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Motherhood, Migration, and Self-Employment of College Graduates

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Abstract
Women face unique challenges in starting and running their own businesses and may have differing motives to men for pursuing self-employment. Previous research suggests that married women with families value the flexibility that self-employment can offer, allowing them to balance their family responsibilities with their career aspirations. This may be especially true for college graduates, who tend to have more successful businesses. Access to childcare may also affect their labor force decisions. Using American Community Survey microdata, we examine how birth-place residence, a proxy for access to extended family and child care, relates to self-employment and hours worked for college-graduate married mothers. Our results suggest that flexibility is a major factor pulling out-migrant college-educated mothers into self-employment. Additionally, it appears that, in response to fewer childcare options, self-employed mothers away from their birth-place work fewer hours, while self-employed mothers residing in their birth place are able to work more hours per week.

Keywords
motherhood, migration, self-employment, childcare, hours worked

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1. Introduction

Female labor force participation (LFP) in the United States is near record levels as is the contribution of women to the overall economy, with much of the increase since the 1970s attributed to the employment decisions of married women and mothers (Juhn and Potter 2006). While overall female self-employment levels are lower than for men, the number of women entering self-employment has been increasing. As shown in Patrick et al. (2016) as of 2014, about 35% of the self-employed were women and married women were self-employed at higher rates (8%) than unmarried women (4%).

As we will further discuss below, the employment outcomes of married women are strongly tied to their family responsibilities (Kuziemko et al. 2018). For married mothers with young children, a major impediment to working is the need for childcare. However, if self-employment with its potentially more flexible hours provides them with an opportunity to work, rather than not work, it will increase their income and have positive impacts on the economy (Patrick et al. 2016).

Married women's employment is also highly tied to that of their spouse (Cooke 2003). Migration of married couples is usually driven by the employment of the male spouse, and is more likely for college graduates (Boyle et al. 1999; Malamud and Wozniak 2012). This can have a negative impact on women's labor market outcomes. Additionally, having a spouse who earns a higher income may make it less likely that a married woman, especially with young children, needs to work. Married women who are college graduates are more likely to be married to spouses who are also college graduates (e.g. Hotchkiss and Pitts 2005). At the same time, migration can impact access to childcare from extended family and family friends. As discussed

in Section 2, grandparents have been shown to be an especially valuable provider of childcare assistance to families with young children (Compton and Pollak 2015; Overturf Johnson 2005).

Using American Community Survey microdata, we consider the employment and self-employment decisions of married college graduate mothers, including the relationship with proximity to their family (proxied by living in their birth-place or the birth-place of their spouse). We focus on college graduates because they are the ones most likely to migrate and have higher earning spouses; higher educated persons are also more likely to be self-employed and to be successful in their ventures (Boden 1996; Dolinsky et al. 1993; Robinson 1994).

This research contributes to the literature linking motherhood and migration to the self-employment outcomes of educated women. Regarding motherhood, migration, and self-employment, while several previous studies have examined the relationship between two of these three variables, ours is the first, to our knowledge, to model the relationships between all three factors simultaneously and to focus on educated women who play an important role in business creation and are more likely to have successful ventures. Motherhood, migration, self-employment, and college education can all be viewed as investments with much of the costs incurred early on and much of the benefits accrued later. Scarce time and other resources may make these somewhat competing investments, such that greater investment in one may reduce investment in another. However, these investments may also be complementary; e.g., college education may increase the returns to migration and self-employment. Additionally, motherhood may make self-employment a more attractive investment because of the greater flexibility in self-employment than paid-employment. Similarly, out-migration may increase the benefits of self-employment for mothers, if moving away from family reduces access to childcare and

increases the need for work flexibility. We explore these important relationships and fill an important gap in the literature.

Our results suggest that motherhood and migration are significantly related to the self-employment outcomes for married college-educated women. Specifically, we find that mothers of young children who have migrated are more likely to be self-employed but also work fewer hours, especially in self-employment. This is consistent with a need for work flexibility and a lack of childcare support from extended family for out-migrant mothers. At the same time, there is evidence that out-migrant mothers are less likely to work at all, perhaps due to migration hurting their employment opportunities or due to the heavy costs of childcare relative to the benefits of paid employment.

In what follows, we review the previous literature, explain our data and methods, and review the results. In the final section, we make some concluding remarks.

2. Background and Motivation

Our research is motivated by several strands of literature regarding the impact of gender, migration, marriage, childcare, and education on self-employment and other employment outcomes.

Individuals weigh the expected benefits and costs when deciding between self-employment, paid-employment, and not working at all. Those who choose to work must also decide how much to work. The main benefits of working include the income they could earn and the fulfillment they receive from building a career and contributing to society. Self-employment can involve significant startup costs, but the startup costs can vary substantially based on the type of business and access to financial capital. For both self-employment and paid-employment, the

opportunity cost of time is a major factor. If one chooses to not work or work less, more time can be spent with family and friends or on self-improvement, recreation, or other sources of personal fulfillment. Individuals choose the type and amount of work that maximizes their expected utility subject to their resource constraints and opportunities available.

Who becomes self-employed and the reasons for self-employment may vary by gender (Maguire and Winters 2017; Winn 2005). While education makes both men and women more likely to be self-employed, family characteristics such as being married (Boden 1996; Carr 1996) and having young children (Boden 1996; Boden 1999; Noseleit 2014; and Wellington 2006) are the strongest predictors of self-employment participation by women. This may be because self-employment offers flexibility in terms of the number of working hours. Married mothers may be pulled into self-employment due to a more flexible schedule or pushed into self-employment to balance family and household obligations responsibilities that fall more heavily on women (Boden 1999; Loscocco 1997; Patrick et al. 2016). This is consistent with the results from Cubas et al. (2018) that full-time working married women work fewer hours and do more of the household care than men and Carr (1996) that most women in paid-employment work full-time, while the hours worked by the self-employed are more varied. Having young children may make it more difficult to be in full-time self-employment, since it may be difficult to take off time to care for a sick child if someone is self-employed full-time (Winn 2005). Overall, while children can reduce the labor force participation (LFP) of mothers (Budig 2003; Cristia 2008; Hotchkiss et al. 2011), self-employment may allow them to stay in the workforce. However, self-employment appears only to be an alternative to completely exiting the labor force for married women with young children, but not for unmarried women, suggesting that pooling married and

unmarried women together may mask this heterogeneity in employment decisions (Patrick et al. 2016).

Education can also affect the self-employment decision for women. More educated women, especially college-educated women, are more likely to be self-employed as a flexible career option, i.e. having the ability to work part-time (Carr 1996; Wellington 2006; Wiswall and Zafar 2016) due to child-care responsibilities. They are also at least or more likely to have successful businesses than other women (Joona 2018), suggesting that a desire for flexibility does not hinder success. However, mothers with more education may be less likely to work at all perhaps due to the fact that more educated women are married to more educated and higher earning men (making it less necessary for them to work) (Boyle et al. 1999; Gonalons-Pons and Schwartz 2017; Hotchkiss and Pitts 2005; Patrick et al. 2016; Pencavel 1998; Schwartz and Mare 2005).

The impact of household migration on married couples' employment outcomes is complex (Cooke 2008). College-educated people are the most likely to migrate and female college graduates are more likely to be married to other college graduates (Costa and Kahn 2000; Malamud and Wozniak 2012). However, in general, it appears that the labor market opportunities for the wife are a smaller factor in the migration decisions of couples (Li and Mroz 2013; Shihadeh 1991). Both spouses may not be able to maximize their earnings potential (Mincer 1978) and migration has been found to result in higher earnings for married men (further evidence that men are the ones most likely to be driving the migration decision of the couple) while married women have initially lower earnings after the move. However, married women who do not migrate may also be geographically constrained and unable to take advantage of higher earnings opportunities (Maxwell 1988; Sandell 1977). Women are also the ones more

likely not to work after migration (Boyle et al. 2001) or to experience negative employment effects, even if they are the higher earning spouse (Boyle et al. 1999; 2001). Married mothers are especially likely to have reduced employment following family migration, perhaps due to the costs of childcare, while married women without children are much less affected (Cooke 2001).

