



Apocalypse Not: The Resilience of Retail SMBs in the 2010s

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About the Author and Acknowledgements

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Executive Summary

This study finds that small and medium-sized retail businesses (SMBs) experienced a period of resurgence and growth in the 2010s. This period of increased growth coincided with increases in investment by retailers in technology, rising productivity in the retail sector, and the introduction of important technological innovations allowing retail SMBs to provide e-commerce and hybrid shopping experiences that previously were only offered by large retailers. Empirical analyses presented in this study suggest a direct link between the resurgence and growth of retail SMBs and increased adoption and use of digital and e-commerce technology, rebutting the narrative that e-commerce technology has limited opportunities for small businesses and has effectively killed retail entrepreneurship.

The findings presented here are based on data from the U.S. Census Bureau's Business Dynamic Statistics (BDS) program. The BDS data provides the most comprehensive publicly available data on entrepreneurship and the growth of small and medium-sized businesses in the United States. While the popular narrative regarding the demise of retail SMBs has become widely accepted, there has been little rigorous empirical examination of the experience of retail SMBs in the 2010s until this study. Using the BDS data we find that the facts do not support the popular narrative. Specifically:

- ❖ The retail sector remains a hub of SMB activity and continues to be a primary source of startup activity in the U.S. economy.
 - ❖ 99.7 percent of retail firms in 2019 were small (firms with 19 or fewer employees) or medium-sized (firms with 20 to 999 employees); the retail sector ranked third out of 18 economic sectors in terms of the prevalence of SMBs.
 - ❖ The retail sector accounted for 9.9 percent of new firms in 2019, ranking fourth of 18 economic sectors in terms of contribution to total U.S. business formation.
- ❖ Retail SMBs experienced a period of resurgence and growth in the 2010s.
 - ❖ In the 2010s, the average growth rate of small and medium-sized retail firms increased relative to the 2000s, while the average growth rate of large retail firms declined. The standardized increases in average growth rates for retail SMBs were among the largest experienced by firms of that size in any sector of the U.S. economy.
 - ❖ Small retail firms enjoyed a positive average annual growth rate in the 2010s for the first time since the 1980s.
 - ❖ Medium-sized retail firms grew faster on average in the 2010s than large retail firms (firms with 1,000 or more employees).

- ⚡ Retail startups became more likely to survive in the 2010s and the successful entry of new firms remained robust.
- ⚡ The resurgence and growth of retail SMBs in the 2010s coincided with increased adoption and use of technology in the retail sector. Perhaps the most important innovation of the decade has been the advent of technology to facilitate “omnichannel retailing” – the combination of traditional brick-and-mortar and other sales strategies within the same firm. Omnichannel e-commerce sales from brick-and-mortar retail locations rose dramatically in the 2010s, increasing by approximately 215 percent from 2010 to 2019, while physical sales from brick-and-mortar stores increased by approximately 32 percent.
- ⚡ A substantial body of evidence suggests that the resurgence and growth of retail SMBs in the 2010s was linked to increased adoption and use of digital and e-commerce technology.
 - ⚡ The large increases in average growth rates for small and medium-sized retail firms in the 2010s relative to the 2000s mirrored similar increases in the growth rates for small and medium-sized firms in the information sector (NAICS 51), which includes software publishers, internet broadcasters, telecommunications firms, web search portals, and firms providing data processing services.
 - ⚡ Investment in equipment and technology by firms in the retail sector from 2000 to 2019 was strongly correlated with the growth of small and medium-sized retail firms, but weakly correlated with the growth of large retail firms.
 - ⚡ Increases in the proportion of omnichannel sales by retail industries (three-digit NAICS) from 2010 to 2019 were strongly correlated with changes in average growth rates for small and medium-sized retail firms in the 2010s relative to the 2000s, but negatively correlated with changes in average growth rates for large retail firms.
 - ⚡ Productivity (real gross output per employee) in the retail sector from 2000 to 2019 was positively correlated with the growth of small and medium-sized retail firms, but uncorrelated with the growth of large retail firms.

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Introduction

This study finds that small and medium-sized retail businesses (SMBs) experienced resurgence and growth in the 2010s. This period of increased growth coincided with increases in investment by retailers in technology, rising productivity in the retail sector, and the introduction of important technological innovations allowing retail SMBs to provide e-commerce and hybrid shopping experiences that previously only large retailers offered. A series of empirical analyses presented in this study suggest a direct link between the resurgence and growth of retail SMBs and increased adoption and use of digital and e-commerce technology, rebutting the narrative that e-commerce technology has limited opportunities for small businesses and has effectively killed retail entrepreneurship.¹

Despite the widespread acceptance of this narrative, claims regarding the demise of retail SMBs have been subjected to little rigorous empirical examination. To the extent that evidence based on economic data is presented, the analyses offered to support this narrative fail to account for well-known measurement issues and biases that occur when data on entrepreneurship and firm growth dynamics are not assessed using appropriate data, definitions, and methodologies.²

Our ability to overcome the problems that have led previous researchers to reach erroneous conclusions derives from our use of data from the U.S. Census Bureau's Business Dynamic Statistics (BDS) program. The BDS data provides the most comprehensive publicly available data on entrepreneurship and the growth of small and medium-sized businesses in the United States. The BDS is unique among publicly available datasets because it provides consistent classifications of firms by size category between years and allows for the classification of firms by age so that the survival of startups "born" in a particular year can be tracked in future years.

Using the BDS data, we find:

- ❖ The retail sector remains a hub of SMB activity and continues to be one of the primary sources of startup activity in the U.S. economy.
 - ❖ 99.7 percent of retail firms in 2019 were small (firms with 19 or fewer employees) or medium-sized (firms with 20 to 999 employees); the retail sector ranked third out of 18 economic sectors in terms of the prevalence of SMBs.
 - ❖ The retail sector accounted for 9.9 percent of new firms in 2019, ranking fourth of 18 economic sectors in terms of contribution to total U.S. business formation.
- ❖ Retail SMBs experienced a period of resurgence and growth in the 2010s.
 - ❖ In the 2010s, the average growth rate of small and medium-sized retail firms increased relative to the 2000s, while the average growth rate of large retail firms declined.

1 Stacy Mitchell, "Monopoly Power and the Decline of Small Business," *Institute for Local Self-Reliance* (August 2016), available at <https://ilsr.org/monopoly-power-and-the-decline-of-small-business/>, at 10 ("Independent businesses have been disappearing across many sectors of the economy. ... Local retailers also saw their ranks diminish by about 108,000.") [hereafter "Mitchell 2016"].

2 See e.g., Mitchell 2016 at 9, 10-11; Josh Boak, "A Slowdown in US Business Formation Poses a Risk to Economy," *Associated Press* (September 5, 2019), available at <https://apnews.com/article/e7179fc8b9dc4399818f2038b75ec423>; Ben Casselman, "A Start-Up Slump is a Drag on the Economy. Big Business may be to Blame," *The New York Times* (September 20, 2017), available at <https://www.nytimes.com/2017/09/20/business/economy/startup-business.html>.

- ❖ The standardized increase in the average growth rate of small retail firms in the 2010s was approximately 1.4 standard deviations – an increase among the largest experienced by small firms in any sector of the U.S. economy. Only small firms in the transportation and warehousing sector experienced a significantly higher increase in their standardized average growth rate.
- ❖ The standardized increase in the average growth rate of medium-sized retail firms in the 2010s was also disproportionately large, with retail being only one of five sectors where medium-sized firms enjoyed an increase of 1.5 standard deviations or more.
- ❖ In contrast, the standardized average growth rate of large retail firms declined by approximately 0.7 standard deviations, placing it 16th out of 18 economic sectors.
- ❖ Small retail firms enjoyed a positive average annual growth rate in the 2010s for the first time since the 1980s.
- ❖ Medium-sized retail firms grew faster on average in the 2010s than large retail firms (firms with 1,000 or more employees).
- ❖ Retail startups became more likely to survive in the 2010s and the successful entry of new firms remained robust.
- ❖ The resurgence and growth of retail SMBs in the 2010s coincided with increased adoption and use of technology in the retail sector. Perhaps the most important innovation of the decade has been the advent of technology to facilitate “omnichannel retailing” – the combination of traditional brick-and-mortar and other sales strategies within the same firm. Omnichannel e-commerce sales from brick-and-mortar retail locations rose dramatically in the 2010s, increasing by approximately 215 percent from 2010 to 2019, while physical sales from brick-and-mortar stores increased by approximately 32 percent.
- ❖ A substantial body of evidence suggests that the resurgence and growth of retail SMBs in the 2010s was linked to increased adoption and use of digital and e-commerce technology.
 - ❖ The large increases in average growth rates for small and medium-sized retail firms in the 2010s relative to the 2000s mirrored similar increases in the growth rates for small and medium-sized firms in the information sector (NAICS 51), which includes software publishers, internet broadcasters, telecommunications firms, web search portals, and firms providing data processing services.
 - ❖ Investment in equipment and technology by firms in the retail sector from 2000 to 2019 was strongly correlated with the growth of small and medium-sized retail firms, but weakly correlated with the growth of large retail firms.
 - ❖ Increases in the proportion of omnichannel sales by retail industries (three-digit NAICS) from 2010 to 2019 were strongly correlated with changes in average growth rates for small and medium-sized retail firms in the 2010s relative to the 2000s, but negatively correlated with changes in average growth rates for large retail firms.
 - ❖ Productivity (real gross output per employee) in the retail sector from 2000 to 2019 was positively correlated with the growth of small and medium-sized retail firms, but uncorrelated with the growth of large retail firms.

