

# Black-Owned Firms, Financial Constraints, and the Firm Size Gap

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Why are Black-owned firms in the U.S. smaller than those owned by Whites? In this paper, we provide new documentation of this racial gap in firm size, measured by the number of employees, and we investigate the role of financial constraints in accounting for it. We draw upon newly available firm-level data containing rich information on relevant firm and owner characteristics, for which we control in the analysis, using a regression decomposition as an accounting framework.

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.<sup>1</sup> 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. Our measure of firm size as the number of employees is especially meaningful in a context where Black business owners are more likely than Whites to hire Black workers ([Bates, 1994](#)) and where the Black unemployment rate is much higher than that of Whites across all stages of the business

cycle.

## I. Data

Our data come from the 2014-2016 Annual Survey of Entrepreneurs (ASE) of the U.S. Census Bureau. The sample is nationally representative based on the universe of non-farm businesses with at least one paid employee and receipts of \$1,000 or more ([Foster and Norman, 2017](#)). For the number of employees, the firm size measure we study in this paper, we link the ASE to the Longitudinal Business Database (LBD). Because of our focus on owner characteristics, particularly race, we analyze the data at the owner level, weighting by the owner's share in the firm in the case of multiple owners. We restrict attention to owners who are either Black or White (as defined below) with complete information on all the variables in the regression. The final sample for analysis contains 656,000 firm-owner-year observations in 197,000 firms.

We define an owner as Black if they are not Hispanic and they list "Black or African American" as a race (respondents may list multiple races). We define an owner as White if they are non-Hispanic and list only "White" as their race. Firms with multiple owners of different races are included in the sample, although they are rare, with owner weights proportionate to ownership share.

Our focus in this paper is on measures of finance sources and amounts, so we describe those variables here, while leaving the description of control variables to the Appendix. The amount of startup capital is a variable with ten categories ranging from less than \$5,000 to \$3 million or more, as well as "none needed" and "don't know." Sources of startup capital are provided as indicators for each of the following. First, there are the sources of personal savings, home equity loan, personal credit cards, business credit cards, other assets, and family loan, which we group as "Startup Capital from In-

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<sup>1</sup>[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.

siders” in the subsumed decomposition analysis reported below. Second are sources of bank loan, government loan, grants, and venture capital (VC), which are subsumed into “Startup Capital from Outsiders.” Finally come other sources, none needed, and don’t know, comprising “Startup Capital from Other Source.”

Pertaining to the survey reference year, we create dummy variables for funds from the owner and for family, friends, or employees, which our decomposition subsumes into “New Funding from Insiders.” A second group includes banks or other financial institutions, outside investors, and government grants, comprising “New Funding from Outsiders.” The final two finance variables are more subjective. “Discouraged borrower” is an indicator for owners who report they chose not to apply for a loan in the reference year despite needing additional funding, because they expected not to be approved by a lender. Lastly, we create a dummy variable for whether access or cost of financial capital is reported to negatively affect the profitability of the business. These two variables are subsumed into “Subjective Financial Constraints.”

## II. Method

We estimate unadjusted and adjusted racial gaps in employment using a linear regression:

$$(1) \quad E_{ij}^r = \alpha^r + X_{ij}^r \beta^r + \varepsilon_{ij}^r$$

where  $E_{ij}^r$  is the log of the number of paid employees for a racial group  $r$ , either Black (B) or White (W).  $X_{ij}^r$  includes all the individual financial variables described in the previous section, which are the variables of interest in this paper.  $X_{ij}^r$  also includes control variables for functions of firm age, number of owners, owner age, gender, immigrant, ownership team diversity, educational attainment, prior business ownership, and veteran status, motivations for ownership (income, flexibility, couldn’t find job), 4-digit NAICS industry dummies, owner’s role(s) in business, average hours per week worked in business, primary source of income from business, and home-based business. When we estimate with the pooled sample,  $X_{ij}^r$  also includes a dummy variable for Black owner.

Firm size and finance may of course be jointly determined through the interaction of demand

and supply for capital. Thus, we do not interpret the regression coefficients as causal but simply as the partial correlation of firm size and finance when controlling for a rich set of variables, some of which may be correlated with demand for finance: firm age, number of owners, owner education and age, motivations for ownership, for example.

To analyze the role of finance in the firm size gap, we employ a Blinder-Oaxaca-type decomposition (Jann, 2008) as an accounting framework, as follows:

$$(2) \quad \bar{E}^W - \bar{E}^B = [(\bar{X}^W - \bar{X}^B)' \hat{\beta}^*] \\ + [(\bar{X}^W)' (\hat{\beta}^W - \hat{\beta}^*) + (\bar{X}^B)' (\hat{\beta}^* - \hat{\beta}^B)]$$

where  $\bar{E}^r$  is the average employment for race  $r$ ,  $\bar{X}^r$  is a vector of the means of covariates,  $\hat{\beta}^r$  is a vector of the estimated coefficients from race-specific regressions, and  $\hat{\beta}^*$  is the vector of coefficients from the pooled regression.<sup>2</sup> The first term in this 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.<sup>3</sup> 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 data subject to sampling variance, and we used the delta method to compute the standard errors (Jann, 2008). Because some firms have multiple owners and appear in more than one year of the ASE, the standard errors are clustered at the firm level. We subsume a large number of finance variables into seven groups and report subsumed components and standard errors.

