Does Size Matter? The Real Effects of Subsidizing Small Firms*

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Abstract

We employ a new empirical approach to estimate the economic effects of small business subsidies in the United States. The analyses focus on changes in industry size standards, which determine small firms' eligibility for federal subsidies, and exploit randomness in the timing of size standard changes across industries surrounding the Small Business Jobs Act of 2010. We find considerable increases in industry size standards that lead to the crowding out of small firms, as reflected by lower shares of small businesses in establishments and employment of affected industries. Consequently, expansions decline and contractions rise for small firms and within an industry. We show that employment growth decreases, wages drop, and displaced workers become unemployed. These effects are amplified in areas reliant on small firms. We also find substantial declines in the supply of government subsidies, such as procurement contracts and guaranteed credit, to the smallest firms in an industry. Overall, we provide causal estimates that small business subsidies support economic growth.

JEL Classification: E24, G38, H25, H57, L25

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1. Introduction

A common perception is that government policies towards small firms play an important role in economic growth and job creation. This perception is popular among politicians of different political persuasions, small business advocates, and the business press.[1] The rationale behind this perception is twofold. First, small firms contribute significantly to economic activity and aggregate employment, creating 1.6 million net jobs and employing more than 60 million people, or roughly 47% of the private workforce, in 2019 alone.[2] Not surprisingly, the question of the importance of small firms has also attracted considerable attention from academic researchers (e.g., Hurst and Pugsley, 2011; Neumark, Wall, and Zhang, 2011; Haltiwanger, Jarmin, and Miranda, 2013). Second, absent policy interventions, small firms could receive suboptimal allocation of resources. This might occur if, for example, technological spillovers are not internalized by entrepreneurs (Jones and Williams, 1998) or financial constraints prevent optimal capital allocation (Evans and Jovanovic, 1989).

Despite the widespread use of policies targeting small firms, prior academic research offers limited causal evidence on their effects. Recent papers focus on developing economies. Banerjee and Duflo (2014), García-Santana and Pijoan-Mas (2014), Martin, Nataraj, and Harrison (2017), and Rotemberg (2019) find that eliminating preferential treatment for small firms in India led to higher profits, employment, and output. In this paper, we seek to provide novel causal estimates of the real economic effects of small business subsidies in the United States, where capital markets and legal systems are highly developed and less susceptible to frictions or corruption.

[1] As a recent example, see: "Where Trump and Biden Stand on Helping Small Businesses," available at: https://www.wsj.com/articles/where-trump-and-biden-stand-on-helping-small-businesses-11602667801.
[2] See the 2020 Small Business Profile published by the Small Business Administration's (SBA) Office of Advocacy, which is available at: https://cdn.advocacy.sba.gov/wp-content/uploads/2020/06/04144224/2020-Small-Business-Economic-Profile-US.pdf.

We focus on a recent set of policy changes in the U.S. that expanded firms' eligibility for small business subsidies by increasing small business size standards. The Small Business Administration (SBA) determines small business size standards in each six-digit NAICS industry based on a firm's average annual revenue or number of employees. These standards represent the maximum size to be classified as a small business and qualify for federal government subsidies such as procurement contracts, grants, and loans for small firms.

A key empirical challenge is that government policies are nonrandom and can be the consequence, rather than the source, of economic developments. To address this challenge, we exploit random variation in the timing of size standard increases across industries around the Small Business Jobs Act of 2010. The Act requires the SBA to review the size standards of all industries every five years. Several institutional features, which we obtain from regulatory filings and discussions with program administrators, highlight that the timing of size standard reviews was not driven by economic fundamentals.[3] In particular, the schedule of sequential industry reviews was set at the beginning of the review process, and, for administrative ease, the SBA simultaneously reviewed all six-digit NAICS industries within a two-digit NAICS sector.[4] Furthermore, the SBA arbitrarily reviewed all revenue-based size standards before turning to employee-based size standards. Accordingly, we find that the timing of the reviews is uncorrelated with the likelihood of a size standard increase in an industry. The empirical analysis focuses only on industries with size standard increases, and compares industries whose size standards increase to industries whose size standards will eventually increase. As such, this approach holds constant the change in an industry's small business size standard to identify its treatment effect through variation in the timing of its implementation.

[3] For details, see: https://www.sba.gov/sites/default/files/2018-02/Report_on_the_First_5-Year_Comprehensive_Size_Standards_Review_1.pdf and https://www.govinfo.gov/content/pkg/FR-2008-05-27/pdf/E8-11763.pdf.

[4] Two-digit NAICS sectors include between 25 and 360 six-digit NAICS industries.

Using this identification approach, we investigate the effects of changes in size standards on industry composition and real economic activity by answering three research questions. First, how do size standard changes affect the share of establishments and employment of small firms relative to larger firms? Second, what are the implications for business dynamism, employment, and wages across industries and local economies that vary in their reliance on small businesses? Third, how do the policy changes in small business size standards impact government programs that subsidize small firms such as federal procurement contracts and guaranteed credit?

We hand-collect data on small business size standards around the 2010 Small Business Jobs Act and find that they have increased in 525 industries and decreased in only three industries. Of the 525 size standard increases, 263 were revenue-based (exceeding the rate of inflation) and 262 were employee-based. The average size standard has increased by nearly 130% based on firm revenue and by about 38% based on the number of employees. This trend implies that considerably larger firms have become eligible for small firm subsidies over the past decade.

In the first set of analyses, we investigate whether increases in small business size standards impact industry composition by crowding out the smallest firms. Using data from the Census Statistics on Small Businesses (SUSB), we find that following an increase in eligibility for small firm subsidies, the ratio of smaller business establishments to the total number of establishments drops by 1.1 percentage points, compared to industries whose size standards will increase following a future review. Similarly, the share of these small firms represented in overall industry employment shrinks by 0.5 percentage points when size standards increase. These estimates are highly statistically significant and represent a large drop of 2.0% to 3.3% relative to the sample means.

We show that the changes in industry composition do not precede size standard changes, consistent with the parallel trends assumption. Further, the proportion of small business establishments and employment declines in the year following size standard increases, and the effects are persistent. Collectively, these results provide new causal evidence that changes in the government's classification of small businesses, which directly affect access to small business government subsidies, have a material effect on industry composition. The estimates suggest that classifying a growing number of larger firms as small businesses crowds out the smallest firms.

The real economic effects of crowding out small firms are theoretically unclear. On the one hand, large firms are a cornerstone of the modern economy, dating to the onset of the industrial revolution. The concept of economies of scale was proposed by Adam Smith (1776) and subsequently echoed by notable economists such as Galbraith (1957), who argued for the importance of large size and monopoly power. On the other hand, others, such as Schumacher (1973), argued strongly that "small is beautiful." In his classic works, Schumpeter (1912, 1942) maintains that the relative roles of small and large firms in technological change and production vary considerably over the business cycle. His theory argues that economic development is a continuous process of innovation and creative destruction, in which entrepreneurs and small businesses play a crucial role.

We evaluate these opposing views by studying the effects of expanding eligibility for small firm subsidies on the forces of creative destruction within an industry. Recent research suggests that business dynamism, which captures the process of firm birth, expansion, contraction, and death, has been declining in the U.S. since 2000 (Decker et. al, 2014; Decker et. al, 2020). Using data from the Census SUSB, we find that increases in size standards lead to fewer expansions and more contractions of relatively smaller firms. Following size standard increases, small business

expansions significantly decline by 4.4% and contractions substantially increase by 3.9%, both relative to the sample mean. Overall, the ratio of establishment births and expansions to establishment contractions and deaths, which we term *dynamism*, decreases by 5.1% compared to the sample average. Moreover, we find that the effects of size standard increases are industry-wide and not limited to small firms. Industry expansions decline by 6.1% and contractions increase by 6.7% compared to the sample mean, leading to considerable declines in industry dynamism.[5] This indicates that the reduction in activity of the smallest firms spills over within an industry. Together, the findings suggest that crowding out small firms hampers the forces of creative destruction, consistent with recent studies highlighting the decrease in U.S. business dynamism.

We next investigate the impact of size standard changes on labor markets. We find that size standard increases lead to a decline of 1.5 percentage points in employment growth and 1.2 percentage points in payroll growth. These estimates, however, can reflect the reallocation of labor to other industries rather than an adverse effect on employment and earnings. To investigate this possibility, we exploit detailed data on job-to-job flows and earnings across industries provided by the Census Longitudinal Employer-Household Dynamics (LEHD) program. We find that job losses following size standard increases lead to unemployment, rather than reallocation of labor to other sectors of the economy. These estimates are similar for stable job losses, highlighting that the effects are not driven by adjustments to the temporary workforce. We also examine changes in the wages of employees in industries with size standard increases. We show that wages for both current and new employees significantly decline after size standards increase. Taken together, these results highlight the adverse effects of crowding out small firms on labor markets.

[5] These outcomes are available at the four-digit NAICS level. The magnitudes are estimated based on half of the industries within a four-digit NAICS code experiencing a size standard increase.

We extend the analyses by studying regional employment effects. These analyses are motivated by Martin, Nataraj, and Harrison (2017), who find that Indian districts more exposed to subsidy reductions for small firms experienced higher employment and output growth. They are also related to studies on agglomeration economies that highlight the synergistic benefits of co-location for productivity, investment, and employment growth (e.g., Greenstone, Hornbeck and Moretti, 2010; Dougal, Parsons and Titman, 2015) and the role of small firms in local economies (Delgado, Porter, and Stern, 2010; Glaeser, Kerr, and Kerr, 2015). In these analyses, we exploit the variation in small business concentration across Metropolitan Statistical Areas (MSAs) to investigate the effect of changes in small business size standards on MSA employment. We find that a one standard deviation increase in an MSA's exposure to size standard changes leads to a 0.9 percentage point increase in unemployment.