A significant literature considers how access to childcare affects the overall LFP of mothers, with some studies showing a positive impact on LFP and others no effect at all (Cascio 1999; Givord and Marbot 2015; Haeck et al. 2015; Kimmel 1998; Lefebvre 2009). For mothers of young children, another alternative to formal childcare can be the care provided by family or friends. Overturf Johnson (2005) reports that, in 2002, 28.3% of children under 5 with employed mothers were regularly cared for by their grandparents. Posades and Vidal-Fernandez (2013) find that having the maternal grandmother be the backup primary caregiver (after the mother) has a positive and statistically significant impact on the LFP of mothers with young children. Even absent data on primary caregivers, there is evidence that living in close proximity to friends and family may provide informal support to mothers of young children, increasing their LFP (Compton 2015; Compton and Pollak 2014; Garcia-Moran and Kuehn 2017). Compton and Pollak (2014) use whether or not a woman lives in her state of birth as a proxy for living near family. They find LFP is higher for married women with young children who live either in their own home state or in the home state of their spouse, suggesting that proximity to family affects their labor force decisions, likely because of the access to childcare from grandparents or other extended family.

Compton and Pollak (2015) examine further the proximity of adult children and their mothers in the United States. The probability of close proximity depends primarily on the age and education of the adult child, not on the presence of young children or on characteristics that

might indicate a need for help. This suggests that people are not choosing whether or not to migrate based on the need for grandparent childcare.

Our research expands on this broad, prior literature to examine the interaction of migration, marriage, children, education, and proximity to family on women's self-employment. Our study is most closely related to work by Compton and Pollak (2014); similar to them, we use microdata from the U.S. Census Bureau and we define migration based on whether someone lives in their birth-place as an adult, which we treat as a proxy for childcare access. However, while they focus solely on how the LFP of all married mothers is affected by living in their home state (a proxy for access to childcare); we instead focus on how migration and access to childcare affects self-employment, because of the flexibility it provides. We also use more recent data and we focus on college graduates because of their special importance in business creation.

Building on this literature, we have multiple hypotheses. First, we expect that having children will increase the self-employment probability of married women. Similarly, having children is expected to reduce hours worked, both in self-employment and paid-employment, but we expect a larger response in self-employment because of its flexibility. These hypotheses are consistent with previous research. Unique to our study, we hypothesize that married college-graduate mothers will be more likely to be self-employed if they have migrated as it can provide them with more flexibility to balance family responsibilities with their desire for a fulfilling career. Thus, we expect that motherhood, migration, and self-employment are complementary investments at the extensive margin for these women. Finally, we also hypothesize that out-migrant self-employed married college-graduate mothers will work fewer hours than their non-migrant counterparts. The next section discusses our data and empirical methods in more detail and further specifies our hypotheses.

3. Data and Methods

3.1 ACS Sample

This study uses microdata from the pooled 2014-2016 American Community Survey (ACS). The ACS is an annual survey conducted by the U.S. Census Bureau and administered to a random one percent sample of the U.S. population each year with samples independently drawn across years, so it is not possible to link individuals across years. Our analysis uses a pooled cross-section of three years of data to increase sample size and estimate precision. The ACS collects individual-level information related to employment, education, demographics, household composition, and other socioeconomic variables. Important for this analysis, the ACS asks individuals whether they worked during the previous year, and if so, whether they worked in paid employment or self-employment. The ACS also asks workers to report the usual number of hours per week that they worked during the previous year. In addition, the ACS microdata include an individual's current U.S. state of residence and the U.S. state or foreign country in which she was born. Our analysis includes both native- and foreign-born women who reside in the U.S. during the survey, but our main results are qualitatively robust to excluding foreign-born women.

Our study examines the employment and self-employment outcomes of college graduate married women, with a focus on those with children in the household. Our analytical sample is limited to married women ages 25-59 whose highest education is a bachelor's degree or higher. We do not include unmarried women as their employment decisions are quite different (Patrick et al. 2016). We focus on college graduates because they have higher labor force participation rates, greater geographic mobility, and more successful businesses compared to women with less

than a bachelor's degree. The lower age range cutoff is chosen because many women in their early 20s are still finishing college. The upper age cutoff is chosen to balance the desire for a reasonably large sample while minimizing the influence of early retirement decisions. In our analysis, we classify married mothers based on the age of their youngest child.

3.2 Dependent Variables and Estimation Methods

We examine multiple dependent variables. We first investigate the probability of self-employment via probit model estimation:

$$P_i = \Pr(y_i = 1|X) = \Pr\left(y_i = 1|x_1, x_2, x_{3,\dots}\right) = \Phi(Z_i)$$

$$Z_i = \beta_0 + \beta_1 x_{1i} + \cdots + u_i$$

Where the probability P_i of being self-employed is determined by $\Phi(Z_i)$, the standard normal cumulative distribution function. The dependent variable is a binary indicator equal to one if a woman is self-employed and zero otherwise. Thus, the probit model estimates the probability of being self-employed, given the explanatory variables *X* that we further explain below. Our primary analysis includes both paid-employees and non-workers in the comparison category to self-employment. However, in robustness checks, we also exclude non-workers from the sample. For comparison, we also estimate probit models with a paid-employment dependent variable, which equals one if a woman works as a paid employee and zero otherwise. Additionally, we consider the probability of working at all during the previous 12 months (in either self-employment or paid-employment) with non-workers as the zero category (results are in Appendix Table A1).

We are also interested in labor supply at the intensive margin. That is, how do our main variables of interest relate to hours worked within a particular employment category? We take

the natural log (ln) of the usual hours worked per week (log hours worked) and estimate a linear regression model (further information on the explanatory variables in X is provided below):

$$ln(hours\ worked) = X\beta + \varepsilon$$

We estimate log hours worked regressions separately for the self-employed and paid employed.

Unfortunately, selection into self-employment and paid-employment may not be randomly assigned, even conditional on controls, and this could potentially bias the coefficients in our estimates for the log hours worked. To account for this potential selection bias, we estimate two-step Heckman selection correction models (Heckman 1979). In the first step, we estimate the probit regressions for the probability of self-employment (or paid-employment) for the full sample. We use the results from the first-stage to compute the inverse Mills ratio for each observation. The inverse Mills ratio is the ratio of the probability density function to the cumulative density function based on the standard normal distribution (since we estimated the first stage using probit). We include the inverse Mills ratio in the second stage (log hours worked) equation to account for selection into self-employment (or paid-employment), in other words, for the potential omitted selection bias.

The Heckman procedure warrants an exclusion restriction, a factor that affects the first stage but should not be included in the second stage. After careful consideration and review of the literature, we chose to utilize dummy variables for the college major of each woman as our exclusion variables. The ACS asks all college graduates to report the major field of study for their bachelor's degree. These are coded into 37 two-digit categories, which we use to construct college major dummy variables. The ACS also reports college major in 173 detailed categories. However, the probit and Heckman procedures that we use perform better with a more moderate number of dummy variables, so we use the broader categories. The literature provides evidence

that field of study affects whether or not someone is self-employed (Leoni and Faulk 2010). Further, we believe that college major affects the decision to be self-employed via potential wages in paid employment and self-employment, especially via the opportunity cost of paid employment wages (Cai and Winters 2017). However, conditional on being self-employed, we believe that college major is unlikely to have a further effect on hours worked, especially among married mothers. We expect that most married women chose their college major long before getting married or having kids and that they chose their major largely based on their skills and interests for paid employment and not in anticipation of self-employment. Furthermore, self-employment allows a woman considerable flexibility to choose the industry for her business and to develop new skills to enhance her business, so her business opportunities need not be strongly tied to her educational credentials such as college major. Thus, the college major dummy variables are used for the exclusion restriction in our Heckman estimation. We also use college major dummy variables in our Heckman estimation of hours worked among the paid-employed. However, we have less confidence in the college major exclusion restriction for the paid-employed than for the self-employed, because some college majors are tied to particular jobs in paid employment that may have strong patterns of hours worked. In sensitivity analysis, we also consider the relationship between our explanatory variables and hours worked without controlling for the selection.

