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New Entrants and Small Business Graduation in the Market for Federal Contracts

Samantha Cohen—is a Research Associate with the Defense-Industrial Initiatives Group at CSIS. Her work focuses on managing and analyzing data to identify relationships among policies, defense spending, and the related impacts on the United States and national security. Her recent research focuses on designing and managing international joint development programs, new entrants' survival rates and business graduation in the market for government contracts, and defense acquisition trends. Cohen holds a BS in economics from American University in Washington, DC, and an MS in economics from Katholieke Universiteit (KU) in Leuven, Belgium.

Andrew Hunter—is a Senior Fellow in the International Security Program and Director of the Defense-Industrial Initiatives Group at CSIS. From 2011 to 2014, he served as a senior executive in the DoD, serving first as Chief of Staff to Under Secretaries of Defense (AT&L) Ashton B. Carter and Frank Kendall, before directing the Joint Rapid Acquisition Cell. From 2005 to 2011, Hunter served as a professional staff member of the House Armed Services Committee. Hunter holds an MA degree in applied economics from Johns Hopkins University and a BA in social studies from Harvard University.

Greg Sanders—is a Fellow in the International Security Program and Deputy Director of the Defense-Industrial Initiatives Group at CSIS, where he manages a research team that analyzes data on U.S. government contract spending and other budget and acquisition issues. In support of these goals, he employs SQL Server, as well as the statistical programming language R. Sanders holds an MA in international studies from the University of Denver and a BA in government and politics, as well as a BS in computer science, from the University of Maryland.

Contributor

Marielle Roth—is a research intern with the Defense-Industrial Initiatives Group at CSIS. Prior to joining CSIS, she interned with the Department of Homeland Security (DHS) in the Office of Policy, focusing on DHS's PPBE system and opportunities for "jointness" within the department; START (National Consortium for the Study of Terrorism and Responses to Terrorism), researching patterns of domestic radicalization; and AT&T: Government Solutions, developing security applications of AI for use in the military. Roth holds an MA in security studies from Georgetown University and a BA in mathematics from Goucher College.

Abstract

This paper garners information crucial to understanding business growth for new entrants and small businesses who contract with the federal government. This information is then used to evaluate entrances, exits, and status changes among commercial and federal vendors with the purpose of comparing challenges faced by small businesses with those of larger ones. Measuring market trends over time and in multiple sectors shows how the challenges facing small businesses, such as market barriers to entry and imperfect competition, keep them from growing. The final results compare the survival rates between small and medium or large new entrants contracting with the federal government and analyzes the graduation rates for those small new entrants who grew in size during the observation period.



Introduction

Promoting small businesses has been a key issue for economic policy makers since the Great Depression occurred almost 90 years ago. This focus is not surprising given that small businesses have been referred to as the backbone of democracy, as their success unequivocally fosters an equal distribution of wealth (Bean, 1996). Furthermore, an entrepreneur's ability to create new companies and enter new markets is a signal of a healthy economy as the abundance and prosperity of small businesses and new entrants are clear indicators of market sustainability, improving both public and private interests. In recent years, small business policy makers have focused on emerging obstacles, especially for those businesses newly entering the heavily regulated market for federal contracts. For instance, the DoD's desire to access non-traditional vendors galvanized the inception of the DoD's Defense Innovation Unit Experimental (DIUx). Another example is Title 15 of U.S. Code § 657a, otherwise known as the HUBZone Program that provides set asides for qualified businesses that might not otherwise be able to effectively compete for federal contracts.

This paper studies entrances, exits, and status changes of six samples of newly-entered federal vendors and specifically DoD vendors. Each sample observes a set of new entrants in each year from 2001 to 2006 and how they fared over the following 10-year period. For example, the first sample looks at new entrants in 2001 and measures their success through 2011, while the last sample looks at how new firms in 2006 fared through 2016. The study team additionally investigates how these outcomes change between small and medium or large businesses.

There is a wide body of literature studying the ability for new entrants, and specifically small businesses, to survive in different industrial sectors. Scholars studying this issue have identified various industry-level, macroeconomic-level, and firm-level characteristics that affect new entrants' and small firms' ability to survive. In the context of public procurement, there is only a small amount of literature focusing on the relationship between small businesses and federal contracting. To break new ground in this critical but understudied domain, the study team observed a large longitudinal sample of firms that offers complete information on firm entries, firm exits, and other available firm-level characteristics.