In the last set of analyses, we provide micro-level evidence on the impact of changes in small business subsidies on product market demand and the supply of capital. First, we examine the implications of the increases in small business size standards for government procurement contracts. We use contract-level data to investigate the allocation of government contracts to small firms. The estimates indicate that an average of 20.1% of contract volume is set aside for eligible small firms, representing an average annual amount of $91.7 billion. We find that after an industry's size standard increases, the percent of small business contracts flowing to firms that were previously classified as small businesses declines by 5.6 percentage points. Conversely, the percent of such contracts flowing to firms that become newly classified as small increases by 1.4 percentage points. Overall, we find that the total amount allocated to small firms does not change, providing direct evidence that following size standard increases, government product demand shifts to newly eligible, larger firms at the expense of smaller firms.

Second, we examine the provision of small business loans using loan-level data from the SBA's 7(a) loan program, which is the SBA's primary program for providing financial assistance to small businesses. Unlike procurement contracts, which can be allocated to larger firms reclassified as small businesses, the criteria for SBA loans typically restrict those larger firms from obtaining new loans. Specifically, the "credit elsewhere" provision states that loan applicants must not be able to acquire credit elsewhere at "reasonable" terms, and must have exhausted all other forms of financing in order to be eligible. Accordingly, we expect that increases in size standards that crowd out small firms will lead to an overall decline in credit provision to small businesses. Consistent with this hypothesis, we find that the number of loans guaranteed by the SBA decreases by 12.2% and the total volume of loans falls by 15.6% following a size standard increase.

Overall, this paper contributes to the literature on the effects of government policies targeting firms, which typically include subsidies, tax credits, and grants, often with the goal of stimulating economic growth and innovation (Bloom, Van Reenen, and Williams, 2019). Recent studies focus on the effects of investment subsidies. Zwick and Mahon (2017) and Criscuolo et al. (2019) find that investment subsidies increase investment and local employment. Howell (2017) shows that R&D grants improve patenting and subsequent financing. Dechezleprêtre et al. (2020) find that R&D tax credits increase firm innovation with positive spillovers for technologically related firms. Our paper adds to this literature by focusing on policies that target small firms. As such, it is also related to recent work that studies the Paycheck Protection Program (PPP), which provided government-guaranteed loans to small firms during the COVID-19 pandemic (Chetty et al., 2020; Granja et al., 2020).

2. Subsidizing Small Firms in the United States

2.1. Firm Eligibility for Federal Subsidies

In 1953, the United States Congress passed the Small Business Act to "aid, counsel, assist, and protect, insofar as is possible, the interests of small business concerns in order to preserve free competitive enterprise." This Act led to the creation of the Small Business Administration (SBA). Among its responsibilities, the SBA sets the definitions of small businesses, which are referred to as size standards. These size standards determine which firms are eligible to access certain federal subsidies for small businesses, including set-asides of procurement contracts and guaranteed credit.

Size standards for small businesses are primarily based on a firm's annual receipts (revenue) or number of employees. The SBA sets the standards using six-digit North American Industry Classification System (NAICS) codes, and standards vary substantially across industries. Revenue size standards mostly apply to goods-based firms, whereas employee size standards apply to service-based firms.[6] The size of a business includes all its subsidiaries and affiliates.

The determination of size standards plays a critical role in the allocation of government subsidies to small firms. For example, the federal government aims to set aside 23% of federal procurement contracts for small businesses.[7] Accordingly, we find that 17.3% to 22.6% of contracts in a particular year flow to firms designated as small during our sample period. This represents a substantial proportion of government spending and accounts for an annual average of $91.7 billion in our sample of contracts. As another example, size standards also affect eligibility for SBA-guaranteed loans provided through a nationwide network of participating lenders via the

[6] The amount of annual receipts is the three-year average of total income plus costs of goods sold. The number of employees is calculated as the average number of people employed, including full- and part-time workers, over the most recent 12 calendar months.
[7] See https://www.sba.gov/federal-contracting/contracting-assistance-programs for additional details.

7(a) loan program. This program provides credit to small businesses that are unable to obtain credit elsewhere at reasonable terms. Eligible small businesses benefit from longer-maturity loans and interest rates that are capped at a fixed spread above prime. Additionally, SBA lenders will not deny an SBA loan simply for lack of collateral. During our sample period, the SBA guaranteed an average of $12.3 billion annually in loans to small businesses.

2.2. Changes in Firm Eligibility: The Small Business Jobs Act of 2010

In 2010, the United States Congress passed the Small Business Jobs Act, which requires the SBA to conduct a review of no less than one-third of all industry small business size standards every 18 months, with a review of all standards to be completed at least once every five years. Prior to this requirement, the SBA reviewed size standards on an ad hoc basis and occasionally adjusted those based on firm revenue for inflation.[8] To facilitate the mandatory review due to the Act, the SBA released a schedule of reviews by two-digit NAICS sectors in advance.[9] The purpose of the predetermined review schedule was to divide the roughly 1,000 industries into manageable sections for potential size standard changes, while examining sectors in their entirety. Importantly, industries (based on six-digit NAICS codes) would only be eligible for a size standard change if their two-digit NAICS sector was under review.

We hand-collect data on small business size standards from the Code of Federal Regulations (CFR). Size standards are recorded as of January 1 of each year and correspond to industries defined at the six-digit level of the NAICS codes. The data include size standards for

[8] Digler (2020) provides a history of size standards in the U.S.
[9] The schedule is provided in 76 *Federal Register* 40140-40142, July 7, 2011, Digler (2020), and "A Report on the First Five-Year Comprehensive Review of Small Business Size Standards Under The Small Business Jobs Act of 2010" (available at https://www.sba.gov/document/support--comprehensive-review-size-standards).

1,180 industries from 2002 to 2017, of which 491 industries have size standards based on revenue and 692 industries have size standards based on the number of employees.[10]

Table 1 describes the changes in size standards surrounding the Small Business Jobs Act of 2010. Since the SBA periodically adjusted revenue standards for inflation, we restrict attention to changes of at least 25%. To focus on the effects of the legislation, we drop industries with size standard changes that exceeded the 25% threshold prior to the Act. Following the Act, there have been 525 size standard increases.[11] The SBA is considerably less likely to decrease size standards and there have been only three such cases during the sample period. Figure 1 highlights the substantial increase in revenue and employee size standards following the Act. Revenue size standards nearly doubled from an average of $10.3 million in 2009 to $19.5 million in 2017. The average employee standard rose from 554 employees in 2009 to 770 employees in 2017.

2.3. Empirical Design

We use quasi-random variation in the timing of size standard reviews to identify the real effects of small business subsidies. Following the passage of the Small Business Jobs Act of 2010, the SBA determined the order for reviewing all size standards. Several key features of this review process indicate that the order is not related to economic fundamentals. First, the SBA predetermined the complete review schedule at the beginning of the review process. Second, the SBA arbitrarily reviewed all revenue-based size standards before reviewing employee-based size standards. Third, the SBA based the schedule on two-digit NAICS sectors for administrative ease, while size

[10] We drop industries with size standards based on assets or various types of output, such as megawatt hours or barrels of petroleum. Also, three industries switch from revenue to employee size standards from 2002 to 2017.
[11] The SBA finalized Sectors 44, 45, 72, and 81 shortly after the Small Business Jobs Act passed on September 23, 2010. We obtain similar results if we omit these sectors from the analyses.

standards are set by six-digit NAICS codes.[12] We confirm each of these features with program administrators at the SBA.

We provide empirical analyses that are consistent with the institutional details of the reviews. Specifically, we empirically investigate if the announcement, proposal, and finalization dates of size standard reviews are related to the likelihood of a size standard increase. We collect these dates from the CFR. We define *Date announced* as the order of industry reviews based on the date when the review process is announced. We define *Date proposed* and *Date finalized* analogously with respect to the dates when the SBA announces its recommendation and finalizes it, respectively. The sample includes all industries at the six-digit NAICS code that the SBA reviews surrounding the Small Business Jobs Act of 2010.

We present these results in Table 2. Column 1 shows that the likelihood of a size standard increase is not associated with the ordering of review announcements across sectors. The coefficient estimate is statistically insignificant, economically negligible, and the regression R-squared is virtually zero. Columns 2 and 3 provide similar results for the proposal and finalization dates, respectively. Collectively, these findings show that the timing of the reviews is unrelated to their outcomes – there is no correlation between the review schedule and the likelihood of a size standard increase. As such, they suggest that the timing of the reviews is unrelated to the underlying economic factors that determine the SBA's decision to increase an industry's size standard.

To estimate the causal effects of size standard increases, the empirical analyses focus only on industries whose size standards increase surrounding the Small Business Jobs Act of 2010. This

[12] These features are based on Digler (2020) and "A Report on the First Five-Year Comprehensive Review of Small Business Size Standards Under The Small Business Jobs Act of 2010" (available at https://www.sba.gov/document/support--comprehensive-review-size-standards).

approach holds constant the change in an industry's small business size standard and identifies the treatment effect using variation in the timing of its implementation. We limit the sample to industries with size standard increases to alleviate concerns that the effects are driven by unobservable industry characteristics or trends correlated with the size standard changes.[13]

We implement the identification strategy using the following difference-in-differences specification:

$$Y_{jt} = \alpha_j + \alpha_t + \beta \cdot Size\ increase_{j,t-1} + \varepsilon_{jt}, \quad (1)$$

where Y_{jt} is the outcome variable of interest for industry j in year t. $Size\ increase_{j,t-1}$ is an indicator variable that equals one when the size standard in industry j increases and zero prior to the increase. We lag this variable by one year since the CFR records size standards as of January 1 of each year, and, consequently, we observe size standards with a delay of up to one year. Industries in the baseline specifications are defined using the six-digit level of NAICS codes. Depending on data availability, we estimate several subsequent analyses at the four- or two-digit NAICS levels. In these cases, we estimate the effects of size standard increases based on the proportion of six-digit industries with size standard increases. We include industry fixed effects to capture time-invariant industry heterogeneity and year fixed effects to absorb economywide time trends. The standard errors are clustered at the industry level. We provide additional variable definitions in Table A.1. The coefficient of interest is β, which estimates the marginal effect of an increase in eligibility for small firm subsidies.