3.3 Explanatory Variables

While a number of factors likely influence employment and self-employment decisions, we focus on a few important variables of interest. First, we consider the influence of childcare demands and we categorize mothers into three categories by age of their youngest child: ages 0-

4, ages 5-12, and ages 13-18. Children under age 5 are typically not in school in the U.S., thus working parents of these children often face substantial childcare costs. Children ages 5-12 are typically in school but may require childcare after school and on weekends, potentially altering maternal work decisions but not as strongly as with children ages 0-4. Children ages 13-18 are typically in school and have the least need for in-person supervision outside of school, yielding even lower childcare costs for working parents. Of course, childcare costs depend on a number of factors, but age of the youngest child is an important one. We first examine differences by age of the youngest child and then proceed to explore other factors for these groups of mothers as separate sub-samples. While, we take the children variables as given, there could be some endogeneity where the employment decisions of women affect the presence of children and the age of the youngest child. Thus, we recognize our estimates may not necessarily represent unbiased causal estimates, but should be suggestive of the relationship.

We expect young children to have different impacts on self-employment versus paid-employment. Many married mothers may choose self-employment for its flexibility in hours worked, both in how many hours to work and when to work, compared to paid employment. We expect that having young children may increase the probability of self-employment, although it could also drive married mothers completely out of the labor force. We also expect married mothers with young children to work fewer hours in both self-employment and paid-employment because of childcare demands.

We are also interested in the impact of migration. The ACS has somewhat limited information on prior residential locations. Similar to previous research (Compton and Pollak 2014; 2015; Sjoquist and Winters 2014; Winters 2017), we compare current U.S. state of residence to the U.S. state of birth for native-born women and the country of birth for foreign-

born women (for brevity we refer to these together as the place of birth). We define a dummy variable equal to one if a woman is a birth-place stayer (if she resides in her place of birth during the time of the ACS) and equal to zero if she is a birth-place leaver (if she no longer lives in her place of birth at the time of the ACS); we refer to this as own birth-place residence. Of course, some of our stayers, may have left and came back, but we cannot observe that. We also do not know the local area within the state or country in which they were born. Still, our simple categorization of birth-place stayers and birth-place leavers allows for useful insights. All foreign-born women residing in the U.S. are by definition birth-place leavers. In terms of migration, our approach defines as migrants both women born in another country who migrated to the U.S. and women born in the U.S. who out-migrated from their home state and currently live in a different state. Non-migrants are women who reside in the same state as they were born.

Own birth-place residence is expected to have opposite relationships with self-employment and paid-employment for married mothers. We expect own birth-place residence to be associated with higher rates of paid-employment for married mothers because of better access to childcare resources (from close family and friends) as noted in the previous literature. Better childcare availability makes it more advantageous to work any job and especially a good job with greater time demands. Working mothers living away from family may need more time flexibility than those living near family and this may pull them into self-employment. At the same time, family demands may push them into self-employment. Thus, own birth-place residence is expected to be associated with lower rates of self-employment among married mothers (in other words, those who have moved away from their birth-place will have higher rates).

Own birth-place residence is also expected to increase hours worked for both self-employed and paid-employed married mothers because of potential childcare support from family and friends. The effect is expected to be more pronounced for self-employed women because they have greater flexibility in hours worked. Furthermore, we expect that own birth-place residence will have a larger increase in hours worked for women with younger children than those with older children because childcare is especially important for mothers of young children.

We also include a dummy variable indicating whether a woman resides in her spouse's birth-place. We use the term wife to refer to the person under observation and use the term spouse to refer to the wife's marital partner since our sample includes both opposite-sex and same-sex couples. Residing in the spouse's birth place is expected to provide childcare access similar to being in the wife's birth place; this is expected to have directionally similar coefficients as the wife's own birth-place dummy, but magnitudes may differ. For example, mothers may feel more comfortable requesting and receiving help from their own families and friends than from those of their spouses, suggesting possibly smaller magnitudes for residing in the spouse's birth-place.

Spousal income may also matter. Spouses' actual incomes are potentially endogenous because they may be jointly determined with their wives' labor supply decisions. Some families may jointly choose that the wife will work less (or more) in the labor market and her spouse will work more (less) to maximize household well-being (Black et al. 2014). To deal with potential endogeneity, we predict the spouse's log income by estimating a linear regression of log annual earned income on a quartic specification of age and dummy variables for education level, college major, race/ethnicity, survey year, state/country of birth, and the dummy for residing in the

spouse's birth place. We include all spouses in the same household as their wife regardless of age or education. While some spouses have non-positive income and are excluded from the log income regression, we still predict their log income based on their characteristics and the log income regression coefficients. We expect that higher predicted spousal income will reduce the probability that the wife works in paid employment and increase the probability that the wife is self-employed; it may also increase the probability that she will not work at all. Predicted spousal income is also expected to reduce the wife's hours worked. Since we predict spousal income, we account for this by reporting bootstrapped standard errors; we use the Stata default of fifty replications.

Our probit and hours worked models also include numerous control variables such as a quartic specification of age, and dummy variables for highest post-bachelor's degree completed, race/ethnicity, survey year, and place of birth. We also control for college major in the self- and paid-employment probit estimations but not in the hours worked regressions as noted above. Since these additional variables are included as controls and not of primary interest themselves, we do not report their results; however, they are available by request from the corresponding author.

We also include place of birth dummy variables for each U.S. state and a consolidated dummy variable for all foreign-born women; probit and Heckman estimation make it impractical to include a large number of individual dummies for each country of birth. Place of birth dummies net out the effects of common factors that influence all married mothers with the same birth-place. Using birth-place residence dummy with birth-place fixed effects thus compares mothers residing in their birth-state to mothers born in the same state but residing outside the state. Of course, location decisions may be affected by unobservable factors for which we cannot

control, so there is some threat to identification of causal estimates for the birth-place residence dummy. However, a large literature suggests that married mothers' location decisions are largely tied to the location-specific employment opportunities of their spouses as noted in the literature review section. Thus, while we cannot rule out possible bias, our estimates should be directionally consistent since any bias is likely relatively small for the employment outcomes of married mothers, especially after including the extensive set of additional variables.

Sub-sample means for the main variables in our analysis are shown in Table 1. All sub-samples are restricted to married, female college graduates ages 25-59. Column 1 includes all currently married women with a spouse present. Columns 2-4 include only married mothers whose youngest children are ages 0-4, 5-12, and 13-18, respectively.

Since the sub-sample means do not account for the control variables, strong conclusions are not possible. However, the patterns related to hours worked are notable. Means for log hours worked are restricted to the sample with positive hours worked in the corresponding self- or paid-employment category and differs significantly between self- and paid-employment and across the sub-samples. Paid-employed women work more hours than the self-employed, especially among mothers of young children. Self-employed mothers whose youngest children are older work more mean hours than self-employed mothers with children ages 0-4. Figures 1 and 2 illustrate the distribution of usual hours worked per week for married, college-educated women in ten-hour intervals, with the self-employed in Figure 1 and the paid-employed in Figure 2. For self-employed college graduate women in Figure 1, the fourth interval (31-40 hours) has the largest share, but there are also sizable shares for each of the first three intervals (1-10, 11-20, and 21-30 hours) and the fifth interval (41-50). In Figure 2, however, the mass is much more concentrated, with more than half of the sample in the 31-40 hours interval. Overall, 48.5 percent

of the self-employed work 30 hours or less, but only 17.0 of the paid-employed work 30 hours or less. Thus, paid-employment is dominated by "full-time" jobs, while self-employment exhibits greater opportunities for part-time work and increased flexibility.

4. Empirical Results

4.1 Full Sample of Married Women

Table 2 presents results for our full sample of married women, the same sample as in Column 1 of Table 1. This analysis includes dummy explanatory variables for the three categories for age of the youngest child. The omitted reference category is married women with no children (age 18 or under) in the household; a few of these have adult children in the household but most have no children in the household. For ease of interpretation, we report average marginal effects and corresponding bootstrapped standard errors for the probit models for self-employment and paid-employment in Columns 1 and 2, respectively. Log hours worked results from the second stage of the Heckman selection procedure are reported in Columns 3 and 4, with the inverse mills ratio results at the bottom of these columns.

