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Families, Human Capital, and Small Business:
Evidence from the Characteristics of Business Owners Survey

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Abstract

An important finding in the rapidly growing literature on self-employment is that the probability of self-employment is substantially higher among the children of business owners than among the children of non-business owners. Using data from the confidential and restricted-access Characteristics of Business Owners (CBO) Survey, we provide some suggestive evidence on the causes of intergenerational links in business ownership and the related issue of how having a family business background affects small business outcomes. Estimates from the CBO indicate that more than half of all business owners had a self-employed family member prior to starting their business. Conditional on having a self-employed family member, less than 50 percent of small business owners worked in that family member's business suggesting that it is unlikely that intergenerational links in self-employment are largely due to the acquisition of general and specific business human capital and that instead similarities across family members in entrepreneurial preferences may explain part of the relationship. In contrast, estimates from regression models *conditioning* on business ownership indicate that having a self-employed family member plays only a minor role in determining small business outcomes, whereas the business human capital acquired from prior work experience in a family member's business appears to be very important for business success. Estimates from the CBO also indicate that only 1.6 percent of all small businesses are inherited suggesting that the role of business inheritances in determining intergenerational links in self-employment is limited at best.

1. Introduction

The literature on self-employment and small business ownership has grown rapidly in the past several years. The upsurge in interest is at least partly due to arguments that small businesses create a disproportionate share of new jobs in the economy, represent an important source of innovation, and have a notable effect on political decisions in the United States (see Birch 1979, Brown, Hamilton and Medoff 1990, and Acs 1999 for example).[1] In addition, many academicians and policymakers view self-employment as a route out of poverty and as an alternative to unemployment or discrimination in the labor market (Glazer and Moynihan 1970, Light 1972, 1979, Sowell 1981, Moore 1983, and Bates 1997). Several states and the federal government are currently promoting self-employment as a way to leave the welfare and unemployment insurance rolls, and there exist a plethora of governmental and private programs promoting business ownership among minorities, women, and other disadvantaged groups.[2] Finally, recent research suggests that the self-employed earn more on average than wage and salary workers (see Borjas 1999 for example).

An important finding in the literature on self-employment is that the probability of self-employment is two to three times higher among the children of business owners than

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[1] Davis, Haltiwanger and Shuh (1996), however, find that although small firms have higher rates of gross job creation they also have higher rates of gross job destruction than larger firms resulting in roughly similar levels of net job creation for manufacturing firms.

[2] See Guy, Doolittle, and Fink (1991) and Raheim (1997) for descriptions of the welfare program, U.S. Department of Labor (1992), Benus et al. (1995) and Vroman (1997) for descriptions of the UI program, and Balkin (1989), Bates (1993) and Severens and Kays (1999) for descriptions of programs for other disadvantaged groups.

among the children of non-business owners (see Lentz and Laband 1990, Fairlie 1999, Dunn and Holtz-Eakin 2000, and Hout and Rosen 2000). Although the intergenerational transmission of business ownership is strong, the underlying causes of intergenerational links in business ownership have not been identified in the literature. They may be due to the acquisition of general business or managerial experience in family-owned businesses, the acquisition of industry- or firm-specific business experience in family-owned businesses, inheritances of businesses, or a correlation among family members in preferences for entrepreneurial activities.

Using confidential and restricted-access data from the Characteristics of Business Owners (CBO), we provide some suggestive evidence on the importance of these factors and explore the related question of whether having a self-employed parent or other family member improves small business outcomes. Although strong intergenerational links in self-employment have been repeatedly documented in the literature, the effects on small business outcomes *conditioning* on ownership are essentially unknown. We also estimate the independent effects of having a self-employed family member, prior work experience in that family member's business, and prior work experience in a similar business on small business outcomes. The results have implications for the roles that general and specific business human capital and the correlation across family members in entrepreneurial preferences play in determining business success. Finally, we examine whether business inheritances are an important method of intergenerational transmission of business ownership.

2. Previous Literature

A few patterns are beginning to emerge in the young and expanding literature on self-employment. The empirical studies in this literature generally find that being male, white, older, married and an immigrant, and having more education and higher asset levels increase self-employment.[3] Another important determinant that has been identified in the literature is having a self-employed parent. The probability of self-employment is substantially higher among the children of business owners than among the children of non-business owners (see Lentz and Laband 1990, Fairlie 1999, Dunn and Holtz-Eakin 2000, and Hout and Rosen 2000). These studies generally find that an individual who had a self-employed parent is roughly two to three times more likely to be self-employed than someone who did not have a self-employed parent.

Several explanations for the intergenerational transmission of business ownership have been offered in the previous literature. First, the informal learning or apprenticeship-type training that occurs in growing up in the context of a family business may provide an important opportunity for the acquisition of human capital related to operating a successful business (Lentz and Laband 1990). To be sure, family business experience can be classified into two types, which we term "general business human capital" and "specific business human capital." General business human capital includes "general administrative and personnel management skills" and "general managerial expertise" (Lentz and Laband 1990, Dunn and Holtz-Eakin 2000). Specific business human capital includes "enterprise-specific skills," "information specific to the firm's production," and "job- or industry-specific knowledge." Interestingly, Dunn and Holtz-

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[3] See Aronson (1991) and Parker (2004) for reviews of the literature.

Eakin (2000) find that self-employed sons follow their father's occupation in only 32 percent of cases suggesting that the business expertise being passed within families is not only specific to the types of business chosen by these sons.

Another explanation is that intergenerational links in self-employment may be caused by a correlation among family members in preferences for entrepreneurial activities and entrepreneurial ability. The correlation may simply be due to similarities among family members in preferences for autonomy or self-employment, or similarities in other personal characteristics that are associated with self-employment, such as entrepreneurial ability and attitudes towards risk (Fairlie 2002). Using the National Longitudinal Surveys (NLS), Dunn and Holtz-Eakin (2000) find, however, that the intergenerational correlation in self-employment is strongest for successfully self-employed parents suggesting that the transmission of business skills instead of similarities in tastes for the self-employed lifestyle drives the relationship between parents' and children's self-employment propensities. Related to the issue of correlated preferences and ability, intergenerational links may also be created by self-employed parents creating role models for their children to become business owners. Observing a successfully self-employed parent may improve a child's assessment of his or her own entrepreneurial ability.

Intergenerational links may also be created directly by the children of self-employed business owners becoming partners with their parents or directly inheriting businesses. Forming a partnership with a child may represent a less expensive, especially in terms of capital, method of helping their children become business owners. Also, partnerships and inheritances may represent an efficient form of transmitting reputation

capital or an established clientele from one generation to the next. Previous research analyzing employer businesses from the National Federation of Independent Businesses (NFIB) finds that 14.2 percent of businessmen inherited their businesses (Lentz and Laband 1990), however, these businesses are much larger than the typical small business included in the CBO. Related to this issue, successful business owners may be more likely to transfer financial wealth to their children potentially making it easier for them to become self-employed. Dunn and Holtz-Eakin (2000), however, provide estimates suggesting that this plays only a modest role. We also find that financial transfers from parents to children are not a common source of startup capital among small business owners in the CBO. Only 6.4 percent of owners borrowed capital from their family.

Using the CBO, we provide two main contributions to the literature on self-employment. First, we provide evidence on the mechanisms driving the relationship between having a self-employed parent and being a business owner. The CBO contains information on having a self-employed family member, prior work experience in that family member's business, and business inheritances allowing us to disentangle some of the potential explanations offered in the previous literature. If most business owners have self-employed family members, but do not have prior work experience in these family businesses then we can infer that the correlation in entrepreneurial preferences or ability is more important that acquiring general and specific business human capital in creating the intergeneration link in self-employment. In addition, if very few businesses are inherited then we can infer that business inheritances play on a minor role in establishing the intergenerational link in business ownership.

