Redefining Business Success: Distinguishing Between Closure and Failure

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ABSTRACT. New firms are believed to have high closure rates and these closures are believed to be failures, but two U.S. Census Bureau data sources illustrate that these assumptions may not be justified. The Business Information Tracking Series (BITS) showed that about half of new employer firms survive beyond four years and the Characteristics of Business Owners (CBO) showed that about a third of closed businesses were successful at closure. The CBO also made it possible to compare results of models of business survival and business success, but because of non-response bias logit models were used. Similar to previous studies, firms having more resources – that were larger, with better financing and having employees – were found to have better chances of survival. Factors that were characteristic of closure – such as having no start-up capital and having a relatively young owner – were also common in businesses considered successful at closure. Hence, few defining factors can be isolated leading to true failures. The significant proportion of businesses that closed while successful calls into question the use of "business closure" as a meaningful measure of business outcome. It appears that many owners may have executed a planned exit strategy, closed a business without excess debt, sold a viable business, or retired from the work force. It is also worth noting that such inborn factors as race and gender played negligible roles in determining survivability and success at closure.

Introduction

Using government data sources that encompasses almost all industries, this paper focuses on business closures. What are the closure rates of new firms? How do business closures differ from business failures, and what factors contribute to them?[1]

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To determine business closure rates, the U.S. Census Bureau's Business Information Tracking Series (BITS) is used to track the status of new employers during the early 1990's. BITS is the universe of employers in the U.S. encompassing about 5.5 million employer firms every year. These results are compared to previous findings.

To analyze the status of closed businesses, the most recent U.S. Census Bureau's Characteristics of Business Owners (CBO) is used. The 1996 survey asked owners of closed firms whether their business was successful at closure. The survey also collected demographic information about the business and owner(s). The CBO represented a universe of about 17 million businesses with a sample of 78,147 businesses. The present study used the subset of the 6 million new business starts from 1989 to 1992, represented in the CBO by 12,185 new firm datapoints.[2]

Focusing on closure has significance because we seek to challenge the widely held but often unsubstantiated belief that new firm closure rates are high and that a closure is a negative outcome. To achieve success, entrepreneurs strive to continue in business or to close or sell while the business is making a profit and before losses pile up. Designing an exit strategy and moving on to other opportunities facilitates this process of a positive exit. Because of data limitations, research models tracking business outcomes usually do not identify "closing while successful" as a possible outcome, hence business "failure" statistics may present much more daunting odds for business success than is actually the case.

Following the introduction are sections on the literature and hypotheses, data and methodology, results, future research opportunities and conclu-

sions. An appendix with information on specific data issues follows.

1. Literature and hypotheses

Phillips and Kirchhoff (1989) mentioned the myth of 9 out of 10 new businesses closing in their first year. But using Dun & Bradstreet data they found that 76 percent of new firms were open after two years, 47 percent after four years and 38 percent after six years. These rates are substantially different than what is still commonly believed; more than ten years after the publication of their article, individuals still call the U.S. Small Business Administration looking for the unknown source of the alarming sound byte that 9 out of 10 businesses close in their first year. This myth may still exist because of the problems Williams (1993) details in using Dun & Bradstreet as a data source for business survival.

It is not hypothesized that current survival figures differ too much from Phillips and Kirchoff's findings, although an argument could be made for a faster pace of life today leading to quicker business closings. Other studies have focused on business survival, but they have generally looked at all businesses, not just new businesses or just a few industries, not the entire economy.

The CBO has been a principal source for many studies focusing on business survival. Using previous years of the CBO, Bates (1990) focused on survival rates of white- vs. black-owned businesses; Bates' (1995) focused on survival of franchise vs. independent business; Åstebro and Bernhardt (1999) used a financial perspective to assess survival and Holmes and Schmitz (1996a) used a labor perspective. These studies showed that businesses having greater inputs (such as financing and education) tend to survive longer.