In Column 1, the probability of self-employment is significantly higher for married mothers of young children relative to observationally similar married women without children. Those whose youngest child is aged 0-4 or 5-12, have a positive and statistically significant increased probability of self-employment. The mean self-employment rate in Table 1, Column 1 is only 0.073, so the implied relative magnitudes in Table 2, Column 1 for these two categories are meaningfully large. For example, the marginal effect of 0.008 for those whose youngest child is aged 0-4 corresponds to a 0.9 percentage point increase relative to the mean of 7.3 percent self-employed. In contrast, in Column 2, all three youngest child variables have statistically

significant negative effects; signifying that having children under 18 at home decreases the probability of paid employment. However, the magnitudes vary widely, and are larger for those with younger children. While the marginal effects for paid employment are much larger than for self-employment, the mean paid-employment rates are also much higher, so the effects relative to sample means are comparable. Also, recall that our sample is not conditioned on working at all. The fact that these negative marginal effects for paid-employment are larger in absolute magnitude than the corresponding positive marginal effects for self-employment means that young children make it less likely that a married, college graduate woman would work at all. We test and confirm this more formally by estimating a similar probit equation where the dependent variable is any employment in either self-employment or paid-employment (results are in Column 1 of Appendix Table A1).

Table 2 also reports results for the own birth-place residence dummy variable, the spouse birth-place residence dummy variable, and predicted spousal log income. In Column 1, both of the birth-place residence variables have negative and statistically significant marginal effects on the probability of being self-employed. The marginal effect of -0.009 for own birth-place residence is moderately larger than the marginal effect of -0.006 for spouse birth-place residence and the difference is significant at the five percent level. As predicted, this suggests that women who live away from their birth-place (or their spouse's birth-place) are more likely to be self-employed. Predicted spouse log income is also significantly positive, suggesting that college graduate women with a higher earning spouse are more likely to choose self-employment. In contrast, in Column 2, birth-place residence and predicted spouse log income have statistically significant marginal effects on the probability of being in paid employment that are of the opposite sign from self-employment. Own birth-place residence has a marginal effect of 0.037,

and spouse birth-place residence has a marginal effect of 0.035. These magnitudes exceed those for self-employment, indicating that the net effects of birth-place residence on any employment are positive (as confirmed in Appendix Table A1). Predicted spouse log income has a negative relationship with paid employment suggesting that women with a higher earning spouse are less likely to take paid employment.

Table 2, Column 3 examines log hours worked of the self-employed using the Heckman procedure to account for selection into self-employment. All three youngest child variables have significant negative coefficients, indicating that having children in the household is associated with reduced hours worked among married self-employed college graduate women, compared to similar married women without children. The youngest child magnitudes are largest for those with young children and smallest for those with older children. The coefficients are -0.467, -0.272, and -0.144 for youngest child age 0-4, 5-12, and 13-18, respectively. Since the magnitudes are very large, we exponentiate the log differences to interpret the magnitudes more accurately. Thus, for women whose youngest child is 0-4 years old, a log difference of 0.467 implies a 60 percent decrease in hours worked. Correspondingly, log differences of 0.272 (with a youngest child of 5-12 years old) and 0.144 (with a youngest child of 13-18 years old) correspond to decreases of 31 percent and 15 percent, respectively. In other words, having young children has a significant negative relationship with the number of hours married college graduate mothers work in self-employment. Own birth-place and spouse birth-place residence are both significantly positive; this suggests that those married women in their home states (with access to family) can work more. Predicted spouse log income is statistically significant and negative. Finally, the inverse mills ratio coefficient is statistically significant, which suggests that selection bias is significant and failing to account for it could alter the results.

Table 2, Column 4 examines log hours worked for the paid-employed via the Heckman procedure to account for selection. Like with self-employment, all three youngest child variables are significantly negative, indicating having children lowers the number of hours worked; however, the magnitudes are smaller than for the self-employed in Column 3 and the pattern by age of youngest child is less pronounced. Own birth-place residence has a small significantly negative coefficient, but spouse birth-place residence has a very small insignificant positive coefficient estimate. Predicted spouse log income is again negative with a coefficient of -0.069, but the response magnitude is much smaller than for the self-employed in Column 3. Overall, the results suggest that once the decision is made to enter paid-employment, the main explanatory variables of interest have less of an effect on the number of hours worked, consistent with Figure 2. The inverse mills ratio coefficient is significant at the one percent level, suggesting that selection into paid-employment is a significant issue.

The results in Table 2 are consistent with migration and childcare playing an important role in self-employment, paid-employment, and hours worked decisions of married women. Younger children typically have more intensive childcare demands, and married mothers with young children especially appear to respond by decreasing participation in paid-employment and increasing participation in self-employment. Self-employment is likely appealing for many because of the greater flexibility in work schedules and this is evidenced by the number of hours worked. Married mothers with young children work fewer hours in both paid-employment and self-employment, but the magnitude is very large for those in self-employment. Thus, an important part of the flexibility in self-employment for married mothers is the flexibility to work significantly fewer hours. Many jobs in paid-employment have less flexibility, so married mothers with young children are not able to reduce their hours as much in paid-employment.

Notably, living in one's own birth-place or the birth-place of one's spouse often increases access to high-quality but low-cost childcare via family and long-term friends. On average, residing in one's own or one's spouse's birth-place increases paid-employment, reduces self-employment, and increases hours worked in self-employment with minimal effects on hours worked in paid-employment (possibly due to less flexibility). Better childcare access from birth-place residence reduces the benefits of self-employment as a response to childcare needs, but it also increases hours worked among those who are self-employed. Thus, childcare resources appear to have opposite effects on the intensive and extensive margins of self-employment for married mothers. Better childcare means fewer mothers participate in self-employment, but those who are self-employed work more intensively. It also may reflect that migration may have a negative impact on wives' employment networks and skill matches, thus increasing their need to be self-employed.

4.2 Sub-Samples of Married Women

We next take a more detailed look at the associations between our employment outcomes and birth-place residence by estimating separate regressions for sub-samples of college graduate married women by age of the youngest child. Table 3 includes the estimates for the probit models for self-employment and paid-employment probabilities in panels A and B, respectively. Columns 1-3 are for sub-samples of married mothers with youngest child ages 0-4, 5-12, and 13-18, respectively. Corresponding probit results with the probability of working at all as the dependent variable are in Appendix Table A1, Columns 2-4.

In Panel A of Table 3, the marginal effect of own birth-place residence on the probability of self-employment is significantly negative for all sub-samples. The marginal effect varies

slightly across the groups, but not in a way with strong economic implications. Spouse birth-place residence also has significantly negative marginal effects in all three columns; and all values are smaller than own birth-place residence. Thus, proximity to a woman's own family appears to be especially important to the self-employment decision for college graduate married mothers. Predicted spouse log income is significantly positive in Columns 1-3 with the marginal effect estimate moderately smaller in Column 1. This makes sense since married mothers with spouses that make more money may be more likely to be self-employed for the flexibility to take care of family rather than to enter into paid-employment, which is more likely to be full-time.

In Panel B of Table 3, own birth-place residence has a significantly positive marginal effect on the probability of paid-employment for all three sub-samples. The magnitude is largest for Column 1 and decreasing with age of the youngest child. Spouse birth-place residence marginal effects are also significantly positive in Columns 1-3 and decreasing with age of the youngest child. Predicted spouse log income is negative for Columns 1-3 with only moderate differences across the columns. Again, this makes sense since women with children at home and higher earning spouses would be less likely to take on the less flexible work option of paid-employment as higher earning spouses likely work more hours and the higher spousal income reduces family reliance on the mother's income.