[13] We note, however, that we find similar results if we also include industries with no size standard changes.

3. Data

We use data from several sources to study the real effects of changes in access to small firm subsidies. The sample period is from 2002 to 2017 to provide a symmetric time window around the 2010 Small Business Jobs Act in the difference-in-differences analyses.

We collect data on industry-level establishments and employment from the Statistics of U.S. Businesses (SUSB), provided by the Census Bureau. This dataset details establishments and employment by firm size and industry at the six-digit level of NAICS codes.[14] The SUSB is a comprehensive summary of the economy and covers all U.S. establishments with paid employees (Hurst and Pugsley, 2011). We also construct measures of creative destruction, which we refer to as business dynamism, using the SUSB employment data.

We study job flows and earnings using data available from the Longitudinal Employer-Household Dynamics (LEHD) program at the Census Bureau (Davis, Faberman, and Haltiwanger, 2006). The LEHD's Job-to-Job Flows (J2J) data allow us to examine labor reallocation by tracing job losses to other industries or to unemployment. The LEHD's Quarterly Workforce Indicators (QWI) data provide detailed information on worker earnings. We use these data to evaluate the labor market effects arising from increases in eligibility for small firm subsidies.

We augment the industry-level data with unemployment data at the Metropolitan Statistical Area (MSA) level provided by the Bureau of Labor Statistics (BLS). We match the unemployment data to the County Business Patterns database from the Census Bureau, which details the breakdown of establishments by firm size and MSA. We use these data to measure regional exposures to changes in size standards. We also collect data on the following control variables for

[14] The SUSB uses noise infusion to protect the confidentiality of respondent data and accompanies each cell value with an associated noise flag. We drop cells with a "high noise" flag from the analyses.

our regional analyses: *MSA population* from the American Community Survey provided by the Census Bureau, *MSA house price growth* from the Federal Housing Finance Agency, and *MSA GDP growth* from the Bureau of Economic Analysis (BEA).

We examine the effects of size standard increases on federal subsidy programs using detailed data on procurement contracts and SBA loans. We collect data on procurement contracts of the U.S. federal government from the USAspending.gov website, which includes detailed contractual data on contract awards, terms and subsequent changes. Brogaard, Denes, and Duchin (2020) provide additional information about these data. We study credit supply by obtaining SBA loan data through a Freedom of Information Act (FOIA) request. The SBA loan data contain every loan originated under the SBA's flagship 7(a) lending program during the sample period, including total loan amount, guaranteed amount, and six-digit NAICS codes (Brown and Earle, 2017). We supplement the SBA loan data with non-imputed employment data from the National Establishment Time-Series (NETS) database (Crane and Decker, 2019). The NETS database comprises comprehensive establishment-level data on employment, industry, and location for most firms in the U.S. We match these data to SBA loan-level data to characterize the size distribution of SBA borrowers.

Table 3 provides summary statistics for the main variables in the analyses. Size standards increase for nearly 21% of the industry-year observations. The average share of small firms in an industry is 56% based on establishments and just over 15% based on employment. The average annual percentages of establishment expansions and contractions are 13.6% and 12.7%, respectively. The average MSA unemployment rate is 6.4%. Table A.1 provides details on all variable definitions.

4. Results

4.1. The Crowding Out of Small Firms

We begin by studying the impact of increases in small business size standards on the composition of firms within an industry. Size standards determine the eligibility for various federal subsidies in the United States, including procurement contracts and guaranteed loans. Since larger firms can claim government subsidies when size standards increase, subsidies may be redirected away from relatively smaller firms, reducing their representation across industries.

Using data from the Census SUSB, we construct two measures of the share of small firms in an industry. *Small establishment ratio* is the total number of establishments for firms with fewer than 20 employees divided by the total number of establishments in an industry each year. Similarly, *Small employee ratio* is the total number of employees working at firms with fewer than 20 employees divided by the total number of employees in a given industry each year. We define small firms in this way because the SUSB defines firm size based on the number of employees. We focus on firms with fewer than 20 employees to study the effects of size standard increases on the smallest firms in each industry and to mitigate the confounding effects of potential size manipulation by firms close to the size standard threshold. However, we also examine alternative size thresholds for small firms.

We investigate the crowding out of small firms using the difference-in-differences specification in equation (1). The empirical design compares compositional changes in industries with size standard increases to changes in industries that will eventually experience a size standard increase, but are not yet up for review.

In Table 4, Panel A reports the estimates of the effects of size standard increases on the share of small firms. The key variable of interest is the indicator variable *Size increase,* which

equals one after an industry size standard increase, and zero otherwise. In column 1, we find that the proportion of small firms in industry establishments drops by 1.6 percentage points following an increase in industry size standards, holding constant time-invariant unobserved industry heterogeneity. The effect is statistically significant at the 1% level and represents a decline of 2.9% relative to the sample mean. In column 2, we augment the regression model with year fixed effects and find that the proportion of small firms in industry establishments drops by 1.1 percentage points, corresponding to a decrease of 2.0% relative to the sample mean. This estimate is also statistically significant at the 1% level.

Columns 3 and 4 provide analogous estimates for the share of small businesses in total industry employment. We find that the ratio of small business employment to total industry employment drops by 0.5 to 0.9 percentage points following an increase in eligibility for small firm subsidies. These estimates represent a sizeable decline of 3.3% to 5.9% relative to the sample mean, and are statistically significant at the 5% level or better.

Panel B of Table 4 shows that the baseline estimates hold across different small business size thresholds. Since the SUSB only provides aggregate establishment and employment data across size bins, we cannot estimate firm-level regressions. Instead, we can evaluate the robustness of our findings by varying the threshold for small firms in an industry. In the analyses of *Small establishment ratio*, column 1 shows that the estimates do not change when we use a cutoff of 100 employees to define small firms. Column 2 shows that the effects are similar when we use a cutoff of 500 employees. In columns 3 and 4, we re-estimate the specifications for *Small employment ratio* with the 100- and 500-employee thresholds, respectively, and find that the effects remain negative and highly statistically significant. These estimates provide additional evidence that increases in eligibility for small business subsidies crowd out small firms.

We investigate the dynamic treatment effects in Panel C of Table 4. We estimate dynamic regression specifications in a four-year window around the increase in industry size standards by including interaction terms for each year in this window. The year of the size standard increase is defined as the base year. This panel reveals two important results. First, changes in the ratio of small business establishments or employment in an industry do not precede size standard increases. The coefficient estimate is only statistically significant once, three years before the size standards increase, but has the opposite (positive) sign. Second, both small business ratios decrease immediately following the size standard change, and the effects persist following the change. These findings are consistent with the parallel trends assumption for the identification strategy and mitigate concerns about reverse causality, a scenario where changes in the composition of firms in an industry lead to changes in its small business size standard.

Taken together, these results provide novel evidence on the causal effects of increasing the eligibility for small firm subsidies. Following the expansion of size limits, larger firms become eligible for subsidies previously reserved for smaller firms. Consistent with crowding out small firms, we show that the industry representation of smaller firms declines following increases in industry size standards. These results add to the findings in Rotemberg (2019) that firms newly eligible for small firm subsidies crowd out their competitors in domestic product markets. Given recent work examining the importance of small firms (Hurst and Pugsley, 2011; Neumark, Wall, and Zhang, 2011; Haltiwanger, Jarmin, and Miranda, 2013), we turn next to the real effects of crowding out small firms.

4.2. Creative Destruction

The real economic consequences of the crowding out of small firms are theoretically unclear. The role that small firms play in technological change and economic growth has been a subject of debate among economists for many years. On the one hand, large firms have been viewed as vital to the modern economy, echoed in the concepts of economies of scale and monopoly power (Adam Smith, 1776; Galbraith, 1957). On the other hand, others contend that small firms importantly differ from large firms and are crucial for economic growth. Schumpeter (1912, 1942) highlighted that innovative activity and creative destruction are driven by small firms and Schumacher (1973) coined that "small is beautiful."

To estimate the impact of size standard increases on creative destruction within an industry, we estimate difference-in-differences regressions akin to equation (1). Importantly, in these analyses, we define industries at the four-digit NAICS code based on the most granular data available from the SUSB.[15] We define *Size increase proportion* as the proportion of size standard increases within an industry-year. Table A.1 provides additional details on variable definitions.

Using the employment change data from the Census SUSB data, we form measures of creative destruction. *Expansions* is defined as the number of establishments that increase employment relative to the total number of establishments in the previous year. Similarly, *Contractions* is defined as the number of establishments that decrease employment relative to the lagged total number of establishments. We also construct a more general measure, *Dynamism,* which is defined as the number of establishment births and expansions over the number of contractions and deaths. Table 2 shows that the average expansion rate of small firms is 13.6% and the average rate of small firm contractions is 12.7%.

[15] We follow a similar identification strategy and limit the sample to four-digit NAICS codes in which at least one six-digit industry experienced a size standard increase during the sample period.

Table 5 provides the results. In Panel A, we report the estimates for measures of creative destruction at small firms. Column 1 shows that the proportion of small firm expansions significantly declines. To shed light on the economic magnitude of the effect, if size standards increase for half of the industries in a four-digit NAICS grouping, the average expansion rate for small firms drops by 4.4% relative to the sample mean. The estimates in column 2 suggest that contraction rates increase by 3.9% compared to the sample mean for a similar increase in *Size increase proportion*. Lastly, in column 3, we find that small firm *Dynamism* falls by 5.1% relative to the sample average. All the estimates are statistically significant at the 1% level. These findings suggest that relaxing the eligibility requirements for small business subsidies impedes creative destruction at small firms.