But using survival as a proxy for success does not capture firms whose strategy includes exiting from the marketplace. Watson and Everett (1996 and 1993) realized that previous researchers had not distinguished business closures from business failures. They mention that closing firms could have been financially successful but closed for other reasons: the sale of the firm or a personal decision by the owner to accept employment with another firm, to retire, or the like. To define failure they created five categories: ceasing to exist (discontinuance for any reason); closing or a change in ownership; filing for bankruptcy; closing to limit losses; and failing to reach financial goals. Jennings and Beaver (1997) add that using financial criteria does not take into account owners' intangible goals. They defined success as "the sustained satisfaction of principal stakeholder aspirations."[3]

Building on this idea, this investigation attempts to separate the successful closers and unsuccessful closers as defined by the owners. Owners are able to account for their intangible goals and give insight into whether the results were worth the efforts. But first business survival factors are investigated to provide context.

Business survival is considered to be a function of the characteristics of the business and the owner(s). The CBO is a rich source to obtain these characteristics, and variables were chosen based on characteristics shown to be factors in other survival models and what was available from the data source.[4] Financing (SFIN_NON, SFIN_G50), being an employer (EMPL), not being home-based (HOM_STRT), having a good education (O_ED_HS, O_ED_BAC), previous ownership experience (O_SRT_PR), being an older owner (O_L35YR, O_G55YR) and having multiple owners (OWNERS) can signal that the resources are in place to overcome barriers and survive obstacles. The industry variables (IND_MAN, IND_RETL, IND_SERV) can be considered controls, as industries with greater barriers to entry most likely require a greater upfront investment which would be recouped over a longer period of time. The location variable (MSA) can be considered a control to test opportunity costs in cities versus rural areas. As far as evaluating the expectations of the owner(s), reasons for starting a business provide a good opportunity to see how owner's intent correlates with the business' outcome. Finally, gender and race variables were included for completeness' sake.

Like previous research, it is hypothesized that firms that have more resources have a higher likelihood of survival. (Such characteristics would include having higher levels of financing, being in the manufacturing sector, having employees, not being home-based, and having numerous owners.)

Characteristics of the owner(s), gender, race, or starting for personal reasons (flexibility for family life and wanting to be one's own boss) seem irrelevant to survival because these traits are believed to have little impact on business acumen. However, being older, more educated, and having previous experience are expected to be positively correlated with survival, as lessons learned often translate into competent decision-making.[5]

After obtaining business survival results, status at closing is tested. For comparison purposes, the same variables are used in the success model, with a control for years in business, which is unknown for the survivors.

It is hypothesized that the factors leading to business survival would also lead to a business closing successfully, as these are both positive outcomes for the owner(s). So like business survival, one would expect that employment size, years in business, and start-up capital to be positively correlated with success at closure. Service and home-based business would be expected to be negatively correlated with success, as generally these industries have few barriers to entry and firms must survive in a highly competitive market. One would also expect success rates to increase with the owner's age, education and previous experience, as older, better educated, and more experienced owners could provide more skills and more capital. Gender and race would seem irrelevant for success or failure status at closure. Finally, the reason for starting the business might present the best opportunity to gauge expectations. Starting a business for personal reasons may be an indicator of low financial or growth expectations, hence this group may be well represented among successful closures.

2. Data and methodology

Two Census data sets were used for analysis. The universe of employers, BITS, was used for tracking survival rates. BITS is a relatively new database of longitudinally linked establishments from 1989 to the present (with about a two year lag). Although BITS is establishment based, links among establishments owned by parent companies allow it to be used a firm size database. BITS contains only a few variables (such as location and employment) but does represent all of the 5.5

million employers in the U.S. (see Robb, 1999). BITS was also used to determine the non-response bias in the Characteristics of Business Owners by matching this group and tracking their survival rates.