Table 4 examines the intensive margin of log hours worked for the sub-samples considered in Table 3. Panel A reports the Heckman selection model estimates for self-employed women, and Panel B reports similar results for women in paid-employment. In Panel A, the coefficient for own birth-place residence is larger in Column 1 than in the other columns. The coefficient estimates are positive in Columns 2-3 but not significant in Column 3. Thus, it appears that the previously observed positive relationship in Table 2 between own birth-place

residence and log hours worked of the self-employed is disproportionately driven by mothers whose youngest child is age 0-4. The spouse birth-place residence coefficient is small and not statistically significant in Column 1, but it is moderately large and statistically significant in Columns 2-3. Predicted spouse log income has large significantly negative coefficients across Columns 1-3 with the magnitude moderately decreasing with age of the youngest child.

In Panel B of Table 4, examining hours worked by the paid-employed, own birth-place residence and spouse birth-place residence both have small coefficients across all three columns, though they are significantly positive in Column 1. Predicted log spouse income has significantly negative coefficients in Columns 1-3 with the coefficient smaller in magnitude in Column 1 than in Columns 2-3; however, all are much smaller in magnitude than with self-employment. Overall, these results are as expected since paid-employment has less flexibility in terms of hours worked.

The results in Table 4 are especially notable for the differences in the birth-place residence coefficients in Panel A. Own birth-place residence has the largest positive coefficient on hours worked in self-employment for women with very young children. However, spouse birth-place residence hours worked coefficients are strongest for married women whose youngest children are ages 5-12 and 13-18. Interestingly, this suggests that childcare resources related to own birth-place residence are especially important for self-employed mothers of young children, but spousal birth-place resources are more important with older children. We can only speculate, but this may reflect the differing intensity of childcare needs for younger versus older children and self-employed mothers' willingness and ability to receive help from their networks versus their spouses' networks. Furthermore, this pattern is not found for paid-employed mothers in Panel B. The flexibility in self-employment makes hours worked for the self-employed

especially sensitive to childcare resources proxied by birth-place residence (of either the woman or her spouse).

4.3 Oaxaca-Blinder Probit Decomposition

We next use the probit version of the Oaxaca-Blinder decomposition technique (via the oaxaca command in Stata) to assess the extent to which the raw differences in self-employment (or paid-employment) for our analytical sample are explained by our models. Results for the full analytical sample are in Table 5. Column 1 indicates that for college graduate married women residing out of their birth-place the mean of self-employment is 0.079, but the mean for their counterparts living in their birth-place is only 0.065. The difference in means is 0.015, due to some rounding error. The portion of the difference explained by the model covariates is 0.006 (about 40 percent), leaving 0.009 (about 60 percent) unexplained.

Column 2 of Table 5 contains decomposition results for the paid-employment dummy. The paid-employment mean is 0.716 for women out of their birth-place and 0.804 for women residing in their birth-place, yielding a difference of -0.088. The explained portion is -0.055 (63 percent), and the unexplained portion is -0.033 (37 percent).

In both cases, the unexplained portions are economically important suggesting there is something (like access to childcare) about living in their birth-place that affects the employment decisions of married college-graduate women.

4.4 Sensitivity Analysis

Appendix Table A2 reports results that drop the college major exclusion restriction and instead estimates the hours worked equations via ordinary least squares (OLS), including college

major dummies as control variables. Non-workers are now excluded entirely; panel A only includes self-employed workers and panel B only includes paid-employed workers. The main OLS coefficients of interest in Table A2 are qualitatively similar to corresponding Heckman coefficients in Tables 2 and 4. A few coefficients change significance levels, e.g., own birth-place residence of the self-employed in Column 3 of Panel A is no longer significant at conventional levels. However, the main takeaways are unchanged, providing support that our results related to hours worked are not driven by the exclusion restrictions in our Heckman estimation.

Because some of the previous literature (Garcia-Moran and Kuehn 2017) suggests that living away from family could lead to lower levels of fertility, we also examine the relationships between migration and marriage and fertility using our data. As shown in Column 1 of Appendix Table A3, we find that, in our sample, women living in their birth-place are less likely to be married. Perhaps this means that women who do not migrate have a harder time finding a match; or it may result from reverse causality with marriage increasing out-migration, e.g., for tied movers. In Column 2, we condition on being married and find that married women are more likely to have children if they live in their birth-place. This is consistent with the previous research (Garcia-Morn and Kuehn 2017) and with the idea that access to family and friends is important to married women for having children.

There is also some possibility that women may have moved on their own earlier in life and that the birth-place out-migration decision is not exogenous (for example to go to college or for a pre-marriage job). Unfortunately, our data do not allow us to observe when or why a woman left her birth-place. To attempt to control for this, we add an indicator variable of whether or not the woman and her spouse are from the same birth-place. We also interact that

with the own birth-place dummy variable. Results are in Appendix Tables A4 and A5. In all cases, the results are similar to those in Tables 2-4, suggesting that omitting this variable is not biasing our results.

Finally, Costa and Kahn (2000) suggest that couples in which both partners have a college degree are more likely to locate in large urban areas due to "colocation" problems that are mitigated by moving to larger labor markets with better labor market opportunities for both partners. At the same time, however, Compton and Pollak (2007) argue that such "power couples" are not disproportionately likely to move to large cities, but instead that college graduate singles are especially likely to marry other college graduates in large cities to form power couples; thus, it could be that such couples are the result of pre-marriage location of men and women to urban areas. Either way, it could be that the labor market decisions of married, college-graduate women may be different in urban areas. To test this, we estimate our main models controlling for whether or not a woman lives in a metropolitan statistical area (MSA). As shown in Appendix Tables A6 and A7, the main results are unchanged. We also ran other alternatives for our main models (results not shown), including limiting the sample to just metropolitan areas, controlling for MSA size, and adding a large number of MSA fixed effects. When including MSA fixed effects, we had to run either linear versions of our models with bootstrapped standard errors or probit/Heckman models with conventional standard errors because the probit/Heckman with bootstrapped standard errors was not estimable. The main results were similar for all alternatives we considered.

While we cannot rule out the possibility of married mothers making endogenous location decisions based on their employment opportunities, the evidence here suggests that any resulting bias should be minimal for our main results. Our trailing spouse assumption should hold the bulk

of the time for married mothers, especially for those with young children. Even if some married mothers make location decisions based on their own employment opportunities, it is not clear that this would differ between self-employment and paid-employment and between mothers with different aged youngest children. Any bias from married mothers making endogenous location decisions is likely to be small and overwhelmed in importance compared to childcare access. Our results are strongly consistent with birth-place out-migration influencing self-employment outcomes through reduced access to childcare from family and friends.

5. Conclusion

The current study examines how motherhood and migration relate to the self-employment outcomes of college-educated married women. Responsibility for arranging and providing childcare still falls heavily on mothers and greatly influences their employment decisions. Self-employment may be an especially attractive option for many mothers because it can allow them flexibility to set their own hours to align with childcare needs. At the same time, proximity to family may increase access to low-cost childcare and increase employment opportunities for mothers. Previous research has found that married couples usually migrate based on the employment opportunities for the male spouse, which often harms the employment opportunities of the wife, possibly because of reduced access to job networks or childcare networks. Thus, this study is particularly interested in how proximity to family relates to the self-employment outcomes of college-educated married mothers, a question of major importance. The share of women in self-employment has been increasing, and businesses started by college graduates are especially likely to be successful. More women are now attending college than men, and women are likely to be a growing force among the college-educated self-employed for years to come.

We first document that college-educated married mothers of young children are more likely to be self-employed and especially unlikely to work in paid employment compared to other college-educated married women without children in the household and even compared to college-educated married mothers with older children. Among those who work, those with young children also work fewer hours, especially among the self-employed. This is consistent with expectations that having young children strongly affects employment and self-employment decisions.

We define migration based on whether a woman lives in her birth-place, defined as state of birth for native-born and country of birth for foreign-born women. Thus, our definition of migrants includes all women residing in the U.S. who are residing outside their place of birth. Using birth-place residence as a proxy for access to family and other support networks, we find that college-educated married mothers are more likely to be self-employed when they live away from home. Conditional on being self-employed, out-migrant mothers also work fewer hours compared to similar mothers, with the difference strongest among mothers with young children in the household. These findings are consistent with out-migrant mothers having reduced access to childcare, and choosing self-employment for the flexibility in hours worked and ability to work fewer hours in order to achieve their desired balance between time devoted to family and work.