The study team garnered firm-level information from the years 2000–2017. The study team posed four research questions to guide the exploration of the data:

1. What are the survival rates for new entrants in the market for federal contracts?
2. How do these survival rates compare with the survival rates for new entrants in the defense industrial base specifically?
3. How do these survival rates change between small and medium or large businesses?
4. What firm-level characteristics differentiate small from medium or large businesses?

This paper seeks to answer these questions by first reviewing the existing literature that studies new entrants' ability to survive and specifically how small businesses fare in this context. Second, by outlining the characteristics that have been found to shape a new entrant's ability to survive based on the literature. Third, by describing and analyzing the data that the study team gleaned from the Federal Procurement Data System (FPDS) and the System for Award Management (SAM). Finally, by offering a discussion of the results and drawing conclusions from the findings.



U.S. Government Policies and the Existing Literature

Small Businesses and New Entrants

Federal policies take a range of approaches to promote entrepreneurship, competitive markets, and small businesses. In addition to alleviating anti-trust threats and providing technical assistance, small-business policy aims to utilize public acquisition dollars as a tool for enhancing demand for small businesses in the market for federal contracts. Under the current policy, federal government agencies are subjected to an overall goal of spending 23% of their prime-contract dollars with small businesses (Moore, Grammich, & Mele, 2014). Generally, both public and academic spheres have acknowledged that the market for government contracts has high barriers to entry and can be a turbulent environment for small businesses, even once penetrated. The government responds to this market failure with various small-business set asides aimed to improve the relationship between small-business vendors and the government.

Given these theoretically favorable opportunities for small businesses in the market for federal contracts, it is worthwhile to study the chance of survival for new entrants in these markets. On the one hand, policy makers should be aware of the success rates for small businesses in the market for federal contracts to better adjust or implement policy when needed. On the other hand, small businesses who might utilize the policy advantages provided to them should be aware of the likelihood of success in certain markets before entering them.

While policy makers are concerned with making the market for government contracts accessible to small businesses, a 2008 survey found that when small businesses were asked to rank 75 problems in order, where 1 equals most concerning and 75 equals least concerning, small business participants listed being awarded a federal contract as 71st out of 75, on average (Kovacic, 1992). Whether small businesses view their participation in the market for federal contracts of high significance, well-rounded participation in this market is important so that the market for federal contracts remains healthy despite its monopsonistic and monopolistic nature. Without legal pressure, the market for federal contracts can become easily concentrated for a variety of reasons. First, many products and services bought by the federal government function at a large scope, making it difficult for small businesses to serve as a prime contractor for certain items (Kovacic, 1992). Second, barriers to entry in the market for federal contracts exist. For instance, navigating the highly regulated nature of federal contracting requires large structural and personnel investments by any businesses looking to sign a federal contract for the first time (Kovacic, 1992).

Given the historical priority placed by policy makers on both the amount of small business participation in, and the general health of, the market for federal contracts, the variables associated with successful small business contracting deserve empirical examination. Furthermore, the investigation of new entrants in the market for federal contracts goes hand in hand with the small business issue because previous research has shown that size impacts a new firm's ability to succeed (Agarwal & Audretsch, 2001). Identifying which variables are associated with successful market participation will help small businesses and new entrants to target practices that enhance their ability to enter the market for federal contracts and further improve the health of the economy.



Variables Associated With New Entrants' Success

The current body of literature that studies the ability for new entrants to survive has identified three buckets in which the characteristics affecting survival rates of new entrants exist: firm-level characteristics, industry-level characteristics, and macroeconomic-level characteristics. This section discusses the existing literature's findings on these characteristics in support of the methods this paper uses to study small business new entrants in the market for federal contracts.

Firm-Level Characteristics

Size

The theories on how size affects new entrants' survival have evolved over time. Scholarship studying new firm survival initially accepted Gibrat's law, which states that firm survival and subsequent growth is independent of firm size (Agarwal & Audretsch, 2001). This law was challenged, however, by subsequent scholars studying small businesses and firm survival. For instance, Evans (1987); Hall (1987); Dunne, Roberts, and Samuelson (1988); Audretsch and Mahmood (1995); and Grammich et al. (2011) found that small firms have a higher likelihood of exiting the market compared to larger firms. Moreover, Geroski (1995) argues that the preponderance of support for the evidence that small firms are more likely to exit the market has become a stylized fact. The literature thereafter follows this view and as a result, includes variables measuring firm size when analyzing survival rates and growth for new entrants.