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Second, we explore the related question of whether having a self-employed parent or other family member improves small business outcomes, such as survival, profits, sales and employment. Specifically, we estimate the independent effects of having a self-employed family member, prior work experience in that family member's business, prior work experience in a similar business, prior management experience and inheriting a business on small business outcomes. The results have implications for the roles that general and specific business human capital and the correlation across family members in entrepreneurial preferences play in determining business success. For example, a finding that prior work experience is an important determinant of business success suggests that the owner's acquisition of general and specific business human capital is useful for creating successful businesses. Although strong intergenerational links in self-employment have been repeatedly documented in the literature, the effects on small business outcomes *conditioning* on ownership are essentially unknown.

Previous studies have not explored these questions in detail primarily because only a few nationally representative datasets contain information on parental and family self-employment and business inheritances. Information on parental self-employment is not available, for example, in the most widely used datasets for studying self-employment such as the Census, Current Population Survey and National Longitudinal Survey of Youth. Furthermore, to our knowledge, the CBO is the only nationally representative dataset containing information on prior work experience in businesses owned by family members and prior work experience in businesses providing similar goods and services.[4] The CBO is also unique in that it contains detailed information on the characteristics of

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[4] The CBO also contains information on prior work experience in a managerial capacity.

both the business and the owner. The CBO, however, has been used by only a handful of researchers. The lack of use appears to be primarily due to difficulties in accessing and reporting results from these confidential, restricted-access data. All research using the CBO must be conducted in a Census Research Data Center or at the Center for Economic Studies (CES) after approval by the CES and IRS, and all output must pass strict disclosure regulations.

3. Data

The 1992 Characteristics of Business Owners (CBO) survey was conducted by the U.S. Bureau of the Census to provide economic, demographic and sociological data on minority, women and non-minority male business owners and their business activities (see U.S. Department of Commerce 1997, Bates 1990a, Headd 1999, and Robb 2000 for more details on the CBO). The survey was sent to more than 75,000 firms and 115,000 owners who filed an IRS form 1040 Schedule C (individual proprietorship or self-employed person), 1065 (partnership), or 1120S (subchapter S corporation).[5] Only firms with $500 or more in sales were included. The businesses included in the CBO represent nearly 90 percent of all businesses in the United States (Department of Commerce, 1996b). Response rates for the firm and owners surveys were approximately 60 percent. All estimates reported below use sample weights that adjust for survey non-response (Headd, 1999).

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[5] Larger C corporations were not included because of the difficulty in asking owner questions for many investors. C corporations as a tax filing status, however, are becoming less popular relative to S corporations due to changes in tax laws (Headd 1999).

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The CBO is unique in that it contains information on both the characteristics of business owners and the characteristics of their businesses. Examples of owner characteristics include marital status, education, detailed work experience, family business background, hours and weeks worked in the business, and health insurance. Detailed information on how the owner acquired the business and on the sources of capital s/he used to start or acquire the business is also available. Business characteristics include closure, profits, sales, employment, industry, startup capital, age of business, legal form of organization, employee composition, customer base, physical location, and exports along with many others.

A major advantage of the CBO over other nationally representative datasets for this analysis is the availability of measures of business ownership among family members. In particular, the CBO contains information on business inheritances, business ownership among family members, and prior work experience in a family member's business. The main disadvantage is that the CBO does not contain information on a comparison group of wage/salary workers. Therefore, we cannot directly explore the determinants of business ownership. Instead, we examine the determinants of several business outcomes conditional on ownership: closure rates, sales, profits, and employment size.

The sample used below includes firms that meet a minimum weeks and hours restriction. Specifically, at least one owner must report working for the business at least 12 weeks in 1992 and at least 10 hours per week.[6] The weeks and hours restrictions are imposed to rule out very small-scale business activities such as casual or side-businesses

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[6] This restriction excludes 22.1 percent of firms in the original sample.

owned by wage/salary workers. We also try tighter restrictions and comment on the

findings below. In multi-owner firms, which represent 20.6 percent of the sample, we

identify one person as the primary owner of the business. The primary owner is

identified as the owner working the most annual hours in 1992 (weeks*hours). In the

case of ties, we identify the primary owner as the person who founded the business.

Finally, all remaining ties are resolved by assigning a random owner. The primary

business owner is used to identify all owner characteristics of the firm, such as marital

status, education, prior work experience, and family business background. The race and

sex of the firm, however, are identified by majority ownership, which is the method used

by the Survey of Minority Owned Business Enterprises and Survey of Women Owned

Business Enterprises (U.S. Department of Commerce 1996a, 1996b).

4. Results

FAMILY BUSINESS BACKGROUND

The CBO provides detailed information on family business experience and

business inheritances that allows us to provide some suggestive evidence on the

importance of these factors. Table 1 reports the percentage of small business owners that

had a family member who was a business owner, the percentage of owners that worked

for that family member, and other measures related to family business background.[7]

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[7] The questions ask (1) "Prior to beginning/acquiring this business, had any of your close relatives

ever owned a business OR been self-employed? (Close relatives refer to spouses,

parents/guardians, brothers, sisters, or immediate family)", and (2) "If "Yes," did you work for

any of these relatives?" U.S. Department of Commerce (1997, p. C-4).

More than half of all business owners had a self-employed family member prior to starting their business. Conditional on having a self-employed family member, nearly half of small business owners worked in that family member's business. Overall, 22.5 percent of small business owners worked in a family business prior to starting or acquiring their business.[8]

The finding that more than 50 percent of all small business owners had a family member who was a self-employed business owner is nearly identical to the 52.2 percent of independent businessmen from the NFIB that had parents who were business owners (Lentz and Laband 1990). Although we do not have a comparison group of non-business owners and family members may include spouses and siblings in addition to parents, the finding that half of business owners have a self-employed family member suggests a high level of intergenerational transmission of business ownership.[9] The percent of owners that had a self-employed family member prior to business startup certainly overstates the percent of owners that had a self-employed parent, but the discrepancy is probably not

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[8] A recent survey of small employer firms by the NFIB, indicates that 45.1 percent of businesses employ a family member. However, they use a broader definition of family members than in the CBO and only include firms with 1-249 employees (National Federation of Independent Business 2002).

[9] Making the conservative assumption that 25 percent of small business owners have a self-employed parent and a steady-state self-employment rate of 10 percent, the children of self-employed parents are 3 times more likely to be self-employed than are the children of non-self-employed parents.

that large.[10] The strong positive influence of parental self-employment is common to brothers suggesting that a propensity for business ownership runs in families (Dunn and Holtz-Eakin 2000), and the question on the CBO asks whether the owner had a self-employed family member *prior* to starting his/her business limiting the likelihood that older siblings are referring to younger self-employed siblings. Furthermore, estimates from the 2002 Current Population Survey indicate that the average probability of having a self-employed spouse among all self-employed business owners is only 24 percent. We suspect that a large percentage of affirmative responses to the CBO question on whether the owner had a self-employed family member prior to starting his/her business refer to the owner's parents.