The BDS data used here covers only “employer firms” or firms that had at least one non-independent contractor employee. Consequently, the statistics presented in this paper present a conservative estimate of small business activity in the retail sector, which also contains a large

number of non-employer small businesses (over 2.1 million firms in 2018³), such as “mom-and-pop” shops where the owners are the only workers, that often use e-commerce technology for a variety of functions.

The remainder of this paper is organized as follows. Section II discusses the data used in this study, addresses important methodological considerations such as the definition of small, medium-sized, and large firms, and provides an overview of startup and small business activity in the retail sector. Section III compares the economic performance of retail SMBs in the 2010s to the performance of retail SMBs in previous decades. Section IV assesses the relationship between the growth of retail SMBs, the adoption and use of digital and e-commerce technology, and productivity. Section V concludes.

Data, Definitions, and the Retail Sector

The first part of this section discusses the data used in this study, defines key terms, and provides a comprehensive discussion of the “size distribution fallacy” – a statistical problem which can lead to erroneous conclusions about the growth of SMBs. The second part of this section provides a brief overview of the retail industry. The third part of this section provides a snapshot of SMB and startup activity in the retail sector compared to other sectors of the U.S. economy.

A. Data and Definitions

The Census Bureau’s BDS program, which “provides annual measures of business dynamics,” is the primary source of data used in this paper.⁴ The BDS is created from the Longitudinal Business Database (LBD), a confidential dataset maintained by the Census Bureau.⁵ The use of the LBD permits the tracking of establishments (business locations) and firms over time through the use of numerical codes identifying establishments and firms.⁶ Firms are “defined at the enterprise level such that all establishments under the operational control of the enterprise are considered part of the firm.”⁷

This paper relies on two primary measures of the performance of retail SMBs: firm survival rates and aggregated firm growth rates by firm size category. To calculate firm survival rates, we use BDS data on firm births in a given year and then track the survival of these firms across years by removing firm deaths as the original cohort of firms ages.⁸ Growth rates by firm size category are measured in the BDS in terms of net job creation rates. Data on establishment- and firm-level revenues is not available in the BDS.

3 U.S. Small Business Administration Office of Advocacy, *2021 Small Business Profile*, available at <https://cdn.advocacy.sba.gov/wp-content/uploads/2021/08/30143723/Small-Business-Economic-Profile-US.pdf>, at 2.

4 U.S. Census Bureau, “Business Dynamics Statistics (BDS),” available at <https://www.census.gov/programs-surveys/bds.html> (“The BDS provides annual measures of business dynamics (such as job creation and destruction, establishment births and deaths, and firm startups and shutdowns) for the economy overall and aggregated by establishment and firm characteristics.”).

5 U.S. Census Bureau, “About this Program,” *Business Dynamics Statistics*, available at <https://www.census.gov/programs-surveys/bds/about.html>.

6 *Id.*

7 *Id.*

8 Calculating firm survival rates by subtracting firm deaths from the original cohort of firm births prevents firms that are acquired from being wrongly classified as deaths.

The BDS provides default economy-wide firm size categories of 19 or fewer employees, 20 to 499 employees, and 500 or more employees. However, because the appropriate definition of small, medium-sized, and large businesses may vary depending on the research application, the BDS also provides a finer classification of firm size with ten subcategories: four or fewer employees, five to nine employees, ten to 19 employees, 20 to 99 employees, 100 to 499 employees, 500 to 999 employees, 1,000 to 2,499 employees, 2,500 to 4,999 employees, 5,000 to 9,999 employees, and 10,000 or more employees. These subcategories can then be grouped as desired to define small, medium-sized, and large businesses.

Due to the reliance of the retail sector on part-time and seasonal employees, firms in the retail sector tend to employ more people, all else equal, for a given level of output.⁹ Thus, in defining the cut off between SMBs and large firms, we begin with the standard BDS cutoff of 499 or fewer employees and add the next size category of 500 to 999 employees to account for the prevalence of part-time and seasonal employees in the retail sector.¹⁰ The economic literature commonly defines small businesses as firms with 19 or fewer employees.¹¹ We adopt this definition of small business to maintain consistency with the literature and because the next smallest possible categorization using the BDS data would involve classifying firms with up to 99 employees as small, potentially obscuring investigation into the economic performance of the smallest retail firms.

Calculating growth rates based on the number of people employed by small businesses across years leads to a statistical problem known as the “size distribution fallacy,” which occurs as firms move between size categories over time.¹² For example, suppose in a given year there are ten firms in the economy each with ten employees. Using the firm size definitions above, small businesses in the economy employ 100 people. Now suppose in the next year, one of the firms grows by ten employees, so that the growing firm moves from the small category to the medium category. Small businesses now employ 90 people, but it is incorrect to attribute a loss of ten jobs to small businesses when, in reality, a small firm created ten jobs and moved into the next size category. To avoid this problem, job creation rates in the BDS are calculated using a longitudinally consistent set of firms, which are assigned to a firm size category based on average employment by the firm in a given year and the previous year.¹³

9 See e.g., U.S. Small Business Administration Office of Size Standards, Office of Policy, Planning, and Liaison, Office of Government Contracting and Business Development, *SBA’s Size Standards Methodology* (April 2019) at 11, available at <https://www.sba.gov/sites/default/files/2021-02/SBA%20Size%20Standards%20Methodology%20April%2011%2C%202019-508.pdf> (noting that a “[h]igh proportion of part-time or seasonal employment” implies that the “[s]ame level of output is achieved with differing employment practices”). Due to factors including the prevalence of part-time and seasonal employment, the Small Business Administration (SBA) uses revenue rather than employment to define small business in the retail sector under the Small Business Act. However, as data on the revenue size distribution of firms is frequently unavailable in economic research, the economic literature typically defines firm size using employment levels.

10 Ali Hortacsu and Chad Syverson, “The Ongoing Evolution of US Retail: A Format Tug-of-War,” *Journal of Economic Perspectives* 29:4 (2015) 89-112 at 92 (“Bureau of Labor Statistics (BLS) data indicate retail workers averaged about 31.4 hours per week in 2014, about 10 percent below the 34.5-hour average for all nonfarm workers.”) [hereafter “Hortacsu and Syverson 2015”].

11 See e.g., Erik Hurst and Benjamin Pugsley, “What Do Small Businesses Do?” *Brookings Papers on Economic Activity* (Fall 2011) 73-142.

12 DHS 1996 at 301-302.

13 U.S. Census Bureau, “BDS FAQ,” *Business Dynamics Statistics*, available at <https://www.census.gov/programs-surveys/bds/documentation/faq.html>.

We also supplement the BDS data with capital expenditure data from the U.S. Census Bureau’s Annual Capital Expenditure Survey (ACES), data on retail e-commerce sales from the U.S. Census Bureau’s E-STATS program, and data on real gross output by economic sector from the U.S. Bureau of Economic Analysis (BEA). The specific uses of these data are described in detail below.

B. The Retail Sector

The “Retail Trade” sector or retail sector is defined by the North American Industrial Classification System (NAICS) as “establishments engaged in retailing merchandise, generally without transformation, and rendering services incidental to the sale of merchandise.”¹⁴

As shown in Table 1, the retail sector is assigned the sector-level NAICS code “44-45” and is comprised of 12 three-digit NAICS industries in the BDS data.

Table 1: The Retail Sector: Three-Digit NAICS Industries

NAICS Industry	NAICS Code
Motor Vehicle and Parts Dealers	441
Furniture and Home Furnishing Stores	442
Electronics and Appliance Stores	443
Building Material and Garden Equipment and Supplies Dealers	444
Food and Beverage Stores	445
Health and Personal Care Stores	446
Gasoline Stations	447
Clothing and Clothing Accessories Stores	448
Sporting Goods, Hobby, Book, and Music Stores	451
General Merchandise Stores	452
Miscellaneous Store Retailers	453
Nonstore Retailers	454

Sources: U.S. Census Bureau, BDS Data

Industries are assigned to establishments rather than firms, and thus, different establishments within a firm can be in different industries. The Nonstore Retailers industry includes all establishments primarily engaged in e-commerce.¹⁵ Consequently, establishments in all other three-digit NAICS retail industries are primarily engaged in traditional brick-and-mortar commerce.

While under the old Standard Industrial Classification (SIC) system, restaurants were included in the retail sector, under the NAICS system beginning in 1997, restaurants are now

14 U.S. Bureau of Labor Statistics, “Retail Trade: NAICS 44-45,” *Industries at a Glance*, available at <https://www.bls.gov/iag/tgs/iag44-45.htm>.

15 U.S. Bureau of Labor Statistics, “Nonstore Retailers: NAICS 454,” *Industries at a Glance*, available at <https://www.bls.gov/iag/tgs/iag454.htm>.

included in the Accommodations and Food Services sector (NAICS 72).¹⁶ Service oriented businesses such as repair shops, dry cleaners, beauty and nail salons, and barber shops are also not included in the retail sector.¹⁷

C. SMBs and Startup Activity in the Retail Sector

As discussed above, while the policy discussion to date has primarily focused on trends in the economic performance of retail SMBs and startups, these trends must be interpreted with reference to overall economic conditions in the retail sector. Thus, we begin our statistical analysis not by examining trends, but by looking at the overall composition of the retail sector at the end of the 2010s.

