Garage Entrepreneurs or just Self-Employed? An Investigation into Nonemployer Entrepreneurship

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Abstract

Nonemployers, businesses without employees, account for most businesses in the U.S. yet are poorly understood. We use restricted administrative and survey data to describe nonemployer dynamics, overall performance, and performance by demographic group. We find that eventual outcome – migration to employer status, continuing as a nonemployer, or exit – is closely related to receipt growth. We provide estimates of employment creation by firms that began as nonemployers and become employers (migrants), estimating that relative to all firms born in 1996, nonemployer migrants accounted for 3-17% of all net jobs in the seventh year after startup. Moreover, we find that migrants' employment creation declined by 54% for the cohorts born between 1996 to 2014. Our results are consistent with increased adjustment frictions in recent periods, and suggest accessibility to transformative entrepreneurship for everyday Americans has declined.

Keyword: nonemployers, business owner demographics, nonemployer transition to employer, business dynamism, startups, entrepreneurship

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1 Introduction

Nonemployers[1], businesses without paid employees, account for most businesses in the U.S. and are growing more rapidly than employer businesses.[2] Yet because they account for less than 4% of business receipts, and the inherent challenges in linking small businesses over time, they remain poorly understood.

Related to nonemployers is the proverbial "garage entrepreneur", a small boot-strapped startup growing into a household brand [Audia and Rider, 2005].[3] For example, Davis et al. [2007] find that many employers have their origin as nonemployers. Although an appealing image, there is limited evidence on the share of nonemployers that become employers (migrants) in a given cohort,[4] and little is known about how much employment these nonemployer migrants create. Finally, how these patterns have changed over time is unknown.[5] Closely related is the finding of declining business dynamism among employers [Decker et al., 2014, 2020], but whether a similar decline is seen among nonemployers remains undetermined. Finding evidence of such a decline among nonemployers would help researchers identify the mechanisms, which remain debated.

Since many employers begin as nonemployers [Davis et al., 2007], the study of nonemployers offers a more complete picture of the entrepreneurial process than the study of employers alone,[6] and is, thus, crucial to obtaining a better understanding of nascent entrepreneurship and the role of ex ante heterogeneity in a firm's success [Haltiwanger, 2015, Sterk et al., 2021]. Moreover, in contrast with employer businesses, the recent development of Nonem-

[1] Closely related are the self-employed, which in the literature are "...individuals who earn no wage or salary but who derive their income by exercising their profession or business on their own account and at their own risk." [Parker, 2004, p.6]. Thus, some self-employed have employees.

[2] In 2020 there were approximately 27 million nonemployers and about 6 million employer firms - see https://www.census.gov/data/tables/2020/econ/nonemployer-statistics/2020-combined-report.html - accessed 2/14/24.

[3] Examples include HP, Apple, and Cabelas.

[4] Fairlie and Miranda [2017] use the ILBD to examine the 1997 cohort of nonemployer startups and find that 2.4% hired an employee by the 7th year after startup.

[5] Henley [2019] analyzes U.K. survey data from 2009-2015 and finds a decline in the share of self-employed who are employers.

[6] In economic theory, firms start small and grow as they learn about their underlying productivity [Jovanovic, 1982].

ployer Statistics by Demographics or NES-D by Census [Luque et al., 2019a,b], makes it possible to link owner demographic information to business performance.

In our paper we use restricted administrative and survey data from Census to study the dynamics of nonemployer businesses, characterize nonemployer performance and its evolution over time, and explore performance by demographic group.

First, aside from Davis et al.'s [2007] finding that nonemployers who become employers (migrants) see steep receipts (revenue) growth leading up to the migration event, there is little evidence on the dynamics of nonemployers. In this paper, we study receipt dynamics by outcome (becoming an employer, continuing as a nonemployer, or exiting operations) and by legal form of organization (LFO), as well as how these dynamics changed over 19 cohorts in the 1996 to 2020 period. Second, we provide evidence on nonemployers' migration rates and employment creation, and how they have evolved over time. Third, we leverage our nonemployer demographics data (i.e., NES-D) to ask how performance varies by demographic group.[7]

Our paper relies on the Integrated Longitudinal Business Database (ILBD) [Davis et al., 2007, Goetz and Kroff, 2021] and the Longitudinal Business Database (LBD)[8] [Chow et al., 2021, Jarmin and Miranda, 2002] which together allow us to track nonemployers from birth, into either their migration to employer status (migrants), their exit (exiters), or their continuation as nonemployers (continuers). Our analysis includes the 1996-2014 cohorts of nonemployers, following each cohort for seven years from startup. Much of our analysis includes breakdowns by legal form of organization, since this choice determines much of a firm's structure and reflects the owner's intentions for his or her business. We consider a nonemployer to be born in a given year if they had no operations of any kind in the two years prior, though our results are robust to alternative definitions.[9] All dollar values are deflated into real 2010

[7]NES-D covers the universe of nonemployers with the exception of C-corporations, which are 2% of nonemployers and 4% of receipts.

[8]We also draw on the restricted Survey of Business Owners 2012 (the most recent survey of nonemployers) and the nonemployer Business Register (BR) [DeSalvo et al., 2016].

[9]In determining nonemployer cohort, Fairlie and Miranda [2017] ensure the firm had no operations in the past four years.

dollars.

We first study nonemployer dynamics, examining how median starting receipts and median receipt growth vary by eventual outcome. We find that migrants' receipts grow the most at $2,320 per year (9.9% of first year receipts), followed by continuers at $460 per year (5.5% of first year receipts), while exiters' receipts actually decrease by $30 per year (-0.7% of first year receipts). This rank order of receipts by outcome holds within each LFO, when using starting (first year) receipts, and within each cohort. Our findings add to Davis et al.'s [2007] finding of migrants having rapidly growing receipts. It also reinforces Coad et al. [2017], who find that sales growth precedes the hiring of the first employee using Danish data. In contrast, Fairlie and Miranda [2017] do not find a strong relationship between receipts and hiring the first employee using the Kauffman Firm Survey.[10] Thus, our findings provide support for relatively high receipts and receipts growth being closely associated with the transition to employer status.

Turning to the performance of nonemployers, and following Fairlie and Miranda [2017], we focus on the seven year overall migration rate to the employer universe and the 7th year employment of nonemployer migrants.[11] Over the course of the 19 cohorts we study, we estimate that just 0.5% of startups become employers (migrants). Moreover, we find that the migration rate has declined substantially from 0.85% for the 1996 cohort to 0.36% for the 2014 cohort. The decline is not driven purely by the increased entry of gig economy nonemployers inflating the denominator [Abraham et al., 2018, Collins et al., 2019], since the overall number of migrants fell from approximately 33 to 20.5 thousand.

Using a conservative definition of migrants,[12] we estimate that the net 7th year employ-

[10]It seems that this different results is probably due to the KFS' unique sample of firms, which Fairlie and Miranda [2017] describe as "Thus, the KFS definition of a business start is somewhat unique and include a disproportionate number of more "advanced," growth-oriented, or employment-oriented nonemployer startups.".

[11]The 7th year migration rate is the share of startups who migrate to the employer universe (hire employees) by the 7th year.

[12]The general patterns are the same under a variety of alternative data specifications: treating nonemployers who operate as employers in their year of birth as migrants as do Fairlie and Miranda [2017], accounting for mergers and acquisitions, examining performance in the 4th year instead of the 7th, and looking for migration events within the same tax year.

ment creation of nonemployers fell from 59,500 employees for the 1996 cohort to 27,500 for the 2014 cohort.[13] When expressed as the share of employment from all startups, the 1996 cohort of nonemployer migrants accounted for about 3% of employment, whereas the 2014 cohort accounted for less than 1.5%. While it is difficult to quantify the precise number of migrants and employees created by nonemployer startups due to data limitations we describe later in the paper, we view our finding of a steep decline in nonemployer performance as a robust and novel contribution to the literature.

To our knowledge, our estimates of nonemployers' employment creation are the first in the literature. Our robustness checks show that depending on specification, the 1996 cohort of nonemployer migrants may have accounted for as much as 17% of employment in the seventh year after startup (i.e., with 1996 employer startups accounting for 83%).[14] In this, our results add to the debate in the entrepreneurship literature on the relative importance of accounting for nonemployers in studies of businesses and entrepreneurship [Hurst and Pugsley, 2011, Bento and Restuccia, 2019]. Additionally, our findings add new evidence to the literature on declining business dynamism, previously observed using only employer firms [Decker et al., 2016, 2020]. Overall, our findings are most consistent with firms facing steeper adjustment frictions in recent periods, such as greater costs of hiring employees. The decline of nonemployer entrepreneurship should be of particular interest to policymakers, since this represents the most accessible form of entrepreneurship to everyday Americans. If millions of Americans are locked out of growing their small business into a transformative company due to changes in policy, reconsidering those policies would be warranted.[15]

[13] In our data some firms operate as both employers and nonemployers in the startup year - it is unclear if these are employer startups who find it advantageous to also operate a nonemployer business or nonemployer migrants. To be conservative in estimating nonemployer migrants' employment, we do not consider these to be migrants in our main analysis though we do include them in robustness checks.

[14] In our baseline specification, nonemployers created about 59.5k net jobs in the 7th year, including same year migrants multiplies this baseline count by 1.96. When accounting for cross-year matching with corporations and partnerships (more research is needed to cross-year match sole-proprietorships) multiplies their baseline count of employees by 3.46. Assuming the same multiplication occurs for sole-proprietorships, and combining both changes, we have $3.46\times1.96\times59.5\text{k}/(3.46\times1.96\times59.5\text{k}+1.96\text{M})=0.17$ (where 1.96M is the 7th year employment of 1995 employer startups).

[15] Davis and Haltiwanger [2014] show evidence of increasing regulations that make running a business more costly. Relatedly, Herkenhoff et al. [2021] show that consumer credit is used to finance business startups

Future work should focus on improving the administrative data linkages to obtain more precise estimates of nonemployer migrants' employment creation. These primarily include, determining whether startup year migrants began as employers or nonemployers and linking across year migrants. In addition, our future work on this topic will include a more in-depth examination of the declining performance including: Does it occur within industries and geographies? Is there evidence of it being related to restrictive policies? How did it behave during and post pandemic?

In the last portion of our paper we use NES-D to examine performance by demographics [Luque et al., 2019a,b]. Because NES-D first became available for the 2017 reference year, we use the 2017 NES-D to link the demographics of the 2017 cohort of nonemployer startups to the firms' performance through 2020 (the lastest available year at the time this paper was written). We study performance by sex, race, ethnicity, veteran status, age, and foreign-born status, focusing on the migration rate, exit rate, continuer rate, 90th percentile employment, median starting receipts, and median receipt growth in the 4th year after startup. Thanks to NES-D, a key contribution of our analysis is the ability to characterize the performance of small demographic groups.

As a preview, we start by comparing female and male owned firms, and find that male-owned firms outperform female-owned firms, consistent with the literature [Fairlie and Miranda, 2017, Henley, 2019, Parker, 2009]. Given the recency of NES-D, we are unable to examine if performance measures have been converging over time, though this will be investigated in future work. When examining by race, we find that Asian and White firms have the highest performance, Black-owned firms are in the middle, and firms owned by Native Hawaiians and Other Pacific Islanders (NHPI) and American Indians and Alaska Natives (AIAN) groups perform approximately equally, and have the lowest performance of all race groups. We believe these to be the first estimates of nonemployer performance for these

and conclude that "...recent legislation that makes consumer bankruptcy more procreditor may also be contributing to the reduced rates of entrepreneurship...".

small-population groups in the nonemployer business literature.[16] Performance of Hispanic and non-Hispanic firms is quite similar. In line with the literature, we find that firms owned by the foreign born experience more success than their U.S. born counterparts.

Given our extensive data, we are able to speak to the relationship between founder age and firm success. We find that performance for the 2017 cohort follows an inverse U-shape, peaking for founders aged 46-54 at time of founding.[17] We also examine performance by veteran status, and find lower performance among veteran owned firms including higher exit rates (55.6% vs 50.9%) and lower median receipts growth (-$20 vs $160). Although the literature compares veteran and non-veteran rates of self-employment [Fairlie, 2004] and provides other descriptive evidence [Lichtenstein, 2013, Haynes, 2014], we are not aware of any previous direct comparisons of performance between non-veteran and veteran owned nonemployer startups.

The rest of this paper is organized as follows: we first describe the data we employ and provide background and key concepts. We then go over descriptive statistics of nonemployers, analyze dynamics and performance over time, and by demographics. We then conclude.

2 Data

We use confidential datasets housed at the U.S. Census Bureau, including the Integrated Longitudinal Business Database (ILBD), Longitudinal Business Database (LBD), Survey of Business Owners (SBO), Business Register (BR), and Nonemployer Statistics by Demographics (NES-D). We provide a description of these datasets in the Data Appendix and summarize important details in Table 1.[18] All dollar values in this paper are converted into 2010 dollars using the CPI.[19]

[16] See Kamoe [2015] for a literature review on NHPI and AIAN entrepreneurship.

[17] See Azoulay et al. [2020] for a similar finding in the employer context.

[18] We note that our survey data is subject to both sampling and non-sampling error, while our administrative records data is subject to non-sampling error. Because most of our analysis relies on administrative data we do not calculate confidence intervals. The datasets we use impute missing data, such as non-response in the SBO or missing demographics in NES-D.

[19] See https://www.bls.gov/cpi/research-series/r-cpi-u-rs-home.htm - accessed 11/18/2023.

For our main analysis, we use the ILBD, which links nonemployer firms longitudinally and provides a linkage to the employer universe if they become employers.[20] This linkage allows us to derive each firm's startup year (cohort) and its outcome, including whether it transitions from the nonemployer universe to the employer universe. The current version of the ILBD is intended to only link nonemployer transitioners who operate in both the employer and nonemployer universe in the *same year* - a limitation we discuss in the introduction. One implication of this limitation is that firms migrating across tax years are missed by the ILBD and thus our analysis.[21] The LBD links employer establishments (not firms) longitudinally, allowing us to observe how employment evolves over time for firms [Chow et al., 2021].

