy variable for incorporated status is used to account for these other factors.

Probability of Self-employment

In an effort to explore the factors affecting the self-employment entry decisions of women, a probit model is estimated in which the dependent variable equals one if the respondent enters self-employment and zero otherwise. Both incorporated and unincorporated self-employment are included. Explanatory variables include age, race, educational attainment, marital status, and the combined wage rate of other household members. Indicator variables for year and industry are also included. More formally, a model of the form is estimated:

$$P(SelfEmployed = 1)_{ijt} = \beta_o + \beta_1 Ed_{it} + \beta_2 Inc_{it-1} + \beta_3 Ind_{it-1} + \beta_4 Unemp_{it-1} + \beta_5 D_{it} + e_{it} \quad (1)$$

where i and t denote individual i in time t. The term Ed_{it} represents a set of indicator variables for the respondent's educational attainment. D_{it} represents demographic characteristics of the respondent, as discussed above, and e_{it} is the error term. Following the previous literature, the authors allow for nonlinearities in the age and education effects (Bruce, 1999). The effects of earnings, industry, and previous employment sector are tested in subsequent specifications. Inc_{it-1} is a set of lagged dummy variables for earnings categories in the previous period. Respondents are divided into high, medium, and low earner categories where the top quarter of earners are considered high earners and the bottom quarter are low earners. The income categories are designed to determine whether high earners are more or less likely to select into self-employment.

Ind_{it-1} is a set of lagged industry indicator variables, used to determine the industries that most often lead to self-employment. Incentives to become self-employed might vary among industry groups, as some industries, such as child care, are more closely related to household production activities generally completed by women. $Unemp_{it-1}$ is a set of indicator variables indicating the individual's employment sector in the previous period: unemployed, wage-and-salary employed, or not in the labor force. Specifications are estimated separately for men and women respondents, allowing coefficients to differ by gender. In some specifications, an indicator for female is interacted with earner status, industry, and previous employment sector.

Three different approaches are used to assess gender differences. First, the probability of entry into self-employment is estimated with a gender control, as is common in the entrepreneurship literature. Second, the female variable is interacted with subgroup indicators for earnings, industry, and previous employment status. Finally, as in Fairlie and Krashinsky (2006), probits are estimated separately for those entering self-employment from unemployment and wage-and-salary work, as well as by earnings and industry groups.

Results

Several patterns are clear from the time-use data. On average, women spent less time on work and work-related activities than men, and self-employed women spent less time on

work than wage-and-salary women. Self-employed women spent the most time in primary and secondary child care activities. These time-use patterns are consistent with the hypothesis that women are more likely to choose self-employment because of family or other off-the-job concerns. Time spent on off-the-job activities such as volunteering, exercising, and traveling, differ by gender but there do not appear to be significant differences in this variable between wage-and-salary and self-employed women. The tables presented below offer a more detailed look at time-use patterns broken up by industry, education, income, and employment sector.

<u>Time-Use Patterns – Descriptive Statistics</u>

Table 3 presents the percent of time spent in work and work-related activities by gender and industry. On average, the self-employed spend less time in work activities than wage-and-salary workers, and women spend less time in work activities than men. Wage-and-salary women spent about 7.3 hours (30 percent of their time) in work activities compared with 8.2 hours (34 percent) for men. The difference was larger for the self-employed, where women spent about 6.2 hours (26 percent) on work activities, compared with 7.6 hours (32 percent) for men. There were also marked differences in time usage across industry groups, indicating that there might be significant differences in lifestyle and career factors that motivate self-employment in each industry. For example, self-employed women and men in financial services spent between 1 and 1.4 fewer hours a day on work activities than their wage-and-salary counterparts.

Table 4 summarizes time spent on work activities by education category. Self-employed women with a professional degree worked slightly more than their wage-and-salary counterparts. However, self-employed women at all other levels of education worked less than wage-and-salary women of the same education level. Unlike the averages for women, a clear pattern emerges for men, where time spent working generally decreases as the education level increases. Again, these patterns suggest that women at different education levels might have different motivations for entering self-employment and that men and women approach self-employment differently.

Table 3: Hours Spent on Work and Work-related Activities

Industry	Wage and Salary			Self-Employed		
	Female	Male	Difference	Female	Male	Difference
All	7.3	8.2	-0.9***	6.2	7.6	-1.4***
Agriculture, forestry, fishing and hunting	8.1	9.7	-1.6	6.3	8.8	-2.5**
Construction	6.5	8.3	-1.8***	6.9	7.8	-0.9
Manufacturing	7.8	8.3	-0.5***	7.1	8.6	-1.5**
Wholesale and retail trade	7.4	8.2	-0.8***	6.0	7.6	-1.6***
Transportation and utilities	7.4	8.7	-1.3***	9.9	7.5	2.4
Information	7.1	7.4	-0.3	4.9	7.3	-2.4**
Financial activities	7.3	7.8	-0.5***	5.9	6.8	-0.9
Professional and business services	7.2	8.0	-0.8***	5.6	7.2	-1.6***
Educational and health services	7.4	7.9	-0.5***	7.0	7.9	-0.9
Leisure and hospitality	7.0	8.2	-1.2***	6.2	7.8	-1.6**
Other services	6.5	8.9	-2.4***	6.3	7.8	-1.5**

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 4: Hours Spent on Work and Work-related Activities by Education

Highest Degree Completed	Wage and Salary			Self-Employed		
	Female	Male	Difference	Female	Male	Difference
High School	7.4	8.5	-1.1***	6.9	7.9	-1.0***
Some College	7.4	8.3	-0.9***	5.8	7.8	-2.0***
Bachelors Degree	7.3	8.0	-0.7***	5.9	7.6	-1.7***
Masters or Ph.D.	7.1	7.9	-0.8***	5.8	7.1	-1.3**
Professional Degree	7.3	8.1	-0.8*	7.4	7.4	0

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Wage-and-salary women spent about the same amount of time, between 7 and 7.5 hours, on work activities regardless of their family income level (Table 5). Work time is also roughly the same across income categories for wage-and-salary and self-employed men. Conversely, time spent working varied by more than an hour a day for self-employed women, with women in the highest income households ($150,000 or more) working the least, followed by those in the $20,000 to $40,000 range. Again, when time is allocated to work activities, it appears that self-employed women are more sensitive than their wage-and-salary counterparts and men in both employment sectors to household characteristics.

Turning to time spent in primary and secondary child care activities, self-employed women spent the most time caring for others, followed by wage-and-salary

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Table 5: Hours Spent on Work and Work-related Activities by Income

Family Income	Wage and Salary			Self-Employed		
	Female	Male	Difference	Female	Male	Difference
Less than $20,000	7.0	8.1	-1.1***	6.1	7.4	-1.3**
$20,000 to $40,000	7.5	8.2	-0.7***	6.0	7.6	-1.6***
$40,000 to $60,000	7.3	8.3	-1.0***	6.6	7.3	-0.7
$60,000 to $80,000	7.4	8.3	-0.9***	6.4	7.8	-1.4***
$80,000 to $100,000	7.3	8.3	-1.0***	6.1	7.8	-1.7***
$100,000 to $150,000	7.3	8.3	-1.0***	7.1	7.8	-0.7
$150,000 or more	7.3	8.2	-0.9***	5.9	7.6	-1.7***

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

women (Tables 6 and 7). There are differences across industries: self-employed women in the information sector spent the most time in primary care activities; self-employed men in agriculture the least. Self-employed women in education and health services spent the most time on secondary child care activities. The most common secondary child care scenario is when a parent is in the same location as the child but is not providing primary child care. Once more, the summary statistics are consistent with lifestyle choices affecting the self-employment decisions of women, particularly in industries conducive to spending more time in care activities.

Consistent with Guryan, Hurst, and Kearney (2008), time spent in primary care activities generally increases with education for wage-and-salary and self-employed women. Self-employed women with a bachelor's degree spent an extra hour per day in primary care activities compared with women with a high school education (Table 8). Time spent in secondary child care activities is highest for self-employed women with a bachelor's degree and lowest for men with a bachelor's degree (Table 9). Perhaps it is not surprising that self-employed women spent more time caring for children, as previous literature suggests that lifestyle factors dominate earnings in the decision to become self-employed (Devine, 1994; Hundley, 2000; Boden, 1999; Caputo and Dolinsky, 1998; Matthews and Moser, 1996). However, this is not universally true for primary care activities, suggesting that self-employed women spent more time in the same location as their children but not necessarily more time as the primary caregiver.