Size critically affects a business's ability to survive because small businesses are disadvantaged by their inability to operate at the minimum efficient scale level of output from the beginning (see discussion from Agarwal and Audretsch, 2001). Small firms experience a cost disadvantage compared to their larger, incumbent competitors and are therefore more likely to fail. In the context of public procurement, Flynn, McKeivitt, and Davis (2015) find that within the definition of small businesses, there are further subsets of size that differentiate micro-businesses from small businesses in general and that these two groups tend to experience different survival and growth rates when participating in public tendering.

The literature review findings on the effect that size has on new entrants' survival rates provides the foundation for the study team's comparison of survival rates for small and medium or large firms. Analyzing this comparison in the context of federal contracting, with the dataset gleaned by the study team, is novel and looks to inform the public procurement community on the success of their efforts to improve the environment for new entrants and small businesses in federal contracting.

Firm Age

Firm age is an important variable in this analysis for two reasons. First, the association of firm age and survival of new entrants has been deemed as another stylized fact by Geroski (1995) and can also be found in analyses by Evans (1987) and Audretsch (1991). Geroski (1995) lays out a rationale for this phenomenon:

Since the process of information acquisition is costly and time consuming, many new entrants are likely to under-invest in information gathering. Further, to the extent that market opportunities change post-entry, the types of actions which entrants need to undertake in order to survive and prosper are also likely to change. The implication is that the growth and survival prospects of new firms will depend on their ability to learn about their environment, and link changes in their strategy choices to the changing configuration of that environment.



In other words, new entrants can only know so much at the time of their entry into the market. It is necessary for these firms to spend time in the market to garner information that can be used and analyzed to improve business development. Some information can only be gleaned over time, making firm age an important variable to consider when analyzing new entrants' survival rates. While financially-robust new entrants might be better positioned to obtain information at an earlier stage, they will likely increase efficiency and capacity with age and experience.

Firm Ownership and Demographics

The study team incorporates the firm-level characteristic of firm ownership in the model estimating likelihood of survival because there are various small business policies issued by the U.S. government that create set asides depending on the nature of firm ownership. There are multiple categories of contracting assistance programs available to certain disadvantaged groups and locations. For example, the U.S. government created the 8(a) Business Development Program to aid small, disadvantaged businesses to participate in the market for federal contracts. The U.S. government has these policies in place due to the disadvantage that small, minority-owned businesses face in competing for federal contracts (Small Business Administration, n.d.).

Firm Nationality

The U.S. government has policies in place that regulate the content that federal contractors can procure from foreign sources. For instance, the Buy American Act (41 U.S. Code §§ 8301–8305) requires federal contracting agencies to prefer domestic materials and services for public use or public works in the United States (41 U.S. Code Chapter 83). Additionally, Buy American Laws such as the Berry and Kissel Amendments mandate nearly exclusive use of U.S. content in certain products. The Berry Amendment requires that the DoD specifically purchases certain items such as textiles, food, shoes, and hand/measuring tools exclusively from domestic suppliers, and the Kissel Amendment extends this to the Department of Homeland Security (Congressional Research Service, 2017). Due to these regulations, the study team explores the relationship between firm nationality and survival in the market for government contracts because these policies indicate that location could impact these relationships.

Industry-Level Characteristics

The characteristics that shape each industry create environments that have differing effects on the ability for new entrants to enter and survive. For this reason, policy makers and scholars who study new entrants account for the differing environments across industries. For instance, the SBA's definition of a small business varies depending on industry sector. Furthermore, scholars who have studied survival rates for new entrants tend to acknowledge these differences by implementing variables measuring industry-level characteristics that have been shown to affect a new entrant small business's likelihood of survival (Audretsch, 1991; Audretsch & Mahmood, 1995; Reijonen, Tammi, & Saastamoinen, 2016). Certain industry-level characteristics that the literature has focused on are degree of competition, innovation rate, industry growth rate, and capital intensity in an industry. While controlling for these industry-level characteristics is beyond the extent of this paper, future iterations will control for these factors by measuring the primary industry that a firm contracts in through NAICS identification.