The success status analysis uses the set of firms starting between 1989 and 1992 in the Characteristics of Business Owners (CBO). The CBO is a Census database that includes demographic information on businesses and owners in most industries (Headd, 1999). Because the CBO surveyed firms in 1996 known to be in existence in 1992, survival analysis was possible; and since it asked the status of the business at closure, it was possible to analyze success status at closure. The CBO asked owners of closed businesses the following question: "Which [response] below best describes the status of this business at the time the decision was made to cease operations [successful, unsuccessful]?" This question allows the owner to consider personal and financial factors (which are often difficult to measure) in determining the status of the business at closure.

The CBO had good coverage of businesses. For 1992, the CBO had response rates around 60 percent and calculated a universe of 5.7 million firms starting between 1989 and 1992. There were 12,185 weighted data points for business starts during this period, 3,009 data points for closures, and the 893 data points for businesses successful at closure.

Although the quantity of data points and the response rate were acceptable for this study, data issues remained, primarily the CBO's non-response bias with regard to closed firms. (Firms that had closed were more likely to not be located and, therefore, less likely to respond to the survey.) Individually matching responding employers and non-responding employers to the universe of employers contained in the BITS database and comparing their survival rates showed that responding employers had much higher survival rates. Other data issues are reported in the Appendix.

However, although non-responders clearly skew the survival rates generated by the CBO, it is not believed that the characteristics of the non-responders differ from the responders. With this being the case, a binomial model such as a logit model could compare the characteristics of one group to

another without being affected by the non-response bias.[6]

The logit models for survival and the success status at closure were kept similar to facilitate comparisons. The main differences were that the success status model included a control for years in business and was the subset of closures.

The following model is used to determine the traits that are a correlated with survival. Because many CBO questions had check box responses, the model had to be created with dummy variables almost exclusively. In the cases of financing, age, education, and industry, a few categories were used to try to avoid taking an arbitrary cut-off point, although the CBO only supplied a couple of options.

> Survival = F[business traits (financing, industry, location, employer, home-based, number of owners), owner traits (gender, race, age, education, reasons for starting, previous experience)]

The following model below is used to determine the traits that are a function of success for closed firms. The variables were chosen to match the survival model with a control for firm age (YRS_BUS).

> Success = F[business traits (financing, industry, location, employer, home-based, owners, firm age), owner traits (gender, race, age, education, reasons for starting, previous experience)]

3. Results

3.1. *New firm survival*

Because of data issues discussed earlier, the CBO does not have accurate survival rates but BITS can provide some perspective. BITS shows that 66 percent of new employers survive two years or more, 50 percent survive four years or more, and 40 percent survive six years or more (see Appendix). These results are strikingly similar to findings from Phillips and Kirchhoff showing about three-quarters of all businesses surviving two years or more, about half surviving four years

or more, and about 40 percent surviving six years or more.

Even with the different data sources and time periods, survival rates seemed consistent. Although the business survival rates presented here simply confirm previous findings, perhaps this kind of independent confirmation is what is needed to dispel the myth that 9 out of 10 businesses close in their first year.

BITS contains little demographic information for analysis, but assuming the non-response bias in the CBO is not correlated with other variables, CBO closure rates can be compared. Closure rates reveal what most would expect, employers and firms with starting capital of more than $50,000 have low closure rates, while firms with no starting capital and young owners have high closure rates. Industry differences are also as expected, with manufacturers having lower closure rates than service and retail trade firms.[7]

A closer examination of closure, taking into account multiple variables, was conducted; Table I shows the output for the logit survival model. The *t*-stats in Model 1 show that variables for manufacturing, age 55 or over, and owners with high school diplomas or less were not relevant to the model. This is not too surprising as these were dummy variables created from categories of industry, age, and education that had remaining dummy variables using different categories. The female and black variables also had low *t*-stats, so the slightly higher-than-average closure rates for female and black owners is most likely the result of other personal and/or business characteristics. These variables were incrementally removed with little impact on the remaining variables and the model's fit as the loglikelihood was similar and the model was more simplistic. Including variables for home-based and number of owners were judgment calls and were left in the model as their inclusion seemed to affect the other variables little. The result is Model 2.