Notably, while married mothers residing outside their birth place are less likely to work in paid employment, those out-migrants who do work in paid employment do not work meaningfully fewer hours than their counterparts residing in their birth-place. This is consistent with paid-employment opportunities having limited flexibility in hours worked and many mothers with limited childcare access (from proximate family) having to choose either to

withdraw from paid employment or accept its inflexible hours. Self-employment may be an attractive option that can increase their individual well-being relative to the alternatives. The businesses that they start and the economic value that they create can also benefit society more broadly.

Our analysis is not without limitations. Our use of birth-place residence as a proxy for proximity to family is admittedly imperfect and will induce some measurement error. However, we argue that the measurement error will likely attenuate coefficient estimates toward zero, making our coefficients conservatively estimated. Additionally, motherhood and migration decisions are not randomly assigned, and we cannot confidently interpret our estimates as unbiased causal effects despite our detailed set of control variables included. Our analysis assumes that the migration decisions of married mothers are driven by their spouses' employment opportunities. While previous literature largely supports this, there is some literature suggesting that educated power couples choose labor markets jointly to solve a colocation problem. We cannot rule this out, but our results are robust to sensitivity analysis that attempts to control for the location decision and makes it likely that our trailing spouse assumption should hold the bulk of the time for married mothers with young children.

Our results suggest that childcare demands and resources play important roles in the employment and self-employment decisions of college graduate married mothers. Some mothers would certainly benefit from additional childcare access and likely increase their attachment to the workforce. However, many mothers use self-employment as an opportunity to balance work and family. While self-employed women may benefit from increased childcare access, there may be other scarce inputs and support services that could help mothers start businesses and succeed in self-employment, including access to mentors and networks of other self-employed mothers

who can offer guidance. Communities may be able to take advantage of the talents of highly educated mothers by helping them to start and grow their businesses. As their businesses grow, they can facilitate positive spillovers into the local economy by creating new jobs and growing the networks of mentors and peers to support future self-employed women.

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Table 1: Sub-Sample Means for Primary Variables

	(1) Full Sample	(2) Married & Youngest Child 0-4	(3) Married & Youngest Child 5-12	(4) Married & Youngest Child 13-18
Self-employed	0.073	0.060	0.078	0.082
Paid-employed	0.754	0.711	0.738	0.759
Own birth-place residence	0.439	0.459	0.438	0.441
Spouse birth-place residence	0.442	0.456	0.440	0.440
Predicted spouse log income	11.106	11.070	11.212	11.211
Log hours of self-employed	3.240	2.977	3.175	3.275
Log hours of paid-employed	3.600	3.556	3.552	3.586
N	503,717	120,033	118,089	68,294

Note: Our analytical sample is limited to married women ages 25-59, whose highest education is a bachelor's degree or higher.

Table 2: Results for the Sample of All Married Female College Graduates

	(1) Probability of Self-Employment	(2) Probability of Paid-Employment	(3) Hours Worked in Self-Employment	(4) Hours Worked in Paid-Employment
Youngest Child 0-4	0.008***	-0.165***	-0.467***	-0.116***
	(0.001)	(0.002)	(0.013)	(0.004)
Youngest Child 5-12	0.006***	-0.093***	-0.272***	-0.118***
	(0.001)	(0.002)	(0.012)	(0.003)
Youngest Child 13-18	-0.000	-0.027***	-0.144***	-0.070***
	(0.001)	(0.002)	(0.013)	(0.003)
Own birth-place residence	-0.009***	0.037***	0.047***	-0.004**
	(0.001)	(0.001)	(0.009)	(0.002)
Spouse birth-place residence	-0.006***	0.035***	0.023**	0.001
	(0.001)	(0.001)	(0.010)	(0.002)
Predicted spouse log income	0.012***	-0.109***	-0.161***	-0.069***
	(0.001)	(0.001)	(0.010)	(0.003)
Coefficient on the inverse mills ratio			0.055**	-0.119***
			(0.024)	(0.014)
N	503,717	503,717	503,717	503,717

Note: The sample is restricted to married female college graduates. The first two columns report the estimated marginal effects and the standard errors from probit estimations for self-employment and paid-employment dummy dependent variables, respectively. The omitted reference category for the youngest child dummy variables is no children in the household. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. College major is excluded from the second stage of the Heckman procedure in Columns 3 and 4 with log hours worked in self-employment and paid-employment as the dependent variables, respectively. Bootstrapped standard errors are in parentheses.
** $p < 0.05$, *** $p < 0.01$.

Table 3: Probit Results for Self-Employment and Paid-Employment by Age of Youngest Child

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employment Probability			
Own birth-place residence	-0.007***	-0.011***	-0.008***
	(0.002)	(0.002)	(0.003)
Spouse birth-place residence	-0.004**	-0.007***	-0.005**
	(0.002)	(0.002)	(0.002)
Predicted spouse log income	0.010***	0.012***	0.012***
	(0.002)	(0.002)	(0.002)
B. Paid-Employment Probability			
Own birth-place residence	0.052***	0.047***	0.028***
	(0.003)	(0.003)	(0.004)
Spouse birth-place residence	0.054***	0.039***	0.030***
	(0.003)	(0.003)	(0.004)
Predicted spouse log income	-0.142***	-0.161***	-0.137***
	(0.003)	(0.004)	(0.004)
N	120,033	118,089	68,294

Note: All results in this table are estimated marginal effects. The dependent variable for Panel A is a self-employment dummy variable. The dependent variable for Panel B is a paid-employment dummy variable. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. ** $p < 0.05$, *** $p < 0.01$.

Table 4: Heckman Procedure Results for Log Hours Worked

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employed			
Own birth-place residence	0.112***	0.030**	0.032
	(0.031)	(0.014)	(0.030)
Spouse birth-place residence	0.007	0.049**	0.047*
	(0.022)	(0.021)	(0.025)
Predicted spouse log income	-0.244***	-0.219***	-0.200***
	(0.025)	(0.028)	(0.026)
Coefficient on the inverse mills ratio	0.112	0.086***	-0.001
	(0.068)	(0.033)	(0.074)
B. Paid-Employed			
Own birth-place residence	0.011**	-0.001	-0.001
	(0.005)	(0.004)	(0.005)
Spouse birth-place residence	0.013***	0.002	0.006
	(0.005)	(0.004)	(0.005)
Predicted spouse log income	-0.075***	-0.116***	-0.107***
	(0.007)	(0.007)	(0.009)
Coefficient on the inverse mills ratio	-0.026	-0.149***	-0.158***
	(0.023)	(0.026)	(0.029)
N	120,033	118,089	68,294

Note: The dependent variable for Panel A is log hours worked of the self-employed. The dependent variable for Panel B is log hours worked of the paid-employed. The regressions also control for a quartic specification of age, and dummy variables for education level, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Oaxaca-Blinder Probit Decomposition of Employment Differentials between Married Mothers Residing Outside and In Their Birth-Places

	(1) Self-employed	(2) Paid-employed
Dependent Variable Means		
Outside birth-place	0.079***	0.716***
	(0.001)	(0.001)
In birth-place	0.065***	0.804***
	(0.001)	(0.001)
Difference	0.015***	-0.088***
	(0.001)	(0.001)
Explained portion	0.006***	-0.055***
	(0.000)	(0.001)
Unexplained portion	0.009***	-0.033***
	(0.001)	(0.001)

Note: The dependent variable for Column (1) is a self-employment dummy variable. The dependent variable for Column (2) is a paid-employment dummy variable. Except for own birth-place residence, the decomposition controls the same covariates as in Table 3. Standard errors in parentheses are robust to heteroscedasticity.
*** $p < 0.01$.