Our analytic sample is based on the following criteria. We consider a nonemployer to have been born in a given year if it had no operations as a nonemployer in the previous two years and never operated as an employer prior to and on the cohort year.[22] Thus a nonemployer that is observed starting up but then does not operate for at least two consecutive years would be treated as a new birth if it were to reappear.[23] For employer startups, we use firm age as created by the LBD to identify birth cohort. Our ILBD data spans 1994 to 2020 and since we follow each cohort for a period of seven years, treating the first year as year one, we obtain performance data for the 1996 to 2014 cohorts allowing us to observe how nonemployer performance has evolved over 19 cohorts.

To observe nonemployer migration events and the performance of nonemployer migrants in the employer universe, we also construct establishment level panels of employment and payroll using the LBD.[24] These establishment level panels are collapsed at the level of founding firm. Thus, our analysis abstracts from merger and acquisition behavior, and captures only the

[20] See [Davis et al., 2007, Goetz and Kroff, 2021].

[21] For instance, a given firm that operates only as a nonemployer in 1996 and only as an employer in 1997 would be missed.

[22] In a robustness check we do include startup year migrants and fine the general pattern to be the same.

[23] Nonemployers' operation tends to be sporadic and disappearances for stretches of time are common. In Appendix A Figure A.3 we show that looking back four years to identify exits as in Fairlie and Miranda [2017] does not alter our main findings.

[24] We restrict establishments that have the BDS tabulation flag set to 1.

performance of establishments that the firm founded outright.[25] We link the ILBD panel to the LBD panel using the contemporaneous firm identifier[26] variable and require that the firm's first year as an employer be at least one year after the nonemployer's birth.[27] The key outcomes we evaluate are whether the nonemployer migrates within the first seven years, and for migrants, the employment and payroll in the 7th year of operation.

To understand the dynamics of nonemployer entrepreneurship, we focus on initial (first year) receipts and annual receipt growth by three categories of outcomes: migrants, continuers, and exiters.[28] Migrants are nonemployer startups who become employers within the first seven years of operation (except for the startup year). Continuers are non-migrant nonemployer startups who are still operating in the 7th year as nonemployers, and never experienced a two consecutive year missing spell in the seven year period we study. Exiters are non-migrant nonemployer startups who have ceased operations, which we define as being missing from the ILBD for two consecutive years in the seven year period. While most startups fall into one of these three categories, around 1 in 20 do not and are excluded from the dynamics analysis.[29]

We obtain the receipts growth rate by regressing real receipts on year and extracting the slope coefficient. Some migrants and exiters may operate for only the first year and hence will not have a slope. As a measure that includes all firms, we also evaluate the initial receipts level. Together, these values provide a glimpse into the operational performance of successful (migrants) and failing nonemployers (exiters), and those in-between (continuers).

[25] In Appendix A Figure A.4 we account for mergers and acquisitions and find that it does not alter our main findings.

[26] The ILBD obtains the each firm's identifer by matching the nonemployer's EIN, PIK, and Name to the employer Business Register.

[27] In Appendix A Figure A.2 we include same year migrants and find that it does not alter our main pattern of declining nonemployer performance, though magnitudes are affected.

[28] These outcomes are evaluated using only the first seven years of operation. We only include receipts from nonemployer activity.

[29] For example, firms that operate in their sixth year but are missing in the data on their seventh year are in this excluded category. Some of these firms may reappear in the eighth year, and since we allow for reappearance events in years years 1-7, we do not categorize these as exiters.

3 Background

In this section we provide information on key concepts as well as background information on nonemployers and measurement issues.

3.1 What is a nonemployer?

Following the Census Bureau's definition, nonemployers are firms with no paid employees that have annual business receipts of $1,000 or more ($1 or more in the Construction sector) and are subject to federal income taxes. Tracking nonemployers longitudinally is challenging, as disappearances from and re-entries to the nonemployer universe for a year or more are common; thus, determining what constitutes a nonemployer's birth year or exit status (ceased operations) inevitably requires discretion by the researcher. There is also evidence that receipts among nonemployers may be underreported. The GAO found that at least 61% of sole-proprietorships underreported receipts in 2001, with 10% of sole-proprietorships underreporting by at least $6,200 [Government Accountability Office, 2007].

3.2 Legal Form of Organization

Knowing a firm's Legal Form of Organization (LFO) is important because the choice of LFO reveals the owners' expectations and plans on tax structure, liability, and ownership. Nonemployers must choose an LFO from among four options: sole-proprietorship, partnership, S-Corporation, or C-corporation. The well-known Limited Liability Company (LLC) status is a state designation and is not recognized by the Internal Revenue Service (IRS). Thus, an LLC may exist as any one of the LFOs above.[30] All of these are described below.

Sole-Proprietorship. The sole-proprietorship is the simplest and most common LFO. No formal action is needed to form a sole-proprietorship, and a firm may be a sole-proprietorship

[30]The IRS states: "Depending on elections made by the LLC and the number of members, the IRS will treat an LLC as either a corporation, partnership, or as part of the LLC's owner's tax return (a "disregarded entity")." https://www.irs.gov/businesses/small-businesses-self-employed/limited-liability-company-llc – accessed 6/16/22.

without the owner explicitly choosing to be so. This is because a firm is automatically designated as a sole-proprietorship if its owner files the Form 1040 Schedule C to report income or loss from business activity. As discussed earlier, a single-owner firm that organizes as an LLC in its home state will be recognized as a sole-proprietorship by the IRS unless it files to be recognized as a corporation. Thus, except for LLCs, sole-proprietorships generally do not enjoy limited liability protection. Taxes and income are passed-through directly to the owner, meaning the company itself does not pay taxes. Note that under certain circumstances, married couples may legally jointly-own a sole-proprietorship.[31]

Partnership. A partnership is a business with at least two owners. Owner liability depends on the structure of the partnership and partner's type. A general partner has unlimited liability while a limited partner has limited liability. An unincorporated firm with multiple owners registered as an LLC in its home state will be designated as a partnership by the IRS (and consequently in the Business Register). Like sole-proprietorships, partnerships pass-through income and taxes to their owners.

C-corporation. The C-Corporation is the default LFO of incorporated firms and while it is owned by shareholders, it is a separate entity, distinct from its owners. Consequently, the owners are not personally liable and importantly, face double taxation. The C-Corporation itself is first taxed on its earnings and profits, and later the dividends distributed to shareholders are also taxed [Lawrie, 2019]. LLCs may choose to be taxed as C-corporations and as a result will be designated as C-corporations in the BR.

Relative to S-corporations, ownership requirements on C-corporations are looser. C-corporations may have an unlimited number of shareholders and be owned by individuals who are non-resident aliens and other businesses.

S-Corporation. The S-Corporation is a corporation that has elected to be taxed like a partnership [Lawrie, 2019]. Thus, while the owners enjoy limited liability protection, they

[31]The IRS allows an unincorporated business jointly owned by a married couple to operate as a qualified joint venture, which is treated as a sole proprietorship for tax purposes - https://www.irs.gov/businesses/small-businesses-self-employed/election-for-married-couples-unincorporated-businesses - accessed 7/18/2024.

only pay pass-through taxes. Ownership is limited to 100 shareholders, and all must be U.S. Citizens or U.S. residents (though ownership by certain organizations is also allowed[32]). LLCs may also choose to be recognized as S-Corporations by the IRS. Pass-through tax rates are generally lower than the double taxation rates faced by C-Corporations [Smith et al., 2022], making this designation advantageous for most small businesses.

The LLC Designation. Generally, states require LLCs to publicly display their limited liability status by including the term "LLC," "Limited Liability Company", or something similar in the firm's name. We search firm names in the Nonemployer Business Register for these terms to estimate the share of firms that are LLCs over time and by LFO. Figure 1 shows that the LLC share for all LFOs has been growing rapidly since 2002.[33] partnerships had a 53% LLC share in 2002, but by 2018 were approaching 78%. Corporations (C and S-Corporations are combined in the data until 2014) start at around 8% LLC in 2002, were over 27% for S-corps, and 14% for C-Corporations by 2018. Not only does this show the rapidly increasing popularity of the LLC among nonemployers, but also that limited liability status is utilized by all LFOs for which we have the data. Sole-Proprietorships are excluded because they do not have business names in our data. However, Figure 1 suggests that many of these may also be LLCs.

To summarize, the choice of firm LFO reveals the owners' thinking on tax structure, liability, and ownership, at a minimum.

4 Basic Facts About Nonemployers

In this section we describe recent trends among nonemployers and summarize receipts, sectoral composition, and firm and owner characteristics by LFO.

[32] Allowable shareholders include: "individuals, certain trusts, and estates and may not be partnerships, corporations, or non-resident alien shareholders". https://www.irs.gov/businesses/small-businesses-self-employed/s-corporations – accessed 1/10/23.

[33] This growth is not explained by additional states permitting LLCs – all states permitted LLCs by 1996. See https://web.archive.org/web/20180502071300/https://www.americanbar.org/newsletter/publications/law_trends_news_practice_area_e_newsletter_home/llc.html – accessed 6/16/22.

In 2020, there were about 27.2 million nonemployers accounting for $1.1 trillion 2010 dollars of revenue, averaging about $40,000 per firm (See Figure 2). Yet underlying this average revenue lies substantial heterogeneity. As Figure 2 shows, while sole-proprietorships account for 86% of nonemployer firms, they account for just 62% of receipts (about $30,000 per firm). Meanwhile, partnerships, S-corps, and C-Corporations are all over-represented in their receipt share and average more than $100,000 of receipts per firm.

Also, between 1997 and 2020, the growth of nonemployer businesses outpaced that of employer businesses substantially. Specifically, the number of nonemployers grew by 76% (11.7 million additional businesses), while that of employer establishments grew by just 16% (see Figure 3). This suggests that the relative importance of nonemployers in the U.S. economy is growing.[34]

We use the nonemployer Business Register (BR) dataset to examine the sectoral composition of nonemployers between 2002 and 2018 (see Figures 4 and 5). Once again we find substantial heterogeneity by LFO: Nonemployer partnerships are dominated by the *Real Estate Rentals and Leasing* sectors, which accounts for 65% of nonemployer partnerships in 2018. In Figure 5, we show that sectoral composition between S and C-Corporations is very similar. For both, *Real Estate Rental and Leasing* and the *Professional, Scientific, and Technical Services* sectors together account for almost 40% of nonemployers in 2018. Sole-Proprietorships however, are distinctive in that they are made up of largely equal shares of various sectors. Moreover, the sectoral composition is more dynamic - for example, the *Transport and Warehousing* sector shows rapid gains in recent years, corresponding to the rise of ride-sharing platform applications [Abraham et al., 2018].

To better understand the demographics of nonemployers, we use the 2017 NES-D microdata, which has demographics for the universe of nonemployers, with the exception of C-corporations, who account for only 2 percent of nonemployers and 4 percent of receipts. Table 4 shows that most nonemployers are male-owned (from 55% for sole-proprietorships

[34] Garin et al. [2022] find that at least some of the growth in nonemployer activity in administrative data is due to reporting incentives.

and partnerships to 64% for S-corporations). The share of nonemployers owned by Hispanics and non-White individuals also varies with LFO. Notably, sole-proprietorships have the highest ownership rate for minority groups, with 15% Hispanic, and 34% non-White. Relative to the adult (18+) population as of 2020, sole-proprietorships are under-represented by females (49%), under-represented by Hispanics (17%), and over-represented by non-Whites (28%).[35]

Meanwhile, partnerships have the lowest rate of minority-group ownership. Another finding is that equal ownership (e.g. equally male/female, non-White/White, Hispanic/non-Hispanic) is very rare when it comes to ethnicity and race (just 2% of partnerships are owned by equal shares of Hispanic and non-Hispanic), however, quite common for sex (28% of partnerships are equally owned by men and women). In Table 5 we examine demographic homogeneity among multi-owner partnership and S-Corporation nonemployers, and find striking results. For these nonemployers, owners are of the same race[36] 94% of the time, and of the same ethnicity 94-95% of the time (depending on LFO). Interestingly, they are of the same sex only 32% (S-corps) or 41% (partnerships) of the time. Our results suggest multi-owner nonemployers tend to run their businesses with those from their immediate community and network, as well as with their partners.

To examine in greater detail the characteristics of nonemployer businesses which are unavailable in administrative data, we use the 2012 Survey of Business Owners, which is the most recent Census Bureau survey of nonemployers, matched to the 2014 BR.[37] Table 2 summarizes various statistics of interest and highlights the substantial variation within nonemployers by LFO.[38] For example, among sole-proprietorships, for over 50% of firms, the business is the main source of income, while ranging between 14-34% for the other

[35]See the 2020 Census Demographic and Housing Characteristics File Tables: https://www.census.gov/data/tables/2023/dec/2020-census-dhc.html#accordion-0c809bf553-item-c27914794a - accessed 7/16/2024.

[36]Racial categories used include White, Black, American Indian and Alaska Native, Asian, and Native Hawaiian and Other Pacific Islander.

[37]Doing this match restricts to firms from the 2012 SBO who will survive until 2014, but it enables us to study firm characteristics by LFO. We obtain firm level statistics for multi-owner firms by averaging the characteristic across owners. For example, a two owner firm where the business is the primary source of income for only one of the owners would have a value of 50% for the primary source of income variable.

[38]Note that the ABS does not sample by LFO.

LFOs. Hours spent working on the business follows a corresponding pattern. Starting capital varies even more: while the average sole-proprietorship begins with $23K of capital, the corresponding partnership begins with $362K.

Table 2 breaks down nonemployers by various other characteristics, including prior business experience (sole-proprietorships have the least), owner-age, and operation by founder, among others. We note that many nonemployers rely on some form of worker labor, such as contractors or temporary workers, in the course of their business operations.[39]

5 The Dynamics of Nonemployers

How do the receipt growth patterns differ between startups who become migrants vs those who become continuers or exiters? Davis et al. [2007] document that migrants see rapid receipt growth prior to the migration event, but their analysis is limited to certain sectors, does not follow firms from startup, and does not characterize continuers and exiters. Moreover, how the startup dynamics have changed within each of the three outcome groups over time is unknown. Our study of nonemployer dynamics in this section sheds light on all of these areas.