Another interesting finding is that more than half of all business owners who have a self-employed family member did not work for that family member's business. This finding suggests that intergenerational links in self-employment are not largely due to the acquisition of general and specific business human capital and that similarities across family members in entrepreneurial preferences may explain part of the relationship. Using data from the National Longitudinal Survey (NLS), however, Dunn and Holtz-Eakin (2000) find that the intergenerational correlation in self-employment is strongest

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[10] On the other hand, there is the possibility that this measure does not capture all types of prior family business ownership. The concern is that some owners may not report a parent who owns a C- or S-corporation as being a self-employed family member. This may represent only a minor problem, however, as only 11 percent of all U.S. firms are C-corporations and 10 percent of all firms are S-corporations (U.S. Department of Commerce, 2001). Furthermore, many of these businesses owned by parents may have started out small, and thus would have been considered more traditional unincorporated businesses at one point in time.

for successfully self-employed parents suggesting that the transmission of business skills instead of similarities in tastes for the self-employed lifestyle drives the relationship between parents' and children's self-employment propensities.

The CBO also contains information on whether the owner previously worked "for a business whose goods/service(s) were similar to those provided by this business "(U.S. Department of Commerce 1997, p. C-4). This type of work experience undoubtedly provides opportunities for acquiring job- or industry-specific business human capital in addition to more general business human capital. Slightly more than half of all small business owners report working in a similar business prior to starting their business.

Among owners who worked in a family member's business, 55.8 percent report working in a business that provided similar goods and services. Unfortunately, however, we cannot ascertain whether the family member's business is the same as the business providing similar goods and services. Therefore, our estimate only provides an "upper bound" estimate of the percent of owners who acquired specific business human capital from working in a family member's business. Nevertheless, the estimate of roughly 50 percent suggests that family businesses are providing opportunities to acquire general business human capital and not just specific business human capital. This finding is consistent with the finding in Dunn and Holtz-Eakin (2000) that self-employed sons follow their father's occupation in only 32 percent of cases.

Another explanation is that the children of self-employed business owners become partners with their parents or directly inherit businesses. In contrast to the high likelihood of having a self-employed family member and working for that family member, very few small businesses are inherited. Estimates from the CBO indicate that

only 1.6 percent of all small businesses are inherited. This finding suggests that the role of business inheritances in determining intergenerational links in self-employment is limited at best.

For comparison, the Federal Reserve's Survey of Small Business Finances (SSBF) also includes information on business inheritances and gifts. Estimates from the SSBF indicate that 4.0 percent of firms are inherited or acquired as gifts. Similarly, estimates from the Federal Reserve's Survey of Consumer Finances (SCF) indicate that 3.5 percent of businesses are inherited or acquired as gifts. Unfortunately, both the SSBF and SCF questionnaires do not distinguish between inheritances and gifts.

Lentz and Laband (1990) provide estimates of business inheritances from a sample of independent businessmen from the NFIB. They find a much higher rate of business inheritances in their sample -- 14.2 percent of businesses are inherited. The discrepancy may be due to the much larger scale of businesses included in the NFIB. These firms had average sales of approximately $2 million in 1979, compared to slightly more than $200,000 in the CBO sample.

The CBO also includes information on whether the owner acquired the business through a "transfer of ownership/gift." This form of receipt of ownership may capture parents giving firms to their children. It may also contain many other forms of business transfers and is not limited to family members. Even with this concern, we find that only 6.6 percent of owners received their business through a transfer of ownership or gift in the CBO suggesting that direct parent-to-child transfers of businesses cannot represent a large percentage of all small businesses. In fact, if we remove owners who did not have a self-employed family member prior to starting the business, only 4.0 percent of owners

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received a transfer of ownership or gift. Thus, an upper bound estimate of the number of owners in the CBO inheriting a business or receiving one as a gift is 5.6 percent. This probably greatly overstates the total, however, as only 4.0 percent of business owners in the SSBF, which includes larger, more established businesses than the CBO, inherited or received their business as a gift.[11] If large corporations other than S corporations are removed the percent inherited or acquired as a gift drops to 3.5 percent in the SSBF. There is the possibility, however, that businesses are transferred at below market prices from parents to children. Unfortunately, there is no information available on this type of transfer.

Related to business inheritances, we also find that financial transfers from parents to children are not a common source of startup capital among small business owners. Only 6.4 percent of owners borrowed capital from their family. This finding is consistent with the finding in Dunn and Holtz-Eakin (2000) that financial transfers from parents to children do not appear to be responsible for the intergenerational transmission of business ownership.

Although there is uncertainty over the correspondence between family members and parents in the CBO questions, the estimates reported in Table 1 provide, at least, some suggestive evidence on the causes of intergenerational links in self-employment. These links appear to be driven partly, but not entirely, by opportunities to acquire both general and specific business human capital from working in family members'

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[11] The SSBF is based on Dunn and Bradstreet records and is known to include older and more established firms than the CBO. For example, average sales of firms in the SSBF are approximately $1 million compared to $200,000 in the CBO (Robb 2005).

businesses. Business inheritances and partnerships with family members appear to play only a minor role. We next examine whether these factors play a role in determining small business outcomes *conditioning* on ownership.

THE DETERMINANTS OF SMALL BUSINESS OUTCOMES

Logit and linear regression models are estimated for several small business outcomes available in the CBO. Estimates from these regressions shed light on the independent roles that the family business background measures play in determining small business success. In particular, the coefficient estimate on having a self-employed family member on business outcomes provides evidence on the relative importance of correlated entrepreneurial preferences and ability, and the coefficient estimate on having prior work experience in that family member's business provides evidence on the relative importance of acquiring general and specific business human capital. The inclusion of prior work experience in a similar business fine tunes this result by providing evidence on the relative importance of specific business human capital. Finally, the inclusion of whether the business is inherited in the regression models provides evidence on the overall importance of business inheritances in determining business success.

Table 2 reports estimates for regressions for the probability of a business closure from 1992-1996, the probability that the firm has profits of at least $10,000 per year, the probability of having employees, and log sales.[12] Estimates from the CBO indicate that

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[12] We estimate a logit model for profits of $10,000 or more because only a categorical measure is available. We also estimate an ordered probit for profits and compare the results below. We estimate a logit model for the employment probability because most of the variation in

nearly one quarter of small businesses existing in 1992 were not operating by 1996, and slightly more than 30 percent of businesses report a net profit of at least $10,000. Small firms also hire 1.77 employees on average with only 21.3 percent hiring *any* employees. Finally, small businesses had mean sales of $212,791 in 1992.

In all specifications, we include the race, sex, region and urbanicity of the firm, and the education level, marital status and previous work experience of the owner as controls (mean values are reported in the Appendix). We also include dummy variables for whether the owner had a family member who was a business owner, worked for that family member's business, had previous work experience in a managerial capacity, and worked in a business providing similar goods and services.

Race and ethnicity are important determinants of small business outcomes (see Fairlie and Robb 2003 for a more detailed analysis). After controlling for numerous owner and business characteristics, black-owned businesses continue to lag behind white-owned businesses. In all specifications except the closure probability equation, the coefficient estimate on the black-owned business dummy variable is large, positive and statistically significant. In the closure probability equation, the coefficient estimate is positive, but statistically insignificant. The results are more mixed for Latino-owned firms.

Similar to previous studies, we find that business outcomes are positively associated with the education level of the business owner.[13] For example, businesses

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employment among small businesses is between 0 and 1 employees. Roughly 80 percent of firms have no employees and only a small percent have more than 5 employees.

[13] For example, using the 1982 CBO, Bates (1990b) finds that small business failures generally

with college-educated owners have a 0.055 lower probability of closure, a 0.113 higher probability of having large profits, a 0.061 higher probability of having employees, and have approximately 25 percent higher sales on average than businesses with owners who did not graduate from high school.[14] Female-owned businesses are less successful and are smaller on average than are male-owned businesses, which is consistent with previous findings indicating that self-employment is associated with higher earnings for men, but lower earnings for women (see Hundley 2000 for example). Firms located in urban areas are more likely to close and are less likely to have employees, but are more likely to have large profits and have higher sales than firms located in non-urban areas.