Table 2 presents data on the number and proportion of small and medium-sized firms in the retail sector compared to other sectors of the U.S. economy in 2019.¹⁸

Table 2: Small and Medium-Sized Firms by NAICS Sector, 2019

NAICS	Sector	Small	% Small	Medium	% Medium	SMB	SMB %
23	Construction	566,943	90.53%	58,685	9.37%	625,628	99.90%
81	Other Services (except Public Administration)	602,025	92.94%	44,827	6.92%	646,852	99.86%
44-45	Retail Trade	521,339	90.26%	54,705	9.47%	576,044	99.73%
72	Accommodation and Food Services	368,223	74.92%	121,725	24.77%	489,948	99.69%
53	Real Estate and Rental and Leasing	251,715	94.72%	13,179	4.96%	264,894	99.68%
54	Professional, Scientific, and Technical Services	641,717	92.41%	50,322	7.25%	692,039	99.66%
62	Health Care and Social Assistance	513,490	84.66%	90,454	14.91%	603,944	99.58%
71	Arts, Entertainment, and Recreation	89,991	83.93%	16,755	15.63%	106,746	99.55%
52	Finance and Insurance	195,087	91.70%	16,364	7.69%	211,451	99.39%
42	Wholesale Trade	219,057	83.66%	40,617	15.51%	259,674	99.18%
56	Administrative and Support and Waste Management and Remediation Services	255,788	85.86%	39,589	13.29%	295,377	99.14%
61	Educational Services	65,908	76.36%	19,619	22.73%	85,527	99.09%
48-49	Transportation and Warehousing	146,115	86.83%	20,484	12.17%	166,599	99.00%
31-33	Manufacturing	166,587	72.97%	59,227	25.94%	225,814	98.91%
51	Information	57,944	83.69%	10,340	14.93%	68,284	98.63%
21	Mining, Quarrying, and Oil and Gas Extraction	13,305	79.58%	3,148	18.83%	16,453	98.41%
22	Utilities	4,256	74.73%	1,276	22.41%	5,532	97.14%
55	Management of Companies and Enterprises	3,797	14.93%	16,448	64.67%	20,245	79.60%

Sources: U.S. Census Bureau, BDS Data

In 2019, the 521,399 small retail firms accounted for 90.26 percent of firms in the retail sector, and the 54,705 medium-sized firms accounted for 9.47 percent of firms in the retail sector.

16 Francine Lafontaine and Jagadeesh Sivadasan, “The Recent Evolution of Physical Retail Markets: Online Retailing, Big Box Stores, and the Rise of Restaurants,” in Michael Andrews *et al.* eds., *The Role of Innovation and Entrepreneurship in Economic Growth* (Chicago, IL: The University of Chicago Press, 2022) 291-365 at 292 [hereafter “Lafontaine and Sivadasan 2022”].

17 *Id.* at 334.

18 All economy-wide analyses in this paper are restricted to Economic Census sectors and thus exclude Agriculture, Forestry, Fishing, and Hunting (NAICS 11) and Public Administration (NAICS 92).

Together, small and medium-sized firms accounted for 99.73 percent of all retail firms, placing retail third out of 18 economic sectors in terms of the prevalence of SMBs.

The retail sector is also a major contributor to U.S. startup activity. Table 3 presents data on new business formation by economic sector in 2019.

Table 3: New Business Formation and Contribution to Startup Activity by NAICS Sector, 2019

NAICS	Sector	Startups	% Startups
54	Professional, Scientific, and Technical Services	64,242	14.2%
23	Construction	58,569	12.9%
72	Accommodation and Food Services	51,725	11.4%
44-45	Retail Trade	44,760	9.9%
62	Health Care and Social Assistance	44,233	9.8%
81	Other Services (except Public Administration)	41,606	9.2%
56	Administrative and Support and Waste Management and Remediation Services	27,953	6.2%
53	Real Estate and Rental and Leasing	27,771	6.1%
48-49	Transportation and Warehousing	21,335	4.7%
52	Finance and Insurance	15,378	3.4%
42	Wholesale Trade	14,572	3.2%
31-33	Manufacturing	11,582	2.6%
71	Arts, Entertainment, and Recreation	11,472	2.5%
51	Information	7,864	1.7%
61	Educational Services	7,357	1.6%
21	Mining, Quarrying, and Oil and Gas Extraction	1,336	0.3%
55	Management of Companies and Enterprises	434	0.1%
22	Utilities	276	0.1%
	Total	452,465	100.0%

Sources: U.S. Census Bureau, BDS Data

The retail sector ranked fourth out of 18 sectors in terms of contribution to new business formation in the United States, accounting for 9.9 percent of startup activity. Thus, Tables 2 and 3 show that the retail sector remains a hub of SMB activity and continues to be one of the primary sources of startup activity in the U.S. economy.

Thus, while the remainder of this paper is focused on the growth of retail SMBs over time, this section demonstrates why trends in economic performance must be interpreted in the context of overall economic conditions. When SMBs account for such a high proportion of firms in the retail sector, and the retail sector is a major contributor to startup activity in the United States, it is misleading to argue that retail SMBs are disappearing or that retail entrepreneurs cannot succeed.

The Resurgence and Growth of Retail SMBs in the 2010s

The analysis presented in this section shows that, contrary to the popular narrative, the 2010s were a decade of resurgence and growth for retail SMBs. The first part of this section provides a comprehensive analysis of the average growth rates of small, medium-sized, and large retail firms by decade since the 1980s. The second part of this section focuses on an important subset of retail SMBs – startups – and their ability to successfully enter the market.

A. Growth Rates by Firm Size Category

Our analysis of the economic performance of retail SMBs begins by analyzing the average growth rates of small, medium-sized, and large firms since the 1980s. As discussed above, we measure growth rates using net job creation rates¹⁹ for each size category.

Table 4 presents average net job creation rates for small, medium-sized, and large firms in the retail sector by decade. The first four columns represent the average job creation rate for each size category by decade. The fifth column represents the change in the average job creation rate for each size category between the 2000s and 2010s.

Table 4: Average Net Job Creation Rate by Firm Size Category, by Decade in the Retail Sector

	1980-1989	1990-1999	2000-2009	2010-2019	Δ 2010-2019
Small	0.675	-0.349	-1.499	0.004	1.503
Medium	2.302	0.818	-0.574	1.546	2.120
Large	2.717	2.757	0.950	0.929	-0.021

Sources: U.S. Census Bureau, BDS Data. Growth rates are reported as percentages.

Both small and medium-sized retail firms experienced substantial increases in growth rates in the most recent decade, with the average job creation rate of small retail firms increasing by 1.5 percentage points and the average job creation rate of medium-sized retail firms increasing by 2.1 percentage points. In contrast, the average growth rate of large retail firms experienced a small decline.

These gains for small and medium-sized retail firms represent a reversal from two decades of overall decline. However, as indicated above, average job creation rates fell substantially for each size category in the 2000s, which ended with the “Great Recession.” Thus, to assess whether the increase in growth rates experienced by small and medium-sized firms in the 2010s was merely an artifact of depressed economic conditions at the end of the 2000s and the beginning of the 2010s, Table 5 repeats the analysis above excluding the years 2008 to 2010.

¹⁹ Net job creation is the difference between firm-level gross job creation and firm-level gross job destruction. Thus, it represents the net change in firm-level employment. See U.S. Census Bureau, “BDS Methodology,” *Business Dynamics Statistics*, available at <https://www.census.gov/programs-surveys/bds/documentation/methodology.html>.

Table 5: Average Net Job Creation by Firm Size Category, by Decade In the Retail Sector, Excluding 2008-2010

	1980-1989	1990-1999	1999-2007	2011-2019	Δ 2011-2019	σ	Δ/σ
Small	0.675	-0.349	-0.436	0.282	0.718	0.529	1.357
Medium	2.302	0.818	0.533	1.849	1.316	0.837	1.572
Large	2.717	2.757	1.784	1.239	-0.545	0.742	-0.734

Sources: U.S. Census Bureau, BDS Data. Growth rates are reported as percentages.

The first two columns in the table above are the same as those in Table 4. However, the third and fourth columns have now been replaced with the average job creation rate for each size category over the nine-year spans before and after the economic disruption associated with the Great Recession. While the magnitudes of the declines in average job creation rates in the 2000s are reduced, the same pattern is apparent as in the previous table. To aid in the interpretation of the magnitudes of the changes, Table 5 also reports the standard deviation of the average job creation rate across decades in column six.²⁰ Column seven then presents the change in the average job creation rate for the most recent period standardized by the standard deviations in column six.

The increase in the average job creation rate for small and medium-sized retail firms in the 2010s was large relative to the variation in each series, with small firms experiencing an increase of approximately 1.4 standard deviations and medium-sized firms an increase of approximately 1.6 standard deviations. Relative to the previous table, removing the years associated with the Great Recession and its immediate aftermath reveals a larger decline in the average job creation rate for large firms, with the average job creation rate of large retail firms declining by 0.545 percentage points or approximately 0.7 standard deviations.

These results indicate that, contrary to the popular narrative, retail SMBs grew faster in the 2010s, while the growth of large retail firms slowed. Due to these substantial increases in growth rates, the average growth rate for small retail firms was positive in the 2010s for the first time since the 1980s, and the average growth rate of medium-sized retail firms exceeded the average growth rate of large firms.

