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

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Abstract

Recent research has concluded that the children of business owners are substantially more likely than others to become self-employed themselves. The authors of this study find that more than half of business owners in the confidential, restricted-access 1992 Characteristics of Business Owners Survey had a self-employed family member before starting their business. Of the group with a self-employed family member, fewer than half had worked in that family member's business, suggesting that the intergenerational link in self-employment is not primarily due to the acquisition of general and specific business human capital. In contrast, the success of small businesses owned by those surveyed was only weakly correlated with having a self-employed family member, but strongly correlated with prior work experience in a family member's business, which is one method of acquiring general and specific business human capital. Another finding is that only 1.6% of the small businesses surveyed were inherited.

KEYWORDS: small business, backgrounds of entrepreneurs

FAMILIES, HUMAN CAPITAL, AND SMALL BUSINESS: EVIDENCE FROM THE CHARACTERISTICS OF BUSINESS OWNERS SURVEY

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Recent research has concluded that the children of business owners are substantially more likely than others to become self-employed themselves. The authors of this study find that more than half of business owners in the confidential, restricted-access 1992 Characteristics of Business Owners Survey had a self-employed family member before starting their business. Of the group with a self-employed family member, fewer than half had worked in that family member's business, suggesting that the intergenerational link in self-employment is not primarily due to the acquisition of general and specific business human capital. In contrast, the *success* of small businesses owned by those surveyed was only weakly correlated with having a self-employed family member, but strongly correlated with prior work experience in a family member's business, which is one method of acquiring general and specific business human capital. Another finding is that only 1.6% of the small businesses surveyed were inherited.

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, for example, Birch

1979; Brown, Hamilton, and Medoff 1990; Acs 1999).¹ In addition, many academicians and policy-makers 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; 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

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This paper has been screened to ensure that no confidential data are revealed. The data can be obtained at a Census Research Data Center or at the Center for Economic Studies (CES) only after approval by the CES and IRS. See <http://www.ces.census.gov/> for details on the application and approval process.

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

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 among the children of non-business owners (see Lentz and Laband 1990; Fairlie 1999; Dunn and Holtz-Eakin 2000; Hout and Rosen 2000). Although the intergenerational transmission of business ownership is strong, its underlying causes have not been identified. Among the potential influences are 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, and 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 how business success is affected by general and specific business human capital and by the correlation across family members

in entrepreneurial preferences. Finally, we examine whether business inheritances are an important method of intergenerational transmission of business ownership.

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 self-employment is positively associated with being male, white, older, married, and an immigrant, and with having more education and higher asset levels.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; Hout and Rosen 2000). These studies generally find that an individual with a self-employed parent is roughly two to three times more likely to be self-employed than someone without 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). 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

²See 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.

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

Holtz-Eakin (2000) found that self-employed sons follow their father's occupation in only 32% 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 possible explanation for the observed intergenerational link in self-employment is that family members tend to share preferences for entrepreneurial activities and entrepreneurial ability. That is, 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 toward risk (Fairlie 2002). Using the National Longitudinal Surveys (NLS), Dunn and Holtz-Eakin (2000) found, however, that the intergenerational correlation in self-employment is strongest for successfully self-employed parents, suggesting that what drives the relationship between parents' and children's self-employment propensities is the transmission of business skills rather than similarities in tastes for the self-employed lifestyle. Related to the issue of correlated preferences and ability, intergenerational links may also be created if self-employed parents' role modeling encourages their children to become business owners. Observing the example of a successfully self-employed parent may improve a child's confidence in his or her own entrepreneurial ability.

Intergenerational links may also be created directly if the children of self-employed business owners become partners with their parents or directly inherit businesses. Compared to other methods for helping their children become business owners, forming a partnership with a child may be less expensive, especially in terms of capital. Also, partnerships and inheritances may be an efficient way to transmit reputation capital or an established clientele from one generation to the next. Previous research analyzing employer businesses (businesses with at least one person on the payroll) from the National Federation of Independent Businesses (NFIB) found that 14.2% of the surveyed businessmen had 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 than unsuccessful business owners to transfer financial wealth to their children, potentially making it easier for those children to become self-employed. Dunn and Holtz-Eakin (2000), however, provided estimates suggesting that inherited wealth 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% 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 focus individually on 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 members' businesses, then we can infer that the correlation in entrepreneurial preferences or ability is a more important determinant of the intergenerational link in self-employment than is the acquisition of general and specific business human capital. In addition, if very few businesses are inherited, then we can infer that business inheritances play only a minor role in establishing the intergenerational link in business ownership.

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 on small business outcomes 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. The

results may improve our understanding of how business success is affected by general and specific business human capital and by the correlation across family members in entrepreneurial preferences. For example, a finding that prior work experience is an important determinant of business success would suggest 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 its inclusion of detailed information on the characteristics of 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.

Data

The 1992 Characteristics of Business Owners (CBO) survey was conducted by the U.S.

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

Census Bureau to provide economic, demographic, and sociological data on minority, female, and non-minority male business owners and their business activities (for more details on the CBO, see U.S. Census Bureau 1997; Bates 1990a; Headd 1999; and Robb 2000). 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% of all businesses in the United States (U.S. Census Bureau 1996b). Response rates for the firm and owners surveys were approximately 60%. All estimates reported below use sample weights that adjust for survey non-response (Headd 1999).

The CBO is the only survey containing detailed 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 he or she used to start or acquire the business is also available. Among the numerous business characteristics included are closure, profits, sales, employment, industry, startup capital, age of business, legal form of organization, employee composition, customer base, physical location, and exports.

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

⁵Larger C corporations were excluded because some questions in the survey would have been difficult for an owner to answer on behalf of many investors. For tax filing purposes, however, C corporation status is becoming less popular than S corporation status due to changes in tax laws (Headd 1999).

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 had to 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 owned by wage/salary workers. We also try tighter restrictions and comment on the findings below. In multi-owner firms, which represent 20.6% 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 assigned to 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. Census Bureau 1996a,b).