Having a family business background is important for small business outcomes. The main effect, however, appears to be through the informal learning or apprenticeship type training that occurs in working at a family business and not from simply having a self-employed family member. The coefficient estimates on the dummy variable indicating whether the owner had a family member who owned a business are small and statistically insignificant in all of the specifications except for the closure probability equation. In contrast, working at this family member's business has a large positive (negative in the closure equation) and statistically significant effect in all specifications. The probability of a business closure is 0.042 lower, the probability of large profits is

decrease with the education level of the owner. Similarly, Robb (2000) found increases in education to be positively associated with business survival.

[14] The implied effects on the probability of closure, large profits, and employment are approximated by multiplying the coefficient estimate from the logit model by $\overline{p}(1-\overline{p})$, where $\overline{p}$ is the mean of the dependent variable.

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0.032 higher, the probability of employment is 0.055 higher, and sales are roughly 40 percent higher if the business owner had worked for one of his/her self-employed family members prior to starting the business.[15] The effects on the closure, profit and employment probabilities represent 15.3 to 26.6 percent of the sample mean for the dependent variables.

The findings from the closure equation are roughly consistent with the findings from previous studies. Using a sample of white male-owned firms from the 1982 CBO, Bates (1990b) finds that having a close relative who was self-employed has a negative, but statistically insignificant (t-statistic of 1.41) effect on the probability of a business failure. In the 1982 CBO "close relatives," however, are defined to include non-family members with whom frequent contact was maintained by the owner. Fairlie (1999) provides additional evidence from the Panel Study of Income Dynamics (PSID). Having a self-employed father is found to have a large, negative and statistically significant effect on the probability of exiting from self-employment for white men. Finally, using German data, Bruderl and Preisendorfer (1998) provide some evidence that network support from "strong ties" (which include spouses, parents, and relatives) improves business outcomes. Unfortunately, they do not have information on whether these individuals are business owners.

Perhaps not surprisingly, inherited businesses are more successful and larger than non-inherited businesses. The coefficients are large, positive (negative in the closure

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[15] These estimates are not overly sensitive to the exclusion of firms started before 1980. In addition, estimates from the log sales specification are not sensitive to the exclusion of firms with extremely large annual sales.

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equation) and statistically significant in all specifications. Inheritances may represent a form of transferring successful businesses across generations, but their overall importance in determining small business outcomes is slight at best. Although the coefficient estimates are large in the small business outcome equations, the relative absence of inherited businesses (only 1.6 percent of all small businesses) suggests that they play only a minor role in establishing an intergenerational link in self-employment.[16]

The strong effect of previous work experience in a family member's business on small business outcomes suggests that family businesses provide an important opportunity for family members to acquire human capital related to operating a business. The general lack of significance of having a self-employed family member may indicate that correlations across family members in entrepreneurial preferences are less important in contributing to the intergenerational link in business success *conditioning* on business ownership than in contributing to the intergenerational link in business ownership.

The CBO also provides detailed information on other methods of acquiring business human capital, including prior work experience in a managerial capacity. Management experience has a similar size effect in the profit and employer probability equations, but has a much smaller effect on log sales and a positive and statistically significant effect on business closures. Management experience prior to starting or acquiring a business generally improves business outcomes, but has a less consistent effect than experience working for a close relative.

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[16] As expected, the removal of business inheritances from the specifications does not affect the coefficients on other variables.

The CBO also provides information on whether the owner worked in a business whose goods and services were similar to those provided by his/her business. This more general case of acquiring specific business human capital appears to be very important. In fact, the coefficient estimates on a dummy variable for whether the owner had work experience in a similar business are comparable in size to the coefficient estimates on prior work experience in a family member's business in the closure probability and log sales equations. The coefficient estimate is smaller in the employer probability equation, but larger in the profits equation. In all specifications, the coefficient estimates are large and statistically significant.

The inclusion of prior managerial experience and similar business experience suggests that the large, positive coefficient estimates on working for a self-employed family member are not simply capturing the effects of management experience or specific business human capital on small business outcomes. Instead, prior work experience in a family member's business has an independent effect on small business outcomes, which may in part be due to the acquisition of less specific, general business human capital.

PROFITS

Unfortunately, only a categorical measure of profits is available in the CBO. Because of this limitation we estimate a logit model for profits of $10,000 or more. To check the sensitivity of our estimates to this cutoff, we estimate an ordered probit for the categorical measure of profits available in the CBO. Coefficient estimates are reported in Specification 5 of Table 2. The results are similar to those for the logit model for profits of $10,000 or more. For example, we find a positive and statistically significant

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relationship between owner's education and profits. We also find that having a self-employed family member has no effect on profits, but prior work experience in a family business and prior work experience in a similar type of business have positive and statistically significant effects on profits. Although not reported, we also estimated a profit equation using $25,000 as the cutoff level and find similar estimates.

MISSING DATA

A concern with the estimates reported in Table 2 is the amount of missing data for some of the independent variables in the CBO. Approximately 10 percent of the observations for each of the specifications reported in Table 3 are excluded because of missing values for one or more of the independent variables. Although these levels of missing data are not extremely high, we examine the sensitivity of our results to two alternative methods of correcting for missing data. First, we estimate regressions in which dummy variables are included for missing values of specific independent variables.[17] For example, if the education level of the business owner is missing then the four education level dummy variables would be equal to zero and a special missing education dummy variable would be equal to one. Thus, the missing observation for owner's education would not contribute to the coefficient estimates on the main education level dummies, but would contribute to coefficient estimates on other variables. This technique is becoming increasingly common in the literature because it is easy to

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[17] Race, gender, region, and urban are from administrative record data and have no missing values.

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implement and allows for an increase in the efficiency of some coefficient estimates. Although not reported, we find estimates that are similar to the ones reported in Table 2.

We also address the missing data problem by using multiple imputation (see Rubin 1987, Schafer and Olsen 1998, and Schafer 1999 for more details).[18] The multiple imputation technique essentially replaces each missing value in the data with a set of plausible values resulting in separate datasets that include the true values for nonmissing observations and the imputed variables for missing observations. The imputations are made by examining correlations between all available independent variables and placing restrictions on minimum and maximum values and rounding.[19] The variables are assumed to have a multivariate normal distribution. Logit or linear regressions are then run on five separately imputed datasets.[20] The results from the five runs are combined for inference and adjustments are made for sampling variance. The resulting coefficient estimates summarize this information and their standard errors capture the variability of estimates across the five runs, which differs from the typical overstatement of the statistical precision of estimates from single imputation methods. We report the multiple imputation coefficient estimates and their standard errors in Table 3. Despite the increase

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[18] The technique has been discussed recently in the Economics literature (Brownstone and Valetta 2001) and has been used to impute income and wealth variables in the Survey of Consumer Finances (Kennickell 1998).

[19] Information from all of the independent variables in the main specification, in addition to information on financial capital, industry, and start year, was used in the correlations.

[20] The gains in efficiency are small after increasing the number of imputations above five (Schafer and Olsen 1998).

in sample size, the estimates are similar to those reported in Table 2. Thus, the removal

of observations with missing data does not appear to overly affect our results.

GENDER ISSUES

We investigate whether the family business backgrounds are similarly important

for men and women. Table 4 reports estimates of the family business background

measures by gender. Male and female business owners are similarly likely to have had a

self-employed family member prior to starting their firm. Male business owners,

however, are more likely to have worked in that family business than female business

owners. Male business owners are also somewhat more likely to have worked in a

similar business before starting their businesses. The gender differences in these types of

work experience, however, are not very large. Finally, both male and female business

owners have similarly low rates of inheriting businesses.