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Table 6: Hours Spent on Primary Child Care by Industry

Industry	Wage and Salary			Self-Employed		
	Female	Male	Difference	Female	Male	Difference
All	1.6	1.3	0.3***	1.9	1.5	0.4***
Agriculture, forestry, fishing and hunting	1.2	0.9	0.3	1.4	0.7	0.7
Construction	1.3	1.2	0.1	1.0	1.8	-0.8
Manufacturing	1.3	1.3	0	1.5	1.1	0.4
Wholesale and retail trade	1.7	1.4	0.3**	1.9	1.4	0.5*
Transportation and utilities	1.7	1.2	0.5**	0.5	1.5	-1.0*
Information	1.5	1.3	0.2	2.7	1.7	1.0
Financial activities	1.5	1.5	0	2.4	1.3	1.1*
Professional and business services	1.7	1.4	0.3***	2.1	1.7	0.4
Educational and health services	1.7	1.4	0.3***	1.8	1.4	0.4
Leisure and hospitality	1.6	1.4	0.2	2.5	1.3	1.2***
Other services	1.7	1.0	0.7***	1.9	1.3	0.6

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 7: Hours Spent on Secondary Child Care

Industry	Wage and Salary			Self-Employed		
	Female	Male	Difference	Female	Male	Difference
All	2.4	1.9	0.5***	3.0	1.8	1.2***
Agriculture, forestry, fishing and hunting	2.5	1.5	1.0	1.7	0.8	0.9
Construction	2.2	1.7	0.5	2.5	2.0	0.5
Manufacturing	2.2	2.0	0.2	1.9	1.5	0.4
Wholesale and retail trade	2.3	1.8	0.5***	3.2	1.9	1.3**
Transportation and utilities	2.5	1.8	0.7**	1.2	1.9	-0.7
Information	1.9	1.7	0.2	2.8	2.3	0.5
Financial activities	2.2	1.9	0.3	1.8	1.6	0.2
Professional and business services	2.4	2.1	0.3*	3.2	1.9	1.3***
Educational and health services	2.7	1.8	0.9***	4.1	2.1	2.0***
Leisure and hospitality	2.5	1.6	0.9***	2.9	1.0	1.9***
Other services	2.7	2.0	0.7*	2.6	1.5	1.1**

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Tables 10 and 11 do not indicate a clear pattern of primary and secondary child care activity time by income category. Self-employed women in the highest-income households spent the most time in primary care activities, while self-employed women in the lowest-income households spent the least amount of time in primary care activities. This trend is reversed for secondary child care activities.

Table 12 also indicates interesting differences between the genders in primary and secondary child care activities, depending on employment status. Employed women who

Table 8: Hours Spent on Primary Child Care by Education

	Wage and Salary			Self-Employed		
Highest Level of Education	Female	Male	Difference	Female	Male	Difference
High School	1.4	1.3	0.1	1.4	1.3	0.1
Some College	1.6	1.3	0.3***	1.8	1.8	0
Bachelors Degree	1.8	1.5	0.3***	2.4	1.3	1.1***
Masters or Ph.D.	1.8	1.4	0.4***	1.8	1.5	0.3
Professional Degree	2.3	1.4	0.9***	1.8	1.3	0.5

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 9: Hours Spent on Secondary Child Care by Education

	Wage and Salary			Self-Employed		
Highest Level of Education	Female	Male	Difference	Female	Male	Difference
High School	2.4	1.8	0.6***	2.8	2.0	0.8**
Some College	2.5	1.9	0.6***	2.9	2.0	0.9***
Bachelors Degree	2.4	2.0	0.4***	3.6	1.4	2.2***
Masters or Ph.D.	2.1	2.0	0.1	1.8	1.5	0.3
Professional Degree	2.1	2.0	0.1	2.8	1.8	1.0

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 10: Hours Spent on Primary Child Care by Income

	Wage and Salary			Self-Employed		
Income	Female	Male	Difference	Female	Male	Difference
Less than $20,000	1.5	1.2	0.3**	1.4	1.8	-0.4
$20,000 to $40,000	1.5	1.2	0.3***	2.0	1.2	0.8***
$40,000 to $60,000	1.5	1.4	0.1*	1.9	1.5	0.4
$60,000 to $80,000	1.6	1.4	0.2	1.9	1.6	0.3
$80,000 to $100,000	1.8	1.5	0.3***	1.7	1.2	0.5**
$100,000 to $150,000	1.6	1.2	0.4***	1.8	2.3	-0.5
$150,000 or more	1.7	1.3	0.4***	2.2	1.2	1.0***

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

were absent from work on the interview day were far more likely to be providing primary or secondary child care than men. Unemployed women were 76 percent more likely to be providing secondary child care, and women not in the labor force were more than 3.5 times more likely to be providing secondary child care than men.

Table 11: Hours Spent on Secondary Child Care by Income

	Wage and Salary			Self-Employed		
Income	Female	Male	Difference	Female	Male	Difference
Less than $20,000	2.8	1.8	1.0***	3.9	1.8	2.1***
$20,000 to $40,000	2.3	1.9	0.4**	2.9	1.4	1.5***
$40,000 to $60,000	2.4	1.9	0.5***	3.0	2.3	0.7
$60,000 to $80,000	2.7	2.4	0.3*	3.6	2.0	1.6***
$80,000 to $100,000	2.8	2.2	0.6***	3.4	2.3	1.1**
$100,000 to $150,000	1.9	1.6	0.3**	2.8	1.4	1.4**
$150,000 or more	2.1	1.6	0.5***	2.4	1.4	1.0***

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 12: Hours Spent on Primary and Secondary Child Care by Employment Sector

	Female	Male	Difference
Percent of Time Spent Caring for and Helping Household Members			
Employed - at work	1.6	1.4	0.2***
Employed - absent	2.9	1.9	1.0***
Unemployed	2.0	1.8	0.2
Not in labor force	2.5	1.5	1.0***
Percent of Time Spent on Secondary Childcare			
Employed - at work	2.5	1.9	0.6***
Employed - absent	3.9	3.0	0.9***
Unemployed	4.4	2.5	1.9***
Not in labor force	2.6	0.7	1.9***

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

The authors reexamine time spent on work activities and primary and secondary child care activities by child status in Table 13. Wage-and-salary-employed women with no children worked in the business an average of 0.3 hours (18 minutes) a day more than similarly employed women with children. This difference is more pronounced among self-employed women, as individuals with no children worked nearly one additional hour per day. For both wage-and-salary-employed and self-employed women, individuals with children spent about one additional hour per day in primary care activities. However, the striking difference in time use between women with and without children is in time spent on secondary child care activities. Wage-and-salary-employed women with children spent more than four additional hours on secondary child care than did those with no

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Table 13: Hours Spent on Work Activities and
Primary and Secondary Child Care by Child Status

Percent of Time Spent on…	Wage and Salary			Self-Employed		
	Children	No Children	Difference	Children	No Children	Difference
Work and Work Related Activities	7.2	7.5	-0.3***	5.7	6.6	-0.9***
Primary Childcare	1.7	0.7	1.0***	2.0	0.9	1.1***
Secondary Childcare	4.6	0.3	4.3***	5.7	0.5	5.2***

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

children, and the difference for self-employed women was more pronounced, at more than five additional hours per day. Self-employed women with children spent more than one additional hour per day on secondary child care activities compared with wage-and-salary employed women with children.

The fraction of time spent in other off-the-job activities is presented by gender and employment sector in Table 14.[12] In general, there are differences in time use patterns across gender, but self-employed and wage-and-salary-employed women allocate their time similarly. One notable exception is in the area of household activities. Self-employed women spent about 2.8 hours per day on household activities, followed by wage-and-salary women, who spent about 2.3 hours, and men, who spent just under 2 hours. This translates into self-employed women spending about 3.5 more hours in household activities per week than wage-and-salary employed women and 6 more hours than men.