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 with a family member who was a business owner, the percentage of owners who worked for that family member, and other measures related to family business background.⁷ 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% of small business owners worked in a family business prior to starting or acquiring their business.⁸

The finding that more than 50% of all small business owners had a family member who was a self-employed business owner is nearly identical to Lentz and Laband's (1990) finding that 52.2% of independent businessmen from the NFIB had parents who were business owners. 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 had a self-employed family member suggests a high level of intergenerational transmission of business ownership.⁹ The percentage of owners who had a self-employed family member prior to business startup certainly overstates the percentage of owners who had a self-employed parent, but the difference is probably not that large.¹⁰ The strong positive influence

⁷The 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. Census Bureau (1997:C-4).

⁸A recent survey of small employer firms by the NFIB indicates that 45.1% of businesses employ a family member. However, the NFIB survey uses a broader definition of family members than does the CBO and only includes firms with 1-249 employees (National Federation of Independent Business 2002).

⁹If we make the conservative assumption that 25% of small business owners have a self-employed parent and that there is a steady-state self-employment rate of 10%, the children of self-employed parents are three times more likely to be self-employed than are the children of non-self-employed parents.

¹⁰On the other hand, there is the possibility that this measure does not capture all types of prior family business

⁶This restriction excludes 22.1% of firms in the original sample.

Table 1. Family Business Background: Characteristics of Business Owners, 1992.

| <i>Owner Characteristic</i> | <i>Percent of Owners, All Firms</i> | <i>Sample Size</i> |
|--|-------------------------------------|--------------------|
| Had a Self-Employed Family Member Prior to Starting Firm | 51.6% | 37,740 |
| Worked in That Family Member's Business (Conditional) | 43.6% | 36,575 |
| Worked in a Family Member's Business (Unconditional) | 22.5% | 36,575 |
| Worked at a Business with Similar Goods/Services | 50.1% | 37,238 |
| Inherited the Business | 1.6% | 37,619 |
| Received the Business as a Transfer of Ownership/Gift | 6.6% | 37,707 |

Notes:

The sample includes businesses that were classified by the IRS as individual proprietorships or self-employed persons, partnerships, and subchapter S corporations, had sales of \$500 or more, and had at least one owner who worked at least 12 weeks and 10 hours per week in the business.

All estimates are calculated using sample weights provided by the CBO.

of parental self-employment is common to brothers, suggesting that a propensity for business ownership runs in families (Dunn and Holtz-Eakin 2000), and because the relevant CBO question asks whether the owner had a self-employed family member *prior* to starting his or her business, the likelihood that older siblings are referring to younger self-employed siblings is limited. 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%. 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 or her business refer to the owner's parents.

Another interesting finding is that more than half of all business owners who reported having 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) found that the intergenerational correlation in self-employment was strongest for successfully self-employed parents, suggesting that the transmission of business skills instead of a familial taste 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. Census Bureau 1997: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 reported working in a similar business prior to starting their own.

Among owners who worked in a family member's business, 55.8% reported working in a business that provided similar goods and services. Unfortunately, however, we cannot ascertain whether the family member's business was the same as the business providing similar goods and services. Therefore, our estimate only provides an "upper bound" estimate of the percentage of owners who acquired specific business human capital from working in a family member's business. Nevertheless, the estimate of roughly 50%

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% of all U.S. firms are C corporations and 10% of all firms are S corporations (U.S. Census Bureau 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 time.

suggests that family businesses were 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 followed their father's occupation in only 32% of cases.

Another potential explanation for the intergenerational transmission of business ownership 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, however, we find that very few small businesses were inherited. Estimates from the CBO indicate that only 1.6% of all small businesses were inherited. This finding suggests that the role of business inheritances in determining intergenerational links in self-employment was limited at best.

For comparison, we can look at data from the Federal Reserve's Survey of Small Business Finances (SSBF), which also includes information on business inheritances and gifts. Estimates from the SSBF indicate that 4.0% of firms are inherited or acquired as gifts. Similarly, estimates from the Federal Reserve's Survey of Consumer Finances (SCF) indicate that 3.5% of businesses are inherited or acquired as gifts. Unfortunately, neither the SSBF's nor the SCF's questionnaire distinguishes between inheritances and gifts.

Lentz and Laband (1990) provided estimates of business inheritances from a sample of independent businessmen from the NFIB. They found that 14.2% of businesses in their sample were inherited—a rate much higher than that found by the SSBF, the SCF, or our study. 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. The unrestricted nature of this measure could complicate its interpretation. We find, however, that only 6.6% 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% of owners 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%. This probably greatly overstates the total, however, as only 4.0% 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 percentage inherited or acquired as a gift drops to 3.5% in the SSBF. There is the possibility, however, that businesses are transferred at below market prices from parents to children. Unfortunately, no information is available on this type of transfer.

Related to business inheritances, we also find that financial transfers from parents to children were not a common source of startup capital among small business owners. Only 6.4% of owners borrowed capital from their family. This finding is consistent with Dunn and Holtz-Eakin's (2000) finding 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 inter-

¹¹The 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).

generational links in self-employment. These links appear to have been driven partly, but not entirely, by opportunities to acquire both general and specific business human capital by working in family members' businesses. Business inheritances and partnerships with family members appear to have played only a minor role. We next examine whether these factors played 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 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 from regressions for the probability of a business closure from 1992 to 1996, the probability that the firm had profits of at least \$10,000 per year, the probability of having employees, and log sales.¹²

¹²We 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 employment among small businesses is between 0 and 1 employees. Roughly 80% of firms have no employees and only a small percentage have more than five employees.

Estimates from the CBO indicate that nearly a quarter of small businesses existing in 1992 were not operating by 1996, and slightly more than 30% of businesses reported a net profit of at least \$10,000. Small firms also hired 1.77 employees on average, with only 21.3% hiring *any* employees. Finally, small businesses had mean sales of \$212,791 in 1992.

In all specifications, we include the race, sex, region, and urban status 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 were important determinants of small business outcomes (see Fairlie and Robb 2007 for a more detailed analysis). Even after we control for numerous owner and business characteristics, we still find that black-owned businesses lagged behind white-owned businesses. In all specifications except the closure probability equation, the coefficient on the black-owned business dummy variable is large, negative, and statistically significant. In the closure probability equation, the coefficient estimate is positive, but not statistically significant. The results are more mixed for Latino-owned firms.