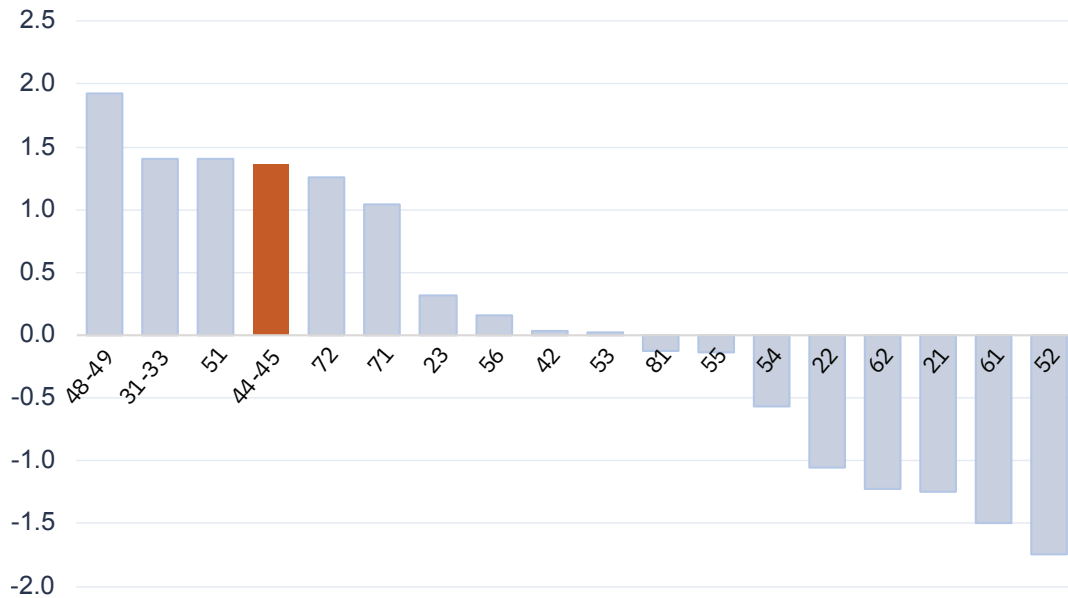
Further insight into the economic significance of these gains can be garnered by comparing changes in average growth rates in the 2010s versus the 2000s across sectors of the U.S. economy. To abstract from the effects of the Great Recession, the figures below present changes in average job creation rates by sector for 1999 to 2007 versus 2011 to 2019. However, the results are very similar if the Great Recession years are included.²¹

20 Standard deviations are calculated using the average growth rate for each decade to establish a benchmark for assessing the relative magnitude of the change in the average growth rate between the 2000s and the 2010s and not to estimate the population standard deviation for the purposes of hypothesis testing.

21 If the Great Recession years are included, the standardized change in the average job creation rate for small firms in the retail sector is third out of 18 sectors instead of fourth, as in Figure 1, and the standardized change in the average job creation rate for medium-sized firms is fifth out of 18 sectors, as in Figure 2.

Figure 1 presents the change in the average job creation rate in the 2010s by sector for small firms.

Figure 1: Standardized Change in Average Net Job Creation Rate by NAICS Sector, 1999-2007 v. 2011-2019: Small Firms



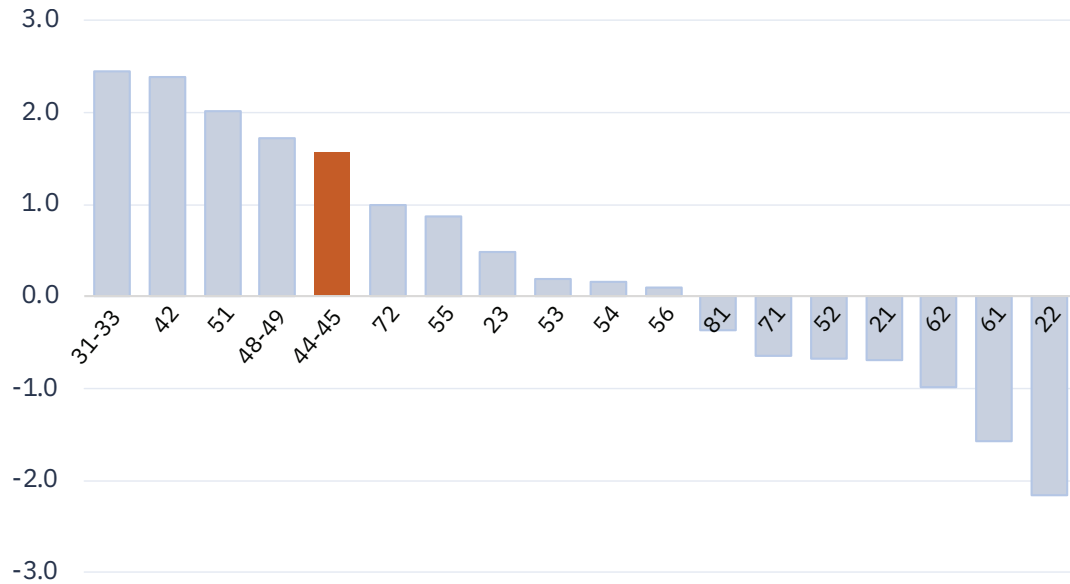
Sources: U.S. Census Bureau, BDS Data.

The standardized change in the average job creation rate for small firms in the retail sector (NAICS 44-45) is among the largest of any sector of the U.S. economy. Indeed, only small firms in the transportation and warehousing sector (NAICS 48-49), an industry closely associated with the rise of e-commerce,²² enjoyed a significantly larger standardized increase in its average job creation rate in the 2010s.

22 Lafontaine and Sivadasan 2022 at 300.

Figure 2 presents the change in the average job creation rate in the 2010s by sector for medium-sized firms.

Figure 2: Standardized Change in Average Net Job Creation Rate by NAICS Sector, 1999-2007 v. 2011-2019: Medium Firms

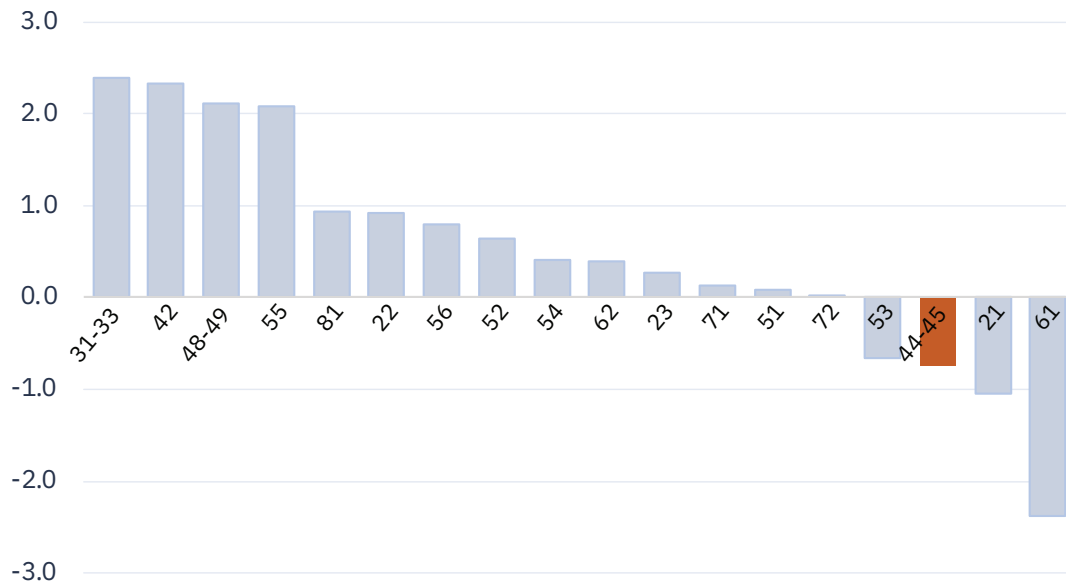


Sources: U.S. Census Bureau, BDS Data.

Medium-sized retail firms (NAICS 44-45) also enjoyed a comparatively large standardized increase in their average growth rate, being one of five sectors to realize an increase of more than 1.5 standard deviations.

Figure 3 presents the change in the average job creation rate in the 2010s by sector for large firms.

Figure 3: Standardized Change in Average Net Job Creation Rate by NAICS Sector, 1999-2007 v. 2011-2019: Large Firms



Sources: U.S. Census Bureau, BDS Data.

In contrast to the results for small and medium-sized firms, the change in the average growth rate for large retail firms (NAICS 44-45) ranked 16th out of 18 sectors. Thus, these comparisons confirm the economic significance of the increases in average growth rates enjoyed by small and medium-sized retail firms in the most recent decade, belying the popular narrative that, without significant policy interventions, retail SMBs cannot compete and face inexorable decline.

But what role did digital and e-commerce technology play in the growth of retail SMBs in the 2010s? Was the resurgence and growth of retail SMBs achieved in spite of, or facilitated by, the growth of digital and e-commerce technology? While these questions are our focus in Section IV, the results presented in this section provide two initial pieces of evidence.

First, in the 1990s, e-commerce was in its infancy. By 2000, e-commerce accounted for only 0.9 percent of retail sales.²³ Nevertheless, it was in the 1990s that growth rates for retail SMBs began to drop substantially, while growth rates for large retail firms increased. Second, as shown in Figures 1 and 2, the substantial increases in average growth rates for small and medium-sized retail firms mirrored similar increases in average growth rates for small and medium-sized firms in the information sector (NAICS 51), which includes software publishers, internet broadcasters, telecommunications firms, web search portals, and firms providing data processing and web hosting services.²⁴ These patterns suggest that rather than impeding the success of retail SMBs, increasing adoption and use of digital and e-commerce technology may have been a catalyst for the growth of retail SMBs in the 2010s.