We also estimate separate sets of regression for men and women, which are

reported in Tables 5 and 6, respectively. Overall, the results do not differ substantially

between men and women. We find a strong positive relationship between business

outcomes and owner's education levels for both men and women. Having a self-

employed family member has no effect on business outcomes, but prior work experience

in a family business has large effects on business outcomes for both men and women.

We also find that prior work experience in a similar business improves outcomes for both

genders, whereas prior management experience has inconsistent effects. Apparently,

human capital and business human capital are similarly related to business success for

men and women.

ADDITIONAL ESTIMATES

We also conduct a few additional sensitivity checks of the coefficient estimates

for the family business background variables. First, we estimate regressions using a

sample that excludes firms with less than $5,000 in startup capital. We do not exclude

these firms in our main sample because we are concerned that the receipt of startup

capital may be related to the potential success of the business and many successful

businesses may have required very little or no capital.[21] Interestingly, the means for the

family business background variables are similar for this more restrictive sample, which

excludes 40 percent of the original sample. For example, 54.1 percent of owners have a

self-employed family member compared to 51.6 percent in the full sample and 25.2

percent of owners have prior work experience in a family business compared to 22.5

percent in the full sample. Furthermore, only 1.5 percent of owners inherited their

businesses, which is comparable to the 1.6 percent in the full sample.

In contrast to these results, the mean outcomes among businesses that started with

$5,000 or more in startup capital are considerably better than those for all businesses

(Table 7). Firms with 5,000+ startup capital are less likely to close, have higher profits

and sales, and hire more employees than firms with less startup capital. Table 7 also

reports small business outcome regression estimates for this restricted sample. The

results are similar for the effects of the family business background measures. We find

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[21] Published estimates from the CBO indicate that even among businesses with sales of $100,000

to $200,000 per year, approximately 40 percent of firms required less than $5000 in startup

capital (U.S. Department of Commerce 1997).

that having a self-employed family member has little effect on outcomes, whereas prior work experience in a family member's business improves outcomes. Prior work experience in a similar business also has a positive effect on business outcomes. One difference in results is that the estimated relationship between owner's education and small business outcomes is now weaker, possibly due to a strong correlation between education and startup capital. Overall, these estimates indicate that the findings regarding the importance of family business backgrounds in contributing to small business success are not due to the inclusion of smaller, less successful firms that require little or no startup capital.

Although not reported, we also check the sensitivity of our results to the removal of part-time business owners. In particular, we estimate means and a separate set of regressions that only include businesses with at least one owner who works 30 hours or more per week and 36 weeks or more per year. This restriction reduces our sample size by roughly 20 percent. As expected, we find that business outcomes are better for this sample, but we find very similar patterns for family business background measures. We also find that the coefficient estimates on prior work experience in a family business are similar in the profits equation, and larger in the other specifications. Similar to the original estimates, we find that having a family member generally does not improve outcomes. We also continue to find that inherited businesses and having similar business work experience improve outcomes although the relationship is slightly weaker. We also try a specification that includes even tighter hours and weeks worked restrictions and find roughly similar results.

FINANCIAL STARTUP CAPITAL AND INDUSTRY

Several previous studies find that asset levels play an important role in determining who enters into or exits from self-employment.[22] Furthermore, small business outcomes vary across industries. Certain industries have higher business turnover rates than others, most notably retail and services (Robb 2000, Reynolds and White 1997, and Humphreys and McClung 1981). Those with higher capital requirements for entry, such as manufacturing and wholesale, typically have lower turnover rates. Barriers of entry into specific industries can result for many reasons. First, capital constraints can limit which industries an individual can enter due to higher capital requirements of certain industries (Bates, 1997). In addition, industry choice may be constrained due to a lack of relevant skills, discrimination, or differences in preferences (Boden, 1996, Boden and Nucci 2002, and Robb 2000). Srinivasan, Woo, and Cooper (1994) show that industry-specific knowledge contributes to higher survival prospects. The distributions of these variables may be correlated with the family background variables implying that their omission from the regressions may bias the coefficient estimates on the family background variables.

To further explore this concern, we estimate a second set of small business outcome regressions that include dummy variables for different levels of startup capital and major industry categories in addition to the independent variables included in the previous equations. The CBO contains categorical information on "the total amount of

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[22] See Evans and Jovanovic (1989), Evans and Leighton (1989), Bates (1997), Holtz-Eakin, Joulfaian, and Rosen (1994a,1994b), Fairlie (1999), Dunn and Holtz-Eakin (2000), and Blanchflower and Oswald (1998).

capital required to start/acquire the business" (U.S. Department of Commerce 1997, p. C-15). Estimates are reported in Table 8. Some caution is required in interpreting the results, however, as the amount of required startup capital is potentially endogenous to business success (Bates 1990b).[23] Furthermore, the choice of industry may not be entirely exogenous as it is related to the entry decision.

As expected, small business outcomes are positively associated with the amount of required startup capital. The coefficients on the startup capital dummies are large, positive (negative for the closure probability), and statistically significant in all specifications. Industry is also linked to business success and size although the coefficients vary across specifications. More importantly, the addition of startup capital and industry does not overly influence the estimated effects of the family business background and similar business experience variables. The coefficient estimates on having a self-employed family member and inheriting the business do not change substantially. The coefficient estimates on previous work experience in a family member's business are generally smaller in absolute value (although statistically

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[23] A similar problem occurs in examining whether asset levels affect the probability of self-employment using cross-sectional data. A correlation between assets and self-employment may simply represent the ability of the self-employed to accumulate more assets than wage/salary workers through operating and owning their own businesses. The approach taken in several recent studies is to examine transitions into self-employment measuring an individual's net worth prior to starting a business (see Evans and Jovanovic 1989, Evans and Leighton 1989, Meyer 1990, Holtz-Eakin, Joulfaian, and Rosen 1994a, Fairlie 1999, and Dunn and Holtz-Eakin 2000). Unfortunately, the CBO does not contain a measure of the owner's net worth prior to starting the business.

significant) in the new specifications. The coefficients on prior work experience in a similar business are very similar.

4. Conclusions

Using data from the confidential and restricted-access Characteristics of Business Owners (CBO) Survey, we provide some suggestive evidence on the underlying causes of intergenerational links in self-employment and the related issue of how having a family business background affects small business outcomes. Estimates from the CBO indicate that more than half of all business owners had a self-employed family member prior to starting their business. Conditional on having a self-employed family member, less than half of small business owners worked in that family member's business suggesting that it is unlikely that intergenerational links in self-employment are due largely to the acquisition of general and specific business human capital and that similarities across family members in entrepreneurial preferences may explain part of the relationship.

In contrast, estimates from regression models for small business outcomes *conditioning* on business ownership indicate that having a self-employed family member plays only a minor role relative to prior work experience in that family member's business. We find that the coefficient estimates on the dummy variable indicating whether the owner had a family member who owned a business are small and statistically insignificant in all of the specifications for small business outcomes, except for the closure probability equation. Working in this family member's business, however, has a large, positive (negative in the closure equation) and statistically significant effect in all

specifications. The inclusion of controls for similar business work experience and management experience in the regressions suggests that the positive coefficient estimates on working for a self-employed family member are not simply capturing the effects of management experience or specific business human capital on small business outcomes. Instead, prior work experience in a family member's business has an independent effect on small business outcomes, which may in part be due to the acquisition of less formal or more general business human capital. These results are not sensitive to the exclusion of smaller firms and firms requiring little or no startup capital, and hold for male and female-owned firms separately.