Figure 1: Hours Worked Distribution for Self-Employed Married Women

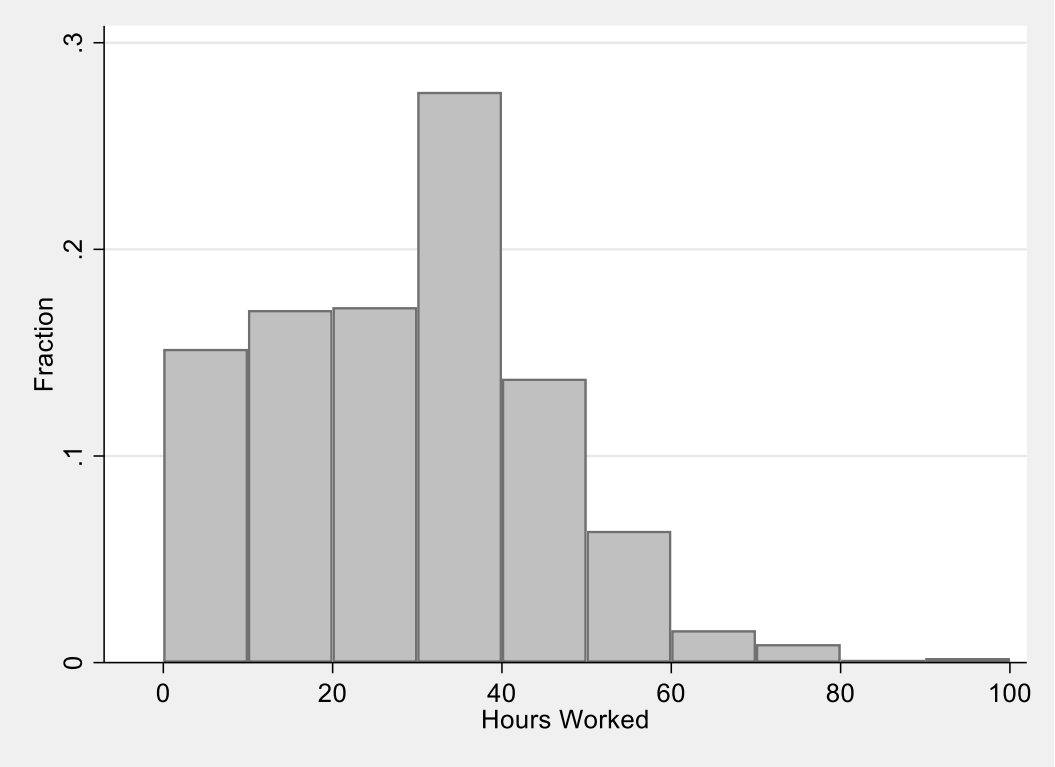
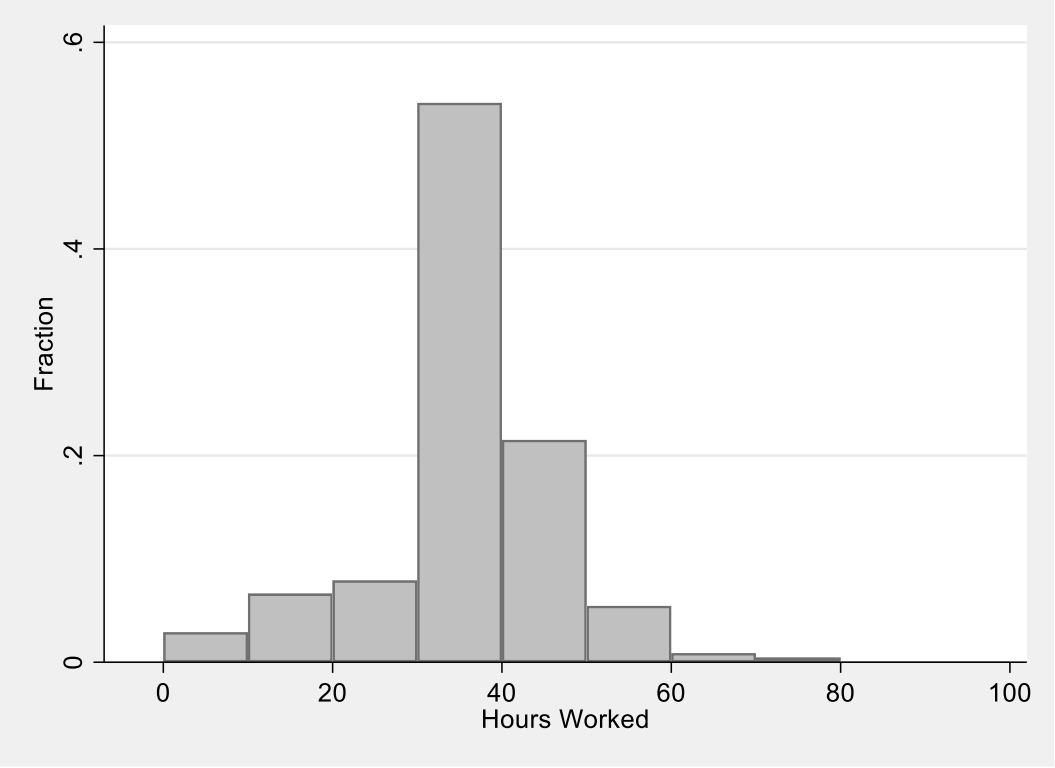


Figure 2: Hours Worked Distribution for Paid-Employed Married Women



Appendix.

Table A1: Probit Results for Employment (versus not working at all)

	(1) Full Sample	(2) Married & Youngest Child 0-4	(3) Married & Youngest Child 5-12	(4) Married & Youngest Child 13-18
Youngest Child 0-4	-0.158***			
	(0.002)			
Youngest Child 5-12	-0.090***			
	(0.002)			
Youngest Child 13-18	-0.029***			
	(0.002)			
Own birth-place residence	0.028***	0.046***	0.036***	0.020***
	(0.001)	(0.003)	(0.003)	(0.003)
Spouse birth-place residence	0.030***	0.050***	0.033***	0.026***
	(0.001)	(0.003)	(0.002)	(0.003)
Predicted spouse log income	-0.097***	-0.134***	-0.149***	-0.125***
	(0.001)	(0.004)	(0.003)	(0.004)
N	503,717	120,033	118,089	68,294

Note: All results in this table are estimated marginal effects. The dependent variable is a dummy variable equal to one for persons who are employed (either in self-employment or paid-employment) and equal to zero for persons not working at all. The omitted reference category for the youngest child dummy variables in Column (1) is no children in the household. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. *** $p < 0.01$.

Table A2: OLS Results for Log Hours Worked

	(1) Full Sample	(2) Married & Youngest Child 0-4	(3) Married & Youngest Child 5-12	(4) Married & Youngest Child 13-18
A. Self-Employed				
Youngest Child 0-4	-0.469***			
	(0.014)			
Youngest Child 5-12	-0.276***			
	(0.012)			
Youngest Child 13-18	-0.146***			
	(0.012)			
Own birth-state residence	0.047***	0.117***	0.029	0.031
	(0.012)	(0.018)	(0.021)	(0.028)
Spouse birth-state residence	0.023**	0.006	0.056***	0.038
	(0.010)	(0.024)	(0.018)	(0.026)
Predicted spouse log income	-0.171***	-0.258***	-0.229***	-0.208***
	(0.011)	(0.025)	(0.026)	(0.019)
B. Paid-Employed				
Youngest Child 0-4	-0.142***			
	(0.002)			
Youngest Child 5-12	-0.132***			
	(0.002)			
Youngest Child 13-18	-0.073***			
	(0.002)			
Own birth-state residence	0.001	0.012***	0.008**	0.004
	(0.002)	(0.004)	(0.004)	(0.004)
Spouse birth-state residence	0.007***	0.016***	0.010**	0.013***
	(0.002)	(0.005)	(0.004)	(0.004)
Predicted spouse log income	-0.092***	-0.090***	-0.156***	-0.143***
	(0.002)	(0.004)	(0.005)	(0.005)
N	416,565	92,527	96,287	57,442

Note: The dependent variable for Panel A is log hours worked of the self-employed. The dependent variable for Panel B is log hours worked of the paid-employed. N is the combined observations for the self-employed and paid-employed. The omitted reference category for the youngest child dummy variables is no children in the household or the youngest child is over 18. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. Estimates for these variables are available upon request. Bootstrapped standard errors are in parentheses. ** $p < 0.05$, *** $p < 0.01$.