23 Hortacsu and Syverson 2015 at 96.

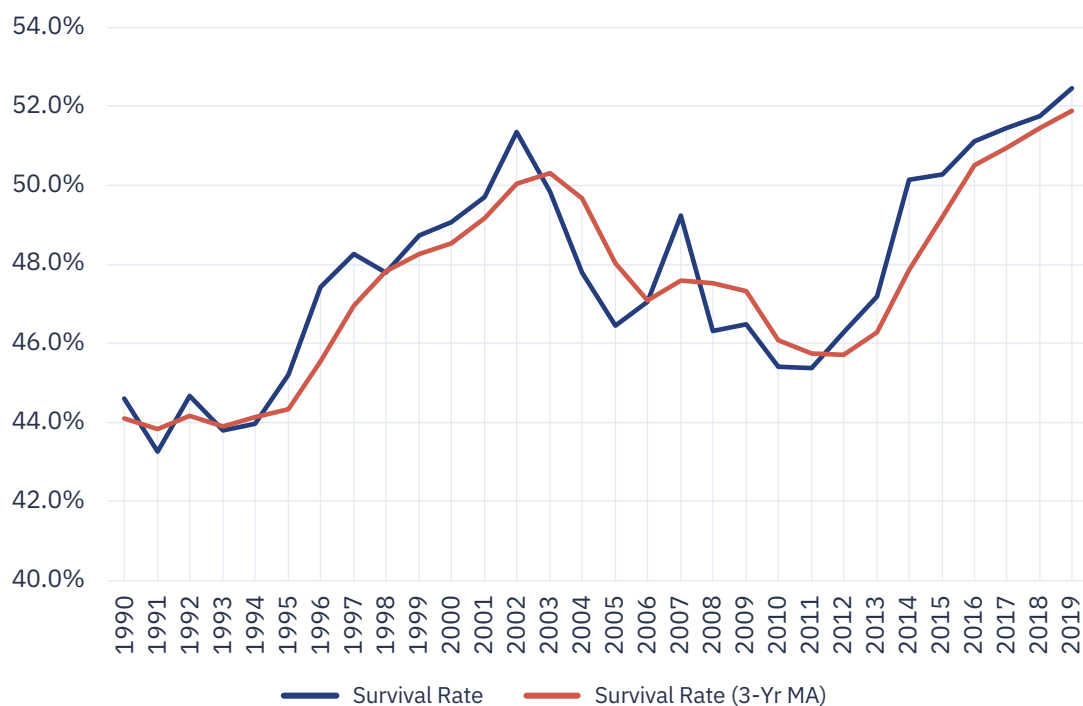
24 U.S. Census Bureau, “North American Industry Classification System,” 2022 NAICS Definition Sector 51 – Information, available at <https://www.census.gov/naics/?input=51&year=2022&details=51>.

B. Startup Survival and Entry

Having established that the average growth rates of retail SMBs increased in the 2010s, we now turn to an examination of the economic performance of an important subset of retail SMBs – startups. Specifically, with regard to startups, we evaluate whether retail startups died at unusually high rates during the 2010s, as suggested by some commentators,²⁵ and whether successful entry by young retail firms became less likely.

Figure 4 presents data on the five-year survival rate of retail startups by year from 1990 to 2019.²⁶

Figure 4: Five-Year Retail Startup Survival Rate, 1990-2019



Sources: U.S. Census Bureau, BDS Data.

In Figure 4, the blue line represents the annual five-year survival rate of retail startups, i.e., the number of surviving five-year old retail firms in a given year divided by the number of firms in the original birth cohort. The orange line represents the annual five-year survival rate smoothed using a three-year moving average including the current year and the two prior years. The five-year survival rate of retail startups began rising in the early 1990s, reaching a peak in the early 2000s, before declining steadily throughout the middle of the decade, the Great Recession, and into 2010. Five-year survival rates then began rising rapidly, increasing by 7.05 percentage points from 2011 to 2019. For the three decades considered in the figure, the 2019 five-year retail startup survival rate of 52.4 percent in 2019 was the highest survival rate for any year and the highest over any three-year period. Thus, retail startups

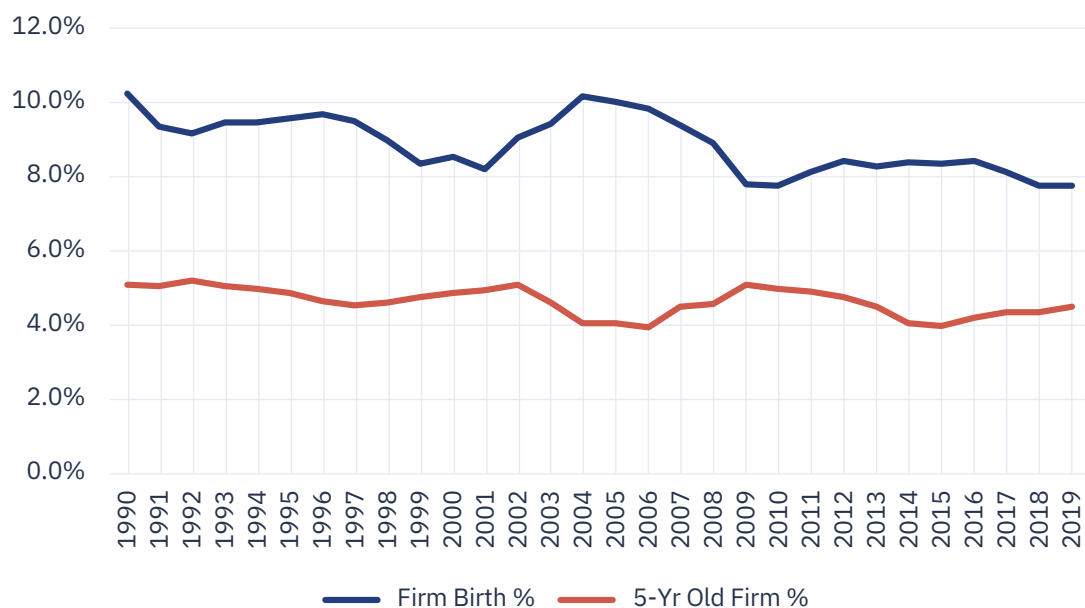
25 See e.g., n. 2, supra.

26 All analyses pertaining to firm age in this section begin in 1990 because the 1990s are the first decade in the BDS data with complete data on five-year old firms.

did not suffer higher failure rates in the 2010s; indeed, they were more likely in 2019 to have survived for five years than at any other point in the previous 30 years.²⁷

However, even if retail startups are not dying at unusually high rates, it could still be the case that successful entry by young firms became less common due to declining rates of new business formation.²⁸ To investigate whether this is the case, Figure 5 compares the share of new retail businesses (the proportion of firm births relative to total firms) to the share of retail firms that succeeded in entering the market after five years (the proportion of surviving five-year old firms relative to total firms).

Figure 5: Retail Share of Firm Births versus Share of Surviving Five-Year Old Firms, 1990-2019



Sources: U.S. Census Bureau, BDS Data.

While the share of firm births in the retail sector declined over time, with the 2019 value of 7.7 percent well below the average from 1990 to 2019 of 8.9 percent, the share of five-year old firms, 4.5 percent, was very similar to the average from 1990 to 2019 of 4.6 percent. Thus, successful entry by retail startups remains robust, despite significant changes in the U.S. economy in recent decades.

27 Note that while the five-year startup survival rate increased significantly in 2014, corresponding to the cohort of firms born at the nadir of the Great Recession in 2009, the upward trend in survival rates cannot be solely attributed to the survival of a particularly robust set of firms founded during the economic upheaval. Startup survival rates continued to increase throughout the decade, and the peak survival rate realized in 2019 corresponds to the cohort of firms born in 2014, well into the recovery from the Great Recession.

28 See supra n. 2.

The Resilience of Retail SMBs, Technology, and Productivity

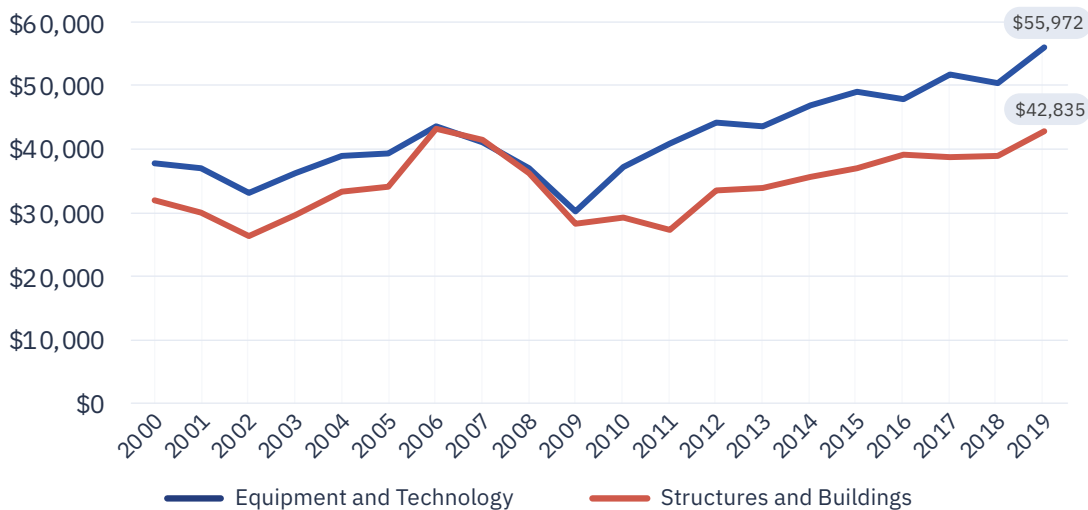
The resilience of retail SMBs in the 2010s raises the question: what role did the adoption and use of new technology play in this outcome? Did retail SMBs achieve faster growth despite headwinds created by digital and e-commerce technology, or did new technology help to improve the economic performance of retail SMBs? The first part of this section evaluates the evidence linking increased adoption and use of new technology to the growth of retail SMBs in the 2010s. The second part of this section evaluates the evidence linking productivity increases in the 2010s to the growth of retail SMBs in 2010s.