Moreover, panel B provides industrywide results on the expansion, contraction, and dynamism rates of all the firms within an industry, not just the smallest firms. We find that increases in size standards significantly reduce the rate of expansions (column 1) and increase the rate of contractions (column 2) in an industry. When size standards increase for half of the industries in a four-digit NAICS industry, the expansion rate drops by 6.1% and the contraction rate jumps by 6.7%, both relative to the sample mean. Column 3 shows that *Dynamism* also declines at the industry level. These estimates are once again highly statistically significant at the 1% level. These results indicate that the decrease in creative destruction spills over from the smallest firms to the rest of the firms in the industry, consistent with the documented decline in business dynamism in the U.S. in recent years (Decker et. al, 2014; Decker et. al, 2020). Our findings suggest that subsidizing small firms has nontrivial effects on the forces of creative destruction. Expanding the set of firms eligible for small business subsidies produces unintended consequences for business dynamism.

4.3. Employment, Labor Reallocation, and Wages

In this subsection, we investigate the effects of increases in size standards on labor markets. To evaluate these effects, we use data from the Census SUSB. We construct two variables to measure industry-level labor market activity. The first variable, *Employment*, is defined as the log change in the total number of employees in an industry. The second variable, *Payroll*, is defined as the log change in total wages in an industry.

Table 6 provides regression estimates on the effect of size standard increases on industry *Employment* and *Payroll*. The estimates in column 1 show that employment growth declines by 1.5 percentage points after size standards increase. This estimate is statistically significant at the 1% level. In column 2, we find that payroll growth declines by 1.2 percentage points when size standards increase. These findings suggest that economic activity in labor markets slows down following the crowding out of small firms due to size standard increases. Accordingly, they are consistent with the Schumpeterian view of small firms.

Next, we examine the reallocation of labor following the decline in employment and payroll growth. We use data on job flows from the Census LEHD's Job-to-Job Flows. We define *Aggregate job losses* as the number of separations into persistent unemployment and *Stable job losses* as the number of separations from a stable job into persistent unemployment.[16] These data are available for two-digit NAICS codes.[17] Accordingly, we calculate *Size increase proportion* as the proportion of size standard increases within a two-digit NAICS industry-year. For interpretability, the outcomes are standardized to have a mean of zero and a standard deviation of one. Table A.1 provides additional details on variable definitions.

[16] Persistent unemployment is defined by the Census LEHD as no main job in two consecutive surveys.
[17] In the sample, each two-digit NAICS sector has at least one six-digit NAICS industry with a size standard increase.

Panel A of Table 7 reports the effect of size standard increases on industry job losses. Column 1 shows that size standard increases trigger aggregate job losses that lead to persistent unemployment. When the share of industries with a size standard increase is 50%, industrywide job losses rise by 0.3 standard deviations. Column 2 suggests that a similar increase in the proportion of size standard increases leads to a 0.2 standard deviation increase in stable jobs lost to unemployment. The estimates in columns 1 and 2 are statistically significant at the 5% level. Together, they suggest that job losses are not transient nor driven by adjustments to temporary workers; rather, size standard increases lead to a persistent decline in full-time jobs in an industry.

Lastly, we examine the impact of size standard increases on wages. For this analysis, we use data from the Census LEHD's Quarterly Workforce Indicators. These data are available at the four-digit NAICS level by state. As before, we aggregate the data to the four-digit industry classification level. However, unlike the previous analyses, the unit of observation is an industry-state-year. Hence, we augment these specifications with state fixed effects to absorb time-invariant state heterogeneity. For interpretability, the outcomes are standardized to have a mean of zero and a standard deviation of one. Table A.1 contains additional details on variable definitions.

Panel B of Table 7 provides estimates of the effects of size standard increases on the earnings of current and new employees. Column 1 shows that earnings decline for an industry's current employees when size standards increase. The estimates imply that when the share of industries with a size standard increase is 50%, the earnings of current employees decline by 0.03 standard deviations. Column 2 investigates the impact of standard increases on the earnings of new employees within an industry. The estimates suggest that a similar increase in the proportion of industries with a size standard increase leads to a decline of 0.02 standard deviations in the earnings of new employees. While the effects of size standard increases on earnings are statistically

significant at conventional levels, they are economically small, possibly due to downward rigidities in nominal wages.[18]

Overall, the results in this subsection suggest that size standard increases lead to a contraction in labor markets. Displaced employees do not find new jobs immediately, and the earnings of current and new employees decline. As such, the estimates indicate that the crowding out of smaller firms has potential nontrivial, negative consequences for labor market activity in the United States. These findings complement recent studies on the removal of preferential treatment for small firms in India, which find that it led to increases in profits, employment, and output (Banerjee and Duflo, 2014; García-Santana and Pijoan-Mas, 2014; Martin, Nataraj, and Harrison, 2017; Rotemberg, 2019). Our results indicate that the economic effects of small business subsidies can vary across developing and developed countries. The results are also related to research on the role of small firms in job creation (e.g., Birch, 1987; Davis, Haltiwanger, and Schuh, 1996; Neumark, Wall, and Zhang, 2011; Haltiwanger, Jarmin, and Miranda, 2013). They indicate that crowding out small firms reduces employment growth and wages, and increases job losses and unemployment.

4.4. Agglomeration

An extensive literature studies agglomeration economies, or the formation of geographic clusters of economic activity. This literature highlights the synergistic benefits from co-location (e.g., Glaeser and Gottlieb, 2009; Moretti, 2011) and local spillovers in productivity, investment, and employment growth (Greenstone, Hornbeck, and Moretti, 2010; Dougal, Parsons, and Titman, 2015; Glaeser, Kerr, and Kerr, 2015). Several studies, including Delgado, Porter, and Stern (2010) and Glaeser, Kerr, and Kerr (2015), also emphasize the role of small firms in agglomeration

[18] See Elsby and Solon (2019) for a survey of the literature on downward rigidity in nominal wages.

economies. Hence, in this subsection, we investigate the effects of size standard increases and the resulting crowding out of small firms on agglomeration economies. The empirical analyses exploit variation in the distribution of small firms and exposure to size standard increases across regions in the U.S.

We measure local labor market activity using *MSA unemployment rate*, defined as the annual unemployment rate in a Metropolitan Statistical Area (MSA). To account for local economic conditions, we include several control variables in the regression specifications: *MSA population* is the log of MSA-level population, *MSA house price growth* is the log change in MSA-level house prices, and *MSA GDP growth* is the log change of MSA GDP.

We measure regional exposure to changes in size standards using the number of industry establishments by firm size at the MSA level from the Census County Business Patterns data. First, we classify a business as small if it has fewer than 20 employees. Second, we calculate the within-industry proportion of local establishments classified as small in each MSA as of 2003, the starting year of the sample period.[19] By calculating the concentration of small businesses in 2003, we mitigate concerns about the simultaneity of local small business concentration and changes in small business size standards. Third, we multiply this proportion by the corresponding industry's size standard increase indicator in year *t-1*. Finally, we sum the weighted industry size standard increases to the MSA level, and refer to this variable as *MSA exposure to size standard increases*. Intuitively, this measure assigns larger weights to MSAs that have a higher concentration of small firms operating in industries with size standard increases. Since the proportion of small businesses is measured as of 2003, and hence is time-invariant, the variation in *MSA exposure to size standard increases* over time arises from increases in small business size standards.

[19] We start the sample period of these analyses in 2003, rather than 2002, due to significant changes in MSA definitions that occurred in 2003.

We estimate equation (1) at the MSA-year level and augment the specification with MSA and year fixed effects to control for time-invariant regional heterogeneity and aggregate macroeconomic trends. We report the results in Table 8. The estimates in column 1 show that local unemployment rises by 0.9 percentage points for a one standard deviation increase in an MSA's exposure to size standard changes. This estimate is statistically significant at the 1% level and economically large, representing a 14.7% increase relative to the sample mean. Next, we incorporate covariates for local economic activity to examine whether the estimate is driven by regional economic conditions. Column 2 contains lagged MSA population, column 3 adds lagged MSA house price growth, and column 4 includes lagged MSA GDP growth. The estimates remain highly statistically significant and largely unchanged, ranging from 0.8 to 1.0 percentage points for a one standard deviation increase in an MSA's exposure to size standard increases. These findings suggest that increasing size standards not only depresses employment at the industry level, but also spills over to regions with greater concentrations of small firms. The large economic magnitudes of the regional effects imply that local spillovers from small firms play an important role in agglomeration economies and amplify the employment effects of size standard increases. These findings complement the findings in Martin, Nataraj, and Harrison (2017) that Indian districts more exposed to subsidy reductions for small firms experienced higher employment growth.

All in all, the results in section 4 provide causal evidence on the importance of subsidizing small firms in a large, developed economy. Relaxing the eligibility criteria crowds out small firms and leads to declines in business dynamism, in addition to decreases in industry and local employment. Lost jobs are followed by persistent unemployment, as well as lower wages for current and new workers in the affected industries.

5. Impact on Federal Subsidy Programs

Size standards determine firms' eligibility for various small business federal subsidies in the United States. We focus on two of the largest programs that target small firms: small business set-asides in federal procurement contracts and small business loans guaranteed by the SBA.

5.1. Procurement Contracts

The United States federal government commonly purchases goods and services from the private sector. To support small firms, policymakers set a goal of allocating 23% of the federal procurement budget to small firms based on size standards. From 2002 to 2017, the federal government purchased $284 billion to $564 billion from contractors, with 17.3% to 22.6% flowing to small firms, as shown in Table A.2. Changes in small business size standards modify the set of firms that qualify for government procurement contracts as small businesses.

We use detailed data on procurement contracts to study the allocation of contracts across firms that were classified as small businesses before the eligibility expansion and firms that are newly classified as small businesses following the eligibility expansion. In this setting, we can estimate the analyses at the firm level because the contracts data uniquely identifies contracts for small businesses. As before, the analyses only include industries with a size standard increase. Furthermore, we focus on firms that received contracts before the size standards change. This allows us to examine the role of procurement contracts holding constant the set of firms receiving contracts. We define *Percent of contracts to always small firms* as the proportion of contracts awarded to firms classified as small before a size standard increase. Similarly, we define *Percent of contracts to newly small firms* as the proportion of contracts awarded to firms classified as small only after a size standard increase. Lastly, we measure the total amount of contracts awarded to

small firms (old and new) by constructing the variable *Contract amount to small firms*, which is defined as the log of one plus the total dollar amount of contracts awarded to firms classified as small.

