Online Appendix for Black-Owned Firms, Financial Constraints, and the Firm Size Gap

By J. David Brown, John S. Earle, Mee Jung Kim, Kyung Min Lee, and Jared Wold

A. Additional Results

Table A1 contains the detailed decomposition for all of the individual financial variables, based on Equation (2) and corresponding to the subsumed categories of variables shown in Table 2 of the main text.

Table A1—Detailed Decomposition for Financial Variables

	Composition	Structure
Startup Source		
Business Credit Card	0.0016	-0.0043
Personal Credit Card	0.0034	0.0043
Home Equity	0.0000	0.0041
Bank Loan	0.0048	0.0009
Family Loan	0.0017	0.0025
Government Loan	-0.0003	-0.0006
SBA Loan	-0.0008	-0.0041
Grants	0.0006	-0.0009
Venture Capital	-0.0001	-0.0018
Savings	-0.0029	0.0391
Other Assets	-0.0007	-0.0029
Other Source	-0.0016	0.0025
Don't Know	0.0109	0.0140
None Needed	0.0004	0.0094
Startup Capital Amount	0.0131	0.0257
Source of New Funds		
Employees, Family, and Friends	0.0052	-0.0034
Bank Loan	-0.0060	0.0034
Grant	-0.0008	0.0032
Owner	0.0289	0.0177
Investor	0.0003	-0.0009
Discouraged Borrower	0.0081	0.0029
Lack of Capital Reduces Profits	0.0010	0.0014

Note: Note: These are the detailed composition and structure contributions for the finance variable categories shown in Table 2. The data presented in this table are approved for dissemination by the DRB (CBDRB-FY21-CES014-010).

B. Additional Explanation

B1. Related Research

We build on previous research on differences in firm employment size and finance by race (e.g., Bates, 1997; Blanchflower, Levine and Zimmerman, 2003). The closest paper to ours in using a decomposition to analyze racial differences in firm employment is Fairlie and Robb (2007), who decompose the probability that a firm has any employees in 1992, with a focus on racial differences in family business background.[1] By contrast, we use 2014-2016 data to focus on how racial differences in measured financial access impact the racial gap at the mean of the employer-firm size distribution.

Evidence on the greater likelihood that Black business owners, compared to White business owners, hire Black workers can be found in and Bates (1988) and Bates (1994).

Kim et al. (2021) contains detailed summary statistics for all the control variables discussed below from the 2014 ASE as well as a more extensive discussion of previous research.

B2. Data

The ASE surveys non-farm businesses with at least one paid employee and receipts of $1,000 or more. Using the Census Bureau Business Register (BR) as the sampling frame, the ASE sample is stratified by the 50 most populous Metropolitan Statistical Areas (MSAs), state, the firm's number of years in business, and the sampling frame based on the probability of ownership by minorities or women. The sample is randomly selected within strata, except for large companies that are selected with certainty. The initial ASE samples included about 290,000 employer firms each year, and the response rate was 74.0, 66.9, and 64.7 percent in 2014, 2015, and 2016, respectively. About 90 percent of firms selected for the 2014 survey were selected for the 2015 survey; firms that ceased operation were replaced by new businesses operating in 2015 that did not exist in 2014. Of firms in the 2014 sample, 81.2 percent were in the 2016 sample. The remainder of the 2016 sample consisted of 8.7 percent selected for the first time in 2015 and 10.1 percent first selected in 2016.[2] We restrict the sample to firms with one or more individuals owning at least 10 percent of the equity. The sample is also slightly reduced by missing values. Our final analysis sample contains 656,000 firm-owner-year observations in 197,000 firms.

Our focus in this paper is the relationship between firm size, as measured by number of employees (described below), and the set of variables representing access to and use of finance. These variables are described in the text, which shows a partially subsumed decomposition of the firm size gap by categories of type of finance in Panel B of Table 2. Table A1 provides the fully detailed decomposition, showing the explained and unexplained contributions from each variable separately. These are the building blocks for

[1] Fairlie, Robb and Robinson (2021) decompose the Black-White owner difference in the value of firm assets and report that about 25 percent can be explained by credit scores.

[2] Note that all our estimates of standard errors cluster on firms to account for the cases of multiple observations per firm, and we control for year of survey to account for any aggregate changes during the three-year period.

the categories of contributions shown in Table 2 and discussed in the text: Startup Capital from Insiders, Outsiders, and Other Sources, Startup Capital Amount, New Funding from Insiders and Outsiders, and Subjective Financial Constraints.