Comparisons of the estimated coefficients can indicate which factors have the greatest impact because all of the remaining variables are dummy variables, except for number of owners, which was usually 1. The signs on the coefficients were as expected – positive for ventures with more resources, except for home-based and being in an MSA. Even these two exceptions had low betas,

TABLE I
Data summary and model of closures for new firms (started between 1989 to 1992)

Variable names	Variable descriptions	Weighted summary stats			Model 1		Model 2	
		Sum	Mean	Percent closed (a)	Betas	t-stats	Betas	t-stats
INTERCPT	–	–	–	–	–0.43	4.9***	0.37	4.6***
SFIN_NON	No start-up capital	3,775	0.31	45.3	–0.36	–8.4***	–0.38	–8.8***
SFIN_G50	Start-up capital $50,000+	872	0.07	15.0	0.55	5.1***	0.55	5.1***
IND_MAN	Manufacturing	310	0.03	29.1	0.13	1.0	–	–
IND_RETL	Retail	1,744	0.14	37.1	–0.30	–4.7***	–0.32	–5.2***
IND_SERV	Services	5,622	0.46	38.1	–0.19	–4.2***	–0.21	–4.8***
MSA	Urban/suburban area	9,508	0.78	36.4	–0.17	–3.5**	–0.17	–3.4**
EMPL	Employer firm	1,034	0.08	14.4	0.97	10.1***	0.98	10.2***
HOM_STRT	Home-based	7,800	0.64	36.7	0.13	3.0**	0.13	3.0*
OWNERS	Number of owners	14,279	1.17	–	0.13	3.1**	0.13	3.0*
FEMALE	Female-owned	4,577	0.38	38.1	–0.03	–0.6	–	–
BLACK	Black-owned	436	0.04	40.6	–0.01	–0.1	–	–
O_L35YR	Owner's age <35	3,678	0.30	43.3	–0.39	–8.6***	–0.37	–8.6***
O_G55YR	Owner's age 55+	2,223	0.18	35.5	–0.07	–1.3	–	–
O_ED_HS	High school or less	4,076	0.33	42.1	–0.08	–1.7	–	–
O_ED_BAC	Bachelor's or greater	4,491	0.37	28.4	0.48	9.6***	0.52	12.1***
O_SRT_PR	Start for personal reason	3,904	0.32	30.1	0.48	11.0***	0.48	11.1***
O_EXP	Owned another firm	2,634	0.22	26.8	0.31	5.8***	0.31	5.9***
LogLik. Intercept					15,940	–	15,940	–
LogLik. Model					15,007	–	15,013	–
Chi-square					932.8	–	927.1	–

* Significant at the 0.05 level, ** at the 0.01 level, and *** at the 0.001 level
(a) Closure percentages are presented for variable comparison purposes only (the overall weighted closure rate was 36.1 percent) because they are most likely low due to non-response bias.
Notes: Based on 12,185 responses to the CBO (excludes 1,374 firms that were non-responsive to key variables, 165 of which it was unclear if the firm was closed). The weights were normalized to match the number of records. The appendix lists data issues.

so they are most likely not driving factors. Some possible explanations are listed below.

Model 2 shows the factors that best explain the likelihood of survival are being an employer firm, having starting capital greater than $50,000, having a college degree, and starting a business for personal reasons. Increased start-up capital and more education both give owners increased resources to develop a business. In addition, the correlation between starting capital greater than $50,000 and higher survival rates also reflect bankers' decisions – evaluating intangibles and "picking winners" by financing businesses judged more likely to survive. It is believed that starting a business for personal reasons gives the owner increased motivation to keep a business going. So even if the business is barely staying afloat, better business opportunities are available, job offers arise, the owner who has started a business for

personal reasons probably gains satisfaction from the lifestyle and does what it takes to keep the business open.

Three other factors – previously owning another business, having multiple owners and being home-based at startup – also seem to increase survivability. The first two factors correspond with the hypothesis that more resources tend to lead to better odds of survival. But the third, being home-based, would seem to signal fewer, not more, resources. However, since businesses that are home-based also keep costs low, odds of survival are increased. The home-based owner probably enjoys the work-from-home lifestyle so could be more likely to continue a struggling business.