Similar to previous studies, ours finds that business outcomes were positively associated with the education level of the business owner.¹³ For example, businesses with college-educated owners had 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 approximately 25% higher sales on average than businesses with owners who did not graduate from high school.¹⁴ Female-owned businesses were

¹³For example, using the 1982 CBO, Bates (1990b) found that small business failures generally decrease with the education level of the owner. Similarly, Robb (2000) found increases in education to be positively associated with business survival.

¹⁴The implied effects on the probability of closure, large profits, and employment are approximated by

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

| <i>Dependent Variable</i> | <i>Specification</i> | | | | |
|---|------------------------------------|------------------------------------|---------------------------------------|----------------------------------|---|
| | (1) <i>Closure</i> (1992–96) | (2) <i>Profits</i> \$10,000+ | (3) <i>Employer</i> <i>Firm</i> | (4) <i>Ln</i> <i>Sales</i> | (5) <i>Profits</i> <i>Ordered</i> |
| Black-Owned Business | 0.0212 (0.0130) | -0.1786 (0.0207) | -0.0951 (0.0166) | -0.4636 (0.0554) | -0.4160 (0.0376) |
| Latino-Owned Business | -0.0138 (0.0121) | -0.0443 (0.0144) | 0.0231 (0.0116) | 0.0660 (0.0490) | -0.0966 (0.0318) |
| Native American–Owned Business | -0.1176 (0.0554) | 0.0422 (0.0530) | 0.0717 (0.0415) | 0.3991 (0.1879) | 0.0654 (0.1207) |
| Asian-Owned Business | -0.0457 (0.0145) | 0.0259 (0.0145) | 0.0728 (0.0115) | 0.4709 (0.0539) | 0.0004 (0.0340) |
| Female-Owned Business | 0.0247 (0.0050) | -0.2107 (0.0066) | -0.0616 (0.0051) | -0.6941 (0.0206) | -0.3968 (0.0135) |
| High School Graduate | -0.0209 (0.0085) | 0.0624 (0.0112) | 0.0447 (0.0092) | 0.1534 (0.0351) | 0.0209 (0.0234) |
| Some College | -0.0101 (0.0084) | 0.0724 (0.0111) | 0.0471 (0.0091) | 0.0570 (0.0351) | 0.1038 (0.0232) |
| College Graduate | -0.0553 (0.0093) | 0.1133 (0.0118) | 0.0606 (0.0097) | 0.2397 (0.0383) | 0.1632 (0.0252) |
| Graduate School | -0.1491 (0.0107) | 0.2127 (0.0122) | 0.1650 (0.0097) | 0.6115 (0.0404) | 0.5130 (0.0267) |
| Urban | 0.0164 (0.0058) | 0.0447 (0.0069) | -0.0343 (0.0055) | 0.1008 (0.0234) | 0.1134 (0.0150) |
| Prior Work Experience in a Managerial Capacity | 0.0655 (0.0054) | 0.0265 (0.0063) | 0.0513 (0.0052) | 0.2089 (0.0217) | -0.0055 (0.0141) |
| Prior Work Experience in a Similar Business | -0.0425 (0.0049) | 0.1024 (0.0059) | 0.0432 (0.0048) | 0.4087 (0.0202) | 0.2484 (0.0131) |
| Have a Self-Employed Family Member | -0.0200 (0.0055) | 0.0113 (0.0067) | -0.0022 (0.0055) | -0.0356 (0.0227) | 0.0092 (0.0148) |
| Prior Work Experience in a Family Member's Business | -0.0419 (0.0069) | 0.0322 (0.0079) | 0.0552 (0.0063) | 0.3784 (0.0273) | 0.0471 (0.0178) |
| Inherited Business | -0.1007 (0.0237) | 0.1097 (0.0217) | 0.2006 (0.0157) | 1.3144 (0.0800) | 0.3524 (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:

See Notes to Table 1.

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.

Marginal effects and their standard errors (in parentheses) are reported for the logit regressions.

All specifications also include a constant, as well as dummy variables for marital status of the primary owner, region, and work experience of the primary owner.

less successful and smaller on average than male-owned businesses, a pattern consistent

multiplying the coefficient estimate from the logit model by $p(1-p)$, where p is the mean of the dependent variable.

with previous findings indicating that self-employment is associated with higher earnings than wage and salary employment for men, but lower earnings for women (see Hundley 2000, for example). Firms located in urban

areas were more likely to close and less likely to have employees than were firms located in non-urban areas, but had, on average, larger profits and higher sales.

Having a family business background was important for small business outcomes. The main effect, however, appears to have been through the informal learning or apprenticeship-type training that occurs when 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 generally statistically insignificant. The coefficient estimates on this variable capture how business outcomes were affected by having a self-employed family member but not working for that family member's business or inheriting it. In contrast, working at this family member's business had a much larger positive (negative in the closure equation) and statistically significant effect in all specifications. Having actually worked for a self-employed family member, as compared to having a self-employed family member but not working for him or her, was associated with a 0.042 lower probability of a business closure, a 0.032 higher probability of large profits, a 0.055 higher probability of employment, and roughly 40% higher sales.¹⁵ The effects on the closure, profit, and employment probabilities represent 15.3–26.6% 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) found that having a close relative who was self-employed had a negative but statistically insignificant effect (t-statistic of 1.41) on the probability of a business failure. In the 1982 CBO, however, "close relatives" are defined to include non-family members with whom frequent contact was maintained by the owner. Astebro and Bernhardt (2003) found a positive but statistically insignificant

coefficient estimate on prior work experience in a family business in a survival regression using a sample of 738 newly created firms from the 1987 CBO. Fairlie (1999) provided additional evidence from the Panel Study of Income Dynamics (PSID). Having a self-employed father was found to have a large, negative, statistically significant effect on the probability of exiting from self-employment for white men. Finally, using German data, Bruderl and Preisdorfer (1998) provided some evidence that network support from "strong ties" (which include spouses, parents, and relatives) improved business outcomes. Unfortunately, they did not have information on whether these individuals were business owners.