Table A3: Probit Model for Being Married and Having Children

	(1) Married	(2) Have Child(ren)
Own birth-place residence	-0.013***	0.033***
	(0.001)	(0.001)
Spouse birth-place residence		0.013***
		(0.001)
Predicted spouse log income		0.071***
		(0.001)
N	773,018	503,717

Note: All results in this table are estimated marginal effects. The Column (1) sample is restricted to female college graduates, and the dependent variable is a dummy variable equal to one if a woman is married. The Column (2) sample is restricted to married female college graduates, and the dependent variable is a dummy variable equal to one if a woman has at least one child. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. *** $p < 0.01$.

Table A4: Probit Results with Control for Same Birth Place as Spouse

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employment Probability			
Own birth-place residence	-0.009***	-0.009***	-0.008***
	(0.002)	(0.002)	(0.003)
Spouse birth-place residence	-0.007***	-0.005**	-0.005
	(0.002)	(0.003)	(0.003)
From the same birth-place as spouse	-0.015***	-0.007***	-0.000
	(0.003)	(0.002)	(0.004)
Interaction – same place * own place	0.015***	0.001	-0.001
	(0.005)	(0.004)	(0.005)
Predicted spouse log income	0.009***	0.012***	0.012***
	(0.001)	(0.001)	(0.002)
B. Paid-Employment Probability			
Own birth-place residence	0.056***	0.048***	0.032***
	(0.004)	(0.004)	(0.006)
Spouse birth-place residence	0.054***	0.038***	0.033***
	(0.004)	(0.004)	(0.006)
From the same birth-place as spouse	-0.051***	-0.026***	-0.017***
	(0.004)	(0.004)	(0.005)
Interaction – same place * own place	0.031***	0.018**	0.003
	(0.007)	(0.008)	(0.011)
Predicted spouse log income	-0.143***	-0.162***	-0.137***
	(0.003)	(0.003)	(0.004)
N	120,033	118,089	68,294

Note: All results in this table are estimated marginal effects. The dependent variable for Panel A is a dummy variable equal to one for persons who are self-employed. The dependent variable for Panel B is a dummy variable equal to one for persons who work in paid-employment. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. ** $p < 0.05$, *** $p < 0.01$.

Table A5: Heckman Log Hours Worked Results with Control for Same Place as Spouse

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employed			
Own birth-place residence	0.136***	0.043*	0.022
	(0.034)	(0.025)	(0.031)
Spouse birth-place residence	0.033	0.062**	0.040
	(0.029)	(0.025)	(0.039)
From the same birth place as spouse	0.071	0.010	0.038
	(0.044)	(0.028)	(0.031)
Interaction – same place * own place	-0.103	-0.034	-0.007
	(0.068)	(0.057)	(0.060)
Predicted spouse log income	-0.243***	-0.218***	-0.199***
	(0.027)	(0.019)	(0.025)
Coefficient on the inverse mills ratio	0.103	0.086*	-0.007
	(0.076)	(0.051)	(0.061)
B. Paid-Employed			
Own birth-place residence	0.009	0.002	-0.003
	(0.006)	(0.007)	(0.008)
Spouse birth-place residence	0.011	0.005	0.004
	(0.007)	(0.007)	(0.007)
From the same birth place as spouse	0.005	0.009	-0.010
	(0.007)	(0.006)	(0.008)
Interaction – same place * own place	-0.001	-0.013	0.011
	(0.013)	(0.012)	(0.015)
Predicted spouse log income	-0.073***	-0.115***	-0.107***
	(0.006)	(0.007)	(0.009)
Coefficient on the inverse mills ratio	-0.032	-0.151***	-0.162***
	(0.023)	(0.025)	(0.036)
N	120,033	118,089	68,294

Note: The dependent variable for Panel A is log hours worked of the self-employed. The dependent variable for Panel B is log hours worked of the paid-employed. The regressions also control for a quartic specification of age, and dummy variables for education level, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6: Probit Results with Metropolitan Control

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employment Probability			
Own birth-place residence	-0.007***	-0.011***	-0.008***
	(0.002)	(0.002)	(0.003)
Spouse birth-place residence	-0.004***	-0.007***	-0.005**
	(0.001)	(0.002)	(0.002)
Predicted spouse log income	0.010***	0.013***	0.012***
	(0.002)	(0.002)	(0.003)
Metropolitan status	-0.008***	-0.007***	0.005
	(0.001)	(0.002)	(0.003)
B. Paid-Employment Probability			
Own birth-place residence	0.052***	0.046***	0.027***
	(0.003)	(0.003)	(0.004)
Spouse birth-place residence	0.054***	0.038***	0.029***
	(0.003)	(0.003)	(0.004)
Predicted spouse log income	-0.143***	-0.159***	-0.134***
	(0.003)	(0.004)	(0.004)
Metropolitan status	0.007**	-0.021***	-0.024***
	(0.004)	(0.003)	(0.005)
N	120,033	118,089	68,294

Note: Metropolitan areas are identified using the 2013 definitions for metropolitan statistical areas (MSAs) from the U.S. Office of Management and Budget. Only MSAs where the sum of match errors is less than 20% (inclusive) are identified in our sample. Very similar results are obtained using MSAs where the sum of match errors is less than 15% (results are not reported). All results in this table are estimated marginal effects. The dependent variable for Panel A is a dummy variable equal to one for persons who are self-employed. The dependent variable for Panel B is a dummy variable equal to one for persons who work in paid-employment. The regressions also control for a quartic specification of age, and dummy variables for education level, college major, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. ** $p < 0.05$, *** $p < 0.01$.

Table A7: Heckman Log Hours Worked Results with Metropolitan Control

	(1) Married & Youngest Child 0-4	(2) Married & Youngest Child 5-12	(3) Married & Youngest Child 13-18
A. Self-Employed			
Own birth-place residence	0.110***	0.028	0.031
	(0.019)	(0.027)	(0.025)
Spouse birth-place residence	0.003	0.045**	0.040
	(0.026)	(0.020)	(0.026)
Predicted spouse log income	-0.235***	-0.208***	-0.191***
	(0.023)	(0.021)	(0.027)
Metropolitan status	-0.086**	-0.099***	-0.125***
	(0.037)	(0.022)	(0.032)
Coefficient on the inverse mills ratio	0.102	0.075	-0.008
	(0.070)	(0.053)	(0.062)
B. Paid-Employed			
Own birth-place residence	0.011***	-0.001	-0.002
	(0.004)	(0.004)	(0.005)
Spouse birth-place residence	0.013**	0.001	0.006
	(0.005)	(0.005)	(0.004)
Predicted spouse log income	-0.075***	-0.114***	-0.107***
	(0.007)	(0.007)	(0.007)
Metropolitan status	0.005	-0.020***	-0.004
	(0.004)	(0.005)	(0.005)
Coefficient on the inverse mills ratio	-0.027	-0.146***	-0.156***
	(0.024)	(0.027)	(0.020)
N	120,033	118,089	68,294

Note: Metropolitan areas are identified using the 2013 definitions for metropolitan statistical areas (MSAs) from the U.S. Office of Management and Budget. Only MSAs where the sum of match errors is less than 20% (inclusive) are identified in our sample. Very similar results are obtained using MSAs where the sum of match errors is less than 15% (results are not reported). The dependent variable for Panel A is log hours worked of the self-employed. The dependent variable for Panel B is log hours worked of the paid-employed. The regressions also control for a quartic specification of age, and dummy variables for education level, race/ethnicity, survey year, and place of birth. The estimates for these variables are suppressed for space conservation. Full regression results are available upon request. Bootstrapped standard errors are in parentheses. ** $p < 0.05$, *** $p < 0.01$.