On the negative side, relatively young owners, being in services or retail trade, not having any start-up capital, and being in an urban/suburban

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area led to a higher likelihood of closure. Young owners and individuals in urban/suburban areas may be more likely to have better business or job opportunities. Owning a business comes at a higher opportunity cost for them, and they may therefore more likely close the business.[8] The sum of these variables shows a tendency to have a venture that is small, easy to start, and easy to close.

These results held up to sensitivity analysis on start periods, employers vs. non-employers, the macroeconomy at start-up, and owner type. Being an employer remained the main factor leading to survival amongst the models. For the employer vs. non-employer models, financing seemed more important to the employer model for survival, and for non-employers, retail trade struggled more.[9]

By and large, slight model modifications yielded small differences, but they seemed mostly the result of slicing the data "too thin" (working with samples too small to generalize from) rather than a reflection of actual differences. So while in some cases splitting the data for more specific analysis would be interesting, the results might be questionable.

Overall, results tended to support the hypothesis: having the resources to be or get larger and the motivation to persist leads to survival. Survival results here are consistent with the previous CBO studies mentioned above. These studies and the results here find that human capital and financing play key roles in survival. But additional questions in the most recent CBO also shows the importance of motivation in business survivability.

3.2. *Success status for closed firms*

The question remains: What was the status of the firms that closed? Unpublished CBO data shows that of the firms that opened between 1989–1992 and closed between 1992–1996, 29.1 percent of their owners felt the business was successful at closure.[10] How did these businesses' characteristics correlate with perceived success?

Financing presented the most surprising results. Firms that started with capital of either zero or $50,000 or more both have higher rates of success at closure than firms in the middle, with capital of $50,000 or less. One possible explanation is that firms without capital may have low initial

expectations and perform labor intensive activities, while firms with a small amount of capital may not have enough to achieve the minimum efficient scale for their industry.

The retail trade industry had the lowest percentage of firms closing while successful, and services had the highest. One could argue that successful retail firms are easily identified and copy, while service firms are less apparent and their owners may utilize unique skills that make them difficult to copy. Being home-based at start-up does not seem to make much difference in success at closing nor does having employees: the percentage of firms closing successfully was similar for firms with employees (27.3 percent) and firms without employees (29.1 percent).

Women and owners under age 35 (in 1992) had higher than average success rates at closing; black owners and those starting for personal reasons had lower than average success at closing rates. The high rates for those under 35 might be the result of keeping the venture small while learning or being enticed to close a business and work for an employer. Not surprisingly, success rates generally increased with owner age, number of owners, and previous experience as the owner of another business.

Results used to find out what caused differences in subsets above are listed in Table II.[11] Model 3 shows that the signs of the coefficients generally agree with what was expected except for start-up capital. While it is unclear why owners with no start-up capital were more likely to consider their closures successful, possible explanations are low initial expectations, having a finite defined scope (i.e., completing a contract or selling off collectibles), or engaging in a business solely to enjoy the lifestyle. In addition, while the female variable has a positive coefficient and the black variable has a negative coefficient, neither variable is a particularly strong indicator. The variable for starting a business for personal reasons turned out to be a negative factor for success at closing (although it is a positive factor for survival). Possible explanations for this include not dedicating as much effort to the business as individuals that were taking advantage of business opportunities and/or not having the skill set or knowledge needed to create a successful business.