Perhaps not surprisingly, the inherited businesses in our sample were more successful and larger than the non-inherited businesses. The coefficients are large, positive (negative in the closure equation), and statistically significant in all specifications. Inheritances may represent a way to transfer successful businesses across generations, but we find that their overall importance in determining small business outcomes was slight at best. Although the coefficient estimates are large in the small business outcome equations, the low incidence of inherited businesses (only 1.6% of all small businesses) suggests that they played only a minor role in the intergenerational transmission of 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 statistical significance and relatively small size of the coefficient estimates on 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

¹⁵These 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.

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

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.

The CBO also provides information on whether the owner had previously worked in a business whose goods and services were similar to those provided by his or her own business. This more general case of acquiring specific business human capital appears to be very important. In fact, in the closure probability and log sales equations, 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. 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.¹⁷ 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 relationship between owner's education and profits. We also find that having a self-employed family member had no effect on profits, but prior work experience in a family business and prior work experience in a similar type of business had positive and statistically significant effects on profits. Also estimated, though not reported, was a profit equation using \$25,000 as the cutoff level, which yielded similar estimates.

Missing Data

A concern with the estimates reported in Table 2 is their potential sensitivity to missing data for some of the independent variables in the CBO. Approximately 10% of the observations for each of the specifications reported in Table 2 are excluded because of missing values for one or more of the independent variables. 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. The results, although not reported, are similar to those reported in Table 2. We also address the missing data problem by using multiple imputation, which 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 (for more details, see Rubin 1987; Kennickell 1998; Schafer and Olsen 1998; Schafer 1999; and Brownstone and Valetta 2001). Logit or linear regressions are then run on five separately imputed datasets, with the results from the runs being combined for inference and adjusted for sampling variance. Despite

¹⁷The cutoffs for the ordered probit are (1) negative, (2) 0–\$9,999, (3) \$10,000–24,999, (4) \$25,000–99,999, and (5) \$100,000 or more.

Table 3. Family Business Background Measures
by Gender: Characteristics of Business Owners, 1992.

| <i>Owner Characteristic</i> | <i>Female</i> | <i>Male</i> | <i>Female Sample Size</i> | <i>Male Sample Size</i> |
|--|---------------|-------------|-------------------------------|-----------------------------|
| Had a Self-Employed Family Member Prior to Starting Firm | 50.6% | 52.0% | 13,818 | 23,922 |
| Worked in That Family Member's Business (Conditional) | 38.3% | 46.2% | 13,380 | 23,195 |
| Worked in a Family Member's Business (Unconditional) | 19.4% | 24.0% | 13,380 | 23,195 |
| Worked at a Business with Similar Goods/Services | 42.5% | 53.8% | 13,656 | 23,582 |
| Inherited the Business | 1.4% | 1.7% | 13,760 | 23,859 |

See notes to Table 1.

the increase in sample size, the estimates are also similar to those reported in Table 2 (see Fairlie and Robb 2003 for estimates and further discussion). Thus, the removal of observations with missing data appears to have no important effect on our results.

Gender Issues

We investigate whether the family business backgrounds were similarly important for men and women. Table 3 reports estimates of the family business background measures by gender. Male and female business owners were similarly likely to have had a self-employed family member prior to starting their firm. Male business owners, however, were more likely to have worked in that family business than were female business owners. Male business owners were 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, similarly low percentages of male and female business owners had inherited their businesses.

We also estimate separate sets of regressions for men and women, which are reported in Tables 4 and 5, 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 genders. Having a self-employed family member had no effect on business outcomes, but prior work experience in a family business had large effects on business outcomes for both men and women. We also find that prior work experience in a similar business improved

outcomes for both genders, whereas prior management experience had 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 on 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.¹⁸ Interestingly, the means for the family business background variables are similar for this more restrictive sample, which excludes 40% of the original sample. For example, 54.1% of owners had a self-employed family member, compared to 51.6% in the full sample, and 25.2% of owners had prior work experience in a family business, compared to 22.5% in the full sample. Furthermore, only 1.5% of owners had inherited their businesses, which is comparable to the 1.6% in the full sample.

In contrast to these results, the mean outcomes among businesses that started with \$5,000 or more in startup capital were considerably better than those for all businesses

¹⁸Published estimates from the CBO indicate that even among businesses with sales of \$100,000 to \$200,000 per year, approximately 40% of firms required less than \$5,000 in startup capital (U.S. Census Bureau 1997).

Table 4. Logit and Linear Regressions for Small Business
Outcomes for Men: Characteristics of Business Owners, 1992.

| <i>Dependent Variable</i> | <i>Specification</i> | | | |
|---|--|--|--|---|
| | <i>(1)</i> <i>Closure</i> <i>(1992–96)</i> | <i>(2)</i> <i>Profits</i> <i>\$10,000+</i> | <i>(3)</i> <i>Employer</i> <i>Firm</i> | <i>(4)</i> <i>Ln</i> <i>Sales</i> |
| 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:

The sample includes businesses that were classified by the IRS as individual proprietorships or self-employed persons, partnerships, and subchapter S corporations, had sales of \$500 or more, and had at least one owner who worked at least 12 weeks and 10 hours per week in the business.

All estimates are calculated using sample weights provided by the CBO.

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.

Marginal effects and their standard errors (in parentheses) are reported.

All specifications also include a constant, as well as dummy variables for marital status of the primary owner, region, and work experience of the primary owner.