Time Use Patterns – Regression Analysis

The regression results presented below (Tables 15 through 20) test whether differences in time use persist after controlling for characteristics such as age, marital status, and education using a linear probability model.[13] Results are largely consistent with the patterns observed in the summary statistics above. Self-employed women spent less time on work and work-related activities and more time on primary and secondary child care activities than men or wage-and-salary-employed women.

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[12] Note that time spent sleeping is included in the "Personal Care" category.
[13] Industry controls and year dummies are also included in each of the specifications.

Table 14: Hours Spent in Off-the-job Activities

Percent of time spent…	Wage and Salary			Self-Employed		
	Female	**Male**	**Difference**	**Female**	**Male**	**Difference**
on Personal Care (including sleep)	9.1	8.7	0.4***	9.0	8.7	0.3***
on Household Activities	2.3	1.9	0.4***	2.8	1.9	0.9***
on Education	2.8	3.2	-0.4	3.1	3.7	-0.6
on Consumer Purchases	1.0	0.8	0.2***	1.0	0.7	0.3***
on Professional and Personal Care Services	0.8	0.8	0	0.9	0.7	0.2
on Government Services and Civic Obligations	0.8	0.7	0.1	0.3	0.5	-0.2
Eating and Drinking	1.1	1.2	-0.1***	1.2	1.3	-0.1***
Socializing, Relaxing and Leisure	3.6	4.0	-0.4***	3.5	3.8	-0.3***
on Sports, Exercise and Recreation	1.3	1.9	-0.6***	1.2	1.9	-0.7***
on Religious and Spiritual Activities	1.5	1.6	-0.1	1.4	1.6	-0.2
on Volunteer Activities	1.7	1.9	-0.2*	1.8	2.1	-0.3
on the Telephone	0.65	0.58	0.07***	0.6	0.6	0
Traveling	1.4	1.5	-0.1**	1.4	1.5	-0.1

Entries represent mean hours per day from the ATUS-CPS, years 2003-2006.
*significant at the 10% level, **significant at the 5% level, *** significant at the 1% level

Table 15 includes results for the percent of time spent on work activities by employment sector. Self-employed women worked about 1.5 hours less per day or about 10 fewer hours per week, compared with self-employed men.[14] Wage-and-salary-employed women worked about 6 fewer hours per week, compared with wage-and-salary-employed men. Individuals with more than a high school education generally worked fewer hours, and the effects of education were greatest for the self-employed. The incorporated self-employed spent just over 5 additional hours per week in work activities than their unincorporated counterparts, consistent with the case in which the incorporated variable is acting as a proxy for other business characteristics.[15]

Separate regressions by gender are presented in Table 16. Marriage is an important determinant of the time men spent working, as self-employed men who are married work almost 4 more hours per week than their unmarried counterparts. The effect is opposite for women; married self-employed women worked 4.5 hours fewer than

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[14] To arrive at this number, the authors take the coefficient on the female variable (-0.061) times 24 hours in a day, which gives us -1.464 hours per day, and then multiply by seven days per week to arrive at -10.248 hours per week. Note that they multiply by seven days instead of five because time-use data are included for all respondents, including those that completed the survey on the weekend. This is because it is not clear when regular work hours occur, particularly for the self-employed.

[15] Although the authors do a better job of predicting time spent on work activities for the self-employed (7 percent of the variation in work time is explained by the variables in the model), most of the variation in work time is left to the error term. Ideally, panel data would be used to control for unobservables at the individual level that do not change over time, but the time-use data are collected only at one point in time for a given individual. As illustrated in the tables below, the authors do slightly better predicting the variation in time spent on primary care activities and the R-squared values are around 0.30 for time spent on secondary child care activities.

Table 15: Multivariate Analysis of Percent of Time Spent on Work and Work-related Activities

	Wage and Salary	Self-Employed
Age	-0.001***	-0.002***
	(4.53)	(4.54)
Female	-0.036***	-0.061***
	(15.60)	(7.58)
Married	0.002	0.004
	(0.84)	(0.43)
Number of Children	-0.003***	-0.008**
	(3.06)	(2.24)
White	0.003	0.033
	(0.66)	(1.54)
African American	0.003	0.025
	(0.45)	(0.93)
Highest Degree Completed		
High School	0.001	0.028*
	(0.39)	(1.74)
Some College	-0.002	0.010
	(0.56)	(0.64)
Bachelors Degree	-0.011***	0.008
	(2.61)	(0.49)
Masters Degree or Ph.D.	-0.016***	-0.005
	(3.30)	(0.26)
Professional Degree	-0.009	0.012
	(0.82)	(0.58)
Incorporated		0.032***
		(4.29)
Observations	17336	2885
R-squared	0.034	0.072

Entries are coefficient estimates from an OLS model. Also included but not reported are industry and year dummies.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

unmarried self-employed women. This result would be consistent with married women substituting work time for home production time. For women, the number of children in the household also affects work time. Each additional child leads to 2.4 fewer work hours per week for self-employed women and 1.5 fewer hours per week for wage-and-salary

Table 16: Multivariate Analysis of Percent of Time Spent on Work and Work-related Activities by Gender

	Wage and Salary		Self-Employed	
	Female	Male	Female	Male
Age	-0.001***	-0.001***	-0.001*	-0.002***
	(3.66)	(3.12)	(1.80)	(4.69)
Married	-0.007**	0.010***	-0.027**	0.023**
	(2.46)	(2.64)	(1.99)	(2.13)
Number of Children	-0.009***	-0.001	-0.014**	-0.005
	(5.70)	(0.45)	(2.10)	(1.19)
White	-0.002	0.007	0.040	0.032
	(0.31)	(1.10)	(1.08)	(1.35)
African American	0.000	0.002	0.098**	-0.010
	(0.01)	(0.26)	(2.08)	(0.34
Highest Degree Completed				
High School	-0.001	0.005	0.036	0.027
	(0.11)	(1.02)	(1.00)	(1.52)
Some College	-0.001	-0.000	-0.010	0.024
	(0.16)	(0.08)	(0.29)	(1.33)
Bachelors Degree	-0.008	-0.010*	-0.006	0.020
	(1.36)	(1.86)	(0.18)	(1.03)
Masters Degree or Ph.D.	-0.016**	-0.013*	-0.015	0.007
	(2.47)	(1.84)	(0.39)	(0.30)
Professional Degree	-0.010	-0.004	0.062	0.015
	(0.72)	(0.25)	(1.40)	(0.63)
Incorporated			0.027**	0.031***
			(2.00)	(3.35)
Observations	8710	8626	1059	1826
R-squared	0.018	0.018	0.087	0.058

Entries are coefficient estimates from an OLS model. Also included but not reported are industry and year dummies.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

employed women. Education levels do not have a statistically significant effect on work time for self-employed individuals. Also of note is that self-employed African-American women work more than two additional hours per day relative to the "other" racial group (not white or African American).

Table 17 contains results for percent of time spent on primary care activities by employment sector. The results suggest interesting differences in the time wage-and-salary-employed and self-employed persons spent on child care. Women spent more time on primary care activities, but the effects are largest for self-employed women who spent

Table 17: Multivariate Analysis of Percent of Time Spent on Primary Care

	Wage and Salary	Self-Employed
Age	-0.001***	-0.001***
	(10.03)	(3.74)
Female	0.012***	0.017***
	(7.21)	(2.69)
Married	0.008***	0.013**
	(4.21)	(2.08)
Number of Children	0.009***	0.009***
	(11.40)	(3.99)
White	-0.003	-0.002
	(0.90)	(0.25)
African American	-0.011***	-0.024
	(2.74)	(1.62)
Highest Degree Completed		
High School	0.014***	-0.010
	(4.38)	(0.63)
Some College	0.014***	0.006
	(4.66)	(0.36)
Bachelors Degree	0.023***	0.008
	(7.40)	(0.53)
Masters Degree or Ph.D.	0.024***	0.001
	(6.67)	(0.08)
Professional Degree	0.033***	0.001
	(4.91)	(0.04)
Incorporated		-0.009*
		(1.80)
Observations	10447	1370
R-squared	0.071	0.094

Entries are coefficient estimates from an OLS model. Also included but not reported are industry and year dummies.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

about 3 additional hours per week on primary care relative with self-employed men. Wage-and-salary-employed women spent about 2 additional hours compared with men in their employed sector. Similarly, married respondents spent more time on primary care, with the largest effects for the self-employed. Each additional child led to 1.5 additional hours per week on primary care activities, and the effects were similar for wage-and-salary employees and the self-employed. Interesting differences also exist by education.