In our analysis we follow the 1996-2014 startup cohorts each for a period of seven years, as in Fairlie and Miranda [2017] and Fairlie et al. [2023]. We categorize firms by outcome within this seven year period, and only nonemployer receipts during the seven years are included. Our main parameters of interest are first-year receipts and receipts growth during operation. First year receipts provide suggestive evidence of a firm's initial performance, although interpretation is complex given variation in intermediate inputs across industries [Haltiwanger et al., 2016]. We also measure receipt growth by regressing real revenue on year of operation and extract the slope coefficient. The analysis of receipt growth addresses "industry-level differences in gross output from differential intermediate input shares." [Haltiwanger et al.,

[39]Note that responses to these questions may have high missing rates, so these results might not be representative of the population.

2016, p. 17]. These authors also find that high output growth firms behave similarly to high-employment growth firms indicating receipt growth is a key measure of performance for nonemployers, relatively few of whom will ever hire employees.

We start by analyzing the median annual receipt growth rate and median first year receipts by eventual outcome for all cohorts.[40] Table 6 shows that overall, just 0.5% of nonemployer startups become migrants within seven years.[41] In fact, just 19.8% continue to operate all the way to the 7th year, while 74.9% exit operations by then. Firm receipts suggest there is a relationship between financial performance and outcome: migrants have both the highest initial receipts ($23.38K) and the highest receipts growth ($2.32K per year) while exiters have the lowest ($4.07K and -$0.03K, respectively), and the performance of continuers is in-between. These results suggest that a business' financial success is a key predictor of its decision to hire employees. Similarly, Coad et al. [2017] use Danish data and find evidence that sales growth precedes the decision to hire the first employee. It is interesting to note, that even among nonemployers, who face minimal costs relative to employer firms, the decision to operate at all seems related to financial performance as measured by receipt growth.

In Table 7 we show that the relationship between outcomes and receipts holds within each LFO. Although the level of starting receipts varies significantly (even exiter corporations and partnerships see higher or similar levels of first-year receipts as sole-proprietorship migrants) the receipt growth rates by outcome are similar. In each LFO, median receipts growth of migrants is at least $1300, while among continuers, receipt growth is muted (between $360-640 per year). Once again, exiters have no receipts growth.

Table 7 also reveals interesting variation in the share of firms that become migrants, exiters, or continuers by LFO. Unsurprisingly, corporations have the highest migration rate

[40] We focus on the median because the distribution is right-skewed.

[41] Fairlie and Miranda [2017] do not exclude startup-year migrants and hence find that the 1997 cohort of nonemployers had a much higher 2.4% migration rate. When excluding startup-year migrants (see Fairlie and Miranda [2017] Table IA), they find the 1997 cohort had 23,200 migrants, whereas we find it had 30,500. First order reasons for the remaining difference likely are due to the recent improvements made to the ILBD by Goetz and Kroff [2021], including improved ILBD identifier linkage and the addition of accidentally omitted records both of which would improve the linkage of nonemployers to employers.

of 3.4%, while sole-proprietorships the lowest of 0.3%. Exit rates are high across all LFOs, with sole-proprietorships having the highest at 76.3%, but surprisingly, even corporations have exit rates of 72.2%.[42]

In Table 8 we break down performance dynamics by sole-proprietorship EIN type vs non-EIN type. EIN type sole-proprietorships choose to apply for an EIN when starting their business, while non-EIN type do not (an EIN is required for partnership and Corporation startups).[43] This distinction has been used in previous research to distinguish between growth-type and non-growth type nonemployer entrepreneurship among sole-proprietorships [Fairlie and Miranda, 2017]. However, we are not aware of any direct comparisons of these entrepreneurship types to determine to what extent they differ in performance. Table 8 shows that non-EIN type sole-proprietorships do have substantially lower migration rates (0.2% vs 1.5%), but most sole-proprietorships who become migrants come from non-EIN type sole-proprietorships due to their sheer number.[44] More surprisingly, the median receipts growth of non-EIN type migrants is *higher* than it is for EIN type. In other words, non-EIN type sole-proprietorships appear to be *more dynamic* than their counterparts. Since firms choose whether or not to file for an EIN at startup based on expectations for their business, this result is consistent with models in which firms learn about their unknown productivity through operation [Jovanovic, 1982]. In addition, our result suggests non-EIN type sole-proprietorships may be a relatively more important source of entrepreneurship than previously thought.

Thus far our results have highlighted the importance of financial performance in nonemployers' outcomes, but understanding how these dynamics have evolved over time could shed light on changes in nonemployers' environment and their response to it. Figure 6 plots receipt growth rates by outcome by cohort. The first takeway is that the rank order of financial performance by firm outcome holds constant: migrants have the highest financial performance, exiters the poorest, and continuers are in between.

[42]Note that migrants that are missed by the ILBD would be mistakenly included as exiters here.

[43]Note that non-EIN types may apply for an EIN sometime after the startup year - our definition focuses only on this choice at startup.

[44]Over 91.5% of sole-proprietorships startup without an EIN over our 19 cohort time period.

Another takeaway is that the relationship between receipts growth and the migration decision appears to be countercyclical. Leading up to the Great Recession of 2008, the receipts growth rate of migrants was falling, which we interpret as suggesting that firms felt comfortable hiring employees under weaker performance. As the Recession dawned, the trend reversed as nonemployers became more cautious or faced additional constraints (such as credit access) about hiring employees given the weaker economic conditions. For continuers, the trend is consistent with economic theory, which implies that the decision to be a nonemployer will depend on its opportunity cost. During a recession, the opportunity cost of formal employment will be lower and hence should lead to more marginal nonemployers continuing to operate. In the graph, we see that prior to the 2001 cohort of continuers (which we fit the growth rate of through 2007, and thus was the first exposed to the Great Recession) receipt growth rates of continuers were the highest.

We next examine how starting real receipts have changed by outcome group and cohort. Although receipt levels are harder to interpret than receipt growth rates, we showed earlier that these two measures follow a similar pattern in terms of their relationship to outcomes (e.g., migrants have both the highest starting receipts and receipt growth rates). Our results, in Figure 7, show a striking positive trend in the starting receipts of migrants. Whereas the median migrant in the 1996 cohort had just $12.5K of initial receipts, the corresponding migrant in the 2014 cohort earned $31.3K - a 150% increase. The growth in starting receipts mainly took place during the 1997 to 2006 cohorts, and has since flattened. Meanwhile, no stark increase is seen among continuers (20% increase) or exiters (33% increase).

Though it is unclear what underlies this trend in migrants' starting receipts, it is concerning, since it is consistent with increased difficulty in businesses becoming employers. Some explanations include firms that previously would have begun as employers instead started up as nonemployers, relatively greater selection pressures on who becomes an employer, or a shift in the industries that generate migrants. It is important to note that the modest rise in starting receipts of continuers and exiters over this period suggests the rise may be due

to some aspect of hiring employees rather than more general changes in the nonemployer environment. This result thus provides new evidence to the current ongoing debate on the reasons underlying the declining business dynamism in the U.S. [Decker et al., 2014]. We interpret this result as consistent with firms facing steeper adjustment frictions in growing their businesses, such as greater costs of hiring employees [Decker et al., 2020].

6 The Performance of Nonemployers

Perhaps the key outcome of interest to understand nonemployer entrepreneurship is the number of nonemployers that become migrants (migration rates) and how much employment each migrant creates (employment rate). How these rates have changed over time is also of interest. The number of employees generated by cohort c some t years after startup can be decomposed using the following identity:

$$Employment_{ct} = StartupRate_{c} \times MigrationRate_{ct} \times EmploymentRate_{ct} \quad (1)$$

In which the employment of cohort c in the t^{th} year after startup is the product of the number of nonemployer startups in cohort c (firms per year)[45], the share of cohort c startups that become employers within the first t years (migrants divided by startups), and the employment per migrant (migrants' total employment in year t divided by migrants). The decomposition is useful in allowing us to learn what underlies changes in employment creation across nonemployer cohorts.

Table 9 lists each nonemployer cohort's number of startups, number of migrants, and total employment in the 7th year post startup. The migration and employment rates are also provided. The table shows that while the number of startups has risen from 3.9 million in 1996 to 5.7 million in 2014, the number of migrants (from 33K to 21K) and employment

[45]Note that the ILBD collapses nonemployers at the owner level, so our metric captures person-level nonemployer startups.

(from 60K to 28K) have both fallen substantially. These trends can be seen even more clearly in Figure 8. Over the 19 cohort span we examine, the 7th year employment of nonemployers fell *by 54%*. The chart shows that that the fall is due mainly to a 58% decline in the migration rate, but also to a 26% decline in the employment rate. In other words, among recent startup cohorts, much fewer nonemployers will become migrants, and per migrant, fewer employees will be hired.

By taking logs of the employment identity, we can decompose the variance in employment as the sum of the variance of the three terms and their covariances. Table 10 shows the results from this decomposition. The largest variance is in the migration rate, followed by the employment rate, and then by the startup rate. There is a large negative covariance between the startup rate and the migration rate, consistent with part of the recent growth in startups being due to platform workers, who are unlikely to hire employees.

7 The Performance of Nonemployer Migrants Relative to Employer Startups

In this section, we benchmark the performance of nonemployer startups relative to same cohort employer startups in terms of employment created. In our analysis, cohort year is assigned based on first year of operation. For example, a nonemployer migrant born in 1996 that first operated as an employer in 1999 is considered as a 1996 startup, and its employment is benchmarked against employers born in 1996. Just as before, we evaluate outcomes in the 7th year of operation. The construction of nonemployer cohorts is as described in the data section. To identify the employer startup's cohort we use the LBD's firm birth year variable, but add the restriction that the firm not have had any nonemployer operations prior to this year. This ensures that the firm's first year with payroll is also its first year of business operation.

In Figure 9, we plot the 7th year post-startup employment share of nonemployer migrant

startups by cohort relative to all startups in that year. Among all firms born in 1996, 2.95% of employment in the 7th year after startup (2002), was accounted for by nonemployer migrants, and thus 97.05% by employer startups. The graph reveals a striking decline in the relative importance of nonemployer startups. By the 2014 cohort, nonemployer startups accounted for just 1.24% of employment. Most of this decline came from sole-proprietorship nonemployer startups, who in the 1996 cohort had accounted for 2.64% of overall 7th year employment, but by the 2014 cohort, accounted for just 0.88%. For partnerships and corporations the share of employment had actually risen or fallen slightly, respectively.

To confirm that these observed performance declines are driven by changes in nonemployer performance not those of employer startups, Figure 10 plots the number of 7th year employees for nonemployer and employer startups by cohort. It is evident that while the total employment created by employer startups has held constant and maybe slightly increased, that of nonemployer startups, has declined substantially. To our knowledge, these results are the first evidence documenting this substantial decline in nonemployer performance. While our results are consistent with firms facing a more difficult climate for entrepreneurship today than in the past, we leave a more thorough investigation of this decline to future work.

8 Heterogeneity by Demographics

The recent development of the Nonemployer Statistics by Demographics (NES-D) makes it possible to examine how nonemployer startup performance varies by demographic group [Luque et al., 2019a,b]. Because NES-D started with the 2017 reference year of nonemployers, we are constrained to a shorter period of analysis. Therefore, for this analysis we link 2017 nonemployer startups to the 2017 NES-D,[46] and we evaluate outcomes over the period of four operational years (2017-2020).

We compare groups on six outcomes: the Migration Rate (share of startups that become migrants), the Exit Rate (the share of nonemployer that exit), the Continuer Rate (share

[46]NES-D does not include C-corporations.

of nonemployers continuing as nonemployers), the 90th percentile of employment rate (employees per migrant), the median starting receipts, and the median receipt growth rate. The demographics we focus on include sex, race, ethnicity, veteran status, age bin, and foreign-born status.[47]

In Table 11 we break down performance by sex and show that male owned nonemployers have higher migration rates (0.14% vs 0.08%) and lower exit rates (50.9% vs 52.2%). Additionally, male owned migrants hire more employees, with the 90th percentile male migrant hiring 47 employees relative to 21 employees for female owned firms. The pattern with receipts is similar, male owned firms exhibit both higher starting receipts ($7.1K vs $5.3K) and receipt growth rates ($330 vs -$20).[48] These findings are consistent with the prior literature on differences in business performance between female and male owned businesses [Brown et al., 2019, Fairlie and Miranda, 2017, Henley, 2019, Parker, 2009].

In Table 12 we examine performance by race and once again find substantial differences by demographic group. Asian and White owned firms both have relatively high migration rates (0.16% and 0.12% respectively) followed by Black owned businesses with a migration rate of 0.06% (due to disclosure restrictions we are unable to provide the migration rates for AIAN and NHPI owned firms). When examining exit rates, NHPI owned have the highest at 57.0%, followed by AIAN owned (56.1%), Black owned (53.9%), White owned (50.8%), and Asian owned (48.0%). Our results are in line with prior literature [Fairlie and Robb, 2007, 2008, Lee et al., 2022], however our analysis of AIAN and NHPI individuals' performance is novel [Kamoe, 2015].

In Tables 13-16 we examine performance by ethnicity, veteran status, owner age bin, and foreign born status. Performance of Hispanic firms relative to non-Hispanic is quite similar along the measures we examine (see Table 13). Comparing veteran owned firms to

[47] We perform Chi-Squared tests for independence on the frequency data (migrants, continuers, and exiters), excluding the equally owned category and groups with suppressed statistics, and find that in all cases, the groups are statistically different.