Table 9 examines the flow of contracts to small firms following increases in size standards based on equation (1). In column 1, we find that the percent of contracts to firms that were previously classified as small declines by 5.6 percentage points. This estimate is statistically significant at the 1% level and represents a 13.9% drop relative to the sample mean. Next, we evaluate the allocation of contracts to firms that become small due to the increase in size standards. Column 2 shows that the percent of contracts flowing to newly classified small firms increases by 1.4 percentage points. This estimate is economically sizable and also statistically significant at the 1% level.

We note, however, that expanding the eligibility for small firm subsidies could increase the allocation of contracts to small firms. According to this scenario, increases in size standards do not necessarily lead to the crowding out of smaller firms in procurement contracts. To assess this possibility, we estimate the impact of size standard changes on the overall allocation of contracts to small firms in an industry. Column 3 shows that the overall dollar amount of contracts awarded to small firms does not change following size standard increases. This is evident by the statistically insignificant and economically small coefficient on *Contract amount to small firms*.[20] This result suggests that newly eligible, larger firms compete with smaller firms for the same goods and services demanded by the federal government, and receive more contracts at the expense of smaller firms.

[20] This specification includes all firms designated as small, including first-time contractors who enter the sample after size standard increases. Accordingly, this sample differs from the sample of contractors in columns 1 and 2.

Collectively, these analyses provide direct, micro-level evidence that procurement contracts are a channel through which increases in size standards crowd out small firms. Increases in size standards reduce the flow of contracts to firms classified as small prior to the size standard change, and increase the volume of contracts to newly qualifying firms. Overall, the total amount of contracts awarded to businesses designated as small does not change, suggesting that relatively smaller firms obtain a shrinking portion of procurement set-asides following size standard increases.

5.2. Credit Supply

Small firms can face considerable frictions in raising capital (Holmstrom and Tirole, 1997; Banerjee and Duflo, 2014; Robb and Robinson, 2014). To alleviate these frictions, the SBA supports the supply of credit when small firms cannot obtain loans in the marketplace. Delegated lenders originate the loans, and the SBA guarantees a portion of the loan balance. The percentage of the loan that the SBA guarantees depends on borrower and loan characteristics, and ranges from 50% to 90% during our sample period. Importantly, size standards determine firms' eligibility for SBA loans. Our analyses focus on the SBA's flagship 7(a) small business loan program, which supplies a substantial amount of credit each year. In 2017, the most recent year of our sample period, it provided a total of $19.8 billion in loans.

We obtain SBA 7(a) loan data through a Freedom of Information Act (FOIA) request. We use these data to construct three measures of SBA loan volume: (1) *Number of loans*, defined as the number of SBA loans in an industry-year; (2) *Total credit*, defined as the log of one plus gross SBA loan amount in an industry; and (3) *Guaranteed credit*, defined as the log of one plus total guaranteed SBA loan amount in an industry.

The analyses aim to provide evidence on the effects of size standard increases on SBA credit provision. We note, however, that these analyses differ from the analyses of procurement contracts in two important ways. First, SBA loan recipients predominantly enter the sample only once. The lack of repeat borrowing precludes an analysis similar to that of procurement contracts for firms always classified as small. Second, SBA loans carry a "credit elsewhere" eligibility requirement: applicants must not be able to acquire credit elsewhere at "reasonable" terms, and must have exhausted all other forms of financing in order to be eligible. In practice, this requirement prevents larger firms from obtaining SBA loans even if they qualify according to the new size standard. We therefore conjecture that size standard increases will lead to overall declines in SBA loan originations because they lower the share of the smallest firms in the industry, and these are the only firms that are eligible for SBA loans.

We begin by characterizing the size distribution of SBA borrowers using non-imputed employment data from the National Establishment Time-Series (NETS) database (Crane and Decker, 2019). The goal of this analysis is to confirm that, consistent with our conjecture, only the smallest firms obtain SBA loans. To this end, we merge the SBA loan-level data with firm-level data from NETS on the number of employees at firms obtaining SBA loans.[21] We present these estimates in Table A.3. The estimates show that the average borrower has 9 employees, suggesting that only the smallest firms utilize the SBA 7(a) credit program. Furthermore, Table A.3 also demonstrates that the vast majority of SBA loans flows to firms with fewer than 20 employees. Hence, we conclude that crowding out the smallest firms affects the main group of SBA borrowers.

Next, Table 10 reports the results on the volume of SBA loans. As before, the specifications follow equation (1). Column 1 examines the effect of a size standard increase on the number of

[21] The SBA loan-level data does not reliably report the number of employees at borrowing firms.

SBA loans. Since the outcome is a count variable, we estimate this specification using a Poisson model.[22] We find that an increase in size standards reduces the number of SBA loans to an industry by 12.2%. This estimate is economically large and statistically significant at the 1% level. We evaluate the effects on credit amounts in columns 2 and 3. Column 2 shows that the total amount of SBA loans, a portion of which is guaranteed, falls by 15.6% after size standard increases. Since smaller firms tend to receive larger loan guarantees, we also examine the guaranteed amount of SBA loans. In column 3, we find that the guaranteed portion of SBA loans drops by 16.1% after size standard increases.[23] These estimates are also statistically significant at the 1% level.

Overall, this subsection highlights that SBA borrowers are, on average, relatively small and that guaranteed credit by the SBA declines when size standards increase. These findings complement our findings in Section 4.1., which show that increases in eligibility for small firm subsidies crowd out the smallest firms in an industry. Taken together, the results in this section suggest that changes in small business size standards have broad implications for federal programs that aim to subsidize small firms.

6. Conclusion

Following the Small Business Jobs Act of 2010, the U.S. has considerably increased eligibility for small firm subsidies. Exploiting randomness in the timing of the staggered implementation of size standard increases across industries, we provide first evidence on the causal effects of these policy changes. We find substantial effects on the composition of firm size across industries, with adverse consequences for the forces of creative destruction and labor markets.

[22] We use a Poisson model to provide unbiased and consistent estimates (Cohn, Liu, and Wardlaw, 2020).
[23] For each of the columns, we report the exponentiated coefficient minus one.

The evidence shows that classifying a growing number of larger firms as small businesses adversely affects the smallest firms, whose share of industry establishments and employment shrinks considerably. The crowding out of the smallest firms has significant implications for real economic outcomes. Size standard increases reduce expansions and amplify contractions, both for small firms and for the industry as a whole. Furthermore, size standard increases affect labor markets by reducing employment growth. We find evidence of stable job losses and lower earnings in affected industries rather than employment reallocation to other sectors. We also find strong effects in regions with small firm concentrations that were exposed to size standard increases.

The expansion of eligibility for small firm subsidies has important implications for government programs that target small businesses. We explore two such programs: set-asides of government procurement contracts and guarantees for small business loans. We find evidence that small firms lose contracts to companies newly classified as small businesses, and that relatively fewer businesses receive loan guarantees following size standard increases.

Overall, the results have overarching implications for academic research and government policy. They provide causal estimates of the important role of subsidizing small businesses in economic growth and labor markets. These findings are particularly important amid the adverse economic impact of the COVID-19 pandemic on small businesses and the ongoing debate surrounding the optimal government response to the crisis.

While our paper assesses the economic impact of changes in access to small business subsidies, it does not provide estimates of the optimal level of those subsidies or the standards that determine access to them. Further, the analyses do not consider government expenditures or the quality of the goods and services procured by the government. Hence, they should not be interpreted as welfare estimates. We leave these topics for future work.

References

Banerjee, Abhijit V., and Esther Duflo, 2014, Do firms want to borrow more? Testing credit constraints using a directed lending program, *Review of Economic Studies*, 81(2): 572-607.

Birch, David L., 1987, *Job creation in America: How our smallest companies put the most people to work*, The Free Press.

Bloom, Nicholas, John Van Reenen, and Heidi Williams, 2019, A toolkit of policies to promote innovation, *Journal of Economic Perspectives*, 28(3): 3-24.

Brogaard, Jonathan, Matthew Denes, and Ran Duchin, 2020, Political influence and the renegotiation of government contracts, *Review of Financial Studies*, forthcoming.

Brown, J. David, and John S. Earle, 2017, Finance and growth at the firm level: Evidence from SBA loans, *Journal of Finance*, 72(3): 1039-1080.

Chetty, Raj, John N. Friedman, Nathaniel Hendren, Michael Stepner, and the Opportunity Insights Team, 2020, How did COVID-19 and stabilization policies affect spending and employment? A new real-time economic tracker based on private sector data, *NBER working paper*.

Cohn, Jonathan, Zack Liu, and Malcolm Wardlaw, 2020, Count data in finance, *Working paper*.

Criscuolo, Chiara, Ralf Martin, Henry G. Overman, and John Van Reenen, 2019, Some causal effects of an industrial policy, *American Economic Review*, 109(1): 48-85.

Crane, D. Leland, and Ryan A. Decker, 2019, Business dynamics in the National Establishment Time Series (NETS), *Working paper*.

Davis, Steven J., John Haltiwanger, and Scott Schuh, 1996, *Job creation and destruction*, The MIT Press.

Davis, Steven J., R. Jason Faberman, and John Haltiwanger, 2006, The flow approach to labor markets: New data sources and micro-macro links, *Journal of Economic Perspectives*, 20(3): 3-26.

Dechezleprêtre, Antoine, Elias Einiö, Ralf Martin, Kieu-Trang Nguyen, and John Van Reenen, 2020, Do tax incentives increase firm innovation? An RD Design for R&D, *Working paper*.

Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda, 2014, The role of entrepreneurship in US job creation and economic dynamism, *Journal of Economic Perspectives*, 28(3): 3-24.

Decker, Ryan A., John Haltiwanger, Ron S. Jarmin, and Javier Miranda, 2020, Changing business dynamism and productivity: Shocks versus responsiveness, *American Economic Review*, 110(12): 3952-90.

Delgado, Mercedes, Michael E. Porter, and Scott Stern, 2010, Clusters and entrepreneurship, *Journal of Economic Geography*, 10(4): 495-518.

Digler, Robert Jay, 2020, Small business size standards: A historical analysis of contemporary issues, *Congressional Research Service Reports R40860.*

Dougal, Casey, Christopher A. Parsons, and Sheridan Titman, 2015, Urban vibrancy and corporate growth, *Journal of Finance*, 70(1): 163-210.

Elsby, Michael W. L., and Gary Solon, 2019, How prevalent is downward rigidity in nominal wages? International evidence from payroll records and pay slips, *Journal of Economic Perspectives*, 33(3): 185-201.

Evans, David S., and Boyan Jovanovic, 1989, An estimated model of entrepreneurial choice under liquidity constraints, *Journal of Political Economy*, 97(4): 808-827.

Galbraith, John Kenneth, 1957, Market structure and stabilization policy, *Review of Economics and Statistics*, 39(2): 124-133.

García-Santana, Manuel, and Josep Pijoan-Mas, 2014, The reservation laws in India and the misallocation of production factors, *Journal of Monetary Economics*, 66: 193-209.
Glaeser, Edward L., and Joshua D. Gottlieb, 2009, The wealth of cities: Agglomeration economies and spatial equilibrium in the United States, *Journal of Economic Literature*, 47(4), 983-1028.
Glaeser, Edward L., Sari Pekkala Kerr, and William R. Kerr, 2015, Entrepreneurship and urban growth: An empirical assessment with historical mines, *Review of Economics and Statistics*, 97(2): 498-520.
Granja, João, Christo Makridis, Constantine Yannelis, and Eric Zwick, 2020, Did the Paycheck Protection Program hit the target?, *NBER working paper*.
Greenstone, Michael, Richard Hornbeck, and Enrico Moretti, 2010, Identifying agglomeration spillovers: Evidence from winners and losers of large plant openings, *Journal of Political Economy*, 118(3): 536-598.
Haltiwanger, John, Ron S. Jarmin, and Javier Miranda, 2013, Who creates jobs? Small versus large versus young, *Review of Economics and Statistics*, 95(2): 347-361.
Holmstrom, Bengt, and Jean Tirole, 1997, Financial intermediation, loanable funds, and the real sector, *Quarterly Journal of Economics*, 112(3): 663-691.
Howell, Sabrina T., 2017, Financing innovation: Evidence from R&D grants, *American Economic Review*, 107(4): 1136-64.
Hurst, Eric, and Benjamin W. Pugsley, 2011, What do small businesses do?, *Brookings Papers on Economic Activity*, 43(2): 73-142.
Jones, Charles I., and John C. Williams, 1998, Measuring the social return to R&D, *Quarterly Journal of Economics*, 113(4): 1119-1135.
Martin, Leslie A, Shanthi Nataraj, and Ann E. Harrison, 2017, In with the big, out with the small: Removing small-scale reservations in India, *American Economic Review*, 107(2): 354-386.
Moretti, Enrico, 2011, Local labor markets. In Orley Ashenfelter and David Card (Eds.), Handbook of labor economics (Vol. 4B). Amsterdam: North Holland.
Neumark, David, Brandon Wall, and Junfu Zhang, 2011, Do small businesses create more jobs? New evidence for the United States from the National Establishment Time Series, *Review of Economics and Statistics*, 93(1): 16-29.
Robb, Alicia M., and David T. Robinson, 2014, The capital structure decisions of new firms, *Review of Financial Studies*, 27(1): 153-179.
Rotemberg, Martin, 2019, Equilibrium effects of firm subsidies, *American Economic Review*, 109(10): 3475-3513.
Schumacher, Ernst Friedrich, 1973, *Small is beautiful: A study of economics as if people mattered*, Random House.
Schumpeter, Joseph A., 1912, *The theory of economic development*, Leipzig: Dicker and Humblot.
Schumpeter, Joseph A., 1942, *Capitalism, socialism and democracy*, New York: Harper.
Small Business Act, 1953, Pub. L. No. 112-2399-58, 119 Stat. 594.
Smith, Adam, 1776, *The wealth of nations*, New York: The Modern Library.
Zwick, Eric, and James Mahon, 2017, Tax policy and heterogeneous investment behavior, *American Economic Review*, 107(1): 217-48.

Figure 1: Size Standards

This figure illustrates size standards in the United States from 2002 to 2017. Revenue-based size standards are in millions of dollars and plotted with the solid blue link on the left axis. Employee-based size standards denote the number of employees and are plotted with the dashed red line on the right axis.

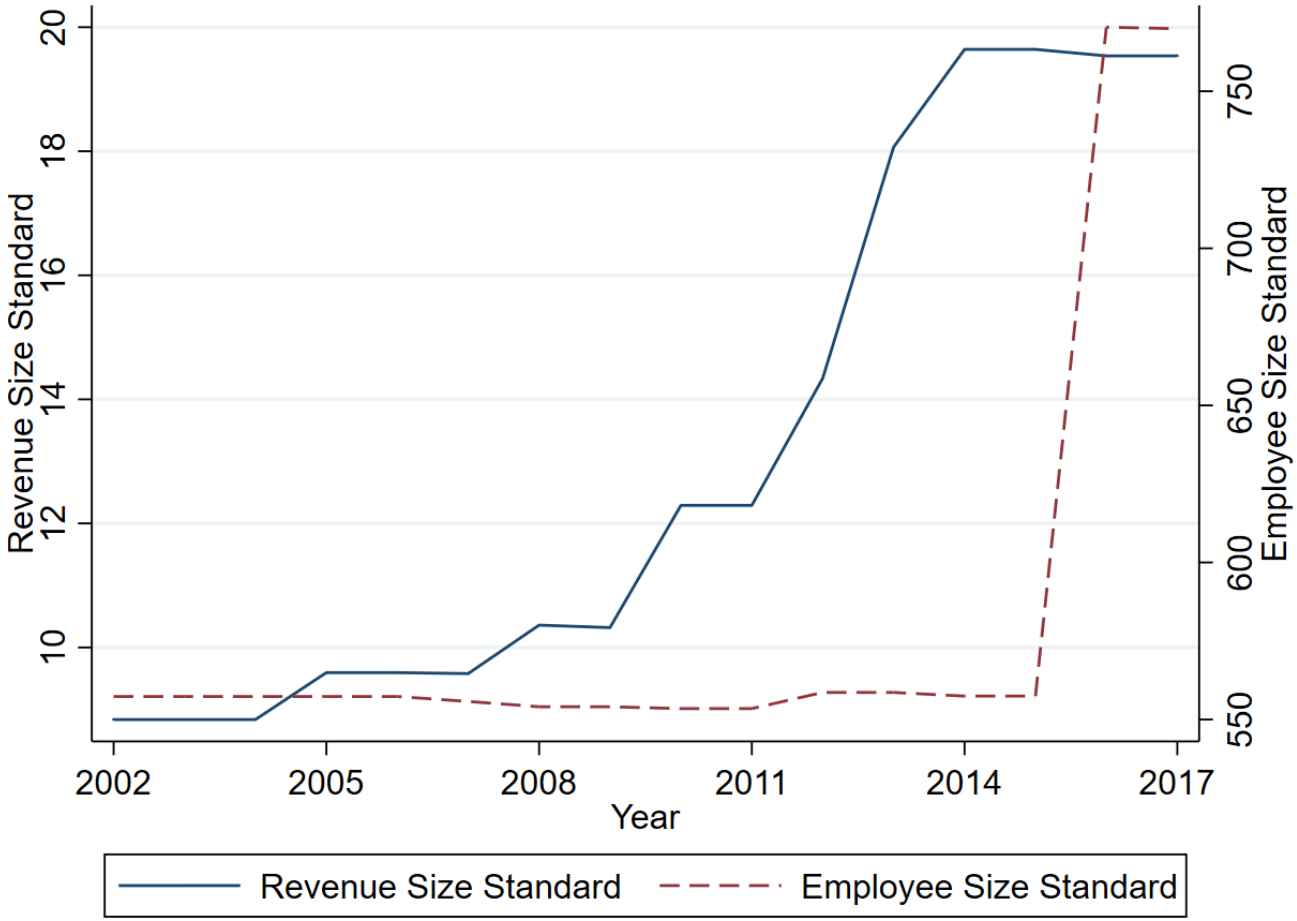

Table 1
Size Standards

This table provides summary statistics for size standard changes stemming from the Small Business Jobs Act of 2010. *Cumulative number of increases* is the cumulative number of size standard increases from 2002 to 2017. *Cumulative number of decreases* is the cumulative number of size standard decreases from 2002 to 2017. *Number of revenue standard increases* is the number of size standard increases based on firm revenue. *Average revenue standard* is the average revenue standard ($ million) for industries with a revenue size standard. *Number of employee standard increases* is the number of size standard increases based on firm employees. *Average employee standard* is the average employee standard for industries with an employee size standard.