Degree of Competition

As one of the pillars supporting a healthy market, the degree of competition impacts the conditions facing new entrants and their ability to survive in a market. Competitive markets provide more opportunity for growth, which enables firms to more easily reach the minimum efficient scale. Audretsch and Mahmood (1995) posit that risk is higher for new entrants when the cost-price margin of an industry is high and that this result increases in non-competitive markets that are highly concentrated because the larger incumbents have more control over price and supply. When measuring survival rates for new entrant small businesses, it is important to account for the degree of competition of the industry in which the new entrant participates.

Innovation Rate

The innovation rate in the industry entered by the firm is an important variable cited in the current literature as having an impact on small business net entrants' survival rates. Technological or informational conditions that dictate the amount of innovation necessary to succeed in an industry influence the ability for new entrants to survive in a market. This idea has been explored by Winter (1984) and Audretsch and Mahmood (1995). Winter (1984) finds that industries differ, with some operating as a "technological regime" and others as an "entrepreneurial regime." Industries characterized as a "technological regime" are more favorable to established incumbent firms who already have the capital and knowledge base to effectively innovate and survive. Conversely, "entrepreneurial regimes" foster innovative success by new entrants and small businesses, giving new entrants an innovative advantage over their incumbent competitors. Audretsch and Mahmood (1995) empirically test how hazard rates for new entrants depend on innovation rates. They estimate that new entrants face a higher risk of failure in highly innovative environments, although their results are not statistically significant.

Industry Growth Rate

Industry growth rates have been shown to affect survival rates because growth rates have been shown to increase price-cost margins (Bradburd & Caves, 1982). Like the industry characteristic degree of competition, industry growth rates influence the price-cost margins that in turn impact the operations of companies in that industry. Heightened price-cost margins create environments where participating firms can survive when operating at a suboptimal level of scale, thus influencing the ability for new firms to survive (Audretsch & Mahmood, 1995).

Capital Intensity

Theoretically, high capital intensity makes it harder for new entrants and especially small businesses to survive and grow in an industry. This is because it is more difficult to acquire the necessary resources needed to operate in a capital-intense environment before operating at the minimum efficient scale. Moreover, incumbent firms in capital-intense industries likely operate with economies of scale, giving them an advantage over newly-established competitors. On the one hand, Audretsch (1991) found that the likelihood of survival for small, newly-established firms is lower in capital-intensive industries that are dominated by scale economies. On the other hand, industries exhibiting high investments in human capital, with higher wages, are a reflection of the tendency to invest heavily in labor-related costs such as training and firm-specific skills, and tend to have a higher likelihood of survival (Audretsch & Mahmood, 1995).



Macroeconomic-Level Characteristics

The third and final set of characteristics that may influence a firm's likelihood of survival pertains to macroeconomic variables. The state of the economy influences business success across all levels of business size and thus must be controlled for when estimating the survival rates of new entrants. The point in time of the business cycle, the unemployment rate, and inflation rates all influence factors such as investment, GDP, employment, and demand. Previous work on this topic has acknowledged these relationships by including variables describing various macroeconomic characteristics, such as the unemployment and real interest rates, to control for these effects and estimate the impact of new entrant size on likelihood of survival more accurately.

Data and Specification

The study team collected the data for this report from the Federal Procurement Data System (FPDS) and the System for Award Management (SAM). The study team gleaned data on a yearly basis measuring a wide variety of variables on new entrants in the market for federal contracts from these two sources and merged them together by firm. The result is a longitudinal data set that provides information on firms entering and exiting the market on an annual basis over the period from 2000 to 2017.

The study team subsets the collected data to six analytical samples of new entrants in the market for both government-wide and DoD-specific contracts. Each sample includes all new entrants starting in year t where $t = 2001-2006$. Each sample is tracked over the decade following t . To define new entrants, the study team uses the registration date in SAM to indicate when a firm entered the market for federal contracts. To define exits, the study team uses the last signed date within the 10-year study period from FPDS.

Given the information on entries and exits, the study team calculates the i -year survival rates for each of the six samples of new entrants where i can equal three, five, or 10. The survival rate is equal to the number of firms that survived in the i th year divided by the total number of firms that entered in the baseline year. These calculations are made for all new entrants, small-business new entrants, and medium- or large-business new entrants. The same calculations are made for those new entrants contracting specifically with DoD. Furthermore, the study team calculates the graduation rates of small businesses specifically for each of the six samples. The study team considers small business graduation to occur through either organic firm growth or acquisition by a larger company. In this analysis, a small business is considered to graduate if, during the 10-year observation period, it changes from small-business status to medium- or large-business status for the majority of contract obligations that it has with the federal government after its first contract as a medium or large firm had been signed. The graduation rates are then calculated by dividing the number of graduated firms over the 10-year observation period by the total number of small firms that entered the market in the baseline year.