[48] We do not discuss equally owned firms, since these are restricted to non sole-proprietorships and thus will have systematic differences relative to male and female owned firms.

non-veteran owned in Table 14, we find similarities along migration rates, employment, and starting receipts, but find that veteran owned firms have higher exit rates (55.6% vs 50.9%) and the median firm having negative receipts growth. Overall, the performance of veteran owned nonemployers is slightly worse than that of non-veterans. As far as we know this analysis is novel to the existing literature [Fairlie, 2004, Haynes, 2014, Lichtenstein, 2013].

When breaking down performance by age bin in Table 15, we show that performance follows an inverse-U shape, with performance peaking for the 46-54 year old age bin. This result adds to the prior literature, where the relationship between age and hiring has been found to be negative [Carroll et al., 2000, De Kok et al., 2010] or inverse U-shaped [Cowling et al., 2004, Henley, 2005]. In Table 16, we show that across all measures, foreign-born nonemployers experience more success than their U.S.-born counterparts.

Overall, our analysis shows that large differences in performance by demographic group generally exist. In future work, we plan to study how within group performance has changed over time.

9 Conclusion

Despite making up the majority of U.S. firms, nonemployer businesses are poorly understood. We use restricted administrative and survey data to present a variety of novel descriptive results regarding nonemployers. We document receipt dynamics by outcome, showing that outcome closely corresponds to receipts. Following the 1996-2014 cohorts over seven years, we show that nonemployer performance has declined substantially over this 19 year period. Rising starting receipts of eventual migrants are consistent with rising adjustment frictions that make it harder for firms to grow [Decker et al., 2020]. Finally, we use the Nonemployer Statistics by Demographics (NES-D) database [Luque et al., 2019a,b] to document performance by demographic group.

Our paper highlights the challenges of accurately estimating nonemployers' employment

creation even with access to administrative data. Future work should focus on improving the Integrated Longitudinal Business Database's linkage to include nonemployers who migrate in the same tax year, as this seems to make a major difference in the estimates of nonemployer performance. Also important is determining whether nonemployers who operate as employers in their startup year really began as nonemployers as assumed by Fairlie and Miranda [2017]. Finally, our finding of declining dynamism needs to be investigated in greater depth to learn more about the underlying reasons.

We believe our results are of special interest to policymakers, since they suggest that the path to successful entrepreneurship through a nonemployer startup, may be much less achievable for startups today. It is crucial to understand to what degree changes in policy are responsible for this [Davis and Haltiwanger, 2014, Herkenhoff et al., 2021]. Our results also show that nonemployers are a relatively accessible business form for researchers seeking to study nascent entrepreneurship, since linkage to owners is straightforward. This permits the linkage of business outcomes to rich individual information necessary to making progress in our understanding of ex ante entrepreneurship [Haltiwanger, 2015, Sterk et al., 2021].

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10 Tables

Table 1: Table: Data Sources and Description

Data Source	**Years Used**	**Description**	**Notes**
Nonemployer Business Register (BR)	2002-18	Universe of nonemployers with information on LFO, receipts, NAICS, business name, geography, and more.	Does not distinguish between C-corporations and S-corporations until 2014.
Integrated Longitudinal Business Database (ILBD)	1994-2020	Tracks nonemployer firms longitudinally including transition from employer to nonemployer. See Davis et al. [2007] Table 1.B.	Does not distinguish between C-corporations and S-corporations until 2014. Does not track firms if ownership changes.
Longitudinal Business Database (LBD)	1996-2020	Tracks employer establishments longitudinally – along with information on firm ownership for each establishment.	
Survey of Business Owners (SBO)	2012	Quinquennial survey of employer and nonemployer firms featuring economic and demographic information.	For nonemployers, this survey does not distinguish between C-corporations and S-corporations. To address this, we match to the 2014 BR to obtain the true firm legal form of organization.
Non-Employer Statistics by Demographics (NESD)	2017-2020	Owner level demographic data linked with firm characteristics from the BR for nonemployer S-corps, Partnerships, and Sole Proprietorships. Demographic information derived from administrative records.	No data is available for nonemployer C-corps.

Table 2: 2012 SBO Summary Statistics

LFO	Owners	Website	Age	Main Income	Prior Business	Hours	Start Capital (K)	Home Based	Institutions Customers	Born Citizen	Education	Benefits	Founded	Temp Labor	Obs
C-Corp	2.3	0.22	55	0.23	0.56	22	123	0.46	0.36	0.69	14.9	0.12	0.77	0.43	10000
S-Corp	1.9	0.26	53	0.34	0.54	26	91	0.55	0.32	0.81	15	0.11	0.86	0.4	30500
Partner.	3.4	0.15	54	0.14	0.68	15	362	0.4	0.36	0.89	15.4	0.1	0.74	0.4	53500
Sole-Prop	1.3	0.23	51	0.51	0.3	30	23	0.63	0.25	0.85	14.6	0.09	0.92	0.26	472000

Table 3: Note: *Owners* - the mean number of firm owners; *Website* - the share of firms that have a website; *Age* - the average age of the owners; *Main Income* - the share of firms for whom the business is the owners' main source of income; *Prior Business* - the share of owners that have prior business experience; *Hours* - the average hours per week worked on the business by the owners; *Starting Capital (K)* - the mean starting capital in thousands of 2010 dollars; *Home Based* - the share of firms that are based out of the home; *Institutions Customers* - the share of firms that have institutions (eg, governments or businesses) as customers; *Born Citizen* - the share of firms with owner(s) born as citizens of the U.S.; *Education* - the average years of education of firm owners; *Benefits* - the share of firms that offer benefits (health insurance, 401K, stocks, paid-leave, or paid tuition); *Founded* - the share of firms that were founded by the current owner; *Temp Labor* - the share of firms that have used some form of temporary labor, including full-time employees, part-time employees, day laborers, temporary workers, leased workers, or contractors. Estimates are weighted. Note that responses to these questions may have high missing rates, so these results might not be representative of the population. Source: 2012 SBO matched to 2014 BR.

Table 4: Owner Demographics by LFO

Owner Sex

LFO	Equally	Female	Male
S-Corporation	11.8%	24.1%	64.1%
Partnership	28.5%	16.9%	54.6%
Sole-Proprietorships	0.0%	44.9%	55.1%

Owner Ethnicity

LFO	Equally	Hispanic	Non-Hispanic
S-Corporation	0.9%	10.7%	88.4%
Partnership	2.0%	4.2%	93.8%
Sole-Proprietorships	0.0%	15.5%	84.5%

Owner Race Status

LFO	Equally	Non-White	Non-White
S-Corporation	1.4%	24.0%	74.6%
Partnership	3.5%	13.1%	83.4%
Sole-Proprietorships	0.0%	34.5%	65.5%

Note: This table presents nonemployer owner demographics by Legal Form of Organization (LFO). Data for C-corporations is unavailable. *Equally* indicates ownership is equally held by the two demographic groups. Source: NES-D 2017.

Table 5: Owner Demographic Homogeneity by LFO

Same Sex

LFO	Share
Partnership	41.1%
S-Corporation	32.3%

Same Ethnicity

LFO	Share
Partnership	95.2%
S-Corporation	94.2%

Same Race

LFO	Share
Partnership	94.3%
S-Corporation	94.0%

Note: This table examines *multi-owner* nonemployers' demographic homogeneity by legal form of organization. For example 41.1% of multi-owner partnerships have all owners with the same sex. No data is available for C-corporations; sole-proprietorships only include one owner and hence are excluded. Source: NES-D 2017.

Table 6: Overall Dynamics by Firm Outcome

Category	N	Share	Med Initial Receipts (K)	Med Receipts Growth (K)
Migrant	486000	0.5%	$23.38	$2.32
Continuer	17950000	19.8%	$8.31	$0.46
Exiter	67870000	74.9%	$4.07	-$0.03
NA	4264000	4.7%	$6.55	-$0.03

Note: This table summarizes median receipts growth and first year receipts by the firms' eventual outcome. The analysis includes the 1996-2014 cohorts, each of which is followed for a period of 7 years. Growth is obtained by fitting the slope of nonemployer real receipts. *Migrant* refers to nonemployer startups who eventually hire employees within the 7 year period. *Continuer*, refers to firms who stay on as nonemployers (in the 7 year span). *Exiter*, refers to firms who exit operation altogether by the 7th year. *NA*, refers to firms who fit neither of these categories, such as firms who are missing in the 7th year only (these may return to operations). Source: ILBD 1994-2020.

Table 7: Overall Dynamics by LFO

LFO	Category	N	Share	Med Initial Receipts (K)	Med Receipts Growth (K)
C/S-Corps	Migrant	194000	3.4%	$37.86	$1.31
C/S-Corps	Continuer	1114000	19.4%	$29.00	$0.36
C/S-Corps	Exiter	4154000	72.2%	$19.32	$0.00
C/S-Corps	NA	290000	5.0%	$22.09	$0.00
Partnerships	Migrant	56000	1.0%	$45.71	$5.14
Partnerships	Continuer	1974000	34.1%	$25.63	$0.64
Partnerships	Exiter	3385000	58.4%	$12.16	$0.00
Partnerships	NA	378000	6.5%	$13.04	$0.00
Sole-Proprietorships	Migrant	237000	0.3%	$14.72	$2.62
Sole-Proprietorships	Continuer	14870000	18.8%	$7.28	$0.45
Sole-Proprietorships	Exiter	60330000	76.3%	$3.93	-$0.04
Sole-Proprietorships	NA	3596000	4.5%	$6.06	-$0.03

Note: This table summarizes median receipts growth and first year receipts by the firms' eventual outcome and LFO. See Table 6 notes for details. Source: ILBD 1994-2020.

Table 8: Overall Dynamics by Sole Proprietorship EIN Type

LFO	EIN Type	Category	N	Share	Med Initial Receipts (K)	Med Receipts Growth (K)
Sole-Proprietorships	No	Migrant	141000	0.2%	$11.40	$2.84
Sole-Proprietorships	No	Continuer	13240000	18.3%	$6.92	$0.44
Sole-Proprietorships	No	Exiter	55690000	77.0%	$3.80	-$0.04
Sole-Proprietorships	No	NA	3229000	4.5%	$5.70	-$0.03
Sole-Proprietorships	Yes	Migrant	95500	1.4%	$21.63	$2.24
Sole-Proprietorships	Yes	Continuer	1631000	24.2%	$11.55	$0.64
Sole-Proprietorships	Yes	Exiter	4645000	68.9%	$6.55	-$0.03
Sole-Proprietorships	Yes	NA	367000	5.4%	$9.71	-$0.06

Note: This table summarizes sole proprietorships' median receipts growth and first year receipts firms' by eventual outcome and EIN type. *EINType* denotes if the firm filed for an EIN at startup (yes) or not (no). See Table 6 notes for details. Source: ILBD 1994-2020.

Table 9: Migrants' Employment Decomposition

Cohort	Startups	Migrants	Employees	Migration Rate	Employment Rate
1996	3903000	33000	59500	0.85%	1.80
1997	3835000	30500	62000	0.80%	2.03
1998	3876000	30500	47500	0.79%	1.56
1999	3971000	29500	46500	0.74%	1.58
2000	4175000	27500	33500	0.66%	1.22
2001	4176000	26000	29500	0.62%	1.13
2002	4375000	27000	29000	0.62%	1.07
2003	4599000	29000	34000	0.63%	1.17
2004	4910000	32000	32500	0.65%	1.02
2005	5198000	30000	34000	0.58%	1.13
2006	4238000	23500	33000	0.55%	1.40
2007	5994000	24500	36500	0.41%	1.49
2008	5147000	19500	30000	0.38%	1.54
2009	4871000	19500	28500	0.40%	1.46
2010	5682000	22500	31500	0.40%	1.40
2011	5280000	21000	27000	0.40%	1.29
2012	5232000	20000	25500	0.38%	1.27
2013	5395000	20500	25000	0.38%	1.22
2014	5718000	20500	27500	0.36%	1.34

Note: This table summarizes the number of nonemployer startups, migrants, and employees from each cohort (in the 7th year post-startup). *Migration Rate*=Migrants/Startups; Employment Rate=Employees/Migrants. Source: ILBD 1994-2020 and LBD 1994-2020.

Table 10: Variance Decomposition of log(employment)

Term	Value
Var(Employees)	0.013
Var(Startups)	0.004
Var(Migration Rate)	0.016
Var(Employment Rate)	0.006
2Cov(Startups, Migration Rate)	-0.014
2Cov(Startups, Employment Rate)	-0.003
2Cov(Migration Rate, Employment Rate)	0.004

Note: This table decomposes the variance in migrants' employment into the variance and covariances of Startup Rate, Migration Rate, and Employment Rate (all are in logs). The decomposition comes from taking the log Equation 1. See also Table 9.