For wage-and-salary workers, higher levels of education led to more time in primary care, consistent with Guryan, Hurst, and Kearney (2008), but education levels were not a significant determinant of primary care time for the self-employed. One possible explanation is that the self-employed, who spent more time in primary care activities in general, have similar tastes for time spent with children regardless of their education level. Incorporated self-employed individuals spent about 1.5 fewer hours per week on primary care. Finally, African-American respondents employed in the wage-and-salary sector spent less time in primary care.

Estimating primary care activity time separately by gender (Table 18) reveals that self-employed women who are married spent considerably more time (4.9 hours per week) in primary care, but no other factors are statistically significant. Results for wage-and-salary workers are similar to those found above. Time spent in primary care increases with education, number of children, and being married.

Tables 19 and 20 present the results for time spent on secondary child care. Time spent in secondary child care can be thought of as a parent being at the same location as the child (at home) but primarily performing another activity (e.g. work, household activities). As with primary care, women spent more time in secondary child care, with the largest effects for self-employed women (6.4 hours per week). Married respondents and those with more children spent more time on secondary child care. Self-employed respondents with high school diplomas spent more time in secondary child care than those with less than a high school education, while owning an incorporated business reduced time spent in secondary child care. Results by gender (Table 19) are largely similar.[16]

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[16] The nature of the data prevents assessing whether self-employment leads to different time allocations or whether the self-employment and time-allocation decisions are made simultaneously. To address this issue, the authors re-estimate time spent in work and care activities with controls for change in marital status, change in the number of children, entry into self-employment, and exit from self-employment. Those newly entered into self-employment spent more time in secondary child care and less time in work activities, but there were no significant effects from exit. These results are consistent with a simultaneous decision for entry where time allocation decisions and entering self-employment are made jointly.

Table 18: Multivariate Analysis of Percent of Time Spent on Primary Care by Gender

	Wage and Salary		Self-Employed	
Percent of Time Spent in Secondary Childcare	Female	Male	Female	Male
Age	-0.002***	-0.001***	-0.002***	-0.001***
	(13.20)	(13.92)	(5.33)	(4.99)
Married	0.018***	0.027***	0.018*	0.029***
	(6.49)	(9.81)	(1.83)	(4.44)
Number of Children	0.064***	0.045***	0.074***	0.040***
	(33.86)	(27.32)	(13.65)	(9.39)
White	0.002	-0.013**	0.000	-0.016
	(0.42)	(2.26)	(0.02)	(0.79)
African American	-0.006	-0.009	-0.037	0.011
	(0.91)	(1.24)	(1.48)	(0.41)
Highest Degree Completed				
High School	-0.002	0.004	-0.004	0.034***
	(0.29)	(0.75)	(0.14)	(2.67)
Some College	-0.004	0.009*	-0.010	0.025**
	(0.59)	(1.73)	(0.37)	(2.00)
Bachelors Degree	-0.009	0.008	-0.002	0.009
	(1.22)	(1.47)	(0.06)	(0.72)
Masters Degree or Ph.D.	-0.010	0.006	-0.034	0.009
	(1.43)	(0.99)	(1.33)	(0.62)
Professional Degree	-0.012	0.008	-0.055	0.021
	(1.11)	(0.78)	(1.53)	(1.30)
Incorporated			-0.018*	-0.002
			(1.81)	(0.36)
Observations	12069	10805	1283	1877
R-squared	0.329	0.272	0.444	0.237

Entries are coefficient estimates from a linear probability model. Also included but not reported are industry and year dummies.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Determinants of Self-employment

The time use results suggest that self-employed women differ from men and wage-and-salary employed women in their time allocations. On average, they spent less time on work activities and more time in primary and secondary child care activities. These results suggest that the family-related factor of time spent with children could be a motivation for women to enter self-employment. However, the finding that self-employed women with professional degrees spent far more time in work activities also suggests that some groups of women might be more career-motivated in becoming self-employed.

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Table 19: Multivariate Analysis of Percent of Time Spent on Secondary Child Care

	Wage and Salary	Self-Employed
Age	-0.002***	-0.002***
	(19.59)	(7.25)
Female	0.022***	0.038***
	(11.62)	(6.75)
Married	0.021***	0.025***
	(10.96)	(4.52)
Number of Children	0.054***	0.053***
	(42.28)	(14.97)
White	-0.006	-0.006
	(1.42)	(0.38)
African American	-0.007	-0.003
	(1.45)	(0.15)
Highest Degree Completed		
High School	0.003	0.024**
	(0.78)	(1.97)
Some College	0.006	0.016
	(1.40)	(1.30)
Bachelors Degree	0.003	0.013
	(0.58)	(1.06)
Masters Degree or Ph.D.	-0.000	-0.006
	(0.07)	(0.46)
Professional Degree	0.001	0.003
	(0.15)	(0.19)
Incorporated		-0.012**
		(2.13)
Observations	22874	3160
R-squared	0.299	0.324

Entries are coefficient estimates from an OLS model. Also included but not reported are industry and year dummies.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

In the following section, the authors address whether there are systematic differences in the determinants of entry into self-employment (incorporated and unincorporated) for women based on basic demographics, their earning potential in the wage-and-salary sector, industry of employment, and previous employment sector (wage-and-salary, unemployed, or not in the labor force). The focus is on entry to address the question of why women become self-employed and to make use of the richest set of

	Wage and Salary		Self-Employed	
	Female	Male	Female	Male
Age	-0.002***	-0.001***	-0.002***	-0.001***
	(13.20)	(13.92)	(5.33)	(4.99)
Married	0.018***	0.027***	0.018*	0.029***
	(6.49)	(9.81)	(1.83)	(4.44)
Number of Children	0.064***	0.045***	0.074***	0.040***
	(33.86)	(27.32)	(13.65)	(9.39)
White	0.002	-0.013**	0.000	-0.016
	(0.42)	(2.26)	(0.02)	(0.79)
African American	-0.006	-0.009	-0.037	0.011
	(0.91)	(1.24)	(1.48)	(0.41)
Highest Degree Completed				
High School	-0.002	0.004	-0.004	0.034***
	(0.29)	(0.75)	(0.14)	(2.67)
Some College	-0.004	0.009*	-0.010	0.025**
	(0.59)	(1.73)	(0.37)	(2.00)
Bachelors Degree	-0.009	0.008	-0.002	0.009
	(1.22)	(1.47)	(0.06)	(0.72)
Masters Degree or Ph.D.	-0.010	0.006	-0.034	0.009
	(1.43)	(0.99)	(1.33)	(0.62)
Professional Degree	-0.012	0.008	-0.055	0.021
	(1.11)	(0.78)	(1.53)	(1.30)
Incorporated			-0.018*	-0.002
			(1.81)	(0.36)
Observations	12069	10805	1283	1877
R-squared	0.329	0.272	0.444	0.237

Entries are coefficient estimates from an OLS model. Also included but not reported are industry and year dummies.

t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

explanatory variables and larger sample sizes in subgroups available for addressing the determinants of exit.

Summary statistics for the estimation sample of CPS data from 1996 to 2006 are presented in Table 21. The first set of sample means and standard errors is for the full CPS sample. The second set is for those included in the entry analysis detailed below. Note that to be eligible for "entry" one must not already be self-employed. The third set of statistics represents those who were self-employed in the first period, or equivalently, those eligible for "exit."