With respect to the firm-level variables, the study team uses firm size, firm location, and firm ownership status. Firm size is defined by the variable "Contracting Officer's Determination of Business Size" from the FPDS database, which denotes whether the contracting officer concluded that the firm satisfies the small business size criterion for the contract's assigned NAICS code. The firm location variable is binary, determining whether the firm is domestically or internationally located. This is defined by the "country" variable that is given from the SAM database. Firm ownership status is described by four variables: woman owned, veteran owned, minority owned, and foreign owned. Using the FPDS section on contractor data, woman owned is defined by the "Woman Owned Business" variable and veteran owned is defined by "Veteran Owned Business." Minority owned is defined as



inclusion in any of the following categories: “Minority Owned Business,” “American Indian Owned Business,” “Alaskan Native Owned Corporation of Firm,” “Native Hawaiian Owned Organization or Firm,” “Tribally Owned Firm,” “Asian-Pacific American Owned Business,” “Black American Owned Business,” “Native American Owned Business,” “Subcontinent Asian (Asian-India) American Owned Business,” “Hispanic American Owned Business,” and “Other Minority Owned Business.” Finally, foreign owned is defined by the field “Foreign Owned and Located.” There were some cases where observations were dropped due to missing values in the firm-level characteristic fields; however, these numbers were never at high enough magnitude to raise alarm.

Results: New Entrants in the Market for Federal Contracts

The number of new entrants that entered the market for federal contracts and the market for DoD contracts specifically each year from 2001 to 2016 is reported in Figures 1 and 2. The overall trend for the entire time period is similar for new entrants in the market for all government contracts and for new entrants contracting with the DoD specifically, where the number of new entrants entering the market to contract with the government decreases each year on average. The trends from 2005 to 2016 are more constant, while there are much larger numbers of new entrants in the first four years. Interestingly, the number of new entrants for all federal agencies increases dramatically in 2004, yet this does not happen for new entrants contracting with the DoD. The high rate of decrease of new entrants contracting with the federal government in the beginning of the period of study is not sufficiently explained in this report, lending itself to future research. It could be due to factors such as a reporting phenomenon, policy implementation, or the state of the economy. The consistency of this phenomenon, with declines happening in the DoD sample even as contract spending is surging combined with significant overhauls of FPDS during the same period,¹ leads the study team to suspect that a change in the reporting of DUNS numbers most likely explains a significant portion of this phenomenon. Until the precipitous decline is better understood, the paper will focus on what trends within each sample rather than trying to explain the differences between years.

¹ FPDS-NG launched at the start of 2005, though a variety of data changes preceded the change. <http://www.govexec.com/technology/2004/12/new-procurement-data-system-to-debut-at-end-of-month/18247/>