Table 11: Startup Performance by Sex

Firm Sex	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
Equally	0.52%	28.1%	57.5%	147.30	$22.19	$2.48
Female	0.08%	52.2%	31.2%	21.30	$5.32	-$0.02
Male	0.14%	50.9%	33.6%	47.04	$7.10	$0.33

Note: Key performance metrics for 2017 nonemployer startups, by owner sex. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

Table 12: Startup Performance by Race

Firm Race	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
White	0.12%	50.8%	33.4%	39.1	$6.21	$0.19
Black	0.06%	53.9%	29.2%	21.3	$5.33	-$0.02
American Indian and Alaska Native	<0.07%	56.1%	27.8%	suppressed	$5.33	$0.05
Asian	0.16%	48.0%	36.1%	43.5	$7.10	$0.24
Native Hawaiian and Other Pacific Islander	<0.15%	57.0%	28.0%	suppressed	$6.21	$0.16

Note: Key performance metrics for 2017 nonemployer startups, by owner race. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

Table 13: Startup Performance by Ethnicity

Firm Race	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
Equally	0.76%	39.13%	45.65%	165.10	$23.96	$3.21
Hispanic	0.11%	51.74%	32.96%	30.18	$7.10	$0.31
Non-Hispanic	0.12%	51.00%	32.84%	37.28	$5.32	$0.11

Note: Key performance metrics for 2017 nonemployer startups, by owner ethnicity. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

Table 14: Startup Performance by Veteran

Firm Veteran	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
Equally	0.61%	35.6%	50.4%	147.30	$19.53	$2.05
Non-Veteran	0.12%	50.9%	33.1%	35.50	$6.21	$0.16
Veteran	0.11%	55.6%	28.3%	38.16	$5.32	-$0.02

Note: Key performance metrics for 2017 nonemployer startups, by owner veteran status. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

Table 15: Startup Performance by Age Bin

Owner Age	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
15-25	0.05%	60.64%	24.74%	15.98	$4.44	$0.33
26-34	0.12%	52.41%	31.48%	27.51	$5.32	$0.35
35-45	0.17%	47.93%	35.63%	44.38	$7.10	$0.29
46-54	0.14%	47.00%	36.91%	54.14	$7.10	$0.16
55-65	0.10%	47.98%	35.98%	51.48	$6.21	-$0.04
66-74	0.05%	50.24%	33.41%	45.26	$6.21	-$0.16
$\geq$75	<0.03%	55.79%	28.42%	suppressed	$5.32	-$0.33

Note: Key performance metrics for 2017 nonemployer startups, by owner age bin. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

Table 16: Startup Performance by US Born Status

Owner US Born	Migration Rate	Exit Rate	Continuer Rate	90th Pctile Employment	Median Starting Receipts (K)	Median Receipt Growth (K)
Yes	0.11%	52.8%	31.2%	33.73	$5.32	$0.07
No	0.16%	45.5%	38.8%	43.49	$7.99	$0.38

Note: Key performance metrics for 2017 nonemployer startups, by owner US Born status. All percentiles are estimates as required by disclosure practices. The sum of migration, employment, and continuer rate is less than 100% since some startups don't belong to any of these outcomes. Sources: NES-D 2017, ILBD 2015-2020, LBD 2015-2020.

11 Figures

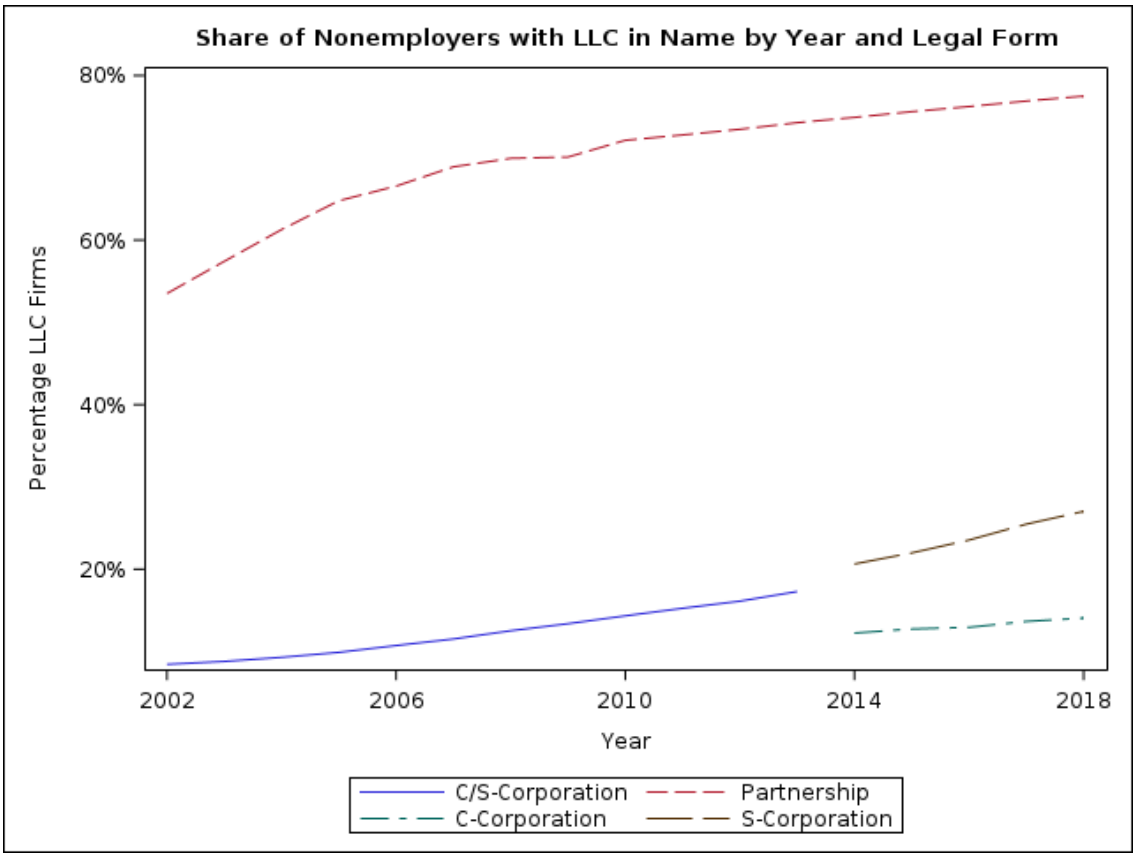
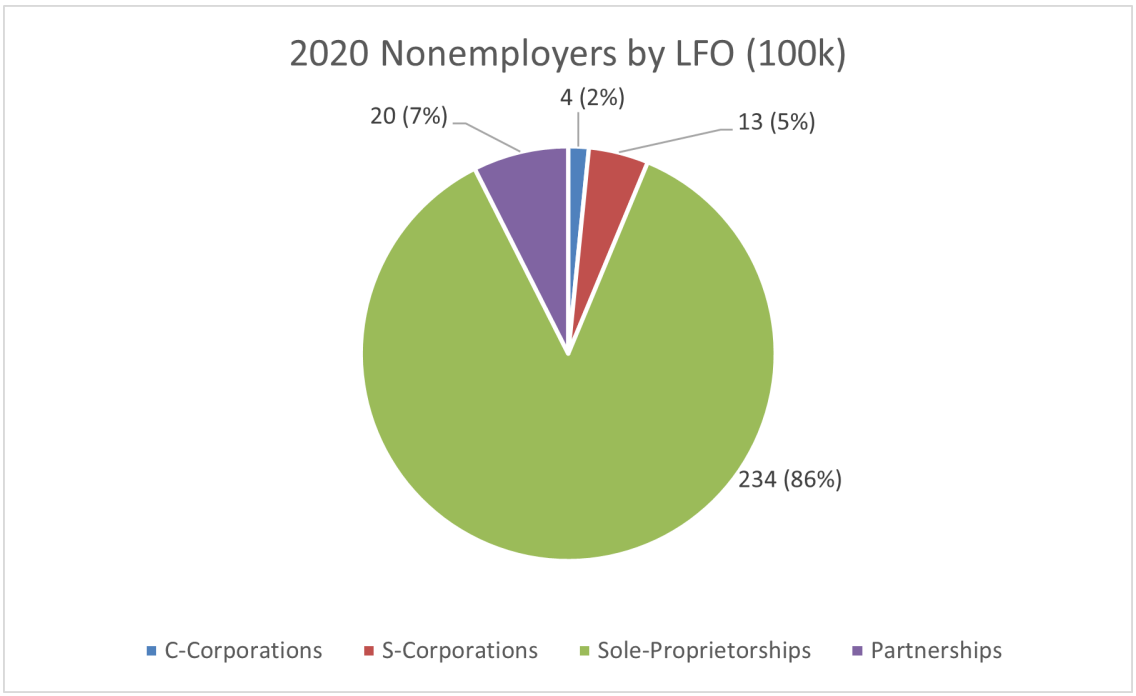


Figure 1: Share of business names that contain terms associated with being an LLC by LFO over time. Prior to 2014, C-corporations and S-corporations are not distinguished in the data. Source: Nonemployer Business Register 2002-2018



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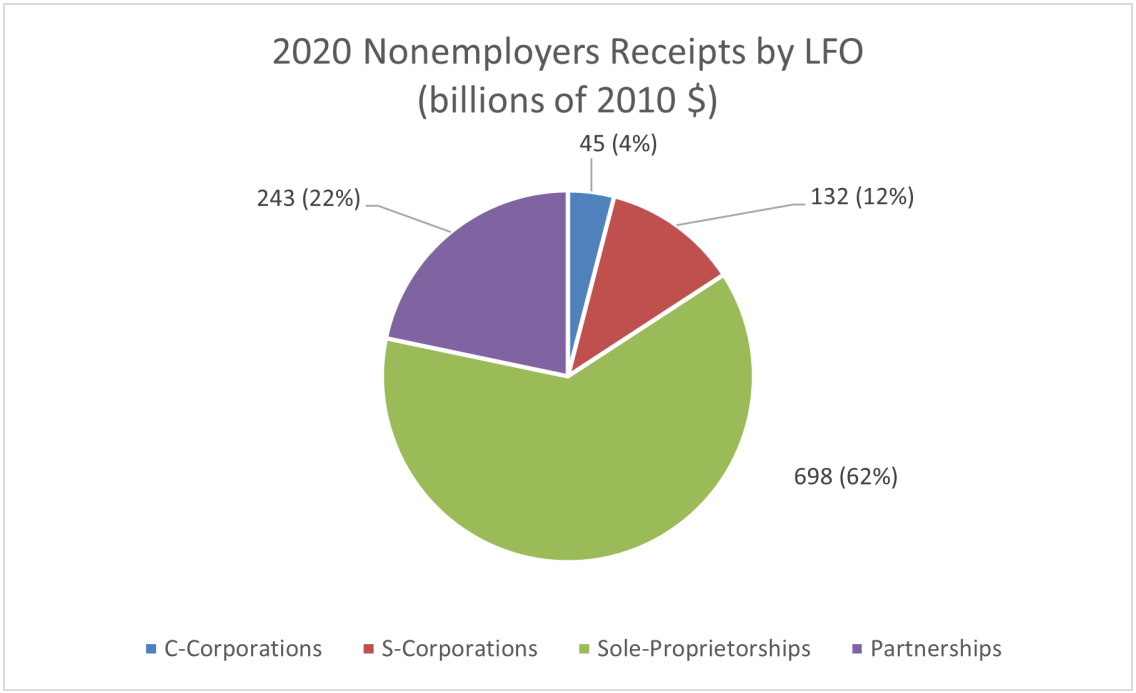

(b)

Figure 2: Figure a, shows the counts (in hundreds of thousands) of 2020 nonemployers by legal form of organization (LFO), as well as shares in parentheses. Figure b, shows the total receipts for 2020 nonemployers by LFO in billions of dollars, and as shares in parentheses. Source: U.S. Census Bureau [2020]