Table 21: Determinants of Self-Employment Summary Statistics

Variable	All Mean	Linearized Std. Err.	Eligible for Entry Mean	Linearized Std. Err.	Eligible for Exit Mean	Linearized Std. Err.
Self Employed	0.096	0.000	-	-	-	-
Entry	-	-	0.092	0.000	-	-
Exit	-	-	-	-	0.864	0.002
Female	0.512	0.001	0.515	0.001	0.477	0.003
Age	43.334	0.017	43.216	0.018	44.612	0.056
White	0.733	0.001	0.727	0.001	0.802	0.002
African American	0.110	0.000	0.115	0.001	0.065	0.001
Less than HS	0.104	0.000	0.107	0.000	0.078	0.001
High School	0.320	0.001	0.324	0.001	0.284	0.002
Some College	0.283	0.001	0.283	0.001	0.282	0.002
Bachelors	0.195	0.001	0.192	0.001	0.226	0.002
Professional	0.098	0.000	0.095	0.000	0.129	0.002
Foreign Born	0.131	0.001	0.132	0.001	0.116	0.002
Married	0.672	0.001	0.666	0.001	0.733	0.002
Other Wage	24.838	0.035	24.874	0.037	24.449	0.124
Lag Self Employed	0.085	0.000	-	-	-	-
Lag Unemployed	0.027	0.000	0.028	0.000	-	-
Lag Wage and Salary	0.581	0.001	0.635	0.001	-	-
Lag Not in Labor Force	0.311	0.001	0.337	0.001	-	-
Observations	569196		518647		50549	

Entries are weighted means from CPS month 4 and month 8 outgoing respondents, years 1996 to 2006.

Looking at the second set of statistics, the row for entry represents the percent of those not self-employed in the first time period who entered self-employment a year later (about 9 percent). Just over half of the sample is female (51.5 percent) and the average age is 43 years old. The sample is 73 percent white and 12 percent African American. Thirty-two percent have a high school education, 13 percent are foreign born, and two-thirds are married. A measure of "other wage" is the total of hourly wages from household members other than the respondent. Of respondents who could enter self-employment in the second period (are not self-employed in the first period), 63.5 percent were employed in the wage-and-salary sector, 33.7 percent were not in the labor force, and 2.8 percent were unemployed.

Table 22 includes probit results for entry into self-employment, with a basic set of control variables. Consistent with the earlier literature, results in the first column indicate that women, minorities, and those with less education were less likely to enter self-

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Table 22: Determinants of Entry into Self-Employment

	All	Female	Male
Female	-0.052***		
	(65.475)		
Age	0.013***	0.010***	0.018***
	(44.481)	(28.254)	(34.305)
Age Squared	-0.0001***	-0.0001***	-0.0002***
	(42.130)	(27.003)	(32.099)
White	0.026***	0.016***	0.039***
	(19.252)	(9.815)	(16.633)
African American	-0.030***	-0.025***	-0.036***
	(16.245)	(12.274)	(10.899)
High School	0.023***	0.020***	0.029***
	(14.215)	(9.567)	(10.817)
Some College	0.037***	0.036***	0.039***
	(21.092)	(16.478)	(13.523)
Bachelors	0.051***	0.045***	0.060***
	(26.380)	(18.294)	(18.948)
Professional	0.072***	0.065***	0.082***
	(30.961)	(20.976)	(22.626)
Foreign Born	0.015***	0.005***	0.028***
	(9.465)	(2.728)	(10.114)
Married	0.031***	0.027***	0.036***
	(36.536)	(27.283)	(23.533)
Other Wage	-0.002***	-0.001***	-0.004***
	(72.867)	(45.205)	(54.954)
Observations	518647	271253	247394
Pseudo R-squared	0.0953	0.0621	0.0918
Probability of Entry	0.092	0.062	0.124

Entries are marginal effects from a probit model. Data are weighted using CPS final weights. Dummies for year are included in each specification but not reported in the table. Robust standard errors are reported.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

employment. The marginal effect for the female variable translates into a 5.2 percentage-point reduction in the probability of entry. Given the average rate of entry of 9.2 percent, women are 57 percent less likely to enter.[17] Older respondents are more likely to enter self-employment, but the effect diminishes with age. Foreign-born and married

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[17] To interpret the marginal effect in terms of percent change we first multiply the marginal effect by 100 to get the percentage point change (-5.2) which we add to the overall probability of entry (9.2, from the bottom row of Table 22) to arrive at an entry rate of 4 percent for women that is 57 percent lower (4 divided by 9.2) than the overall entry probability.

respondents were more likely to enter self-employment, and those whose household members earn higher wages were less likely to enter.

Separate estimates for women and men, columns 2 and 3, indicate substantial differences in the determinants of entry by gender. Specifically, white women were 1.6 percentage points (24 percent) more likely to enter than those in the other race category, while African-American women were 2.5 percentage points (40 percent) less likely to enter self-employment. The comparable numbers for men were a 3.9 percentage point (31 percent) increase for white men and a 3.6 percentage point (29 percent) decrease for African-American men. Age was an equally important factor for men and women, as age caused the probability of entry to increase at a decreasing rate for both genders. Foreign-born men were 2.8 percentage points (23 percent) more likely to enter, while the effect was much smaller for women, at 0.5 percentage points (8 percent).

Education was also a more important factor for women. Relative to those with less than a high school education, women who had completed high school (32 percent), some college (58 percent), a bachelor's degree (73 percent), or more than a bachelor's degree (105 percent) were more likely to enter, and the effects increased with education.[18] Education effects also increased for men, but the magnitudes were lower (23 percent increase for those with a high school education, 31 percent for some college, 48 percent for a bachelor's degree, and 66 percent for more than a bachelor's degree). The finding that education is more important for women differs from Moutray (2007) who found smaller effects and sometimes statistically insignificant effects for wives, compared with heads of household. A possible explanation for the difference is that the groups are defined differently: here the sample is groups of men and women, whereas the PSID data used in Moutray (2007) is divided into heads of household and wives.

The research examines whether those with higher wages in the earlier period are more likely to enter self-employment in the second period (Table 23). Indeed, high earners (top quarter) were 1.6 percentage points more likely to enter and low earners (bottom quarter) were 0.8 percentage points less likely to enter than those with medium earnings. The second column includes additional terms of earner status interacted with

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[18] To calculate a percent change from the marginal effect, multiply the marginal effect by 100 and divide by the overall entry rate for the group, reported in the bottom row of the table.

female status to test whether the effects of earner status differ by gender. All of the interaction terms were jointly significant, but the magnitudes were too small to be economically important. Women were about 4.8 percentage points less likely to enter in both estimations, and the effects of high- and low-earner status remained identical when the interactions were included.[19]

Estimating separate equations for women and men reveals little difference in the marginal effects of earner status. In the estimation for women, high earners were 1.2 percentage points (19 percent) more likely to enter and low earners were 0.6 percentage points (10 percent) less likely to enter than medium earners. The effects were similar for men: high earners were 2.2 percentage points (18 percent) more likely to enter and low earners were 1.2 percentage points (10 percent) less likely to enter than medium earners. Contrary to the implication from the previous literature that higher-earning women would be expected to enter self-employment at lower rates, the authors find that high-earning women are actually slightly more likely to enter self-employment than high-earning men, all else equal, while the opposite is true for lower-earning women—although the differences are not large.

The probability of entry is estimated separately by earner status. High-earning women were 5.6 percentage points (50 percent) less likely to enter and low-earning women were 4.8 percentage points (62 percent) less likely to enter than similarly earning men.[20] Contrary to conventional wisdom, these results do not indicate that high-earning women enter self-employment at lower rates. After controlling for other factors, high-earning women were more likely to enter relative to men of the same earning level.

Table 24 includes results with industry controls.[21] Based on the results from the first column, respondents in financial services (1.4 percentage points), education and health (1.2 percentage points), and other services (2.0 percentage points) were most likely to enter relative to those in the retail sector. Column 2 includes selected results from an estimation including all industry controls, as well as industry controls interacted with the female variable. All interaction terms were jointly statistically significant, but only those

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[19] To get 4.8 percentage points, multiply the marginal effect for female in columns 1 and 2 by 100.

[20] A full set of results is available from the authors upon request.

[21] Regressions with industry controls are limited to years 1996 to 2002. Consistent industry classifications were not available for 2003 to 2006.