A. Evidence on the Relationship between the Adoption and Use of New Technology and the Growth of Retail SMBs

The analysis in this section begins by investigating the relationship between the growth of retail SMBs and capital investment. The U.S. Census Bureau’s ACES program provides comprehensive data on capital expenditures by economic sector,²⁹ distinguishing between capital investment in equipment and technology and capital investment in physical structures and buildings.³⁰

Figure 6 presents annual capital expenditures by firms in the retail sector for both categories of investment from 2000 to 2019.

Figure 6: Capital Expenditure in the Retail Sector, 2000-2019: Equipment and Technology versus Structures and Buildings



Sources: U.S. Census Bureau, ACES Data.

29 In its reports on capital spending patterns, the Census Bureau compares annual capital spending across years without adjusting for inflation, due to the difficulty of accounting for factors like declining information technology equipment prices. See e.g., U.S. Census Bureau, “2022 Capital Spending Report: U.S. Capital Spending Patterns 2011-2020” (April 5, 2022), available at <https://www.census.gov/library/publications/2021/econ/2021-csr.html#par-reference>. To the extent that information technology prices in the retail sector are declining, this bias would tend understate rather than overstate changes in capital expenditure in the sector over time. Thus, we follow the Census Bureau’s methodology and do not adjust the capital expenditure data presented in this section for inflation.

30 U.S. Census Bureau, “Frequently Asked Questions,” *Annual Capital Expenditure Survey*, available at <https://www.census.gov/programs-surveys/aces/about/faq.html>.

As shown in Figure 6, investment by retail firms in equipment and technology in the 2000s changed relatively little through the middle of the decade before declining significantly after 2006 and through the Great Recession. Investment in structures and buildings increased faster through the middle of the decade, but also experienced a sharp reversal from 2006 to 2009. However, after reaching its nadir in 2009, investment in equipment and technology rose dramatically throughout the next decade. Total expenditures reached approximately \$56 billion by 2019 – an increase of approximately \$26 billion relative to 2009. Investment in structures and buildings experienced a more modest increase of approximately \$15 billion from 2009 to 2019, with total expenditures reaching approximately \$43 billion in 2019.

These patterns demonstrate that the resurgence and growth of retail SMBs in the 2010s coincided with large increases in capital investment in equipment and technology by retail firms. Thus, to further investigate the potential link between the growth of retail SMBs and investment in technology, Table 6 examines the relationship between annual growth rates by firm size category and investment in each type of capital from 2000 to 2019.

Table 6: Correlation Between Annual Net Job Creation Rates and Capital Investment in the Retail Sector by Firm Size Category and Type of Capital, 2000-2019

	Equipment and Technology		Structures and Buildings	
	Net Job Creation	Net Job Creation (3-Year MA)	Net Job Creation	Net Job Creation (3-Year MA)
Small	0.492	0.531	0.289	0.492
Medium	0.485	0.531	0.244	0.423
Large	0.274	0.167	0.306	0.508

Sources: U.S. Census Bureau, BDS Data; U.S. Census Bureau, ACES data.

The first column in Table 6 presents the correlation between annual job creation rates by firm size category and investment by retail firms in equipment and technology. The second column repeats the analysis with a smoothed measure of annual job creation rates calculated using a three-year moving average to reduce statistical noise from transient economic conditions. The third and fourth columns repeat the analysis in the first panel for capital investment in structures and buildings.

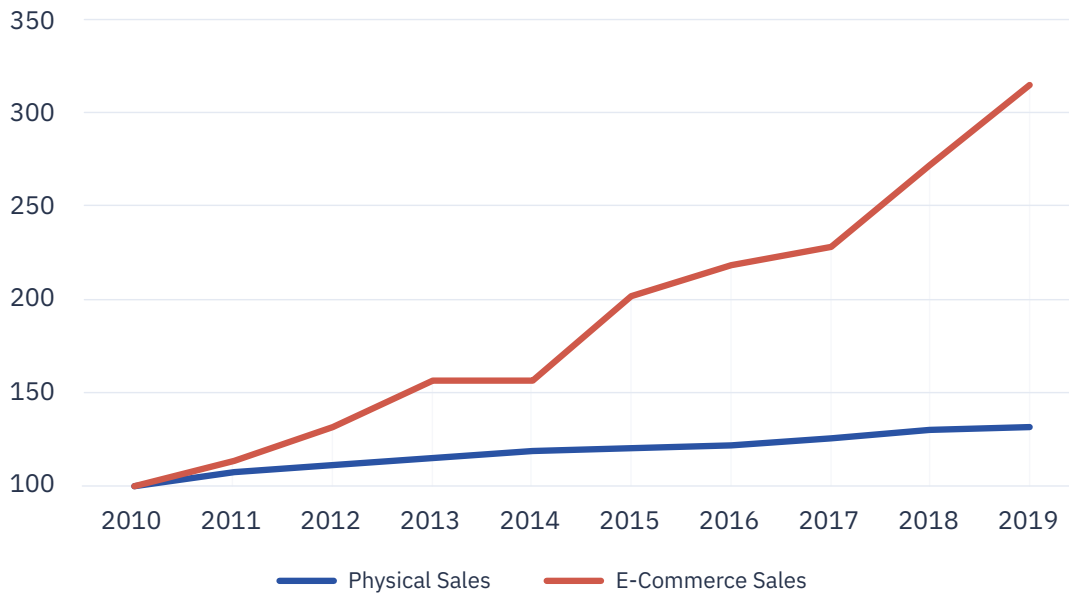
As shown in the first panel, the annual growth rates of small and medium-sized retail firms were strongly correlated with capital expenditures on equipment and technology, but more weakly correlated with the annual growth rates of large retail firms. The pattern remains similar regardless of which measure of the annual firm growth rate is used, although the smoothed measure suggests an even weaker relationship between investment in equipment and technology and the performance of large retail firms. The pattern differs for investment in structures and buildings, where the correlations are similar for all firm size categories and strongest for large retail firms.

Thus, not only did the surge in investment in equipment and technology by retail firms occur at the same time that average growth rates for small and medium-sized retail firms increased in the 2010s, but there was a direct link between the growth of small and medium-sized retail firms and capital expenditures specific to investment in technology.

This analysis provides evidence of a relationship between the growth of retail SMBs and their use of technology. But because it is not possible to identify specific categories of technological investment in the ACES data, it is useful to also consider evidence pertaining specifically to the adoption and use of e-commerce technology. One of the most heralded technological innovations of the 2010s in the retail sector was the rise of omnichannel e-commerce – the combination of traditional brick-and-mortar and e-commerce sales strategies within the same firm.

As part of its E-STATS program, the Census Bureau collects information on e-commerce sales from store locations primarily engaged in physical retail, thus providing a measure of omnichannel e-commerce activity.³¹ Figure 7 compares the growth of omnichannel e-commerce from brick-and-mortar retail stores to the growth of physical sales from brick-and-mortar stores using the Census Bureau’s E-STATS data.

Figure 7: Growth of Physical Sales versus E-Commerce Sales at Omnichannel Retail Stores, 2010-2019 (Base Year = 2010)



Sources: U.S. Census Bureau, E-STATS Data.

As shown in Figure 7, the growth of omnichannel e-commerce sales increased dramatically from 2010 to 2019, rising by approximately 215 percent, while physical sales from brick-and-mortar stores increased by approximately 32 percent.

The outside growth of omnichannel e-commerce in the retail sector has coincided with a profusion of innovative commerce and shopping startups founded in the 2010s. Data from Crunchbase indicates that between 2010 and 2019, commerce and shopping startups completed at least 16,771 funding rounds, yielding at least \$118 billion of funding.³²

31 Hortacsu and Syverson 2015 at 97.

32 Crunchbase (accessed by CCIA, April 4, 2023). These figures include 8,200 seed funding rounds raising \$5.3 billion and 2,349 early stage funding rounds raising \$22.4 billion. Of the \$118 billion raised from 2010 to 2019, \$55.6 billion or 47 percent was raised in the three years from 2017 to 2019.

Funding has increased even more rapidly in the 2020s, with commerce and shopping startups raising at least \$134.6 billion from 2020 to 2022.³³

B. Brick-and-Mortar and E-Commerce

Many large companies such as Home Depot and Sephora have adopted omnichannel retail strategies over the past few years. Founded in 1978, Home Depot is now one of the world's largest home improvement retailers, with more than 2,300 stores and 500,000 associates in North America.³⁴ Home Depot was an early innovator in omnichannel sales, offering its first hybrid shopping experience in 2000.³⁵ Home Depot invests heavily in omnichannel experiences and is able to handle most of their innovations in-house. In 2022, Home Depot deployed the Adobe Customer Data Platform and the Aruba Edge Service Platform to better understand the customer journey and improve customer experience.³⁶

Sephora has implemented a mix of in-house and facilitator-led omnichannel strategies. The company opened its first store in 1970 and attracts over six million shoppers per year.³⁷ Sephora was an early adopter of an omnichannel strategy, especially within its mobile app where the company tracks the customer journey from browsing online to in-store interactions.³⁸

Such large companies have the scale to engage in both in-house e-commerce tool development and also implement third-party facilitator technology. Smaller SMBs' limited scale makes third-party facilitators more appealing, especially early on.