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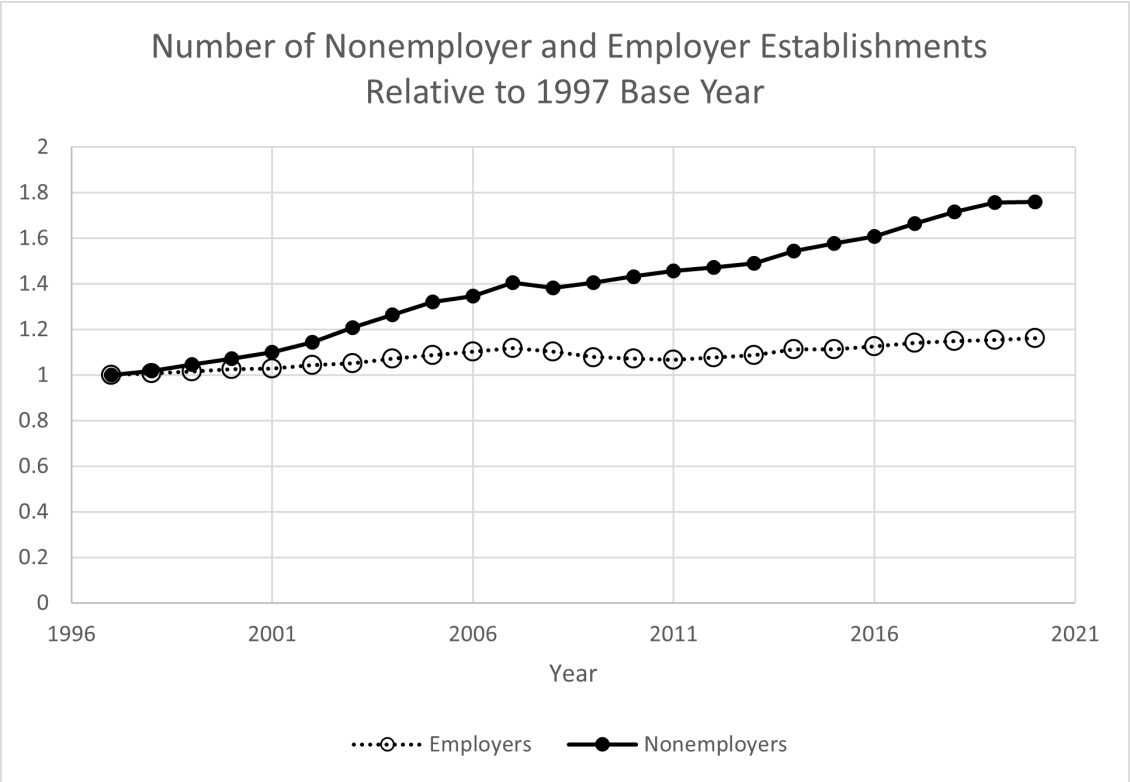
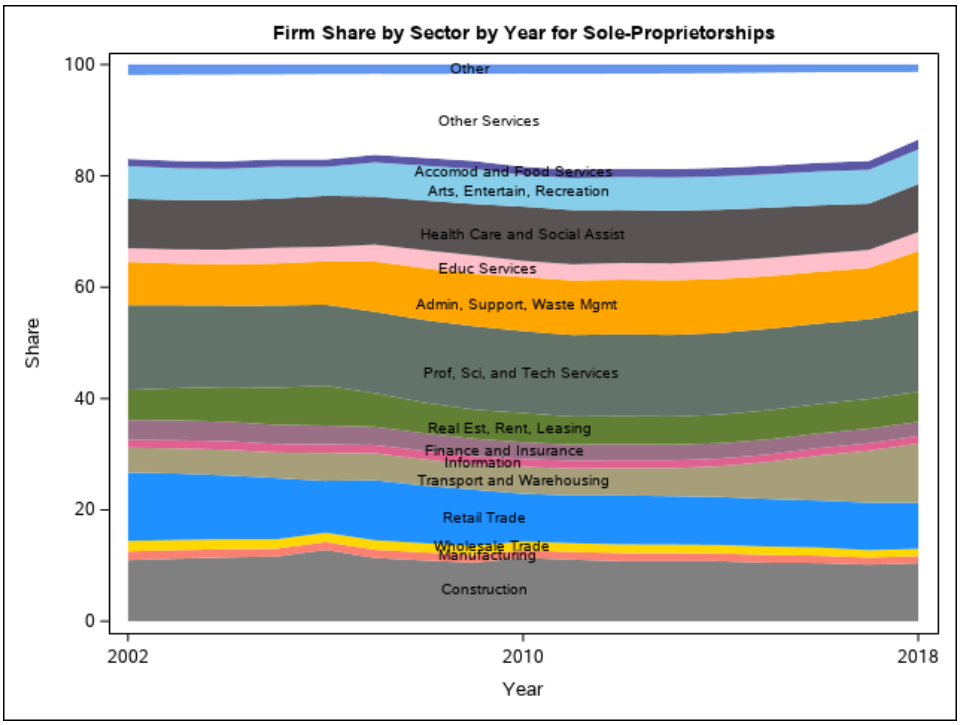
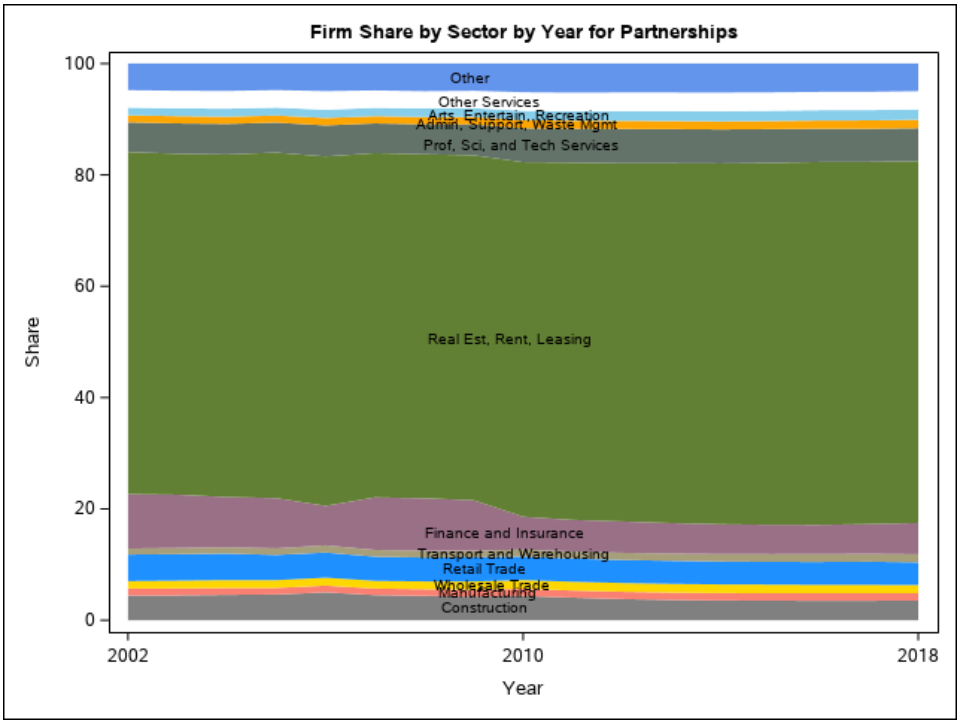


Figure 3: The number of nonemployer and employer establishments over time, relative to the 1997 base year. Source: Census CBP and NES 1997-2020.

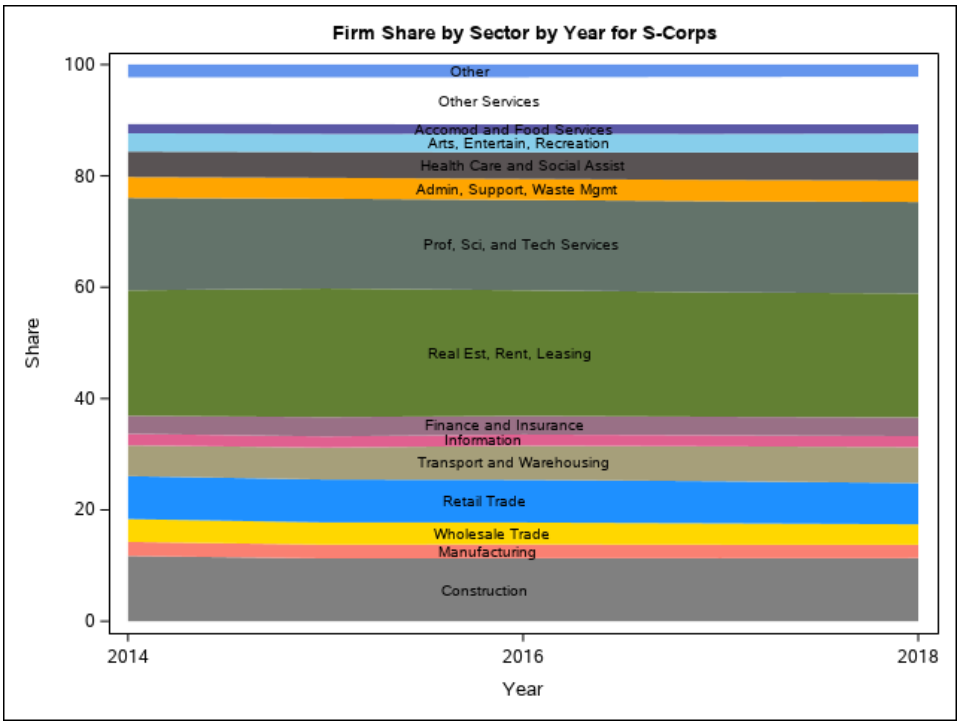


(a)

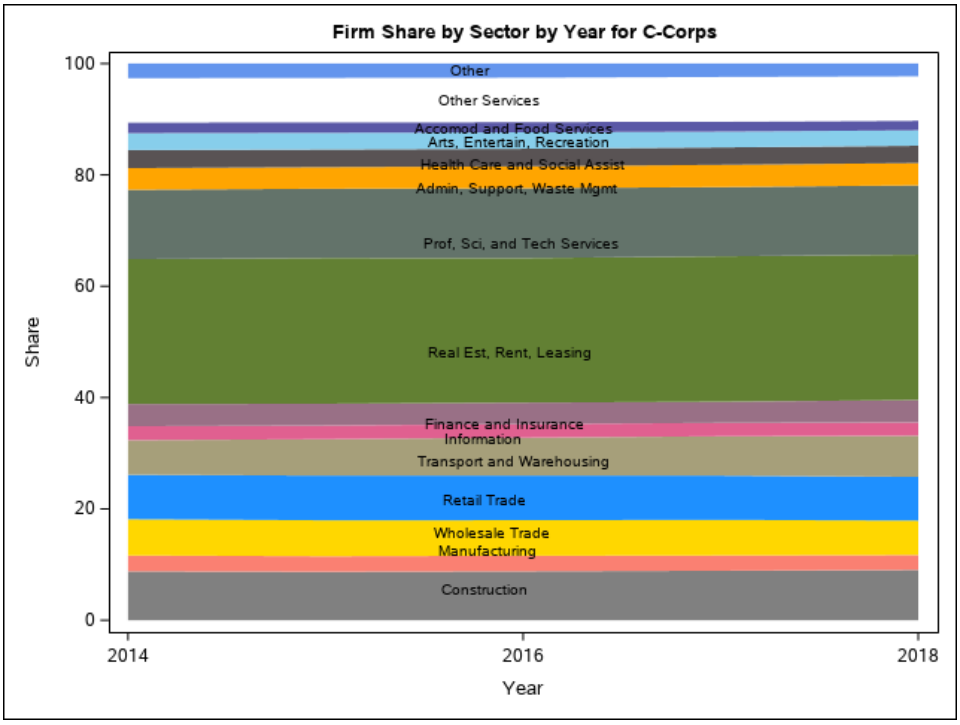


(b)

Figure 4: Nonemployer sole-proprietorships' (a) and partnerships' (b) sectoral composition by Year. Source: Nonemployer Business Register 2002-2018.



(a)



(b)

Figure 5: Nonemployer S-Corps' (a) and C-Corps' (b) sectoral composition by Year. Source: Nonemployer Business Register 2002-2018.

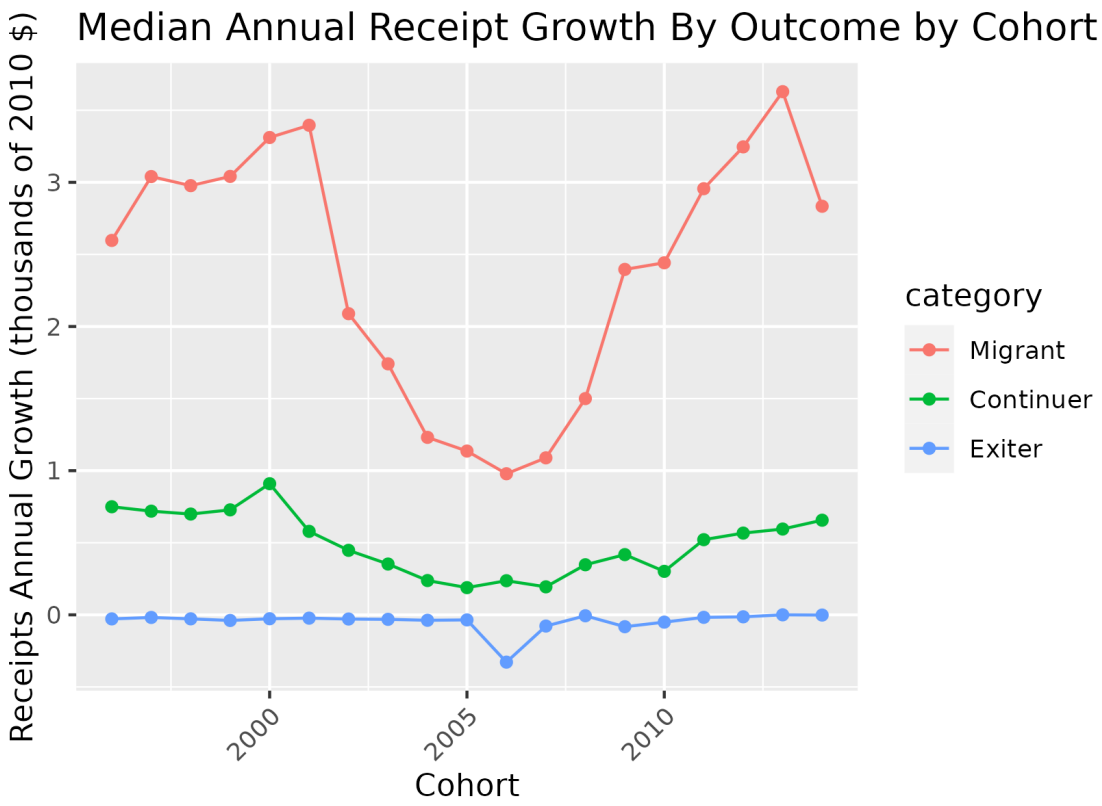


Figure 6: Receipt growth rates by outcome, by cohort. See Table 6 notes for details. Source: ILBD 1994-2020.

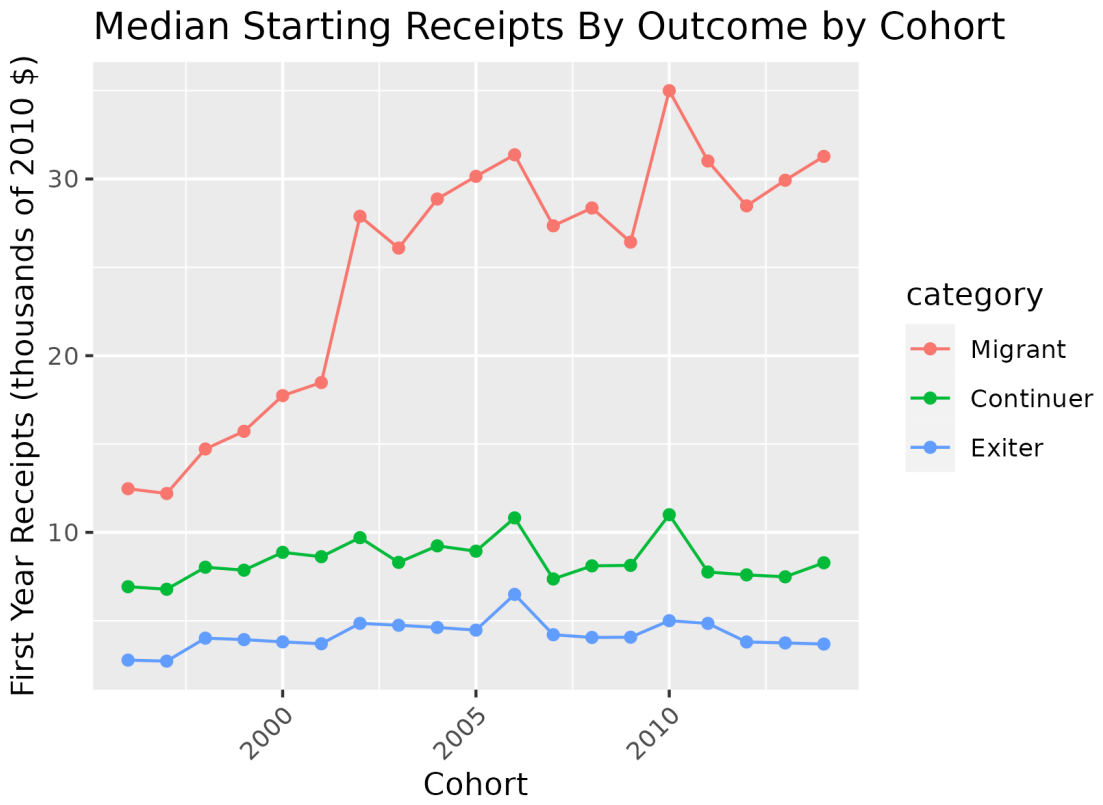


Figure 7: First year receipts by outcome, by cohort. See Table 6 notes for details. Source: ILBD 1994-2020.