Although the signs of the coefficients were not

TABLE II
Data summary and model of success for new firms that closed (started between 1989 to 1992)

Variable names	Variable descriptions	Weighted summary stats			Model 3		Model 4	
		Sum	Mean	Percent successful	Betas	*t*-stats	Betas	*t*-stats
INTERCPT	–	–	–	–	–2.47	–10.8***	–2.42	–15.5***
YRS_BUS	Years in business	9,744.1	3.24	–	0.19	6.7***	0.19	6.9***
SFIN_NON	No start-up capital	1,170.5	0.39	40.6	1.16	11.8***	1.19	12.3***
SFIN_G50	Start-up capital $50,000+	89.5	0.03	37.9	0.89	3.5**	0.92	3.8**
IND_MAN	Manufacturing	61.8	0.02	20.0	–0.51	–1.5	–	–
IND_RETL	Retail	442.5	0.15	13.5	–0.84	–4.9***	–0.81	–4.7***
IND_SERV	Services	1,464.8	0.49	35.4	0.28	2.8*	0.32	3.4**
MSA	Urban/suburban area	2,364.3	0.79	30.2	0.14	1.2	–	–
EMPL	Employer firm	102.0	0.03	27.3	–0.15	–0.6	–	–
HOM_STRT	Home-based at start	1,958.3	0.65	27.9	–0.18	–1.9	–	–
OWNERS	Number of owners	3,190.0	1.06	–	–0.02	–0.2	–	–
FEMALE	Female-owned	1,192.4	0.40	31.9	0.25	2.7*	0.24	2.6*
BLACK	Black-owned	120.9	0.04	20.4	–0.57	–2.3*	–	–
O_L35YR	Owner's age <35	1,089.6	0.36	36.9	0.86	8.6***	0.83	9.1***
O_G55YR	Owner's age 55+	539.0	0.18	29.6	0.15	1.2	–	–
O_ED_HS	High school or less	1,173.4	0.39	23.6	–0.36	–3.2**	–0.51	–5.4***
O_ED_BAC	Bachelor's or greater	871.4	0.29	37.4	0.24	2.2*	–	–
O_EXP	Owned another firm	482.4	0.16	40.8	0.91	7.6***	0.93	7.9***
O_SRT_PR	Start for personal reason	803.7	0.27	21.5	–0.51	–4.8***	–0.50	–4.7***
LogLik. Intercept					3,627	–	3,627	–
LogLik. Model					3,165	–	3,185	–
Chi-square					461.8	–	441.7	–

* Significant at the 0.05 level, ** at the 0.01 level, and *** at the 0.001 level.
Notes: Based on 3,009 responses to the CBO (excludes 191 closed firms that were non-responsive to the status of the business at closure and 387 closed firms that were non-responsive to key variables). The weights were normalized to match the number of records. The appendix lists data issues.

surprising, the statistical significance of variables compared to the survival model were. The variables for employer, home-based, and number of owners had low coefficients and *t*-statistics. Unlike their effect on survival, the three business-size indicators (being an employer, being non-home-based, and having multiple owners) do not have much impact on the success status of closed businesses. Being in the manufacturing sector, having an owner over age 55, and having an urban/suburban location, which also could be indicators of size, were also statistically insignificant as indicated by their low *t*-stats.

These statistically insignificant variables were incrementally dropped with negligible effects on the model's overall fit. In addition, variables for black-ownership and education level of a bachelor's degree or greater, which had been statistically indeterminate became less significant and were removed as well. After removing these, the remaining variables were little changed, creating a simplified model.

Model 4 shows starting without any capital, starting with capital of $50,000 or more, and having a previous business had large impacts on perceived success at closure. Firms with relatively young owners, female owners, and in the service sector were also positive factors leading to success.

Why are capital and being the owner of a previous business strongly correlated with perceived success at closure? There are several likely scenarios. People who start businesses without capital are undertaking small ventures with little financial risk that hold out the possibility of great personal satisfaction; long-term survival may not

have been a goal. While this type of business may not grow into a huge engine for the economy, it provides a great opportunity for learning. At the other end of the spectrum are businesses that secure a lot of capital at the entry phase, implement the "business plan," then close, either selling or ceasing operations before losses pile up. In the middle are businesses that need some capital but do not obtain enough at the entry phase; these are the ones that struggle. Having previously owned a business allows one to acquire skills, make connections, and develop reasonable expectations that can result in success. This picture of entrepreneurship shows that starting small, planning for success, learning from previous mistakes, and being persistent yields successful results.