Table 23: Determinants of Entry into Self-employment
by Previous Earner Status

	All	All	Female	Male
Female	-0.048***	-0.049***		
	(41.254)	(29.028)		
Age	0.013***	0.013***	0.009***	0.018***
	(29.798)	(29.795)	(18.514)	(23.449)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0002***
	(28.127)	(28.124)	(17.758)	(21.824)
White	0.028***	0.028***	0.014***	0.044***
	(13.682)	(13.681)	(5.919)	(12.753)
African American	-0.029***	-0.029***	-0.025***	-0.033***
	(10.372)	(10.373)	(8.217)	(6.692)
High School	0.021***	0.021***	0.017***	0.026***
	(8.498)	(8.499)	(5.606)	(6.450)
Some College	0.034***	0.034***	0.032***	0.036***
	(13.098)	(13.099)	(10.061)	(8.465)
Bachelors	0.052***	0.052***	0.041***	0.065***
	(17.587)	(17.588)	(11.195)	(13.287)
Professional	0.076***	0.076***	0.061***	0.094***
	(21.308)	(21.313)	(13.244)	(16.355)
Foreign Born	0.014***	0.014***	0.004	0.026***
	(5.823)	(5.822)	(1.614)	(6.404)
Married	0.033***	0.033***	0.029***	0.037***
	(26.292)	(26.294)	(19.791)	(16.617)
Other Wage	-0.003***	-0.003***	-0.002***	-0.004***
	(48.807)	(48.794)	(34.247)	(34.120)
High Earner	0.016***	0.115***	0.012***	0.022***
	(11.274)	(8.751)	(6.654)	(9.259)
Low Earner	-0.008***	-0.008***	-0.006***	-0.012***
	(5.928)	(4.494)	(3.481)	(5.044)
High Earner*Female		0.0006		
		(0.218)		
Low Earner*Female		0.0001		
		(0.042)		
Observations	231637	231637	119595	112042
Pseudo R-squared	0.1086	0.1086	0.0676	0.1125
Probability of Entry	0.092	0.092	0.062	0.123

Entries are marginal effects from a probit model. Data are weighted using CPS final weights. Dummies for year are included in each specification but not reported in the table. Robust standard errors are reported. High (top quarter) and low (bottom quarter) earner status based on wages reported in the previous (month 4) period.

t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 24: Determinants of Entry into Self-employment by Industry

	All	All	Female	Male
Female	-0.047**	-0.003***		
	(41.044)	(18.682)		
Age	0.014***	0.014***	0.010***	0.019***
	(32.075)	(32.074)	(20.356)	(24.732)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0002***
	(30.469)	(30.479)	(19.603)	(23.147)
White	0.030***	0.030***	0.016***	0.047***
	(15.255)	(15.237)	(6.711)	(14.124)
African American	-0.030***	-0.030***	-0.027***	-0.034***
	(11.101)	(11.139)	(9.124)	(6.917)
High School	0.025***	0.025***	0.020***	0.032***
	(10.492)	(10.474)	(6.928)	(7.887)
Some College	0.041***	0.041***	0.036***	0.047***
	(15.886)	(15.869)	(11.468)	(10.925)
Bachelors	0.068***	0.068***	0.053***	0.087***
	(22.528)	(22.521)	(14.155)	(17.106)
Professional	0.099***	0.099***	0.077***	0.124***
	(26.118)	(26.134)	(15.890)	(20.236)
Foreign Born	0.015***	0.015***	0.006**	0.026***
	(6.401)	(6.372)	(2.282)	(6.527)
Married	0.036***	0.036***	0.031***	0.041***
	(28.898)	(28.919)	(21.641)	(18.387)
Other Wage	-0.003***	-0.003***	-0.002***	-0.004***
	(49.389)	(49.405)	(35.201)	(34.093)
Financial Services	0.014***	0.012***	0.012***	0.017***
	(5.39)	(3.43)	(3.94)	(3.68)
Education	0.012***	0.011***	0.009***	0.015***
	(6.59)	(4.59)	(4.23)	(4.78)
Other Services	0.020***	0.011***	0.026***	0.014***
	(6.58)	(2.75)	(6.79)	(2.86)
Agriculture*Female		-0.021**		
		(2.528)		
Other Service*Female		0.022***		
		(3.486)		
Public Admin*Female		0.011*		
		(1.869)		
Observations	227967	227967	117892	110075
Pseudo R-squared	0.1206	0.1208	0.0759	0.1297
Probability of Entry	0.092	0.092	0.062	0.122

Entries are marginal effects from a probit model. Data are weighted using CPS final weights.

Dummies for year and industry are included in each specification but not reported in the table.

t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

with economically significant magnitudes were included in the table. The marginal effect on the agriculture interaction was negative 2.1 percentage points, while other services and public administration had positive marginal effects of 2.2 and 1.1 percentage points, respectively. With the exception of these industries, the effects of industry on the probability of entry generally have the same sign for men and women, but the effects tend to be larger for women. However, women were more likely to enter in the financial industry (19 percent for women, 14 percent for men), education and health industries (15 percent for women, 12 percent for men), and the other services industry (42 percent for women, 11 percent for men).

Previous literature suggests that the determinants of self-employment differ based on whether an individual moves from a wage-and-salary job or from unemployment (Fairlie and Krashinsky, 2006). However, the authors do not find differences in the effects of previous employment sector by gender (Table 25). CPS respondents working in a wage-and-salary job in the previous period were 0.7 percentage points (8 percent) more likely to enter self-employment, and the authors cannot reject the null of no effect from being unemployed relative to not being in the labor force. These effects (in percent terms) were almost identical in separate regressions for men and women. To further test these results, regressions were estimated separately by previous employment sector.[22] Women are less likely to enter from each previous employment sector by roughly 56 percent (wage-and-salary), 62 percent (unemployment), and 59 percent (not in labor force). These results provide suggestive evidence that women are less likely than men to enter from unemployment, but the results are sensitive to specification.

Robustness Checks

The previous results are for entries into self-employment, but the level of self-employment among women depends on both entries and exits. Probit results for the probability of exit are presented in Table 26. Exit is defined analogously to entry: those self-employed in the first period and not self-employed in the second.[23] Results from the first column indicate that women are 8 percent more likely to exit than men. Exits

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[22] A full set of results is available from the authors upon request.
[23] Note that exit does not imply failure.

Table 25: Determinants of Entry into Self-employment by Previous Employment Sector

	All	All	Female	Male
Female	-0.052***	-0.053***		
	(65.288)	(38.980)		
Age	0.013***	0.013***	0.010***	0.018***
	(44.465)	(44.473)	(28.256)	(34.283)
Age Squared	-0.0001***	-0.0001***	-0.0001***	-0.0002***
	(42.130)	(42.138)	(26.943)	(32.087)
White	0.026***	0.026***	0.016***	0.039***
	(19.178)	(19.179)	(9.760)	(16.576)
African American	-0.030***	-0.030***	-0.025***	-0.036***
	(16.184)	(16.182)	(12.239)	(10.843)
High School	0.023***	0.023***	0.019***	0.029***
	(14.101)	(14.095)	(9.501)	(10.723)
Some College	0.036***	0.036***	0.036***	0.038***
	(20.909)	(20.911)	(16.377)	(13.366)
Bachelors	0.050***	0.050***	0.045***	0.059***
	(26.121)	(26.127)	(18.153)	(18.721)
Professional	0.071***	0.071***	0.064***	0.082***
	(30.720)	(30.729)	(20.850)	(22.414)
Foreign Born	0.015***	0.015***	0.005***	0.028***
	(9.416)	(9.408)	(2.688)	(10.082)
Married	0.031***	0.0313***	0.027***	0.036***
	(36.545)	(36.557)	(27.346)	(23.482)
Other Wage	-0.002***	-0.002***	-0.001***	-0.004***
	(72.567)	(72.574)	(45.031)	(54.745)
Wage and Salary	0.007**	0.006***	0.005***	0.011***
	(8.791)	(6.601)	(2.486)	(7.574)
Unemployed	-0.003	-0.001	-0.004	-0.001
	(1.000)	(0.341)	(1.393)	(0.126)
Wage and Salary*Female		0.002		
		(1.120)		
Unemployed*Female		-0.003		
		(0.674)		
Observations	518647	518647	271253	247394
Pseudo R-squared	0.0957	0.0957	0.0624	0.0922
Probability of Entry	0.092	0.092	0.062	0.124

Entries are marginal effects from a probit model. Data are weighted using CPS final weights.
Dummies for year are included in each specification but not reported in the table. Robust
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

decrease with increased age and education and increase as other members of the household have higher earnings. There are also racial disparities in exit rates, as white respondents were about 3 percent less likely to exit, while African American respondents were almost 5 percent more likely to exit relative to the other race category.