One of the most salient examples of the successful innovation through the adoption of an omnichannel retailing strategy has been the rapid rise of a smaller company, Warby Parker. Founded in 2010, Warby Parker began with a purely online strategy of selling designer eyeglasses at low price points.³⁹ The company became well known for its "Home Try-On" program, allowing customers to select five pairs of eyeglasses and try them at home for five days before deciding which, if any, to purchase and keep.⁴⁰

In the following years, the company began experimenting with brick-and-mortar retailing by partnering with other retailers to open "stores-within-stores" where customers could try on eyeglasses with orders then shipped by mail.⁴¹ In 2013, Warby Parker opened its first

33 *Id.*

34 Home Depot, "Our Story" (May 8, 2022) available at <https://corporate.homedepot.com/page/about-us>.

35 Lucy Banducci, "Home Depot Now Online," *CNN* (August 31, 2000) available at <https://money.cnn.com/2000/08/31/companies/ceo/index.htm>.

36 Judy Mottl, "Home Depot SVP on Building a Seamless Shopping Experience," *Retail Customer Experience* (March 7, 2023) available at <https://www.retailcustomerexperience.com/articles/home-depot-vp-on-building-a-seamless-shopping-experience/>.

37 Joyce Qian, "Sephora: The Omnichannel Strategy Which Redefined CX in Cosmetics," *Contact Pigeon* (May 2, 2023) available at <https://blog.contactpigeon.com/sephora-omnichannel-strategy/#:-:text=By%20creating%20one%20team%2C%20Sephora,over%2Dthe%2Dcounter%20sales>.

38 *Id.*

39 Vanessa O'Connell, "Warby Parker Co-Founder Says Initial Vision was All about Price," *Wall Street Journal* (July 18, 2012), available at <https://www.wsj.com/articles/SB10000872396390444097904577535111565440718>. Douglas MacMillan, "Eyeglass Retailer Warby Parker Valued at \$1.2 Billion," *Wall Street Journal* (April 30, 2015), available at <https://www.wsj.com/articles/BL-DGB-41553>.

40 Warby Parker, *Annual Report 2021* (April 27, 2022) at 9, available at https://s28.q4cdn.com/987131352/files/doc_financials/2021/annual/Warby-Parker-Annual-Report-2021.pdf.

41 Rip Empson, "Warby Parker Opens Retail Store in NYC, With Boston Up Next, Beats Google & Amazon to the

flagship retail store in New York City.⁴² As of 2021, Warby Parker had 161 retail stores.⁴³ In 2019, prior to the COVID-19 pandemic, in-store sales accounted for approximately 60 percent of transactions and, as of 2022, in-store sales have returned to a similar level.⁴⁴ By 2023, a Wall Street Journal article on the trend of once online-only retail startups opening brick-and-mortar stores reported that Warby Parker had 900 retail stores.⁴⁵

Many companies now provide channels to help retailers of all sizes engage in omnichannel strategies. One of the most innovative and best known of these services is Instacart. Founded in 2012, Instacart provides online shopping and technology services and facilitates home delivery for grocery stores, serving more than 80,000 store locations.⁴⁶ Economic research has shown that there is a direct causal connection between Instacart adoption by grocery stores and revenue and employment growth in the grocery industry.⁴⁷ This research shows that from 2013 to 2019, Instacart was directly responsible for creating approximately 116,000 jobs in the U.S. grocery industry and increasing grocery revenue by at least \$2.9 billion.⁴⁸

Innovation in omnichannel retailing has also been driven by smaller startups that have developed new opportunities for retailers to engage in omnichannel strategies, particularly by offering vastly improved customer shopping experiences, targeting specific industries, and providing services specifically designed for SMB retailers.

For instance, Promenade was founded in 2010 as BloomNation to help florists manage online and in-store orders.⁴⁹ The platform has since expanded to serve pet stores, liquor stores, butcher shops, and restaurants.⁵⁰ Promenade specifically markets itself as helping local stores to compete against large e-commerce players by providing small businesses with SEO-optimized websites, web order processing and management, delivery services, pricing tools, and tools to increase online order value such as bundling and recommendations.⁵¹

Offline Punch,” *TechCrunch* (April 13, 2013), available at <https://techcrunch.com/2013/04/13/warby-parker-opens-retail-store-in-nyc-with-boston-up-next-beats-google-amazon-to-the-offline-punch/>.

42 *Id.*

43 Warby Parker, *Annual Report 2021* (April 27, 2022) at 9, available at https://s28.q4cdn.com/987131352/files/doc_financials/2021/annual/Warby-Parker-Annual-Report-2021.pdf.

44 Barbara Collins, “Warby Parker, Once Online-Only Eyeglasses Retailer, Plans Hundreds of More Stores,” *CNBC* (October 21, 2022), available at <https://www.cnn.com/2022/10/21/warby-parker-once-online-only-eyewear-sees-hundreds-of-more-stores.html>.

45 Kate King, “Online-Only Startups Adopt a Bold New Strategy: Opening Actual Shops,” *Wall Street Journal*, May 13, 2023, available at https://www.wsj.com/articles/warby-parker-allbirds-everlane-parachute-collars-co-stores-e4b94623?mod=tech_featst_pos2.

46 Instacart, “About Us,” available at <https://www.instacart.com/company/about-us>.

47 Robert Kulick, *The Economic Impact of Instacart on the Retail Grocery Industry: Evidence from Four States*, NERA Economic Consulting (February 2020), available at <https://www.nera.com/publications/archive/2020/nera-economist-evaluates-the-economic-impact-of-instacart-on-the.html>; Robert Kulick, *The Economic Impact of Instacart on the U.S. Retail Grocery Industry Before and During the COVID-19 Pandemic*, NERA Economic Consulting (September 2021), available at <https://www.nera.com/publications/archive/case-project-experience/nera-study-finds-direct-causal-relationship-between-instacart-ad.html>.

48 Robert Kulick, *The Economic Impact of Instacart on the U.S. Retail Grocery Industry Before and During the COVID-19 Pandemic*, NERA Economic Consulting (September 2021) at 5, available at <https://www.nera.com/publications/archive/case-project-experience/nera-study-finds-direct-causal-relationship-between-instacart-ad.html>.

49 Promenade, “About Promenade,” available at <https://getpromenade.com/about-promenade/>.

50 *Id.*

51 Promenade, “Plans,” available at <https://getpromenade.com/pricing/>.

The company also provides back office⁵² and marketing services.⁵³ According to Crunchbase, Promenade has 101 to 250 employees and completed its Series B funding round on February 3, 2021, raising \$11 million; overall, the company has raised \$18.2 million from eight investors.⁵⁴

While Promenade helps brick-and-mortar stores to provide online shopping experiences, Popable helps online retailers to emulate Warby Parker’s strategy of moving from the internet to physical retail. Founded in 2017, Popable acts as a platform connecting entrepreneurs and store locations, charging flat-fee rates for leasing and support services, rather than the commission-based fees typically charged by real estate brokers.⁵⁵ Matches are facilitated through the maintenance of profiles by retailers and storefronts, a filtered search interface, and messaging and support services.⁵⁶ In 2022, Popable and Walmart entered into a strategic partnership to allow small businesses to rent space in Walmart stores for short-term leases from one month to up to a year.⁵⁷ According to Crunchbase, Popable has one to ten employees and completed a seed funding round on June 1, 2022.⁵⁸

The growth of UNTUCKit, a clothing retailer specializing in shirts designed to be worn “untucked,” provides a salient example of a retailer using multiple innovative technology solutions to achieve success through an omnichannel sales strategy. UNTUCKit opened its first retail store in New York City in 2015.⁵⁹ In 2018, UNTUCKit began using the NewStore Omnichannel Platform to enhance its online, mobile, and omnichannel sales capabilities. By engaging the NewStore platform, UNTUCKit sales associates became able to “connect meaningfully with customers through mobile and offer inventory visibility for real-time access, providing a top of line digital experience within stores.”⁶⁰ Engagement with NewStore also allowed UNTUCKit to “provide customers with an array of modern fulfillment options, such as buy online pick up in store (BOPIS) and buy online return in store (BORIS).”⁶¹

In 2020, with stores closed due the COVID-19 pandemic, UNTUCKit began using a customer chat and live-stream tool called HERO.⁶² Through HERO, UNTUCKit transitioned its in-store sales team to online sales during the pandemic.⁶³ Post-pandemic, the company began using HERO to allow in-store sales associates to alternate between in-store sales and online sales.⁶⁴

52 Promenade, “About Promenade,” available at <https://getpromenade.com/about-promenade/>.

53 Promenade, “Plans,” available at <https://getpromenade.com/pricing/>.

54 Crunchbase (accessed by CCIA, April 4, 2023).

55 Popable, “How it Works,” available at <https://popable.com/offer/>.

56 *Id.*

57 Popable, “Popable and Walmart Join Forces to Help Small Business Retailers Get Back on their Feet after Pandemic,” *PR Newswire* (October 31, 2022), available at <https://www.prnewswire.com/news-releases/popable-and-walmart-join-forces-to-help-small-business-retailers-get-back-on-their-feet-after-the-pandemic-301662834.html>.

58 Crunchbase (accessed by CCIA, April 4, 2023).

59 UNTUCKit, “About Us,” available at <https://www.untuckit.com/pages/about-us>.

60 NewStore and UNTUCKit, “UNTUCKit Selects NewStore to Help Scale Rapidly Growing Brick & Mortar Presence in U.S. and Canada,” *Businesswire* (October 22, 2018), available at <https://www.businesswire.com/news/home/20181022005103/en/UNTUCKit-Selects-NewStore-to-Help-Scale-Rapidly-Growing-Brick-Mortar-Presence-in-U.S.-and-Canada>.