Year	Cumulative number of increases	Cumulative number of decreases	Number of revenue standard increases	Average revenue standard ($ million)	Number of employee standard increases	Average employee standard
2002	0	0	0	8.8	0	557
2003	0	0	0	8.8	0	557
2004	0	0	0	8.8	0	557
2005	0	0	0	9.6	0	557
2006	0	0	0	9.6	0	557
2007	0	0	0	9.6	0	556
2008	0	0	0	10.4	0	554
2009	0	0	0	10.3	0	554
2010	62	0	62	12.3	0	553
2011	62	0	0	12.3	0	553
2012	160	0	96	14.3	2	559
2013	262	0	102	18.1	0	559
2014	266	0	3	19.6	1	557
2015	266	0	0	19.6	0	557
2016	525	3	0	19.5	259	770
2017	525	3	0	19.5	0	770

Table 2
Predictive Regression

This table examines the association between size standard increases and the order of industries reviewed by the Small Business Administration. *Size increase* is an indicator variable equaling one if the size standard increases for a particular industry. *Date announced* is the order of industries reviewed based on the date when the review process is announced in the Code of Federal Regulations. *Date proposed* is the order of industries reviewed based on the date that the size standard increases are proposed in the Code of Federal Regulation. *Date finalized* is the order of industries reviewed based on the date that the size standard increases are finalized in the Code of Federal Regulation. Table A.1 provides additional details on variable definitions. Standard errors are reported in parentheses and clustered at the two-digit industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Size increase	Size increase	Size increase
Model	(1)	(2)	(3)
Date announced	0.008		
	(0.014)		
Date proposed		0.003	
		(0.006)	
Date finalized			0.005
			(0.008)
Observations	1,016	1,016	1,016
R-squared	0.003	0.001	0.000

Table 3
Summary Statistics

This table details the summary statistics for main variables used in the analysis. *Size increase* is an indicator variable equaling one when the size standard increases for a particular industry. *Small establishment ratio* is the number of establishments for firms with fewer than 20 employees relative to the number of establishments in an industry. *Small employment ratio* is the number of employees at firms with fewer than 20 employees relative to the number of employees in an industry. *Expansions* is the number of establishments that increase employment relative to the total number of establishments in the previous year. *Contractions* is the number of establishments that decrease employment relative to the total number of establishments in the previous year. *Dynamism* is defined as the number of establishment births and expansions over the number of contractions and deaths. *Expansions*, *Contractions*, and *Dynamism* are defined for small firms with fewer than 20 employees and at the industry level. *Employment* is the log change in the total number of employees in an industry. *Payroll* is the log change in the total wages in an industry. *Aggregate job losses* is the number of separations into persistent unemployment. *Stable job losses* is the number of separations from a stable job into persistent unemployment. *Earnings for current employees* is the average earnings for all workers. *Earnings for new employees* is the average earnings for new workers. The outcomes related to job losses and earnings are standardized by subtracting the sample mean and dividing by the standard deviation. *MSA exposure to size standard increases* is the sum of size standard increases weighted by the 2003 proportion of an industry's establishments with fewer than 20 employees in an MSA. *MSA unemployment rate* is the unemployment rate in an MSA. *MSA population* is the log of MSA population. *MSA house price growth* is the log change in MSA house prices. *MSA GDP growth* is the log change in MSA GDP. Table A.1 provides additional details on variable definitions.

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Size increase	7,403	0.209	0.000	0.000	1.000	0.407
Small establishment ratio	7,403	0.560	0.566	0.003	1.000	0.218
Small employment ratio	7,003	0.153	0.107	0.000	0.868	0.143
Expansions (small firm)	1,458	0.136	0.137	0.000	0.361	0.049
Contractions (small firm)	1,458	0.127	0.128	0.000	0.301	0.047
Dynamism (small firm)	1,458	1.068	1.069	0.000	3.462	0.283
Expansions (industry)	1,458	0.289	0.280	0.027	0.613	0.082
Contractions (industry)	1,458	0.284	0.273	0.032	0.696	0.078
Dynamism (industry)	1,458	1.046	1.066	0.214	2.614	0.293
Employment	7,184	-0.003	0.003	-1.289	1.763	0.109
Payroll	7,184	0.024	0.030	-1.163	1.793	0.120
Aggregate job losses	1,216	0.000	-0.348	-1.188	2.623	1.000
Stable job losses	1,216	0.000	-0.366	-1.156	3.067	1.000
Earnings for current employees	152,428	0.000	-0.173	-1.292	86.849	1.000
Earnings for new employees	152,428	0.000	-0.190	-1.449	72.236	1.000
MSA exposure to size standard increases	5,205	0.108	0.000	0.000	0.418	0.124
MSA unemployment rate	5,205	0.064	0.058	0.020	0.289	0.027
MSA population	5,205	12.495	12.234	10.904	15.685	0.944
MSA house price growth	5,205	0.024	0.024	-0.605	0.346	0.067
MSA GDP growth	5,205	0.036	0.037	-0.439	0.425	0.052

Table 4
Crowding Out of Small Firms

This table examines the effect of size standard increases on industry composition. Panel A provides the baseline results, Panel B evaluates the robustness to different thresholds for small firms, and Panel C details the dynamics for the baseline estimates. *Size increase* is an indicator variable equaling one when the size standard increases for a particular industry. *Small establishment ratio* is the number of establishments for firms with fewer than 20 employees relative to the total number of establishments in an industry. *Small employment ratio* is the number of employees at firms with fewer than 20 employees relative to the total number of employees in an industry. The small firm threshold is varied in Panel B. Industries are defined at the six-digit NAICS code level. Table A.1 provides additional details on variable definitions. All models include industry fixed effects. Models 2 and 4 in Panel A and all models in Panel B and C also include year fixed effects. The sample for Panel C is a four-year window around a size standard increase. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Baseline Results

Dependent variable	Small Establishment Ratio	Small Establishment Ratio	Small Employment Ratio	Small Employment Ratio
Model	(1)	(2)	(3)	(4)
Size increase	-0.016***	-0.011***	-0.009***	-0.005**
	(0.003)	(0.004)	(0.002)	(0.002)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	No	Yes	No	Yes
Observations	7,403	7,403	7,003	7,003
R-squared	0.963	0.963	0.967	0.967

Panel B: Robustness

Dependent variable	Small Establishment Ratio	Small Establishment Ratio	Small Employment Ratio	Small Employment Ratio
Model	(1)	(2)	(3)	(4)
Size increase	-0.011***	-0.013***	-0.011***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.005)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Small firm threshold	<100 employees	<500 employees	<100 employees	<500 employees
Observations	7,374	7,405	6,904	7,066
R-squared	0.960	0.943	0.961	0.946

Table 4 (continued)

Panel C: Dynamics

Dependent variable	Small Establishment Ratio	Small Employment Ratio
Model	(1)	(2)
Size increase$_{t-4}$	0.002	0.002
	(0.002)	(0.001)
Size increase$_{t-3}$	0.004**	0.003**
	(0.002)	(0.001)
Size increase$_{t-2}$	0.002	0.002
	(0.002)	(0.002)
Size increase$_{t-1}$	-0.001	0.001
	(0.001)	(0.001)
Size increase$_{t+1}$	-0.006***	-0.002**
	(0.002)	(0.001)
Size increase$_{t+2}$	-0.005*	-0.004**
	(0.003)	(0.002)
Size increase$_{t+3}$	-0.009***	-0.008***
	(0.003)	(0.002)
Size increase$_{t+4}$	-0.012***	-0.011***
	(0.004)	(0.003)
Industry fixed effects	Yes	Yes
Observations	3,918	3,694
R-squared	0.981	0.978

Table 5
Creative Destruction

This table explores the role of size standard increases on creative destruction. Panel A provides estimates for small firms and Panel B details estimates for the total industry. *Size increase proportion* is the proportion of size standard increases within a particular industry-year. *Expansions* is the number of establishments that increase employment relative to the total number of establishments in the previous year. *Contractions* is the number of establishments that decrease employment relative to the total number of establishments in the previous year. *Dynamism* is defined as the number of establishment births and expansions over the number of contractions and deaths. Table A.1 provides additional details on variable definitions. Industries are defined at the four-digit NAICS code level. All models include industry and year fixed effects. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Small Firms

Dependent variable	Expansions	Contractions	Dynamism
Model	(1)	(2)	(3)
Size increase proportion	-0.012***	0.010***	-0.109***
	(0.003)	(0.002)	(0.027)
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	1,458	1,458	1,458
R-squared	0.896	0.905	0.660

Panel B: Industry

Dependent variable	Expansions	Contractions	Dynamism
Model	(1)	(2)	(3)
Size increase proportion	-0.035***	0.038***	-0.142***
	(0.008)	(0.008)	(0.040)
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	1,458	1,458	1,458
R-squared	0.762	0.724	0.566

Table 6
Labor Markets

This table studies the effect of size standard increases on industry labor markets. *Size increase* is an indicator variable equaling one when the size standard increases for a particular industry. *Employment* is the log change in the total number of employees in an industry. *Payroll* is the log change in the total wages in an industry. Industries in this table are defined at the six-digit NAICS code level. Table A.1 provides additional details on variable definitions. All models include industry and year fixed effects. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Employment	Payroll
Model	(1)	(2)
Size increase	-0.015***	-0.012*
	(0.005)	(0.006)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	7,184	7,184
R-squared	0.088	0.098

Table 7
Job Losses and Earnings

This table examines the effect of size standard increases on job losses in Panel A and worker earnings in Panel B. *Size increase proportion* is the proportion of size standard increases within a particular industry-year. *Aggregate job losses* is the number of separations into persistent unemployment. *Stable job losses* is the number of separations from a stable job into persistent unemployment. *Earnings for current employees* is the average earnings for all workers. *Earnings for new employees* is the average earnings for new workers. Industries are defined at the two-digit NAICS code level in Panel A and the four-digit NAICS code level in Panel B. The unit of observation is an industry-year in Panel A and an industry-state-year in Panel B. The outcomes in each panel are standardized by subtracting the sample mean and dividing by the standard deviation. All models include industry and year fixed effects in Panel A and all models include industry, year, and state fixed effects in Panel B. The specifications in Panel A are weighted by the number of industries at the six-dight NAICS code level. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Job Losses

Dependent variable	Aggregate Job Losses	Stable Job Losses
Model	(1)	(2)
Size increase proportion	0.505**	0.358**
	(0.194)	(0.161)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	1,216	1,216
R-squared	0.897	0.903