Regressions run separately by gender reveal differences in the importance of exit factors, conditional on being self-employed in the first period. While exits decrease with education for both genders, the effects are larger for men. Marriage and race also play a larger role in exits for men. Married men are 4.2 percent less likely to exit, while the comparable number for women is 2.5 percent. White men are 5 percent less likely to exit and African American men are 5 percent more likely to exit relative to the other race category. The corresponding numbers for women are 2 percent and 4 percent, respectively.

The results from the exit estimations are generally consistent with the entry results. The same factors that increase entry also decrease exit. However, conditional on self-employment in the first period, differences in race, education, and marital status are more important determinants of exit for men, whereas these factors generally had more impact on women for entry decisions. This is not altogether unexpected, as individuals are only in the exit sample if they entered in some previous period. Thus, the factors that limited entry of women relative to men would be underrepresented in the exit sample. The lack of controls for earnings and industry limit the exit analysis.

In addition to exits, several other specifications are estimated to test the robustness of the baseline results. In all cases, results were qualitatively the same as those presented above. First, the authors simply include region controls, as in Fairlie (2006), and find identical results.[24] Second, they add all controls, including earnings, industry, and previous employment sector in the same specification. The effect of being female on entry is slightly lower in this specification (51 percent) but still within the range suggested by the previous literature, and hence the other conclusions remain the same.

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[24] Using Census regions, we include a dummy variable for region of residence.

Table 26: Determinants of Exits from Self-employment

	All	Female	Male
Female	0.082***		
	(25.964)		
Age	-0.022***	-0.015***	-0.029***
	(17.254)	(10.399)	(13.863)
Age Squared	0.0002***	0.0002***	0.0003***
	(16.239)	(10.008)	(12.833)
White	-0.034***	-0.020***	-0.050***
	(6.002)	(3.158)	(5.155)
African American	0.046***	0.039***	0.050***
	(5.101)	(4.143)	(3.159)
High School	-0.055***	-0.058***	-0.058***
	(7.277)	(5.694)	(4.939)
Some College	-0.068***	-0.074***	-0.067***
	(8.786)	(7.050)	(5.602)
Bachelors	-0.089***	-0.087***	-0.098***
	(10.768)	(7.562)	(7.762)
Professional	-0.103***	-0.097***	-0.115***
	(11.161)	(7.291)	(8.376)
Foreign Born	-0.022***	-0.007	-0.039***
	(3.427)	(1.044)	(3.509)
Married	-0.035***	-0.025***	-0.042***
	(9.805)	(6.395)	(6.887)
Other Wage	0.004***	0.002***	0.005***
	(23.061)	(16.282)	(16.959)
Observations	50549	24539	26010
Pseudo R-squared	0.1135	0.0727	0.1072
Probability of Entry	0.864	0.912	0.82

Entries are marginal effects from a probit model. Data are weighted using CPS final weights. Dummies for year are included in each specification but not reported in the table. Robust standard errors are reported.
t statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Multinomial logits are estimated as in Hundley (2000) and Wennberg, Folta, and Delmar (2007). The probability of entry for women is lower regardless of their previous period employment sector (wage-and-salary, unemployed, or not in the labor force). In addition, women are more likely than men to become unemployed or exit the labor market, regardless of their previous employment sector.

Finally, partial transitions are addressed by examining entries into full-time self-employment (30 or more hours per week) with a part-time control variable, as well as entries into part-time self-employment. Women are even less likely to enter full-time self-employment (74 percent), but they are more likely to enter part-time self-employment (33 percent) relative to men. These results are consistent with the findings regarding time use, as self-employed women spent the least amount of time in work activities. Evidence emerges that part-time self-employment is used as a transition to full-time self-employment, as those already self-employed on a part-time basis were 20 percent more likely to enter full-time self-employment in the following period.

Conclusions and Policy Implications

The results shed light on two themes from the previous literature: 1) women choose self-employment because of family factors, and 2) self-employed women are not as motivated by earnings. Time-use data show that self-employed women do allocate their work and nonwork time differently than wage-and-salary women and men. Self-employed women spend less time in work activities related to their employment and more time in care and household activities. The largest differences are in the area of time spent on secondary child care, suggesting that self-employed women spend more time with their children, but are often performing other tasks such as work activities or housework. As in Guryan, Hurst and Kearney (2008), the authors find that time spent with children generally increases with education for men and wage-and-salary-employed women. However, self-employed women spend about the same amount of time with children regardless of their education level. Also consistent with lifestyle or family motivations for choosing self-employment, women are 33 percent more likely than men to enter part-time self-employment, but 74 percent less likely to enter full-time self-employment.

The authors are able to test the second theme indirectly by addressing whether high-earning women are less likely to enter self-employment. Unlike previous econometric studies (Devine, 1994; Hundley, 2000), no evidence is found here that high-earning women are less likely to enter self-employment; in fact, they are more likely than middle- or low-earning women to enter. Further, the effects of being a higher earner are

slightly greater than those for men; high-earning women are 20 percent more likely to enter, while high-earning men are 18 percent more likely to enter, controlling for various demographic factors and lower overall entry rates for women. This is not definitive evidence that women and men are equally motivated by earnings factors, but it does suggest that lower rates of women's self-employment are not more severe for high-ability women. The factors that are most important for women's entry, relative to men, are education and race.

The results suggest several areas where policy could be used to address the chronically lower rates of self-employment among women. First, the time-use evidence indicates that women, and particularly self-employed women, allocate more time to care activities and household production. Programs that enhance work-life balance or facilitate secondary child care opportunities (where a parent works from the same location as the child but is not responsible for primary child care) would likely make self-employment more attractive for women. Further, policies to offset racial disparities in self-employment and increase human capital through the accumulation of education would serve to encourage greater numbers of women to seek self-employment.

References:

Abraham, Katharine G., Aaron Maitland, and Suzanne Bianchi, "Nonresponse in the American Time Use Survey: Who Is Missing from the Data and How Much Does It Matter?" paper presented at the ATUS Early Results Conference, Bethesda, MD, Dec. 9, 2005

Aguiar, Mark and Erik Hurst, 2007. "Lifecycle Prices and Production." *American Economic Review* 97:5.

Ahl, Helene, 2006. "Why Research on Women Entrepreneurs Needs New Directions." *Entrepreneurship Theory and Practice* 30(5): 595-621.

Aspen Institute, 2002. "Directory of Microenterprise Programs." The Aspen Institute: Wahsington, D.C.

Bianchi, Suzanne M., 2000. "Maternal Employment and Time with Children: Dramatic Change of Surprising Continuity?" *Demography* 37:4, 401-414.

Bianchi, Suzanne M., Melissa A Milkie, Liana C. Sayer, and John P. Robinson, 2000. "Is Anyone Doing the Housework? Trends in the Gender Division of Household Labor." *Social Forces* 79:1, 191-228.

Boden, Richard J., 1999. "Flexible Working Hours, Family Responsibilities, and Female Self-Employment: Gender Differences in Self-Employment Selection." *American Journal of Economics and Sociology* 58: 1, 71-83.

Brown, Sarah, Lisa Farrel, and John G. Sessions, 2006. "Self-Employment Matching: An Analysis of Dual Earner Couples and Working Households." *Small Business Economics* 26, 155-172.

Bruce, Donald, 1999. "Do Husbands Matter? Married Women Entering Self-Employment." *Small Business Economics* 13:4, 317-329.

Buttner, E. Holly, and Dorothy P. Moore, 1997. "Women's Organizational Exodus to Entrepreneurship: Self-Reported Motivations and Correlates with Success." *Journal of Small Business Management* 35:1, 34-46.

Caputo, Richard K. and Arthur Dolinsky, 1998. "Women's Choice to Pursue Self-Employment: The Role of Financial and Human Capital of Household Members." *Journal of Small Business Management* 36:3, 8-17.

Coleman, Susan, 2007. "The Role of Human and Financial Capital in the Profitability and Growth of Women-Owned Small Firms." *Journal of Small Business Management* 45(3): 303-319.