(Table 6). Firms with \$5,000+ startup capital were less likely to close, had higher profits and sales, and hired more employees than firms with less startup capital. Table 6 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 that having a self-employed family member had little effect on outcomes, whereas prior work experience

Table 5. Logit and Linear Regressions for Small Business
Outcomes for Women: Characteristics of Business Owners, 1992.

| <i>Dependent Variable</i> | <i>Specification</i> | | | |
|---|------------------------------------|------------------------------------|---------------------------------------|----------------------------------|
| | (1) <i>Closure</i> (1992–96) | (2) <i>Profits</i> \$10,000+ | (3) <i>Employer</i> <i>Firm</i> | (4) <i>Ln</i> <i>Sales</i> |
| Black-Owned Business | 0.0261 (0.0199) | -0.1155 (0.0259) | -0.0737 (0.0219) | -0.3708 (0.0794) |
| Latino-Owned Business | 0.0466 (0.0218) | -0.0113 (0.0214) | 0.0503 (0.0178) | 0.2478 (0.0877) |
| Native American-Owned Business | -0.0458 (0.0798) | 0.1167 (0.0628) | 0.1003 (0.0533) | 0.5322 (0.2925) |
| Asian-Owned Business | -0.0333 (0.0255) | 0.0509 (0.0181) | 0.1048 (0.0161) | 0.7822 (0.0899) |
| High School Graduate | 0.0233 (0.0162) | 0.0129 (0.0176) | 0.0321 (0.0145) | 0.1106 (0.0627) |
| Some College | 0.0130 (0.0161) | 0.0355 (0.0171) | 0.0158 (0.0143) | 0.0725 (0.0618) |
| College Graduate | 0.0092 (0.0173) | 0.0584 (0.0180) | 0.0033 (0.0154) | 0.1672 (0.0669) |
| Graduate School | -0.1597 (0.0213) | 0.1277 (0.0185) | 0.0414 (0.0162) | 0.4034 (0.0730) |
| Urban | -0.0004 (0.0102) | 0.0400 (0.0098) | -0.0197 (0.0083) | 0.1272 (0.0391) |
| Prior Work Experience in a Managerial Capacity | 0.0169 (0.0092) | 0.0282 (0.0084) | 0.0561 (0.0078) | 0.1622 (0.0355) |
| Prior Work Experience in a Similar Business | -0.0195 (0.0087) | 0.0709 (0.0078) | 0.0525 (0.0071) | 0.3539 (0.0332) |
| Have a Self-Employed Family Member | -0.0631 (0.0095) | 0.0150 (0.0088) | -0.0051 (0.0081) | -0.0027 (0.0361) |
| Prior Work Experience in a Family Member's Business | 0.0032 (0.0123) | 0.0565 (0.0102) | 0.0560 (0.0094) | 0.3815 (0.0456) |
| Inherited Business | -0.2746 (0.0557) | 0.1185 (0.0276) | 0.1623 (0.0233) | 1.5391 (0.1385) |
| Mean of Dependent Variable | 0.2495 | 0.1686 | 0.158 | 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 |

See notes to Table 4.

in a family member's business improved outcomes. Prior work experience in a similar business also had 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 the effects of family business backgrounds on small business success are not due to the inclusion

of smaller, less successful firms that required little or no startup capital.

We also check (but do not report) 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 worked 30 hours or more per week and 36 weeks or more per year. This restriction reduces our sample size by roughly 20%. As expected, we find that business outcomes were better for this sample,

Table 6. Small Business Outcomes Regressions for Firms with \$5,000+ Startup Capital: Characteristics of Business Owners, 1992.

| <i>Dependent Variable</i> | <i>Specification</i> | | | |
|---|--|--|--|---|
| | <i>(1)</i> <i>Closure</i> <i>(1992–96)</i> | <i>(2)</i> <i>Profits</i> <i>\$10,000+</i> | <i>(3)</i> <i>Employer</i> <i>Firm</i> | <i>(4)</i> <i>Ln</i> <i>Sales</i> |
| Black-Owned Business | 0.0085 (0.0170) | -0.1966 (0.0293) | -0.1419 (0.0268) | -0.5556 (0.0946) |
| Latino-Owned Business | 0.0333 (0.0127) | -0.0562 (0.0199) | 0.0171 (0.0181) | 0.0737 (0.0972) |
| Native American-Owned Business | -0.0415 (0.0583) | -0.0348 (0.0742) | -0.0209 (0.0687) | -0.0434 (0.2923) |
| Asian-Owned Business | -0.0288 (0.0129) | 0.0041 (0.0168) | 0.0367 (0.0155) | 0.2575 (0.0897) |
| Female-Owned Business | 0.0301 (0.0057) | -0.2154 (0.0091) | -0.0465 (0.0080) | -0.5880 (0.0924) |
| High School Graduate | 0.0147 (0.0102) | 0.0177 (0.0156) | 0.0334 (0.0146) | 0.0750 (0.1589) |
| Some College | 0.0109 (0.0102) | 0.0477 (0.0155) | 0.1003 (0.0144) | 0.1502 (0.1552) |
| College Graduate | -0.0456 (0.0113) | 0.0269 (0.0165) | 0.0971 (0.0152) | 0.3380 (0.1759) |
| Graduate School | -0.0516 (0.0114) | 0.1603 (0.0168) | 0.1838 (0.0152) | 0.5028 (0.1674) |
| Urban | 0.0333 (0.0063) | 0.0707 (0.0089) | -0.0036 (0.0082) | 0.1033 (0.0983) |
| Prior Work Experience in a Managerial Capacity | 0.0376 (0.0061) | 0.0078 (0.0088) | 0.0634 (0.0081) | 0.1764 (0.0900) |
| Prior Work Experience in a Similar Business | -0.0285 (0.0055) | 0.0910 (0.0080) | 0.0268 (0.0073) | 0.2573 (0.0937) |
| Have a Self-Employed Family Member | -0.0046 (0.0061) | 0.0105 (0.0092) | -0.0173 (0.0084) | -0.0517 (0.1032) |
| Prior Work Experience in a Family Member's Business | -0.0490 (0.0077) | 0.0142 (0.0105) | 0.0870 (0.0096) | 0.4342 (0.1125) |
| Inherited Business | -0.0471 (0.0261) | 0.0644 (0.0309) | 0.2980 (0.0300) | 1.6740 (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 |

See notes to Table 4.

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, this estimate indicates that having a family member who was a business owner generally did not improve outcomes. We also continue to find that having inherited the

business and having had similar businesswork experience improved outcomes, although the relationships are slightly weaker. Finally, a specification that includes even tighter hours and weeks worked restrictions yields roughly similar results.