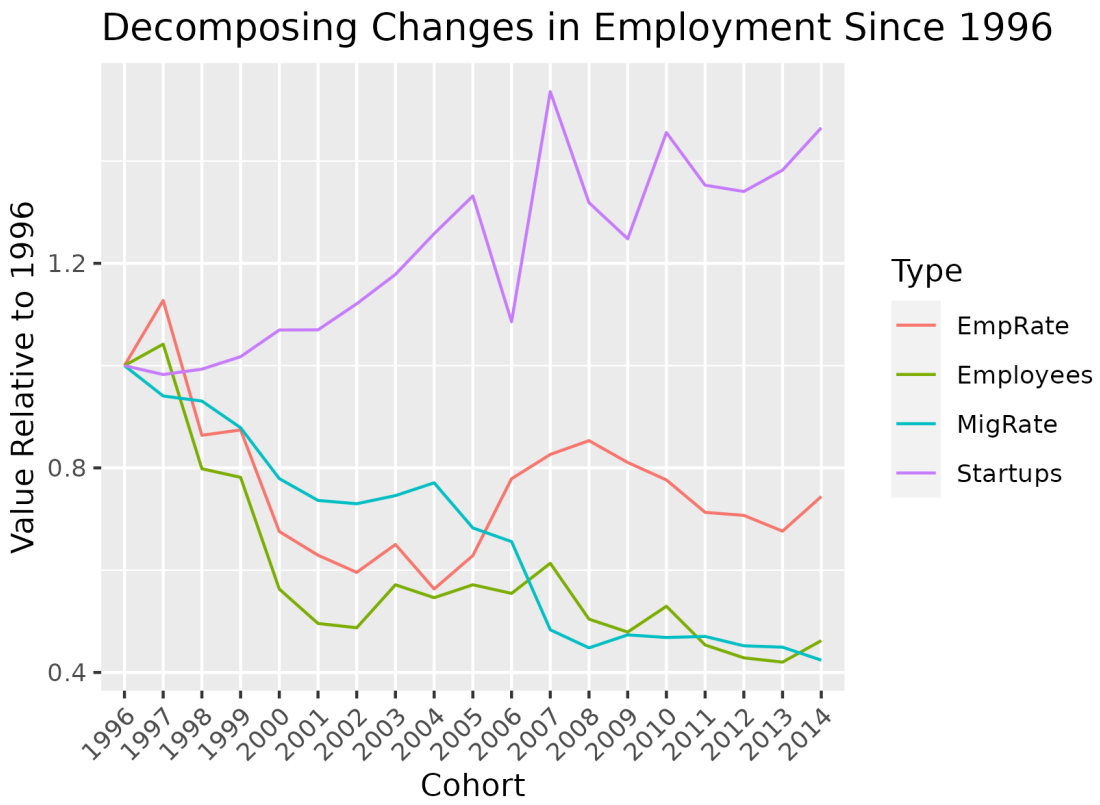


Figure 8: Nonemployer employment by cohort (Employees) decomposed into startups, migration rate (MigRate), and employment rate (EmpRate). All values are set relative to the 1996 cohort's values. Source: ILBD 1994-2020 and LBD 1994-2020.

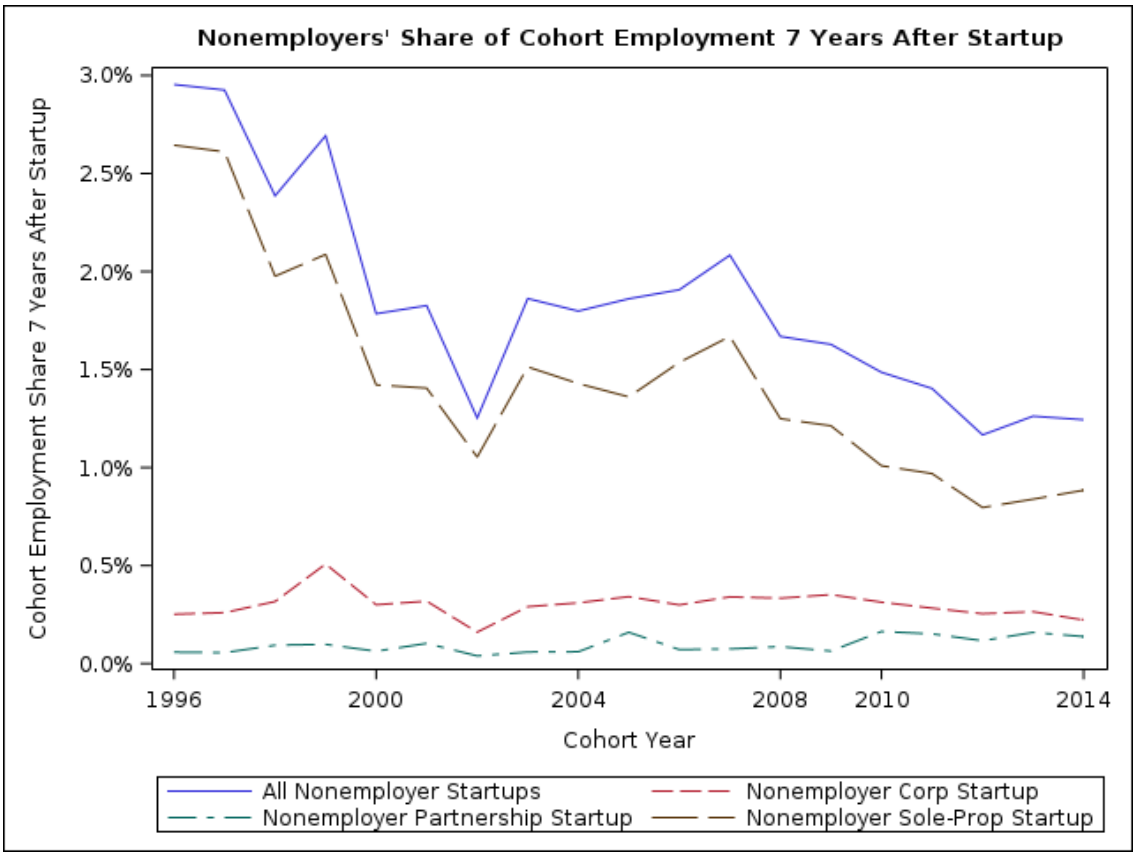


Figure 9: The employment of nonemployer migrants relative to employers by startup cohort, by nonemployer LFO and overall. Source: ILBD 1994-2020 and LBD 1994-2020.

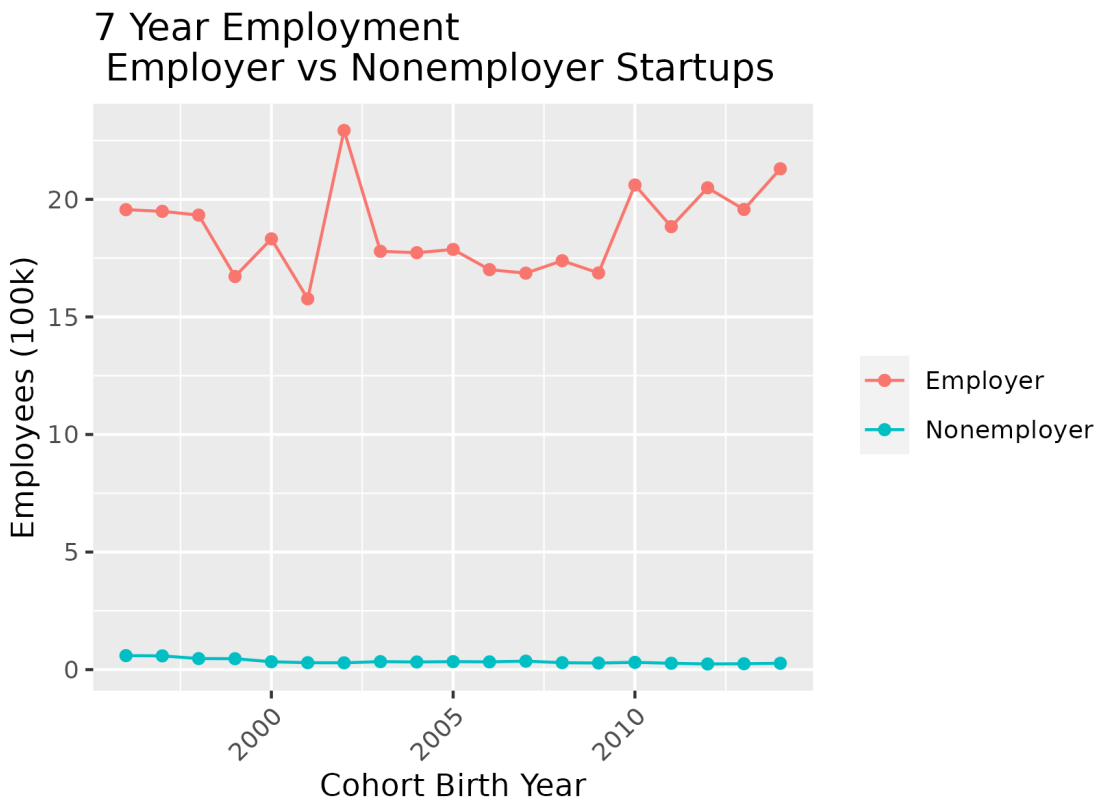


Figure 10: The 7th year employment of nonemployer migrants and employer startups by cohort. Source: ILBD 1994-2020 and LBD 1994-2020.

A Appendix: Robustness Checks

A.1 Cross-Year Matching

As discussed in the introduction, firms that migrate across tax years will be missed by the current ILBD linkage strategies. For Corporations and partnerships, checking for this is straightforward, while checking this for sole-proprietorships will require additional research. The figure below compares partnerships' and corporations' share of 7th year employment in out baseline approach (blue solid line) to the cross-year matching approach (red dashed line). When accounting for cross-year migration events, nonemployer corporations and partnerships are substantially more important, and have a slight upward trend, relative to a flat trend in the baseline specification.

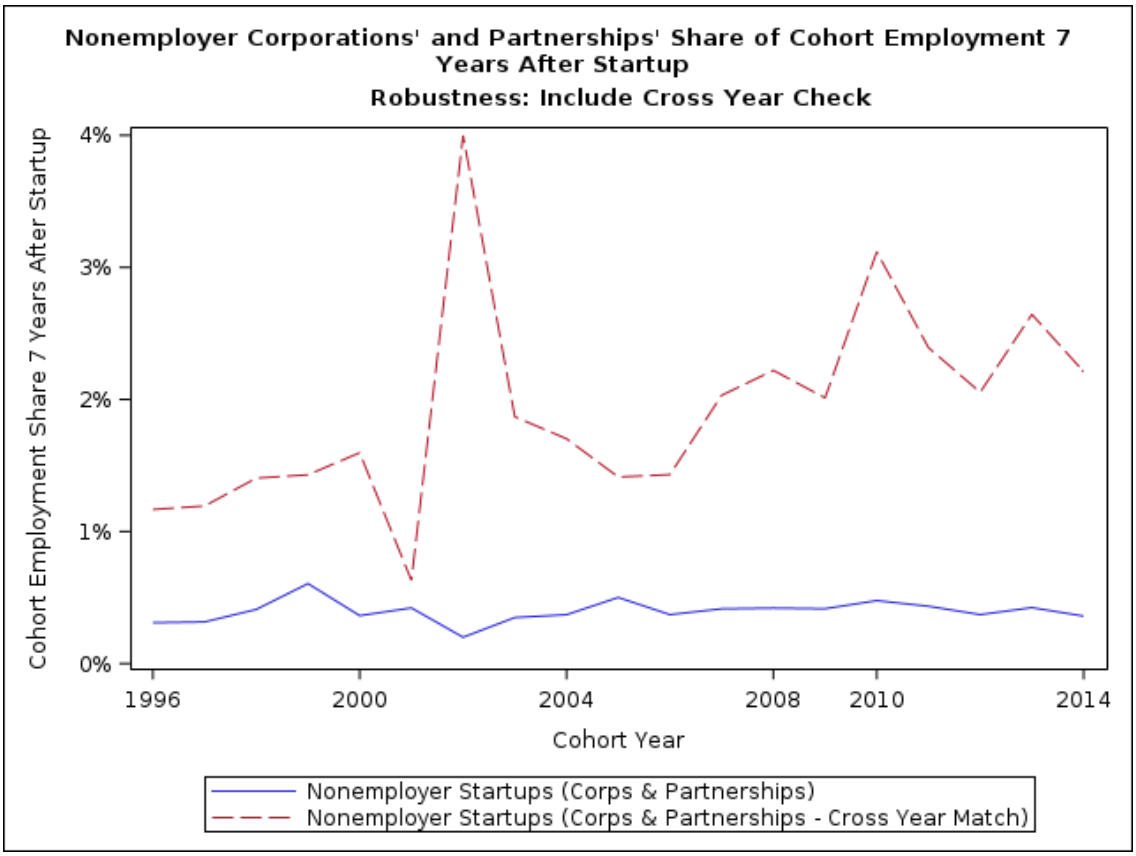


Figure A.1:

A.2 Include Same-Year Migrants

When a firm operates as both a nonemployer and employer in its startup year, the order of operations is unclear. Hence, we chose to exclude these types of firms from our analysis. To match prior literature, we here show what the results look like when these same-year migrants are included (red dashed line) relative to the baseline approach (blue solid line). As expected, not including these same-year migrants reduces the importance of nonemployer migrants somewhat, but importantly the pattern of declining performance over time is even more stark.