DeMartino, Richard, Robert Barbato, and Paul H. Jacques, 2006. "Exploring the Career/Achievement and Personal Life Orientation Difference between Entrepreneurs and Nonentrepreneurs: The Impact of Sex and Dependents." *Journal of Small Business Management* 44:3, 350-368.

Devine, Therea J., 1994. "Changes in Wage-and-Salary Returns to Skill and the Recent Rise in Female Self-Employment." *American Economic Review* 84:2, 108-113.

Dunn, Thomas, and Douglas Holtz-Eakin, 2000. "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links." *Journal of Labor Economics* 18:2, 282-305.

Fairlie, Robert W., 2004. "Self-Employed Business Ownership Rates in the United States: 1979-2003." U.S. Small Business Administration, Office of Advocacy, SBAHQ-04-M-0248.

Fairlie, Robert W., forthcoming. "Entreprensurship among Disadvantaged Groups: An Analysis of the Dynamics of Self-Employment by Gender, Race, and Education." *Handbook of Entrepreneurship*. Eds. Simon C. Parker, Zoltan J. Acs, and David R. Audretsch. Kluwer Academic Publishers.

Fairlie, Robert W, 2006. "Kauffman Index of Entrepreneurial Activity: National Report 1996-2005." Ewing Marion Kauffman Foundation: Kansas City, MO.

Fairlie, Robert W. and Harry A. Krashinsky, 2006. "Liquidity Constraints, Household Wealth, and Entrepreneurship Revisited." *IZA Discussion Paper No. 2201*.

Fairlie, Robert W. and Alicia M. Robb, forthcoming. "Why Are African American-Owned Businesses Less Successful than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital." *Journal of Labor Economics*.

Georgellis, Yannic, and Howard J. Wall, 2005. "Gender Differences in Self-Employment." *International Review of Applied Economics* 19:3, 321-342.

Gurley-Calvez, Tami and Donald Bruce, 2008. "Do Tax Cuts Promote Entrepreneurial Longevity?" *National Tax Journal* LXI:2, 225-250.

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Guryan, Jonathan, Erik Hurst, and Melissa Kearney, 2008. "Parental Education and Parental Time with Children." *The Journal of Economic Perspectives* 22:3, 23-46.

Hackler, Darrene, Ellen Harpel, and Heike Mayer. 2008. "Human Capital and Women's Business Ownership." SBA Office of Advocacy Report SBAHQ-06-M-0481.

Hamermesh, Daniel S., Caitlin Knowles Myers, and Mark L. Pocock, 2008. "Cues for Timing and Coordination: Latitude, Letterman and Longitude." *Journal of Labor Economics* 26:2.

Hamermesh, Daniel, 2008. "Direct Estimates of Household Production." *Economic Letters* 98:1.

Hipple, Steven. 2004. "Self-Employment in the United States: an Update." *Monthly Labor Review,* 127(7): 13-23.

Hout, Michael, and Harvey Rosen. 2000. "Self-Employment, Family Background, and Race." *The Journal of Human Resources* 35:4, 670-692.

Hundley, Greg, 2000. "Male/Female Earnings Differences in Self-Employment: The Effects of Marriage, Children, and the Household Division of Labor." *Industrial and Labor Relations Review* 54: 1, 95-114.

Kepler, Erin and Scott Shane, 2007. "Are Male and Female Entrepreneurs Really That Different?" SBA Office of Advocacy Report SBAHQ-06-M-0480.

Kimmel, Jean and Rachel Connelly, 2007. "Mothers' Time Choices: Caregiving, Leisure, Home Production and Paid Work." *Journal of Human Resources* 42:3.

Kimmel, Jean (Ed.), 2008. *How Do We Spend Our Time? Evidence from the American Time Use Survey.* Kalamazoo: W.E. Upjohn Institute for Employment Research.

Kosanovich, William T., Heather Fleck, Berwood Yost, Wendy Armon, and Sandra Siliezar, 2001. Comprehensive Assessment of Self-Employment Assistance Programs. U.S. Department of Labor Report.

Krueger, Alan B. and Schkade, David, 2007. "Sorting in the Labor Market: Do Gregarious Workers Flock to Interactive Jobs?" IZA Discussion Paper No. 2730.

Langowitz, Nan and Maria Minniti, 2007. "The Entrepreneurial Propensity of Women." *Entrepreneurship Theory and Practice* 31(3): 341-364.

Long, J. Scott, 1997. *Regression Models for Categorical and Limited Dependent Variables.* Sage Publications: Thousand Oaks, CA.

Madrian, Brigitte C. and Lars John Lefgren, 2007. "An Approach To Longitudinally Matching Population Survey (CPS) Respondents." *Journal of Economic and Social Measurement* v26(1), 31-62.

Matthews, Charles H. and Steven B. Moser, 1996. "A Longitudinal Investigation of the Impact of Family Background and Gender on Interest in Small Firm Ownership." *Journal of Small Business Management* 34:2, 29-43.

Moutray, Chad. 2007. "Educational Attainment and Other Characteristics of the Self-Employed: An Examination using Data from the Panel Study of Income Dynamics." Office of Advocacy Working Paper, U.S. SBA.

O'Neill, Grace and Jessica Sincavage, "Response Analysis Survey: A Qualitative Look at Response and Nonresponse in the American Time Use Survey." BLS working paper (Bureau of Labor Statistics, 2004).

Parasuraman, Saroj and Claire A. Simmers, 2001. "Type of Employment, Work-Family Conflict and Well-Being: A Comparative Study." *Journal of Organizational Behavior* 22, 551-568.

Rybczynski, Kathleen Kenny, 2006. "Gender Differences in Self-Employment: The Contribution of Credit Constraints and Risk Aversion to Self-Employment Entry, Duration, and Earnings in Canada." Ph.D. Dissertation, Queen's University.

Shelton, Lois M., 2006. "Female Entrepreneurs, Work-Family Conflict, and Venture Performance: New Insights into the Work-Family Interface." *Journal of Small Business Management* 44:2, 285-297.

U.S. Bureau of Labor Statistics, 2007. *American Time Use Survey User's Guide: Understanding ATUS 2003 to 2006.* Washington, DC http://www.bls.gov/tus/atususersguide.pdf.

Wagner, Joachim, 2007. "What a Difference a Y makes - Female and Male Nascent Entrepreneurs in Germany." *Small Business Economics* 28(1): 1-21.

Wennberg, Karl J., Timothy Folta, and Frederic Delmar, 2007. "A Real Options Model of Stepwise Entry into Self-Employment." U.S. Small Business Administration, Office of Advocacy, SBAHQ-05-M-0561.

Appendix I: ATUS

The ATUS was established to measure how people divide their time among life's activities. The detailed information on time use is valuable to those who study small businesses, including the self-employed, as it affords researchers the opportunity to compare time-use patterns for individuals in different employment sectors. In addition, the data can be linked to responses from the main CPS to gain a rich set of covariates. ATUS respondents represent a subset of the CPS sample, and response rates for the ATUS were more than 52 percent in each year since 2003 (U.S. Bureau of Labor Statistics, 2007). Surveys are conducted over the phone using computer-assisted telephone interviewing.

Interviewers ask follow-up questions to clearly identify activities such as work, volunteering, and secondary child care. ATUS interviewers also collect updated household roster and employment information from the last CPS interview (2 to 5 months prior to the ATUS). Time-use responses are divided into 17 major activity codes, each with multiple second- and third-tier subcategories, using a 6-digit code. Additional details regarding the history, development, and implementation of the survey can be found in the user's guide available at: http://www.bls.gov/tus/atususersguide.pdf.

Time-use data have been used to address a number of research questions. For example, in Kimmel (2008) economists explore the value of time in the context of multiple activities including child care, housework and consumption. Hamermesh (2008) examines the relationship between inputs to eating, time and goods, finding that they are positively correlated. Kimmel and Connelly (2007) examine the effects of socioeconomic factors in the time-use patterns of mothers. Aguiar and Hurst (2007) examine how households substitute time for money through shopping and home production activities. Hamermesh, Myers, and Pocock (2008) use time-use data to assess whether television schedules and time zones affect the timing of work and sleep.