Operating a retail trade business was the prime factor among businesses that were unsuccessful at closure, followed by owners with high school diplomas or less and individuals that started firms for personal reasons. Considering that the survival rate for retail trade was also quite low, positive business outcomes with this industry seem limited.[12] Not having a high school education may limit employment prospects, and these individuals may become self-employed as a last resort, because of poor prospects elsewhere. Personal reasons might be from the owners of these businesses, as discussed in the closure section, enjoying the lifestyle and being more likely to hold onto the business until it completely fails.

Given these results, it seems clear that contrary to what was hypothesized, variables leading to survival do not necessarily correspond with whether an owner perceived the business as successful at closure. A possible explanation is that survival may be a result of self-selection. Businesses whose strategy is to grow tend to continue growing, while businesses entered into for the lifestyle have less at stake and are easier to exit.

As a last exercise, a model using a broad definition of success – encompassing survivors and those closing successfully – was created. This model combined positive outcomes to see if this definition would differ from the more traditional definition equating success with survival. Many of the lifestyle traits leading to success at closing (starting without capital, being home-based, etc.)

were not factors in this broader definition of business success. The two largest factors leading to business survival, being an employer and having $50,000 or more in start-up capital, were also the two largest factors leading to business survival plus closing successfully.

4. Future research opportunities

Business survival rates were shown here to be higher than commonly believed, however this inquiry only considered employer firms. Annual data from the U.S. Census Bureau on non-employer businesses recently became available but only two year's worth of data is currently available. Once an adequate longitudinal series is available, microdata of non-employers can be matched over time, and entry and exit rates for all new firms can be calculated.

Business status at closure for about one-third of businesses was successful but it is not known if closure was a planned event. If certain kinds of closings are the final step in a preplanned strategy – growing to a certain size and selling out, closing after the ending of a contract, closing for retirement, and so forth – then knowing the survival rate of new firms might come to have less value than knowing the success rate.

Another interesting research direction would go beyond start-up factors to focus on the managerial decisions that affect business outcome. Such decisions might include adjusting the original business plan after start-up by switching product mix, end users, production processes, or financing plans. This inquiry could test whether inefficient firms tend to be less successful or if a more random process is at work.

5. Conclusion

This paper analyzed business survival and the success status of closed businesses. As shown in Figure 1, BITS showed that about half of new businesses remained open for a reasonable time period and the CBO showed that about a third of all closed businesses closed while successful. Contrary to what is commonly believed, not all closures are failures. Only one-third of new businesses (33 percent) closed under circumstances that owners considered unsuccessful.
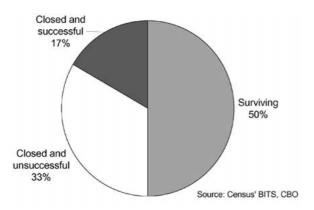
Figure 1. Business success (percent of new employer firms after four years).

The factors leading to survival were similar to those found in other studies. Size and such resource indicators as having employees, a good amount of starting capital, and an educated owner correlated with survival. However, the factors that led to closing, such as being young and having no start-up capital, were also prevalent among businesses that were successful at closing. So even if a firm may fit a profile of a likely business casualty, the owner(s) did not seem to see the firm's brief life span as a negative business outcome. This leads to the conclusion that there are few traits that lead to a true business failure or to a business that closes unsuccessfully. These results suggest that potential entrepreneurs, particularly those planning very small ventures, have less to fear than what is commonly believed. Their prospects of survival are reasonable, and if they close, their prospects for being successful at closure are reasonable.

Acknowledgments

Appendix – CBO data issues

To test non-response bias for employers (employers were known from CBO's parent data source, the Standard Statistical Establishment List or SSEL), BITS was used to determine whether the firm began between 1989 and 1992 and if it remained open in 1996.[13] This matching shown in Table III below clearly demonstrates that the unreturned surveys were more likely to be firms that closed.[14] Robb (forthcoming) found similar response bias using the CBO and Holmes and Schmitz (1996b) also recognized problems with the microdata. Therefore, evaluating the CBO for survival rates without considering the non-response bias could produce erroneous results.