Although many owners had a self-employed family member and previous work experience in a family member's business, very few small businesses were inherited. Estimates from the CBO indicate that only 1.6 percent of all small businesses were inherited. In the regression analysis, we find that inherited businesses are more successful on average than non-inherited businesses. However, their limited representation among the population of small businesses suggests that business inheritances are only a minor determinant of small business outcomes.

From a policy perspective the findings are important. Most disadvantaged business development policies currently in place, such as set-asides and loan assistance programs, are targeted towards alleviating financial constraints not towards providing opportunities for work experience in small businesses. Even programs providing mentoring, such as the Small Business Administration's 8(a) Business Development Mentor-Protégé Program, generally focus on technical, management and financial assistance, subcontract support, and assistance in performing prime contracts through

joint venture arrangements. These programs do not explicitly provide opportunities for would-be entrepreneurs to acquire general and specific business human capital by working for other small business owners.[24] The findings from this research suggest that governmental programs providing mentoring, internships or apprenticeship-type training may help to reduce historical inequalities in business ownership patterns.[25] More research, however, is needed on the potential effectiveness of these types of programs, especially from evaluations of experimental programs.

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[24] The Kauffmann Foundation, however, has a program that provides students with opportunities to work as interns for entrepreneurial ventures. The Kauffmann Entrepreneurial Internship Program has grown rapidly over the past few years and placed 1,800 students at entrepreneurial companies and non-profit organizations in the past year.

[25] Apprenticeships are very common in the manufacturing sector in Africa and are associated with substantial returns in self-employment (Frazer 2003).

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Table 1
Family Business Background Measures
Characteristics of Business Owners, 1992

	All Firms	Sample Size
Percent of owners that had a self-employed family member prior to starting firm	51.6%	37,740
Percent of owners that worked in that family member's business (conditional)	43.6%	36,575
Percent of owners that worked in a family member's business (unconditional)	22.5%	36,575
Percent of owners that worked at a business with similar goods/services	50.1%	37,238
Percent of owners that inherited their businesses	1.6%	37,619
Percent of owners that received their businesses as a transfer of ownership/gift	6.6%	

Notes: (1) The sample includes businesses that are classified by the IRS as individidual proprietorships or self-employed persons, partnerships, and subchapter S corporations, have sales of $500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

Table 2
Logit, Linear and Ordered Probit Regressions for Small Business Outcomes
Characteristics of Business Owners, 1992

	Specification				
	(1)	(2)	(3)	(4)	(5)
Dependent variable	Closure (1992-96)	Profits $10,000+	Employer Firm	Ln Sales	Profits Ordered
Black-owned business	0.0212	-0.1786	-0.0951	-0.4636	-0.4160
	(0.0130)	(0.0207)	(0.0166)	(0.0554)	(0.0376)
Latino-owned business	-0.0138	-0.0443	0.0231	0.0660	-0.0966
	(0.0121)	(0.0144)	(0.0116)	(0.0490)	(0.0318)
Native American-owned business	-0.1176	0.0422	0.0717	0.3991	0.0654
	(0.0554)	(0.0530)	(0.0415)	(0.1879)	(0.1207)
Asian-owned business	-0.0457	0.0259	0.0728	0.4709	0.0004
	(0.0145)	(0.0145)	(0.0115)	(0.0539)	(0.0340)
Female-owned business	0.0247	-0.2107	-0.0616	-0.6941	-0.3968
	(0.0050)	(0.0066)	(0.0051)	(0.0206)	(0.0135)
High school graduate	-0.0209	0.0624	0.0447	0.1534	0.0209
	(0.0085)	(0.0112)	(0.0092)	(0.0351)	(0.0234)
Some college	-0.0101	0.0724	0.0471	0.0570	0.1038
	(0.0084)	(0.0111)	(0.0091)	(0.0351)	(0.0232)
College graduate	-0.0553	0.1133	0.0606	0.2397	0.1632
	(0.0093)	(0.0118)	(0.0097)	(0.0383)	(0.0252)
Graduate school	-0.1491	0.2127	0.1650	0.6115	0.5130
	(0.0107)	(0.0122)	(0.0097)	(0.0404)	(0.0267)
Urban	0.0164	0.0447	-0.0343	0.1008	0.1134
	(0.0058)	(0.0069)	(0.0055)	(0.0234)	(0.0150)
Prior work experience in a managerial capacity	0.0655	0.0265	0.0513	0.2089	-0.0055
	(0.0054)	(0.0063)	(0.0052)	(0.0217)	(0.0141)
Prior work experience in a similar business	-0.0425	0.1024	0.0432	0.4087	0.2484
	(0.0049)	(0.0059)	(0.0048)	(0.0202)	(0.0131)
Have a self-employed family member	-0.0200	0.0113	-0.0022	-0.0356	0.0092
	(0.0055)	(0.0067)	(0.0055)	(0.0227)	(0.0148)
Prior work experience in a family member's business	-0.0419	0.0322	0.0552	0.3784	0.0471
	(0.0069)	(0.0079)	(0.0063)	(0.0273)	(0.0178)
Inherited business	-0.1007	0.1097	0.2006	1.3144	0.3524
	(0.0237)	(0.0217)	(0.0157)	(0.0800)	(0.0506)
Mean of dependent variable	0.2280	0.2980	0.2070	10.0725	1.2391
Log likelihood / R-square	-17,466.46	-16,957.14	-16,542.74	0.1119	-40,045.16
Sample size	33,485	30,500	34,179	34,179	30,500

Notes: (1) See notes to Table 1. (2) Logit models are used for Specifications 1-3, OLS is used for Specification 4, and an ordered probit is used for Specification 5. The log likelihood value is reported for the logit and ordered probit regressions and R-squared is reported for the OLS model. (3) Marginal effects and their standard errors (in parenthesis) are reported for the logit regressions. (4) All specifications also include a constant, and dummy variables for marital status of primary owner, region, and work experience of the primary owner.

Table 3
Multiple Imputation Regressions for Small Business Outcomes
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(3)	(4)
Dependent variable	Closure by 1996	Profits $10,000+	Employer Firm	Ln Sales
Black-owned business	0.0213	-0.1866	-0.1038	-0.4883
	(0.0121)	(0.0197)	(0.0157)	(0.0522)
Latino-owned business	-0.0190	-0.0340	0.0167	0.0552
	(0.0113)	(0.0135)	(0.0111)	(0.0463)
Native American-owned business	-0.1220	0.0338	0.0650	0.3944
	(0.0522)	(0.0502)	(0.0396)	(0.1783)
Asian-owned business	-0.0473	0.0198	0.0696	0.4549
	(0.0135)	(0.0137)	(0.0110)	(0.0508)
Female-owned business	0.0199	-0.2066	-0.0640	-0.6942
	(0.0047)	(0.0063)	(0.0049)	(0.0197)
High school graduate	-0.0280	0.0634	0.0390	0.1620
	(0.0080)	(0.0108)	(0.0090)	(0.0346)
Some college	-0.0188	0.0734	0.0419	0.0781
	(0.0080)	(0.0105)	(0.0088)	(0.0342)
College graduate	-0.0619	0.1141	0.0542	0.2428
	(0.0089)	(0.0112)	(0.0097)	(0.0373)
Graduate school	-0.1596	0.2187	0.1581	0.6181
	(0.0102)	(0.0119)	(0.0098)	(0.0396)
Urban	0.0171	0.0476	-0.0291	0.1260
	(0.0055)	(0.0066)	(0.0053)	(0.0225)
Prior work experience in a managerial capacity	0.0617	0.0247	0.0529	0.2395
	(0.0053)	(0.0062)	(0.0052)	(0.0228)
Prior work experience in a similar business	-0.0423	0.1014	0.0414	0.3862
	(0.0049)	(0.0057)	(0.0049)	(0.0208)
Have a self-employed family member	-0.0241	0.0174	0.0011	-0.0138
	(0.0059)	(0.0065)	(0.0056)	(0.0231)
Prior work experience in a family member's business	-0.0389	0.0311	0.0535	0.3607
	(0.0083)	(0.0077)	(0.0074)	(0.0327)
Inherited business	-0.1266	0.1378	0.1987	1.2058
	(0.0225)	(0.0200)	(0.0145)	(0.0736)
Mean of dependent variable	0.2253	0.3009	0.2131	10.0995
Sample size	37,156	33,804	38,020	38,020

Note: (1) See notes to Table 2. (2) Missing values for all independent variables are imputed. See text for more details.