<sup>2</sup>Although 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.

<sup>3</sup>We follow the labelling of the two components in Fortin, Lemieux and Firpo (2011)’s analysis of wage structure and composition effects.

TABLE 1—DESCRIPTIVE STATISTICS AND REGRESSION: EMPLOYMENT AND FINANCE BY RACE

	Pooled		Black		White	
	Mean	Coef.	Mean	Coef.	Mean	Coef.
<b>Employment</b>						
Number of Employees	11.99 (124.1)		10.76 (80.81)		12.02 (124.9)	
Ln(Number of Employees)	1.43 (1.21)		1.32 (1.20)		1.43 (1.21)	
<b>Selected Finance Variables</b>						
Startup capital amount $\geq 100k$	0.193	0.306	0.149	0.265	0.194	0.306
Startup capital source: savings	0.647	0.048	0.706	-0.007	0.645	0.049
Startup capital source: bank	0.192	0.112	0.150	0.106	0.193	0.112
New funding source: bank	0.349	0.238	0.373	0.229	0.348	0.238
Discouraged borrower	0.033	-0.102	0.111	-0.127	0.032	-0.098
Lack of capital reduces profits	0.127	-0.007	0.269	-0.013	0.124	-0.008

*Note:* The number of employees and the log number of employees are continuous variables, while financial measures are dummy variables, as explained in the text. The numbers of owner-firm-year observations and firms in the sample are approximately 656,000 and 197,000 in total, 643,000 and 192,000 for White owners, and 13,500 and 6,000 for Black owners, respectively. Owners are weighted by their ownership share in the firm and by the ASE weights, so the sample is representative of all employer-firms in the U.S. non-farm private sector. Coefficients are from the pooled regression and separate regressions for Black and White. The data presented in this table are approved for dissemination by the DRB (CBDRB-FY21-CES014-010).

### III. Results

Table 1 contains summary statistics for the number of employees and selected financial variables in the total sample and for Black and White owners separately. Employment has a large standard deviation (coefficient of variation over 10 in the full sample) because of high skewness, but much less so for the natural logarithm, our dependent variable. The raw difference in firm size by this measure is 11.3 log points.

The table also shows the means of selected financial variables and their estimated coefficients based on equation (1). White-owned firms are more likely to report startup capital of at least \$100,000: 19.4 vs. 14.9 percent for Black-owned firms. The estimated impact on firm employment is also slightly larger for Whites: 30.6 vs. 26.5 percent. Black owners are somewhat more likely to use personal savings in starting their firms, at 70.6 vs. 64.5 percent for Whites, but here the difference in coefficients is stark: essentially zero for Blacks, it is 4.9 percent for Whites. Whites also have an advantage in receiving a bank loan at startup, while Black owners are slightly more likely to have received a bank loan during the reference year. But the two subjective indicators of financial constraints imply much greater stringency for Blacks, with significantly higher rates of discouraged borrowers who report needing capital but not applying because they expect rejection and of those reporting that financial access and costs reduce profits.

Table 2 provides the decomposition results. Panel (A) shows the overall decomposition of the firm employment size gap by race. The raw gap of about 11.3 percent is almost entirely accounted for by the composition effect, based on differences in observable characteristics, at 97 percent of the total, while the structure effect, based on differences in the intercept and in coefficients, is only about 3 percent. Note that the appropriate interpretation of this result is decidedly not that there is little discrimination affecting firm size. The underlying regression contains a number of variables that may themselves reflect discrimination, in particular, differences in access to finance, which is our focus in this paper and to which we now turn.

Panel (B) contains the partially subsumed contributions of the finance variables to the raw gap in firm size by race. Overall, the composition effect resulting from finance is 6.6 percent, which means that nearly 60 percent of the gap is accounted for by differences in these observed variables. The structure effect, or “unexplained” component, from finance is even larger, at 11.8 percent, more than 100 percent of the total 11.3 percent gap. This result implies that employment at Black-owned firms benefits much less from additional finance than at White-owned firms. Taken together, the total contribution of the financial measures “over-explains” the total gap by about 63 percent. The implication is that if both the measured financial variables and their impacts on firm size were equalized across