Panel B: Earnings

Dependent variable	Earnings for Current Employees	Earnings for New Employees
Model	(1)	(2)
Size increase proportion	-0.051*	-0.047**
	(0.027)	(0.021)
Industry fixed effects	Yes	Yes
State fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	152,428	152,428
R-squared	0.336	0.411

Table 8
Agglomeration

This table studies the role of size standard increases on local unemployment. *MSA exposure to size standard increases* is the sum of size standard increases weighted by the 2003 proportion of an industry's establishments with fewer than 20 employees in an MSA. *MSA unemployment rate* is the unemployment rate in an MSA. *MSA population* is the log of MSA population. *MSA house price growth* is the log change in MSA house prices. *MSA GDP growth* is the log change in MSA GDP. All models include MSA and year fixed effects. Standard errors are reported in parentheses and clustered at the MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	MSA Unemployment Rate	MSA Unemployment Rate	MSA Unemployment Rate	MSA Unemployment Rate
Model	(1)	(2)	(3)	(4)
MSA exposure to size standard increases	0.076***	0.068***	0.079***	0.071***
	(0.020)	(0.020)	(0.018)	(0.017)
MSA population		0.011**	0.008**	0.008**
		(0.004)	(0.004)	(0.004)
MSA house price growth			-0.080***	-0.073***
			(0.005)	(0.005)
MSA GDP growth				-0.031***
				(0.004)
MSA fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	5,205	5,205	5,205	5,205
R-squared	0.874	0.875	0.898	0.900

Table 9
Procurement Contracts

This table examines the role of procurement contracts in size standard increases. In this table, small firms are based on the designation of small businesses in the contracts data. *Size increase* is an indicator variable equaling one when the size standard increases for a particular industry. *Percent of contracts to always small firms* is the proportion of contracts awarded to firms that are designated as small before a size standard increase. *Percent of contracts to newly small firms* is the proportion of contracts awarded to firms that are designated as small only after a size standard increase. *Contract amount to small firms* is the log of one plus the amount of contracts awarded to firms that are designated as small. The sample only includes industries with a size standard increase and firms that received contracts before the size standards change. All models include industry and year fixed effects. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Percent of Contracts to Always Small Firms	Percent of Contracts to Newly Small Firms	Contract Amount to Small Firms
Model	(1)	(2)	(3)
Size increase	-0.056***	0.014***	0.007
	(0.014)	(0.003)	(0.163)
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	7,378	7,378	7,378
R-squared	0.586	0.250	0.745

Table 10
SBA Loans

This table explores the role of SBA loans in size standard increases. *Size increase* is an indicator variable equaling one when the size standard increases for a particular industry. *Number of Loans* is the number of loans in an industry. *Total Credit* is the log of one plus the gross SBA loan amount in an industry. *Guaranteed Credit* is the log of one plus the guaranteed SBA loan amount in an industry. Industries are defined at the six-digit NAICS code level. All models include industry and year fixed effects. Column 1 is estimated using a Poisson model, since the dependent variable of number of loans is a count variable. Standard errors are reported in parentheses and clustered at the industry level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Number of Loans	Total Credit	Guaranteed Credit
Model	(1)	(2)	(3)
Size increase	-0.130***	-0.170***	-0.176***
	(0.051)	(0.056)	(0.060)
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Observations	7,172	7,172	7,172
R-squared	0.914	0.722	0.707

Table A.1
Variable Definitions

Variable Name	Description	Source
Size increase	An indicator variable equaling one when the size standards increase for a particular industry.	Code of Federal Regulations
Size increase proportion	Proportion of size standard increases within a particular industry-year.	Code of Federal Regulations
MSA exposure to size standard increases	Sum of size standard increases weighted by the proportion of an industry's establishments with fewer than 20 employees in an MSA in 2003.	Code of Federal Regulations and County Business Patterns (Census Bureau)
Date announced	Order of industries reviewed based on the date when the review process is announced in the Code of Federal Regulations.	Code of Federal Regulations
Date proposed	Order of industries reviewed based on the date that the size standard increases are proposed in the Code of Federal Regulation.	Code of Federal Regulations
Date finalized	Order of industries reviewed based on the date that the size standard increases are finalized in the Code of Federal Regulation.	Code of Federal Regulations
Small establishment ratio	Number of establishments for firms with fewer than 20 employees relative to the total number of establishments in an industry.	Statistics of U.S. Businesses (Census Bureau)
Small employment ratio	Number of employees at firms with fewer than 20 employees relative to the total number of employees in an industry.	Statistics of U.S. Businesses (Census Bureau)
Expansions	Number of establishments that increase employment relative to the total number of establishments in the previous year.	Statistics of U.S. Businesses (Census Bureau)
Contractions	Number of establishments that decrease employment relative to the total number of establishments in the previous year.	Statistics of U.S. Businesses (Census Bureau)
Dynamism	Number of establishment births and expansions over the number of contractions and deaths.	Statistics of U.S. Businesses (Census Bureau)
Employment	Log change in the total number of employees in an industry.	Statistics of U.S. Businesses (Census Bureau)
Payroll	Log change in the total wages in an industry.	Statistics of U.S. Businesses (Census Bureau)
Aggregate job losses	Number of separations into persistent unemployment. This variable is standardized by subtracting the sample mean and dividing by the standard deviation.	Job-to-Job Flows (Census Bureau)
Stable job losses	Number of separations from a stable job into persistent unemployment. This variable is standardized by subtracting the sample mean and dividing by the standard deviation.	Job-to-Job Flows (Census Bureau)

Table A.1 (continued)

Variable Name	Description	Source
Earnings for current employees	Average earnings for all workers. This variable is standardized by subtracting the sample mean and dividing by the standard deviation.	Quarterly Workforce Indicators (Census Bureau)
Earnings for new employees	Average earnings for new workers. This variable is standardized by subtracting the sample mean and dividing by the standard deviation.	Quarterly Workforce Indicators (Census Bureau)
MSA unemployment rate	Unemployment rate in an MSA.	Bureau of Labor Statistics
MSA population	Log of MSA population.	American Community Survey
MSA house price growth	Log change in MSA house prices.	Federal Housing Finance Agency
MSA GDP growth	Log change in MSA GDP.	Bureau of Economic Analysis
Percent of contracts to always small firms	Proportion of contracts awarded to firms that are designated as small before a size standard increase.	USASpending.gov
Percent of contracts to newly small firms	Proportion of contracts awarded to firms that are designated as small only after a size standard increase.	USASpending.gov
Contract amount to small firms	Log of one plus the amount of contracts awarded to firms that are designated as small.	USASpending.gov
Number of loans	Number of loans in an industry.	Small Business Administration
Total credit	Log of one plus the gross SBA loan amount in an industry.	Small Business Administration
Guaranteed credit	Log of one plus the guaranteed SBA loan amount in an industry.	Small Business Administration

Table A.2
Summary Statistics for Procurement Contracts

This table provides summary statistics for U.S. procurement contracts to small businesses. In this table, small firms are based on the designation of small businesses in the contracts data. *Number of contracts to small firms* is a count of the number of contracts awarded to small firms. *Contract amount to small firms* is the amount of contracts awarded to small firms in millions of dollars. *Contract amount to all firms* is the amount of contracts awards to all firms in millions of dollars. *Percent of small firms* is the proportion of contract amount awarded to small firms relative to *Contract amount to all firms*.

Year	Number of Contracts to Small Firms	Contract Amount to Small Firms	Contract Amount to All Firms	Percent to Small Firms
2002	413,627	54,239	283,826	19.1%
2003	751,725	64,473	338,828	19.0%
2004	1,118,404	66,242	355,005	18.7%
2005	1,455,640	78,129	380,672	20.5%
2006	2,138,570	82,515	454,945	18.1%
2007	2,096,819	89,171	463,303	19.2%
2008	2,033,379	97,714	564,435	17.3%
2009	1,624,359	100,605	519,327	19.4%
2010	1,658,929	125,444	554,870	22.6%
2011	1,561,575	102,702	524,779	19.6%
2012	1,398,217	99,576	541,919	18.4%
2013	1,158,509	89,215	427,005	20.9%
2014	1,401,936	99,404	454,644	21.9%
2015	1,863,621	97,220	436,954	22.2%
2016	2,054,976	106,971	489,467	21.9%
2017	2,155,032	113,202	510,436	22.2%

Table A.3
Summary Statistics for SBA Loans

The table provides summary statistics for loans guaranteed by the Small Business Administration matched to non-imputed data on firm-level employees from NETS. *Average employees* is the average number of employees for firms receiving SBA loans. *Percent of number of loans to small firms* is the number of loans to firms with fewer than 20 employees relative to the total number of loans in a particular year. *Percent of total credit to small firms* is the total amount of loans to firms with fewer than 20 employees relative to the total amount of loans in a particular year. *Percent of guaranteed credit to small firms* is the guaranteed amount of loans to firms with less than 20 employees relative to the total guaranteed amount of loans in a particular year.

Year	Average Employees	Percent of Number of Loans to Small Firms	Percent of Total Credit to Small Firms	Percent of Guaranteed Credit to Small Firms
2002	8.88	88.55%	77.05%	77.29%
2003	7.98	90.18%	79.73%	79.77%
2004	8.22	89.85%	78.54%	78.47%
2005	7.69	90.64%	79.28%	78.68%
2006	7.30	91.21%	79.37%	78.63%
2007	7.26	91.49%	79.80%	79.11%
2008	8.26	89.28%	77.66%	77.05%
2009	9.74	85.91%	72.59%	72.21%
2010	10.53	83.97%	70.22%	69.82%
2011	10.44	83.61%	64.97%	64.25%
2012	10.49	84.16%	68.20%	67.46%
2013	10.38	84.95%	70.32%	69.64%
2014	9.63	86.03%	71.51%	70.92%
2015	9.55	85.62%	72.73%	72.19%
2016	9.63	85.91%	72.27%	71.64%
2017	8.80	87.97%	76.36%	75.86%