Table 4
Family Business Background Measures by Gender
Characteristics of Business Owners, 1992

	Female	Male	Female Sample Size	Male Sample Size
Percent of owners that had a self-employed family member prior to starting firm	50.6%	52.0%	13,818	23,922
Percent of owners that worked in that family member's business (conditional)	38.3%	46.2%	13,380	23,195
Percent of owners that worked in a family member's business (unconditional)	19.4%	24.0%	13,380	23,195
Percent of owners that worked at a business with similar goods/services	42.5%	53.8%	13,656	23,582
Percent of owners that inherited their businesses	1.4%	1.7%	13,760	23,859

Notes: (1) The sample includes businesses that are classified by the IRS as individidual proprietorships or self-employed persons, partnerships, and subchapter S corporporations, have sales of $500 or more, and have at least one owner who worked at least 12 weeks and 10 hours per week in the business. (2) All estimates are calculated using sample weights provided by the CBO.

Table 5
Logit and Linear Regressions for Small Business Outcomes for Men
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(3)	(4)
Dependent variable	Closure (1992-96)	Profits $10,000+	Employer Firm	Ln Sales
Black-owned business	0.0161 (0.0174)	-0.2036 (0.0274)	-0.1057 (0.0227)	-0.5322 (0.0746)
Latino-owned business	-0.0347 (0.0146)	-0.0568 (0.0181)	0.0115 (0.0150)	0.0013 (0.0588)
Native American-owned business	-0.1674 (0.0795)	-0.0042 (0.0692)	0.0467 (0.0575)	0.3201 (0.2397)
Asian-owned business	-0.0512 (0.0177)	0.0070 (0.0189)	0.0509 (0.0154)	0.3240 (0.0665)
High school graduate	-0.0313 (0.0101)	0.0805 (0.0139)	0.0469 (0.0118)	0.1686 (0.0430)
Some college	-0.0149 (0.0099)	0.0835 (0.0139)	0.0567 (0.0116)	0.0437 (0.0426)
College graduate	-0.0882 (0.0113)	0.1341 (0.0148)	0.0846 (0.0124)	0.2692 (0.0467)
Graduate school	-0.1433 (0.0124)	0.2419 (0.0154)	0.2122 (0.0123)	0.6930 (0.0484)
Urban	0.0229 (0.0071)	0.0457 (0.0088)	-0.0390 (0.0071)	0.0934 (0.0288)
Prior work experience in a managerial capacity	0.0896 (0.0069)	0.0226 (0.0082)	0.0478 (0.0068)	0.2218 (0.0272)
Prior work experience in a similar business	-0.0532 (0.0061)	0.1126 (0.0077)	0.0395 (0.0063)	0.4381 (0.0252)
Have a self-employed family member	-0.0012 (0.0069)	0.0100 (0.0088)	-0.0006 (0.0073)	-0.0558 (0.0288)
Prior work experience in a family member's business	-0.0523 (0.0085)	0.0158 (0.0103)	0.0513 (0.0083)	0.3709 (0.0340)
Inherited business	-0.0461 (0.0263)	0.1004 (0.0279)	0.2182 (0.0205)	1.1793 (0.0972)
Mean of dependent variable	0.2170	0.3617	0.2299	10.3239
Log likelihood / R-square	-10,761.38	-11,978.54	-11,107.46	0.0892
Sample size	21,316	19,439	21,753	21,753

Notes: (1) See notes to Table 1. (2) Logit models are used for Specifications 1-3, and OLS is used for Specification 4. The log likelihood value is reported for the logit regressions and R-squared is reported for the OLS model. (3) Marginal effects and their standard errors (in parenthesis) are reported. (4) All specifications also include a constant, and dummy variables for marital status of primary owner, region, and work experience of the primary owner.

Table 6
Logit and Linear Regressions for Small Business Outcomes for Women
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(4)	(5)
Dependent variable	Closure (1992-96)	Profits $10,000+	Employer Firm	Ln Sales
Black-owned business	0.0261	-0.1155	-0.0737	-0.3708
	(0.0199)	(0.0259)	(0.0219)	(0.0794)
Latino-owned business	0.0466	-0.0113	0.0503	0.2478
	(0.0218)	(0.0214)	(0.0178)	(0.0877)
Native American-owned business	-0.0458	0.1167	0.1003	0.5322
	(0.0798)	(0.0628)	(0.0533)	(0.2925)
Asian-owned business	-0.0333	0.0509	0.1048	0.7822
	(0.0255)	(0.0181)	(0.0161)	(0.0899)
High school graduate	0.0233	0.0129	0.0321	0.1106
	(0.0162)	(0.0176)	(0.0145)	(0.0627)
Some college	0.0130	0.0355	0.0158	0.0725
	(0.0161)	(0.0171)	(0.0143)	(0.0618)
College graduate	0.0092	0.0584	0.0033	0.1672
	(0.0173)	(0.0180)	(0.0154)	(0.0669)
Graduate school	-0.1597	0.1277	0.0414	0.4034
	(0.0213)	(0.0185)	(0.0162)	(0.0730)
Urban	-0.0004	0.0400	-0.0197	0.1272
	(0.0102)	(0.0098)	(0.0083)	(0.0391)
Prior work experience in a managerial capacity	0.0169	0.0282	0.0561	0.1622
	(0.0092)	(0.0084)	(0.0078)	(0.0355)
Prior work experience in a similar business	-0.0195	0.0709	0.0525	0.3539
	(0.0087)	(0.0078)	(0.0071)	(0.0332)
Have a self-employed family member	-0.0631	0.0150	-0.0051	-0.0027
	(0.0095)	(0.0088)	(0.0081)	(0.0361)
Prior work experience in a family member's business	0.0032	0.0565	0.0560	0.3815
	(0.0123)	(0.0102)	(0.0094)	(0.0456)
Inherited business	-0.2746	0.1185	0.1623	1.5391
	(0.0557)	(0.0276)	(0.0233)	(0.1385)
Mean of dependent variable	0.2495	0.1686	0.1589	9.5403
Log likelihood / R-square	-6,548.74	-4,743.32	-5,234.98	0.0593
Sample size	12,169	11,061	12,426	12,426

Notes: (1) See notes to Table 1. (2) Logit models are used for Specifications 1-3, and OLS is used for Specification 4. The log likelihood value is reported for the logit regressions and R-squared is reported for the OLS model. (3) Marginal effects and their standard errors (in parenthesis) are reported. (4) All specifications also include a constant, and dummy variables for marital status of primary owner, region, and work experience of the primary owner.