There were several data issues:

- The CBO consists of a firm and owner database. The firm database was used here except for a few owner variables (previous ownership, age, education, and reasons for starting). These exceptions were matched to the firm data and the owner with the greater experience or resources was used.

TABLE III
New firm survival rates by data source (percentages)

	CBO Responding employers 1992–1996	CBO Non-responding employers 1992–1996	BITS Employers 1989–1998
Still open after 2 yrs.	95.3	64.1	66.0
4 yrs.	75.4	45.0	49.6
6 yrs.	–	–	39.5

Notes: The CBO excludes C corporations; BITS figures exclude farms and firms starting with multi-establishments (a relatively rare occurrence). BITS survival rates per start year differed by a percent or two.

- The number of owners was created from the larger value of number of partners or shareholders.
- Due to the limitations of the data source, employer status, owner's age, industry, and number of owners are based on 1992 status not start-up status.
- For the "home based at start up" category, in the few instances that home start was not listed and home based in 1992 was available, the 1992 status was used.
- The 43 records with responses of "not sure" in the category of owner experience were counted as none.
- Responses that did not include all tested variables (165 records without the status at closure and 1,374 records with one or more missing fields) were excluded and the remaining data were not re-weighted. The 1,374 records had similar characteristics as the remaining records but some small differences did exist. Adding in the non-response data and using non-response dummies yielded similar results as the models without non-response data.

Notes

[1] This article is based on a U.S. Census Bureau Center for Economic Studies (CES) working paper, CES-01-01, "Business Success: Factors leading to surviving and closing successful" (Headd, 2001).

[2] Most firms – and particularly new firms – do not have employees so only about 10 percent of these data points represented employer firms.

[3] Morel d'Arleux (1999) also used owners' opinions to evaluate professional, and personal success.

[4] Everett and Watson (1998) grouped causes of closure into three categories: the economy, industry, and firm performance. The closure analysis here, focusing on the growth period of a business cycle (1992 to 1996) should limit the macroeconomic effects, so industry and firm performance can be analyzed. However, a dummy variable on the average yearly change for a firm's major industry gross state product (GSP) for the first four years after start-up was checked and found to have a beta that did not differ significantly from zero.

[5] Missing responses for Asian and Hispanic-owner status for many records required these variables to be excluded from the model. The reported Asian and Hispanic groups had similar closure and success rates as the totals.

[6] Competing risk analyses creating a multinomial logit model for staying open, closing successfully and closing unsuccessfully could have been used, however the models were kept independent to allow different functional forms.

[7] Audretsch and Mahmood (1995) found technology differences in industries to be a factor in survival but the data used here limited industry classifications. Robb (forthcoming) used more detailed industries than the data here.

[8] Everett and Watson (1998) found failure can be positively correlated with employment rates.

[9] This confirms Bates and Nucci's (1989) point that firms without employees are very volatile and *should be considered* when studying discontinuance of business sets that include employers and non-employers.

[10] Non-response bias may not be much of a concern with the status of a closing business. While non-response may be skewed toward firms that closed, it is not believed that firms that closed successfully would be more or less likely to be found and respond to the CBO than firms that closed unsuccessfully.

[11] Years in business and the number of owners are the only variables that are not dummy variables.

[12] Although the few "winners" in retail trade may be such great successes that the risks of retail appear worth the rewards.

[13] An employer firm in the BITS could be reduced to a firm without employees and stay open, however that possibility could not be analyzed using BITS.

[14] The CBO and BITS both use the Bureau of the Census' SSEL for some information but differ in their properties. The CBO considered tax returns (and excludes C-corporations) filed by the same business in the same industry as a business unit, while BITS uses the establishment with a link to and data for the enterprise (and excluded farms, railroads and household employees).

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