61 *Id.*

62 Erika Wheless, “How UNTUCKit Embraced Virtual and Clienting Software to Drive Sales,” *Digiday* (June 17, 2021), available at <https://digiday.com/marketing/how-untuckit-embraced-virtual-clienting-software-to-drive-sales/>.

63 *Id.*

64 *Id.*

UNTUCKit has attested that its in-store/online sales engagement facilitated by HERO has directly increased the company's revenue.⁶⁵ According to UNTUCKit, its employees "field nearly 300 chats per day during store hours and their conversion rate for live chat sales is over 20%," relative to an average e-commerce conversion rate for fashion clothing and accessories of 2.4 percent.⁶⁶

As a result of UNTUCKit's innovative omnichannel strategy, the company now has over 80 stores and 700 employees.⁶⁷ It has also raised a total of \$30 million in funding in one Series A round completed on June 5, 2017.⁶⁸

Omnichannel retailing has also been combined with new technologies facilitating product curation to help retail SMBs offer unique shopping experiences. The two retail industries which experienced the largest increases in the average growth rates of small businesses between the 2000s and 2010s were "Miscellaneous Store Retailers" (NAICS 453) and "General Merchandise Retailers" (NAICS 452).⁶⁹ One of the most important dimensions of competition in these industries is the ability to offer differentiated product offerings.

While many startups have been formed to facilitate product curation by retail SMBs, Faire has grown to become one of the leading curation platforms. Founded in 2017, Faire provides a wholesale marketplace where small retail businesses can discover unique products and independent brands.⁷⁰ Faire has grown rapidly, employing over 500 employees according to Crunchbase and having completed 12 funding rounds, raising a total of \$1.7 billion.⁷¹ It advertises having over 600,000 retailers and 85,000 brands on its platform⁷² and was recognized as one of Fast Company's ten most innovative retail companies in 2020.⁷³ Product areas include home décor, food and drink, clothing and accessories, beauty and wellness, jewelry, paper and novelty, kids and baby, and pets.⁷⁴

While these examples provide important insight into the variety and breadth of omnichannel e-commerce strategies available to retail SMBs, they ultimately represent only a small portion of the innovation occurring in this rapidly growing area. We thus now turn again to statistical analysis to provide systematic evidence as to the economic significance of innovations in omnichannel e-commerce.

65 *Id.*

66 *Id.*

67 UNTUCKit, "About Us," available at <https://www.untuckit.com/pages/about-us>.

68 Crunchbase (accessed by CCIA, April 4, 2023).

69 U.S. Census Bureau, BDS Data.

70 *Id.*

71 Crunchbase (accessed by CCIA, April 4, 2023).

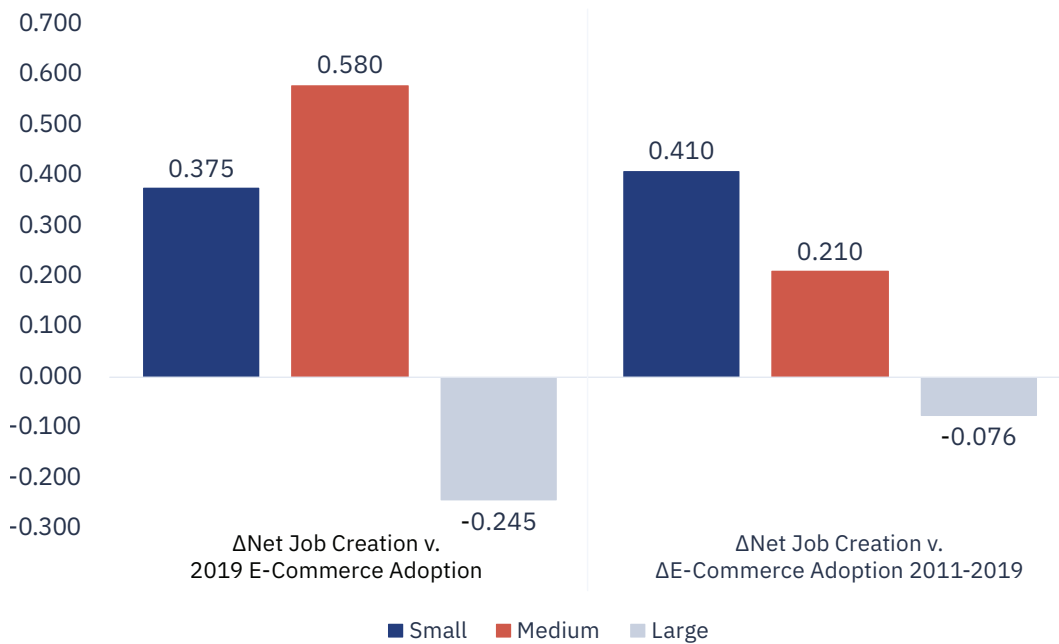
72 *Id.*

73 Fast Company, "The 10 Most Innovative Retail Companies of 2020" (March 10, 2020), available at <https://www.fastcompany.com/90457893/retail-most-innovative-companies-2020>.

74 Faire, "About Us," available at <https://www.faire.com/about>.

For each three-digit NAICS industry in the retail sector with economically meaningful omnichannel e-commerce sales,⁷⁵ Figure 8 shows the correlation between the average change in net job creation from 2011 to 2019 versus 1999 to 2007 and the prevalence of omnichannel e-commerce activity in the industry.

Figure 8: Correlation Between Change in Average Net Job Creation Rate 1999-2007 v. 2011-2019 and Omnichannel E-Commerce Activity by Three-Digit NAICS Retail Industry



Sources: U.S. Census Bureau, BDS Data; U.S. Census Bureau, E-STATS Data.

The first panel of Figure 8 shows the correlation between the change in average job creation rates by firm size category for retail firms and the proportion of sales accounted for by omnichannel e-commerce in 2019. The second panel performs the same analysis using the change in the proportion of sales accounted for by omnichannel e-commerce from 2011 to 2019 instead of the level in 2019. Both analyses indicate positive correlations between the prevalence of omnichannel e-commerce in the industry and the change in firm growth rates in the 2010s for small and medium-sized retail firms, but negative correlations for large retail firms.

Thus, the analysis suggests that the ability of small and medium-sized retailers to use physical locations for both traditional and e-commerce sales has facilitated their growth, whereas this capability is less useful for large firms that have greater ability to dedicate specific facilities to e-commerce. Taken as a whole, the analyses presented in this section suggest that digital and e-commerce technology helped to facilitate the resurgence and growth of retail SMBs in the 2010s.

⁷⁵ Seven three-digit NAICS retail industries had sufficient sales to report total omnichannel e-commerce sales in 2011 and 2019: Motor Vehicles and Parts Dealers (NAICS 441), Furniture and Home Furnishings Stores (NAICS 442), Electronics and Appliance Stores (NAICS 443), Food and Beverage Stores (NAICS 445), Clothing and Clothing Accessories Stores (NAICS 448), Sporting Goods, Hobby, Book, and Music Stores (NAICS 451), and Miscellaneous Store Retailers (NAICS 453).

C. Evidence on the Relationship between Productivity and the Growth of Retail SMBs

One of the primary reasons retail firms adopt digital and e-commerce technology is to increase productivity. Thus, in assessing how technology has affected firms in the retail sector, it is also useful to look directly at trends in productivity.

Figure 9 presents data on labor productivity defined as output per employee using real gross output data from the BEA and employment data from the BDS for the retail sector compared to the broader U.S. economy.

Figure 9: Labor Productivity in the Retail Sector versus the U.S. Economy, 2000-2019
(Base Year = 2000)



Sources: U.S. BEA, Gross Output by Industry; U.S. Census Bureau, BDS data.

Productivity in the retail sector rose early in the 2000s but stagnated in the middle of the decade before declining during the Great Recession. In the 2010s, productivity in the retail sector increased substantially, significantly outpacing the overall growth of productivity in the United States.

While it is not possible to separately quantify productivity gains by firm size category using the BEA real gross output data, Table 7 assesses the link between annual growth rates by firm size category and productivity in the retail sector by analyzing the correlation between the annual growth rates for small, medium-sized, and large firms and productivity from 2000 to 2019.

Table 7: Correlation Between Retail Labor Productivity and Net Job Creation Rates in the Retail Sector by Firm Size Category, 2000-2019

	Net Job Creation	Net Job Creation (3-Year MA)
Small	0.271	0.325
Medium	0.234	0.278
Large	0.028	-0.131

Sources: U.S. BEA, Gross Output by Industry; U.S. Census Bureau, BDS Data

While annual net job creation rates are correlated with productivity in the retail sector, there is no correlation between annual net job creation rates for large retail firms and productivity, and a negative relationship after smoothing. This pattern is highly consistent with the results from the previous section; each analysis suggests a direct link between the growth of retail SMBs and increasing adoption and use of digital and e-commerce technology.

Conclusion

While many commentators take it for granted that digital and e-commerce technology are stifling retail SMBs and killing retail entrepreneurship, there has been surprisingly little empirical investigation of the recent economic performance of small and medium-sized retail businesses. Using data from the U.S. Census Bureau’s BDS program specifically designed to facilitate study of the growth of startups and small businesses, we find that, contrary to the popular narrative, the 2010s were not a decade of decline for retail SMBs, but one of resilience. During this decade, retail SMBs experienced a period of resurgence and growth. A substantial body of evidence suggests that this growth was due, at least in part, to the adoption and use of digital and e-commerce technology by retailers.