Table 7
Small Business Outcomes Regressions for Firms with $5,000+ Startup Capital
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(4)	(5)
Dependent variable	Closure (1992-96)	Profits $10,000+	Employer Firm	Ln Sales
Black-owned business	0.0085	-0.1966	-0.1419	-0.5556
	(0.0170)	(0.0293)	(0.0268)	(0.0946)
Latino-owned business	0.0333	-0.0562	0.0171	0.0737
	(0.0127)	(0.0199)	(0.0181)	(0.0972)
Native American-owned business	-0.0415	-0.0348	-0.0209	-0.0434
	(0.0583)	(0.0742)	(0.0687)	(0.2923)
Asian-owned business	-0.0288	0.0041	0.0367	0.2575
	(0.0129)	(0.0168)	(0.0155)	(0.0897)
Female-owned business	0.0301	-0.2154	-0.0465	-(0.5880)
	(0.0057)	(0.0091)	(0.0080)	(0.0924)
High school graduate	0.0147	0.0177	0.0334	0.0750
	(0.0102)	(0.0156)	(0.0146)	(0.1589)
Some college	0.0109	0.0477	0.1003	0.1502
	(0.0102)	(0.0155)	(0.0144)	(0.1552)
College graduate	-0.0456	0.0269	0.0971	0.3380
	(0.0113)	(0.0165)	(0.0152)	(0.1759)
Graduate school	-0.0516	0.1603	0.1838	0.5028
	(0.0114)	(0.0168)	(0.0152)	(0.1674)
Urban	0.0333	0.0707	-0.0036	0.1033
	(0.0063)	(0.0089)	(0.0082)	(0.0983)
Prior work experience in a managerial capacity	0.0376	0.0078	0.0634	0.1764
	(0.0061)	(0.0088)	(0.0081)	(0.0900)
Prior work experience in a similar business	-0.0285	0.0910	0.0268	0.2573
	(0.0055)	(0.0080)	(0.0073)	(0.0937)
Have a self-employed family member	-0.0046	0.0105	-0.0173	-0.0517
	(0.0061)	(0.0092)	(0.0084)	(0.1032)
Prior work experience in a family member's business	-0.0490	0.0142	0.0870	0.4342
	(0.0077)	(0.0105)	(0.0096)	(0.1125)
Inherited business	-0.0471	0.0644	0.2980	1.6740
	(0.0261)	(0.0309)	(0.0300)	(0.2486)
Mean of dependent variable	0.1564	0.4117	0.3540	10.8625
Log likelihood / R-square	-8,536.59	-11,959.81	-12,831.09	0.0891
Sample size	20,212	18,886	20,485	20,485

Notes: (1) See notes to Table 1. (2) Logit models are used for Specifications 1-3, and OLS is used for Specification 4. The log likelihood value is reported for the logit regressions and R-squared is reported for the OLS model. (3) Marginal effects and their standard errors (in parenthesis) are reported. (4) All specifications also include a constant, and dummy variables for marital status of primary owner, region, and work experience of the primary owner.

Table 8
Logit and Linear Regressions for Small Business Outcomes
Characteristics of Business Owners, 1992

	Specification			
	(1)	(2)	(3)	(4)
Dependent variable	Closure (1992-96)	Profits $10,000+	Employer Firm	Ln Sales
Black-owned business	0.0077 (0.0133)	-0.1684 (0.0213)	-0.0703 (0.0176)	-0.3215 (0.0506)
Latino-owned business	-0.0143 (0.0123)	-0.0444 (0.0149)	0.0277 (0.0126)	0.0735 (0.0447)
Native American-owned business	-0.1270 (0.0564)	0.0322 (0.0548)	0.0696 (0.0454)	0.3468 (0.1706)
Asian-owned business	-0.0091 (0.0149)	-0.0176 (0.0150)	-0.0164 (0.0128)	0.0216 (0.0495)
Female-owned business	0.0150 (0.0053)	-0.1943 (0.0069)	-0.0498 (0.0057)	-0.5708 (0.0193)
High school graduate	-0.0065 (0.0087)	0.0428 (0.0116)	0.0251 (0.0099)	0.0324 (0.0325)
Some college	0.0095 (0.0086)	0.0637 (0.0115)	0.0398 (0.0098)	0.0011 (0.0322)
College graduate	-0.0433 (0.0096)	0.0855 (0.0123)	0.0470 (0.0106)	0.1441 (0.0355)
Graduate school	-0.1617 (0.0117)	0.1573 (0.0137)	0.1674 (0.0115)	0.5567 (0.0397)
Urban	0.0079 (0.0059)	0.0610 (0.0071)	-0.0144 (0.0059)	0.1831 (0.0214)
Prior work experience in a managerial capacity	0.0826 (0.0056)	0.0075 (0.0066)	0.0212 (0.0057)	0.0401 (0.0200)
Prior work experience in a similar business	-0.0505 (0.0052)	0.0962 (0.0061)	0.0426 (0.0053)	0.4081 (0.0187)
Have a self-employed family member	-0.0181 (0.0057)	0.0004 (0.0069)	-0.0057 (0.0060)	-0.0651 (0.0207)
Prior work experience in a family member's business	-0.0323 (0.0071)	0.0210 (0.0081)	0.0344 (0.0069)	0.2300 (0.0250)
Inherited business	-0.0761 (0.0246)	0.1351 (0.0238)	0.2267 (0.0182)	1.3143 (0.0764)

(continued)

Table 8 (continued)
Logit and Linear Regressions for Small Business Outcomes
Characteristics of Business Owners,1992

Explanatory Variables	Specification			
	(1)	(2)	(3)	(4)
Startup capital:	-0.0871	0.1505	0.1487	0.7156
$5,000-$24,999	(0.0061)	(0.0068)	(0.0059)	(0.0214)
Startup capital:	-0.1308	0.2312	0.3077	1.4676
$25,000-$99,999	(0.0090)	(0.0088)	(0.0070)	(0.0291)
Startup capital:	-0.2295	0.1791	0.3735	2.1520
$100,000 or more	(0.0166)	(0.0125)	(0.0099)	(0.0422)
Agricultural services	0.0112	-0.0111	-0.1586	-0.9204
	(0.0164)	(0.0184)	(0.0167)	(0.0574)
Mining and construction	0.0438	0.0528	-0.0353	-0.2546
	(0.0096)	(0.0111)	(0.0090)	(0.0350)
Manufacturing	-0.0625	0.0358	0.0035	-0.1055
	(0.0171)	(0.0166)	(0.0129)	(0.0532)
Wholesale	0.0057	0.1305	-0.0006	0.6082
	(0.0148)	(0.0153)	(0.0127)	(0.0518)
FIRE	-0.0609	0.0771	-0.1856	-0.4926
	(0.0109)	(0.0122)	(0.0109)	(0.0367)
Trans., communications,	0.0600	0.1205	-0.1523	-0.3300
and public utilities	(0.0130)	(0.0147)	(0.0139)	(0.0486)
Personal services	0.0195	-0.0488	-0.1161	-0.7430
	(0.0079)	(0.0096)	(0.0077)	(0.0286)
Professional services	0.0973	0.0650	-0.1191	-0.7021
	(0.0089)	(0.0110)	(0.0092)	(0.0328)
Uncoded industry	0.0198	-0.1020	-0.5054	-0.9842
	(0.0132)	(0.0183)	(0.0334)	(0.0490)
Mean of dependent variable	0.2280	0.2975	0.2066	10.0668
Sample size	33,116	30,271	33,701	33,701

Notes: (1) See notes to Table 2. (2) Logit models are used for Specifications 1-3 and OLS is used for Specification 4. (3) Marginal effects and their standard errors (in parenthesis) are reported. (4) All specifications also include a constant, and dummy variables for marital status of primary owner, region, and work experience of the primary owner.