The ASE provides detailed characteristics for up to four persons with the largest ownership shares in the firm, from which we build firm-owner-year data. Our analysis uses the firm-owner-year as the observational unit to facilitate controlling for a long list of owner characteristics. However, so that the data are representative of all employer-firms, we construct a composite weight for each owner by multiplying the firm-year-level sampling weight by the owner's share. Therefore, each owner is represented in proportion to their ownership share in the firm. This procedure clearly makes no difference for single-owner firms, but it takes into account firms with multiple owners and varying characteristics. Thus, firms with multiple owners of different races are included in the sample, although they are rare, with owner weights proportionate to ownership share. We use the detailed information in the ASE to compare finance in Black- and White-owned firms while controlling for a large set of possibly confounding factors that may affect the gaps: human capital, other demographic characteristics, motivations for ownership, choice of industry, and other owner choices about the firm.

We define Blacks as non-Hispanic individuals who select a race of Black/African American, including those who select both Black and other races, irrespective of their birthplace. We focus on comparisons of Blacks to non-Hispanic Whites. Other demographic characteristics include gender, age, and immigrant (defined as not born a U.S. citizen). Age is expressed as six categorical variables for less than 25, 25-34, 35-44, 45-54, 55-64, and 65 or over. In cases of multiple owners, the data also include the relationships among business owners, including whether ownership is by a married couple, non-couple family, or is multi-generational. We construct dummy variables for diversity in terms of gender (distinguishing within-family from unrelated gender diversity), race and ethnicity, and immigrant vs. U.S. citizen-born status within the owner team. Human capital variables include educational attainment, ownership of another business prior to owning this one, and veteran status. Educational attainment is defined as the highest degree prior to owning the business (less than high school graduate, high school graduate, vocational, some college, associate degree, Bachelor's degree, and graduate degree). Prior business ownership experience and veteran status are dummy variables.

As mentioned in the text, firm size and finance are likely determined jointly as functions of the entrepreneur's characteristics that affect both the demand and supply of capital. Ideally, we would isolate the impact of supply differences by race, but neither supply nor demand are directly observable. In this paper, our approach is to control for a rich set of observable characteristics related to demand, including owner demographics as well as motivations for owning the business. In general, nonpecuniary motivations for lifestyle reasons, such as flexible hours, would seem to imply less ambition to grow the business, and thus lower demand for capital. On motivations, the ASE asks the importance for owning the business of different motivations, with the options of "very important," "somewhat important," or "not important." We focus on three motivations: "flexible hours" (Flexible Hours), which represents nonpecuniary motivations; "opportunity for

greater income/wanted to build wealth" (Income), representing pecuniary motivations; and "couldn't find a job/unable to find employment" (No Job), representing necessity entrepreneurs. We construct dummy variables representing very important, somewhat important, not important, and didn't answer. These questions allow us to address the possibility that Blacks and Whites may differ on average in their motivations for business ownership, which could affect both the demand for finance and firm employment size.

The ASE also includes variables representing owner choices about the business. Like motivations, we include these because they could reflect owner preferences about the business that might matter for finance and employment. Job function is a set of dummy variables for the owner's role(s) in the business including manager, good/service provider, financial controller, and none of these roles. Primary income is a dummy variable indicating whether this business is the owner's primary income source. Hours worked is a categorical variable for ranges of average weekly hours the owner spends managing or working in the business. Home-based is a dummy variable indicating whether the business operates primarily from home.

Further information on the 2014 ASE can be found in Kim et al. (2021).

We link the ASE to the LBD, which consists of all firms and establishments with payroll employment in the U.S. non-farm business sector. The LBD variables used in the analysis are number of employees and firm age, as of the pay period including March 12th of the survey reference year. The number of employees is a common measure of firm size, primarily for reasons of availability and reliability, in research on finance and growth. But we are especially interested in employment because it reflects opportunities for workers and thus wider potential impacts of capital constraints than those affecting only business owners.[3]

B3. Further Explanation of Methods

The decomposition method described in the paper is standard, and it is based on Equation (4) in Jann (2008). While it has become conventional to use the pooled regression coefficients to represent the "nondiscriminatory structure," Black owners are such a tiny fraction of our sample that the results would differ little had we used the coefficients from the regression for the White rather than pooled sample.

The first term in the two-fold decomposition is the composition ("explained") component resulting from Black-White differences in observed owner and firm characteristics using the estimated coefficient ($\hat{\beta}^*$) from the pooled regression. The second term is the structure ("unexplained") component resulting from differences in returns to characteristics by owner race.[4] To address the identification problem involved in choosing base categories, we follow the deviation contrast transform method of Yun (2005), which normalizes categorical variables based on their grand means. The decomposition is based on

[3] Brown et al. (2019) link the LBD with the Survey of Business Owners, the predecessor survey of the ASE.

[4] We follow the labelling of the two components in Fortin, Lemieux and Firpo (2011)'s analysis of wage structure and composition effects.

data subject to sampling variance, and we use the delta method to compute the standard errors (Jann, 2008).

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