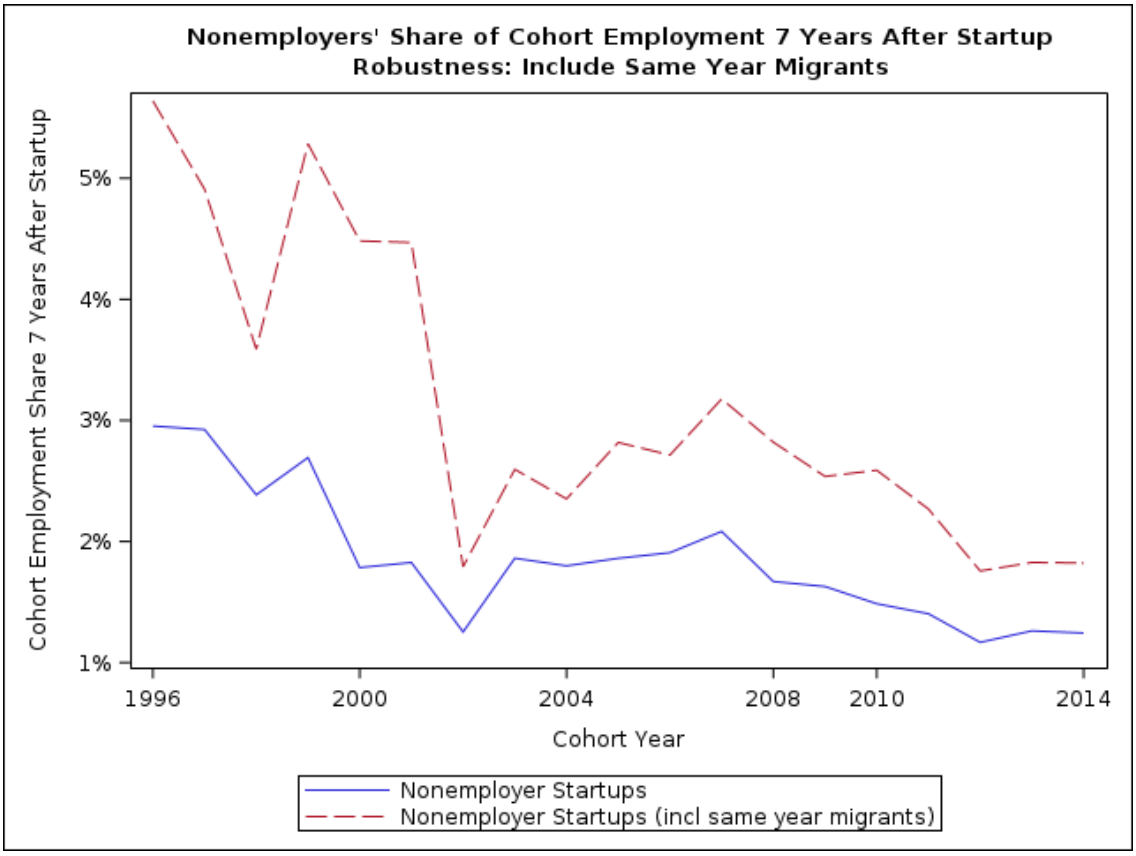


Figure A.2:

A.3 Look Back Four Years

In identifying the birth year of a startup, Fairlie and Miranda [2017] ensure the firm had no operations in the past four years. We chose to look back two years to generate a longer time series. Here we compare the results when looking back four years (red dashed line) to our baseline results (blue solid line). As expected by the increased stringency, looking back 4-years slightly reduces the importance of nonemployers, but the general pattern of results is very parallel. Note that the time series is shorter when looking back four years.

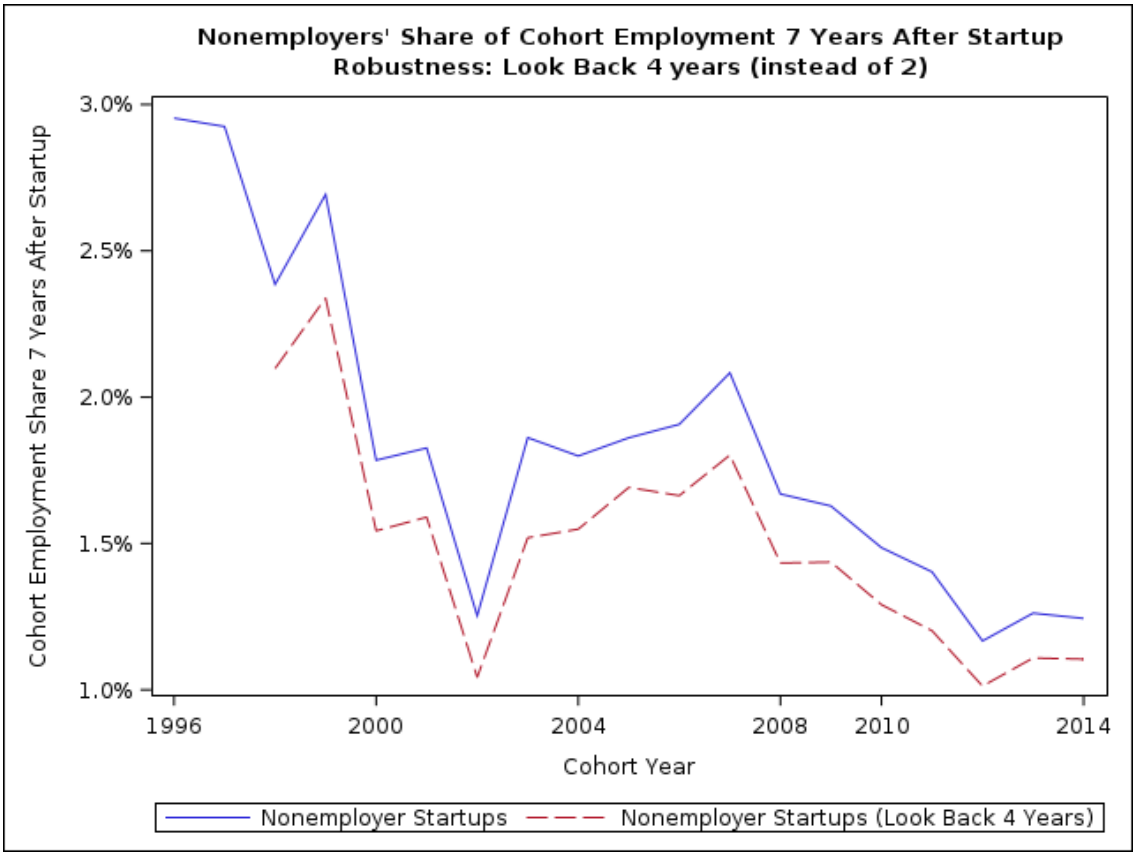


Figure A.3:

A.4 Mergers and Acquisitions

In our paper we have abstracted from Merger and Acquisition (M&A) behavior among firms. But this behavior may have changed over time and may account for the pattern of results we are seeing. Here we compare the results when accounting for M&A behavior (red dashed line) to the baseline method (blue solid line). The relative importance of migrants declines, showing that although accounting for M&A behavior increases total employment for both nonemployer and employer startups, it's relative more important for employer startups. Importantly, the general pattern is unchanged.

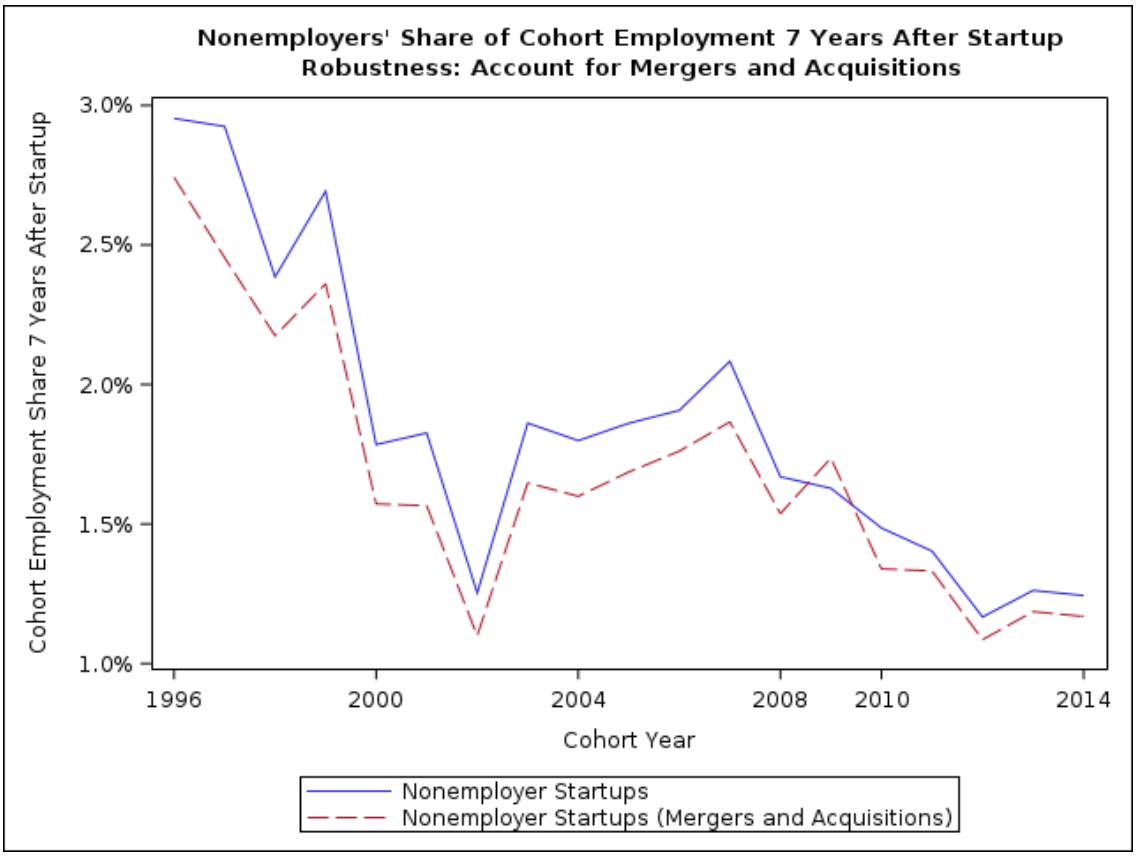


Figure A.4:

A.5 Performance in 4th Year Instead of 7th Year

In the paper, we evaluate performance in the 7th year of operation. To verify that the pattern of declining business performance isn't due to this choice, here we evaluate the trend using employment share in the 4th year after startup and find largely a parallel trend.

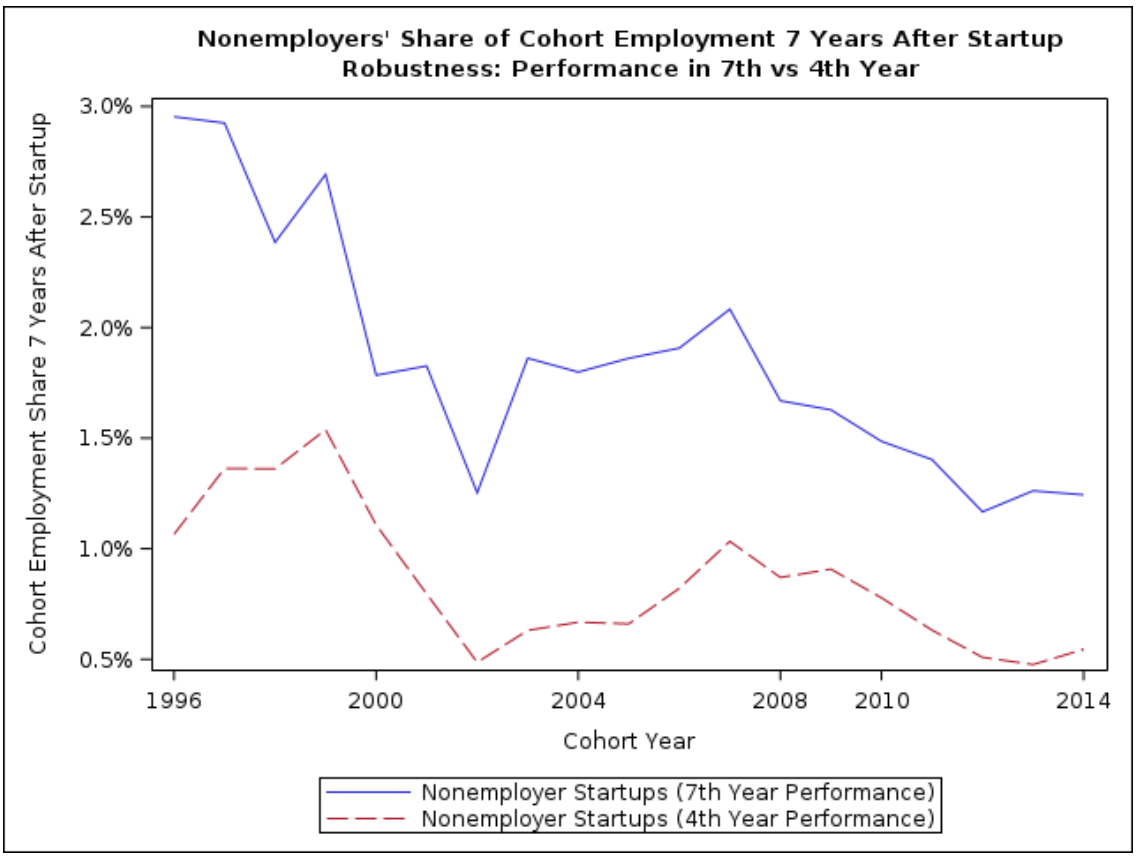


Figure A.5: Source: ILBD and LBD.