Financial Startup Capital and Industry

Several previous studies have found that

Table 7. Logit and Linear Regressions for Small Business
Outcomes: Characteristics of Business Owners, 1992.

| <i>Dependent Variable</i> | <i>Specification</i> | | | |
|---|------------------------------------|------------------------------------|---------------------------------------|----------------------------------|
| | (1) <i>Closure</i> (1992–96) | (2) <i>Profits</i> \$10,000+ | (3) <i>Employer</i> <i>Firm</i> | (4) <i>Ln</i> <i>Sales</i> |
| 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

asset levels play an important role in determining who enters into or exits from self-employment.¹⁹ 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; Humphreys and McClung 1981).

Those with higher capital requirements for entry, such as manufacturing and wholesale, typically have lower turnover rates. Barriers to 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; Robb 2000). Srinivasan, Woo, and Cooper (1994) showed that industry-specific knowledge contributes to

¹⁹See 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).

Table 7. Continued

| <i>Dependent Variable</i> | <i>Specification</i> | | | |
|---|--|--|--|---|
| | <i>(1)</i> <i>Closure</i> <i>(1992–96)</i> | <i>(2)</i> <i>Profits</i> <i>\$10,000+</i> | <i>(3)</i> <i>Employer</i> <i>Firm</i> | <i>(4)</i> <i>Ln</i> <i>Sales</i> |
| Startup Capital: \$5,000-\$24,999 | -0.0871 (0.0061) | 0.1505 (0.0068) | 0.1487 (0.0059) | 0.7156 (0.0214) |
| Startup Capital: \$25,000-\$99,999 | -0.1308 (0.0090) | 0.2312 (0.0088) | 0.3077 (0.0070) | 1.4676 (0.0291) |
| Startup Capital: \$100,000 or More | -0.2295 (0.0166) | 0.1791 (0.0125) | 0.3735 (0.0099) | 2.1520 (0.0422) |
| Agricultural Services | 0.0112 (0.0164) | -0.0111 (0.0184) | -0.1586 (0.0167) | -0.9204 (0.0574) |
| Mining and Construction | 0.0438 (0.0096) | 0.0528 (0.0111) | -0.0353 (0.0090) | -0.2546 (0.0350) |
| Manufacturing | -0.0625 (0.0171) | 0.0358 (0.0166) | 0.0035 (0.0129) | -0.1055 (0.0532) |
| Wholesale | 0.0057 (0.0148) | 0.1305 (0.0153) | -0.0006 (0.0127) | 0.6082 (0.0518) |
| FIRE | -0.0609 (0.0109) | 0.0771 (0.0122) | -0.1856 (0.0109) | -0.4926 (0.0367) |
| Transp., Communications, and Public Utilities | 0.0600 (0.0130) | 0.1205 (0.0147) | -0.1523 (0.0139) | -0.3300 (0.0486) |
| Personal Services | 0.0195 (0.0079) | -0.0488 (0.0096) | -0.1161 (0.0077) | -0.7430 (0.0286) |
| Professional Services | 0.0973 (0.0089) | 0.0650 (0.0110) | -0.1191 (0.0092) | -0.7021 (0.0328) |
| Uncoded Industry | 0.0198 (0.0132) | -0.1020 (0.0183) | -0.5054 (0.0334) | -0.9842 (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:

See notes to Table 1.

Logit models are used for Specifications (1)–(3), and OLS is used for Specification (4).

Marginal effects and their standard errors (in parentheses) are reported.

All specifications also include a constant, as well as dummy variables for marital status of the primary owner, region, and work experience of the primary owner.

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 test for the presence of such a pattern, 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 capital required to start/acquire the business” (U.S. Census Bureau 1997:C-15). Estimates are reported in Table 7. Some caution is required in interpreting the results, however, as the amount of required startup capital is potentially endogenous to business success (Bates 1990b).²⁰ Furthermore, the choice of

²⁰A similar problem occurs in examining whether asset levels affect the probability of self-employment

industry may not be entirely exogenous, as it is related to the entry decision.

As expected, small business outcomes were 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 was also linked to business success and size, although the coefficients vary across specifications. More important, the addition of startup capital and industry does not greatly 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 significant) in the new specifications. The coefficients on prior work experience in a similar business are very similar.

Conclusions

Using data from the confidential and restricted-access Characteristics of Business Owners (CBO) Survey, we have provided 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 the acquisition of general and specific business human capital is not likely to account primarily for intergenerational links in self-employment, 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 played 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. Having worked in this family member's business, however, had a large, positive (negative in the closure equation), and statistically significant effect in all specifications. The results of including controls for similar business work experience and management experience in the regressions suggest 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 they hold for both male-owned firms and female-owned firms.

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% of all small businesses were inherited. In the regression analysis, we find that inherited businesses were more successful on average than non-inherited businesses. However, their limited representation among the population of small businesses suggests

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.

that business inheritances were only a minor determinant of small business outcomes.

Our findings are important from a policy perspective. Most disadvantaged business development policies currently in place, such as set-asides and loan assistance programs, are targeted toward alleviating financial constraints, not toward providing opportunities for work experience in small businesses. Even programs that provide 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 opportu-

nities for would-be entrepreneurs to acquire general and specific business human capital by working for other small business owners. The findings from this research suggest that governmental programs providing mentoring, internships, or apprenticeship-type training might help to reduce historical inequalities in business ownership patterns.²¹ More research, however, is needed on the potential effectiveness of these types of programs, especially evidence from evaluations of experimental programs.

²¹Apprenticeships are very common in the manufacturing sector in Africa and are associated with substantial returns in self-employment (Frazer 2003).