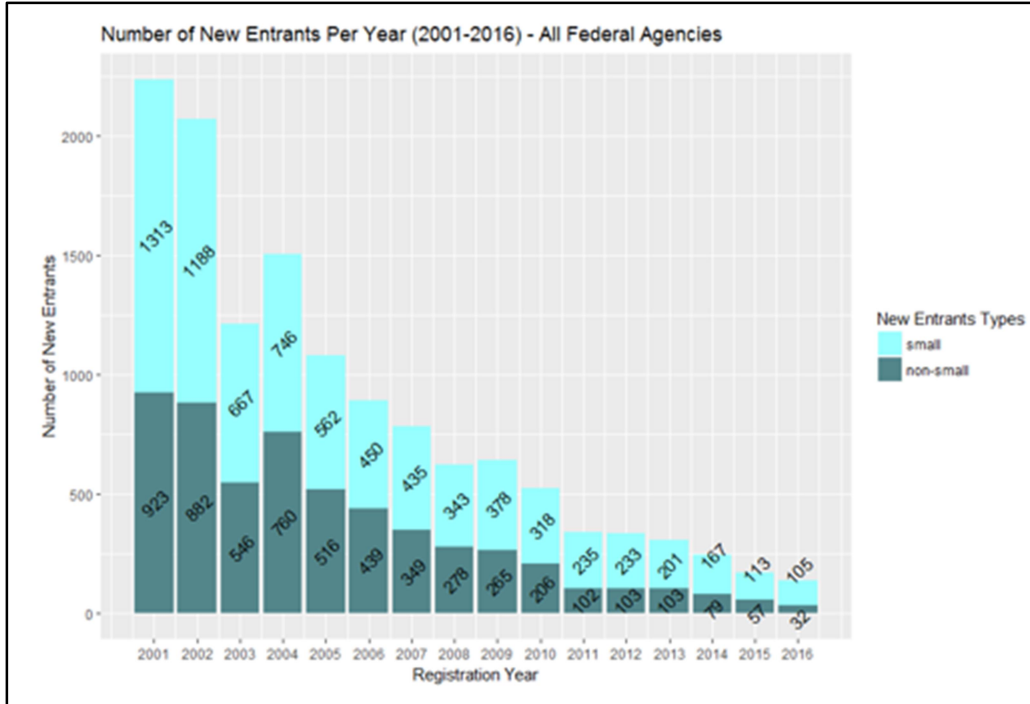


Figure 1. Number of New Entrants per Year (2001–2016)—All Federal Agencies

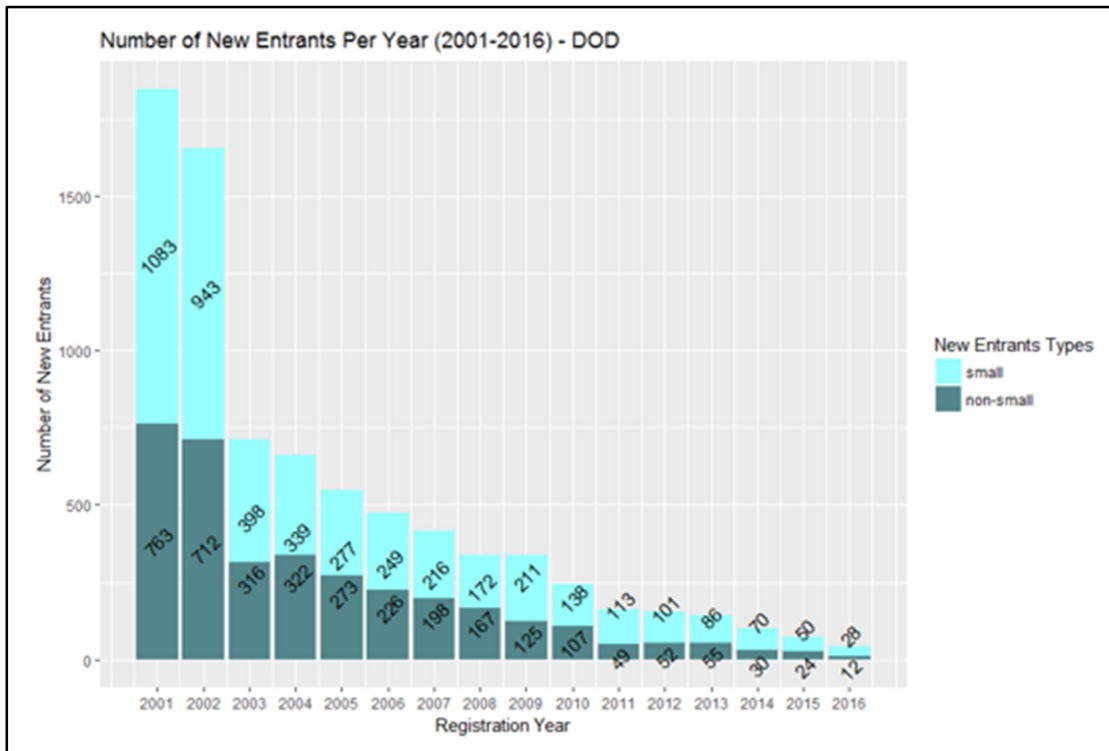


Figure 2. Number of New Entrants per Year (2001–2016)—DoD



2001 Sample of New Entrants

The differences in firm-level characteristics between small and medium or large vendors is displayed in Table 1. Small firms were around 14 years younger than their medium or large competitors, on average. Nearly all small and medium or large firms were domestically located, although the difference in means is significantly different from zero. Small businesses tended to have higher rates of minority, veteran, and woman owners, on average.