TABLE 2—DECOMPOSITION OF THE BLACK-WHITE GAP IN FIRM SIZE AND CONTRIBUTION OF FINANCE

	Composition Effect	Structure Effect
(A) Aggregate Decomposition	0.110 (0.013)	0.003 (0.016)
(B) Detailed Decomposition of Contributions from Finance		
Finance Total	0.066 (0.004)	0.118 (0.049)
Of which:		
Startup Capital Amount	0.013 (0.002)	0.026 (0.017)
Startup Capital from Insiders	0.003 (0.001)	0.043 (0.029)
Startup Capital from Outsiders	0.004 (0.001)	-0.006 (0.008)
Startup Capital from Other Source	0.009 (0.002)	0.031 (0.009)
New Funding from Insiders	0.034 (0.002)	0.014 (0.022)
New Funding from Outsiders	-0.006 (0.002)	0.006 (0.011)
Subjective Financial Constraints	0.009 (0.001)	0.004 (0.009)

*Note:* Panel (A) provides the aggregate decomposition of the gap in number of employees, by owner race. Panel (B) shows the detailed decomposition for the financial variables, partially subsumed within the categories, as described in the text. Finance Total is the sum of the categories. The overall racial gap in firm size is 0.113 (0.020). Standard errors clustered on firm are in parentheses. See Table 1 notes for the number of observations. The data presented in this table are approved for dissemination by the DRB (CBDRB-FY21-CES014-010).

racers, then Black-owned firms would be 18.4 percent larger than their actual size, or about 7 percent larger than White-owned firms, on average.

Within that total contribution, the various types of capital have independent contributions as follows. The startup capital amount contributes 1.3 percentage points to the composition and 2.6 percentage points to the structure effect: as we saw in Table 1, Black entrepreneurs are less likely to have large startup capital, and the impact on their size of larger capital is smaller than for Whites. Insider Startup Capital contributes only 0.3 percentage points to the composition effect, and the unexplained component for this source is 4.3 percent. Blacks tend to rely on these sources somewhat more than Whites (for instance, 71 percent of Blacks use personal savings at startup, compared with 65 percent of Whites), but the return to this source is zero for Blacks and statistically significant five percent for Whites. Blacks' greater use of internal finance may result from greater difficulty in obtaining capital from outsiders, so it is associated with smaller firm size, while Whites' personal investments are complemented by outside capital, resulting in larger firms. A similar interpretation may apply to the new funds (during the reference year) from insiders, which contributes 3.4 percentage points to the composition effect and 1.4 points to the structure effect. Finally,

the subjective financial constraint measures contribute 0.9 and 0.4 percentage points to the two components, respectively.

#### IV. Conclusion

This paper has focused on the role of observable financial variables in accounting for the employment size gap between Black- and White-owned firms. We use a Oaxaca-style decomposition not to infer the presence of discrimination from the “unexplained” component, but as an accounting framework with respect to observed variables. Applying the decomposition to a newly available large firm-level database rich in firm and owner characteristics, we find that the racial firm size gap is nearly fully accounted for (97 percent) by differences in observables. Changing the financial variables alone so that they have the same values across races would close 60 percent of the size gap. At the same time, even more of the gap, 103 percent, is accounted for by the unexplained components, differences in the impacts of the financial variables on firm size. The results imply that, if Black-owned firms had the same access to finance along the measured dimensions and if they had the same return to finance, Black-owned firms would have 18.4 percent more employees than they actually have, on average. Moreover, rather than being 11.3 percent smaller than White-owned firms, at the mean, they would be 7.1 per-

cent larger.

We hasten to point out that this analysis is limited in that only a few crude measures of finance are observable in our data. Financial information is generally scant in large U.S. data sets including non-publicly traded firms, and our data are the most appropriate for this study that we know of. Perhaps richer measures might show an even larger role for finance in accounting for the firm size gap, although this is only speculation.

Other variables than finance also play important roles in the firm size gap. In particular, characteristics of the entrepreneur such as education and motivations for business ownership are negatively associated with the gap in similar decompositions as we have presented here. Space constraints prevent us from elaborating, so we leave this as a teaser to our planned future research on this topic.

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## APPENDIX A. ADDITIONAL RESULTS

TABLE A1—DETAILED DECOMPOSITION OF FINANCIAL CONTROLS

	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:* These are the detailed explained and unexplained contributions for the finance variable categories shown in [Table 2](#). The standard errors are clustered on firm. The data presented in this table are approved for dissemination by the DRB (CBDRB-FY21-CES014-010).

## APPENDIX B. 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 consisted of 8.7 percent selected for the first time in 2015 and 10.1 percent first selected in 2016.<sup>4</sup> 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 but [Table to be added] contains a full set of means, coefficients, standard errors for each of them. It also provides the fully detailed decomposition, showing the explained and unexplained contributions from each variable separately. These are the building blocks for the categories of contributions shown in Table 3 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 of up to four persons with the largest ownership shares in the firm, from which we build firm-owner data. Most of 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-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. 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

<sup>4</sup>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.

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 in some specifications 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.

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 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.