Appendix
Means of Selected Variables: Characteristics of Business Owners, 1992

| <i>Owner Characteristic</i> | <i>All Firms</i> | <i>Sample Size</i> | <i>Owner Characteristic</i> | <i>All Firms</i> | <i>Sample Size</i> |
|---|------------------|--------------------|--|------------------|--------------------|
| Firm No Longer Operating 1996 (Closure) | 22.5% | 37,156 | Mountain | 0.0660 | 38,020 |
| Net Profit of at Least \$10,000 | 30.1% | 33,804 | Urban | 0.7571 | 38,020 |
| One or More Paid Employees | 21.3% | 38,020 | Prior Work Experience: <2 Years | 0.0731 | 37,503 |
| Log Sales | 10.10 | 38,020 | Prior Work Experience: 2-5 Years | 0.1648 | 37,503 |
| Female-Owned Business | 0.3290 | 38,020 | Prior Work Experience: 6-9 Years | 0.1513 | 37,503 |
| Married | 0.7640 | 39,606 | Prior Work Experience: 10-19 Years | 0.2935 | 37,503 |
| Never Married | 0.1030 | 36,906 | Prior Work Experience: >20 Years | 0.2529 | 37,503 |
| High School Graduate | 0.1052 | 36,782 | Startup Capital: \$5,000-\$25,000 | 0.2350 | 37,388 |
| Some College | 0.3107 | 36,782 | Startup Capital: \$25,000-\$100,000 | 0.1126 | 37,388 |
| College Graduate | 0.1921 | 36,782 | Startup Capital: \$100,000+ | 0.0501 | 37,388 |
| Graduate School | 0.1371 | 36,782 | Agricultural Services | 0.0271 | 38,020 |
| Northeast | 0.0583 | 38,020 | Mining and Construction | 0.1206 | 38,020 |
| Mid-Atlantic | 0.1452 | 38,020 | Manufacturing | 0.0331 | 38,020 |
| East North Central | 0.1552 | 38,020 | Wholesale | 0.0352 | 38,020 |
| West North Central | 0.0781 | 38,020 | FIRE | 0.0973 | 38,020 |
| South Atlantic | 0.1633 | 38,020 | Transp., Commun., and Public Utilities | 0.0417 | 38,020 |
| East South Central | 0.0493 | 38,020 | Personal Services | 0.2630 | 38,020 |
| West South Central | 0.1062 | 38,020 | Professional Services | 0.1912 | 38,020 |
| | | | Uncoded Industry | 0.0405 | 38,020 |

See Notes to Table 1.

REFERENCES

- Acs, Zoltan J. 1999. *Are Small Firms Important? Their Role and Impact*. Boston: Kluwer Academic.
- Aronson, Robert L. 1991. *Self-Employment: A Labor Market Perspective*. Ithaca, N.Y.: ILR Press (an imprint of Cornell University Press).
- Astebro Thomas B., and Irwin Bernhardt. 2003. "Start-Up Financing, Owner Characteristics, and Survival." *Journal of Economics and Business*, Vol. 55, No. 4, pp. 303–20.
- Balkin, Steven. 1989. *Self-Employment for Low-Income People*. New York: Praeger.
- Bates, Timothy. 1990a. "The Characteristics of Business Owners Data Base." *Journal of Human Resources*, Vol. 25, No. 4, pp. 752–56.
- _____. 1990b. "Entrepreneur Human Capital Inputs and Small Business Longevity." *Review of Economics and Statistics*, Vol. 72, No. 4, pp. 551–59.
- _____. 1993. *Assessment of State and Local Government Minority Business Development Programs*. Report to the U.S. Department of Commerce Minority Business Development Agency. Washington, D.C.: U.S. Department of Commerce.
- _____. 1997. *Race, Self-Employment, and Upward Mobility: An Illusive American Dream*. Washington, D.C.: Woodrow Wilson Center Press; Baltimore: John Hopkins University Press.
- Benus, Jacob M., Terry Johnson, Michelle Wood, Neelima Grover, and Ted Shen. 1995. *Self-Employment Programs: A New Reemployment Strategy: Final Report on the UI Self-Employment Demonstration, Unemployment Insurance Occasional Paper No. 95-4*. Washington, D.C.: U.S. Department of Labor, Employment and Training Administration, Unemployment Insurance Service.
- Birch, David. 1979. *The Job Creation Process*. Center for the Study of Neighborhood and Regional Change. Cambridge: MIT Press.
- Blanchflower, David G., and Andrew J. Oswald. 1998. "What Makes an Entrepreneur?" *Journal of Labor Economics*, Vol. 16, No. 1, pp. 26–60.
- Boden, Richard, Jr. 1996. "Gender and Self-Employment Selection: An Empirical Assessment." *Journal of Socio-Economics*, Vol. 25, No. 6, pp. 671–82.
- Boden, Richard, Jr., and Alfred R. Nucci. 2002. "On the Survival Prospects of Men's and Women's New Business Ventures." *Journal of Business Venturing*, Vol. 15, No. 4, pp. 347–62.
- Borjas, George J. 1999. "The Wage Structure and Self-Selection into Self-Employment." Working paper, Harvard University.
- Brown, Charles, James Hamilton, and James Medoff. 1990. *Employers Large and Small*. Cambridge: Harvard University Press.
- Brownstone, David, and Robert Valletta. 2001. "The Bootstrap and Multiple Imputations: Harnessing Increased Computing Power for Improved Statistical Tests." *Journal of Economic Perspectives*, Vol. 15, No. 4, pp. 129–41.
- Bruderl, Josef, and Peter Preisdorfer. 1998. "Network Support and the Success of Newly Founded Businesses." *Small Business Economics*, Vol. 10, No. 3, pp. 213–25.
- Davis, Steven J., John C. Haltiwanger, and Scott Schuh. 1996. *Job Creation and Destruction*. Cambridge: MIT Press.
- Dunn, Thomas A., and Douglas J. Holtz-Eakin. 2000. "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links." *Journal of Labor Economics*, Vol. 18, No. 2, pp. 282–305.
- Evans, David, and Boyan Jovanovic. 1989. "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints." *Journal of Political Economy*, Vol. 97, No. 4, pp. 808–27.
- Evans, David, and Linda Leighton. 1989. "Some Empirical Aspects of Entrepreneurship." *American Economic Review*, Vol. 79, No. 3, pp. 519–35.
- Fairlie, Robert W. 1999. "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment." *Journal of Labor Economics*, Vol. 17, No. 1, pp. 80–108.
- _____. 2002. "Drug Dealing and Legitimate Self-Employment." *Journal of Labor Economics*, Vol. 20, No. 3, pp. 538–67.
- Fairlie, Robert W., and Alicia Robb. 2003. "Families, Human Capital, and Small Businesses: Evidence from the Characteristics of Business Owners Survey." Economic Growth Center, Yale University, Center Discussion Paper No. 871.
- _____. 2007. "Why Are Black-Owned Businesses Less Successful Than White-Owned Businesses? The Role of Families, Inheritances, and Business Human Capital." *Journal of Labor Economics* (forthcoming).
- Frazer, Garth. 2003. "Learning the Master's Trade: Apprenticeship and Firm-Specific Human Capital." Working paper, University of Toronto.
- Glazer, Nathan, and Daniel P. Moynihan. 1970. *Beyond the Melting Pot: The Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City*, 2nd ed. Cambridge, Mass.: MIT Press.
- Guy, Cynthia, Fred Doolittle, and Barbara Fink. 1991. *Self-Employment for Welfare Recipients: Implementation of the SEID Program*. New York: Manpower Demonstration Research Corporation.
- Headd, Brian. 1999. "The Characteristics of Business Owners Database 1992." U.S. Census Bureau, Center for Economic Studies, Working Paper Series, CES-WP-99-8.
- Holtz-Eakin, Douglas, David Joulfaian, and Harvey Rosen. 1994a. "Entrepreneurial Decisions and Liquidity Constraints." *Rand Journal of Economics*, Vol. 23, No. 2, pp. 334–47.
- _____. 1994b. "Sticking It Out: Entrepreneurial Survival and Liquidity Constraints." *Journal of Political Economy*, Vol. 102, No. 1, pp. 53–75.
- Hout, Michael, and Harvey S. Rosen. 2000. "Self-Employment, Family Background, and Race." *Journal of Human Resources*, Vol. 35, No. 4, pp. 670–92.
- Humphreys, M. A., and J. McClung. 1981. "Women Entrepreneurs in Oklahoma." *Review of Regional Economics and Business*, Vol. 6, No. 2, pp. 13–20.
- Hundley, Greg. 2000. "Male/Female Earnings Differences in Self-Employment: The Effects of Marriage, Children, and the Household Division of Labor."

- Industrial and Labor Relations Review*, Vol. 54, No. 1, pp. 95–104.
- Kennickell, Arthur B. 1998. "Multiple Imputation in the Survey of Consumer Finances." Paper Prepared for the August 1998 Joint Statistical Meetings.
- Lentz, Bernard, and David Laband. 1990. "Entrepreneurial Success and Occupational Inheritance among Proprietors." *Canadian Journal of Economics*, Vol. 23, No. 3, pp. 563–79.
- Light, Ivan. 1972. *Ethnic Enterprise in America*. Berkeley: University of California Press.
- _____. 1979. "Disadvantaged Minorities in Self Employment." *International Journal of Comparative Sociology*, Vol. 20, No. 1–2, pp. 31–45.
- Meyer, Bruce. 1990. "Why Are There So Few Black Entrepreneurs?" Working Paper No. 3537, National Bureau of Economic Research.
- Moore, Robert L. 1983. "Employer Discrimination: Evidence from Self-Employed Workers." *Review of Economics and Statistics*, Vol. 65, No. 3, pp. 496–501.
- National Federation of Independent Business. 2002. *National Small Business Poll: Families in Business*. Washington, D.C.: NFIB.
- Parker, Simon C. 2004. *The Economics of Self-Employment and Entrepreneurship*. Cambridge: Cambridge University Press.
- Raheim, Salome. 1997. "Problems and Prospects of Self-Employment as an Economic Independence Option for Welfare Recipients." *Social Work*, Vol. 42, No. 1, pp. 44–53.
- Reynolds, Paul D., and Sammis B. White. 1997. *The Entrepreneurial Process: Economic Growth, Men, Women, and Minorities*. Westport, Conn., and London: Greenwood, Quorum.
- Robb, Alicia. 2000. "The Role of Race, Gender, and Discrimination in Business Survival." Doctoral diss., University of Michigan.
- _____. 2002. "Entrepreneurship: A Path for Economic Advancement for Women and Minorities?" *Journal of Developmental Entrepreneurship*, Vol. 7, No. 4.
- _____. 2005. "The Borrowing Experiences of Black-Owned Small Businesses." Working Paper, University of California, Santa Cruz.
- Rubin, Donald B. 1987. *Multiple Imputation for Nonresponse in Surveys*. New York: John Wiley.
- Schafer, Joseph L. 1999. "Multiple Imputation: A Primer." *Statistical Methods in Medical Research*, Vol. 8, pp. 3–15.
- Schafer, Joseph L., and Maren K. Olsen. 1998. "Multiple Imputation for Multivariate Missing-Data Problems: A Data Analyst's Perspective." *Multivariate Behavioral Research*, Vol. 33, No. 4, pp. 545–71.
- Severens, C. Alexander, and Amy J. Kays. 1999. *1999 Directory of U.S. Microenterprise Programs*. Washington, D.C.: Aspen Institute.
- Sowell, Thomas. 1981. *Markets and Minorities*. New York: Basic Books.
- Srinivasan, Raji, Carolyn Y. Woo, and Arnold C. Cooper. 1994. "Performance Determinants for Male and Female Entrepreneurs." Working Paper No. 1053, Purdue University.
- U.S. Census Bureau. 1996a. *1992 Survey of Minority Owned Business Enterprises: Black*.
- _____. 1996b. *1992 Survey of Women Owned Business Enterprises*.
- _____. 1997. *1992 Economic Census: Characteristics of Business Owners*.
- _____. 2001. *1997 Economic Census: Company Summary*.
- U.S. Department of Labor. 1992. "Self-Employment Programs for Unemployed Workers." Unemployment Insurance Occasional Paper 92-2. Washington, D.C.: Government Printing Office.
- Vroman, Wayne. 1997. "Self-Employment Assistance: Revised Report." Urban Institute.