The sample of businesses that started contracting with the federal government in 2001 had relatively high three-year survival rates, where the survival rate for all new entrants after three years was 78%. The small businesses in this sample had lower survival rates than the medium or large firms, with three-year survival rates of 76% for small businesses and 81% for medium or large firms. After five years, the survival rates decrease to 62%, 61%, and 64% for all firms, small firms, and medium or large firms, respectively. The 10-year survival rates decrease by a much greater margin, and small new entrants have a higher survival rate than medium or large new entrants, at 20% and 19%, respectively. The graduation rate for small businesses contracting with all federal agencies is approximately 4%.

The new entrants that contract with the DoD have similar results in that the difference in survival rates between firms at three years and five years is less severe than it is between firms at five years and 10 years. Small new entrants contracting with the DoD also have lower three- and five-year survival rates than medium or large new entrants. After 10 years, however, small new entrants have a higher survival rate than their medium or large counterparts, although the difference is hardly over one percentage point. The graduation rate for small businesses contracting with DoD is 2.4%.

Table 1. 2001 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or large	T-Stat Ha: diff#0
Firm Age	19.12	33.46	-10.51***
Foreign Owned	0	0	-1.73
Woman Owned	0.1	0.012	9.74***
Veteran Owned	0.05	0.01	7.05***
Minority Owned	0.06	0.01	7.82***
Domestic Location	0.99	0.95	5.86***
<i>Significance Level: *p<.1 **p<.05 ***p<.01</i>			



Table 2. 2001 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 2237	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 1846	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	78.01%	76.09%	80.72%	3-Year	71.56%	69.81%	74.05%
5-Year	62.27%	61.31%	63.60%	5-Year	55.47%	55.31%	55.70%
10-Year	19.58%	20.49%	19.16%	10-Year	13.98%	15.14%	12.32%
Graduation Rate	3.53%			Graduation Rate	2.38%		

Source: FPDS and SAM

2002 Sample of New Entrants

The mean differences in firm-level characteristics for the 2002 sample of new entrants are displayed in Table 3 and follow very similar patterns to the 2001 sample. Additionally, the 2002 sample of new entrants (displayed in Table 4) exhibit similar results to the 2001 sample. The three-year survival rate is relatively high, at around 75%. Different from the 2001 sample, small and medium or large new entrants in 2002 show nearly equal three-year survival rates, varying within 1 percentage point of one another. Both small and medium or large new entrant's five-year survival rate reduces by about 15 percentage points compared with the three-year rates, but the difference between the two groups remains at less than 1%. The 10-year survival rate is much smaller for both small and medium or large new entrants, and small new entrants have a higher survival rate than medium or large new entrants after 10 years. The graduation rate for small businesses contracting with the all federal agencies in 2002 is 3%.

Small new entrants contracting with the DoD have slightly higher three-, five-, and 10-year survival rates than medium or large new entrants in 2002. Approximately 70% of all new entrants survive after three years, with 54% surviving five years, and about 15% of the 2002 new entrants still alive after 10 years. These rates are slightly lower than the survival rates for the 2002 sample of new entrants contracting with all federal agencies. The graduation rate for small new vendors over the decade after they entered in 2002 is 2%.

Table 3. 2002 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or Large	T-Stat Ha: diff≠0
Firm Age	19.69	32.25	-9.65***
Foreign Owned	0	0	N/A
Woman Owned	0.11	0.01	9.79***
Veteran Owned	0.05	0	6.97***
Minority Owned	0.07	0.01	7.94***
Domestic Location	0.99	0.92	7.69***
<i>Significance Level: *p<.1 **p<.05 ***p<.01</i>			



Table 4. 2002 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 2070	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 1655	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	75.41%	75.17%	75.74%	3-Year	70.21%	70.84%	69.38%
5-Year	60.19%	60.69%	59.52%	5-Year	54.08%	55.14%	52.67%
10-Year	20.82%	22.22%	18.93%	10-Year	16.44%	17.39%	15.17%
Graduation Rate		3.24%		Graduation Rate		2.11%	

Source: FPDS and SAM

2003 Sample of New Entrants

On average, medium or large new entrants were approximately 13 years older than their small firm competitors in 2003. Additionally, small firms had higher levels of woman, veteran, and minority owners (see Table 5). The 2003 sample of new entrants contracting with all federal agencies have lower survival rates than the previous two samples examined for all year categories. The survival rates of the 2003 sample do not vary by a high magnitude between small new entrants and medium or large new entrants in the three- or five-year categories. However, the 10-year survival rate for small new entrants is just over 4 percentage points higher than that of medium or large new entrants, at 13% for small new entrants and 9% for medium or large new entrants. The graduation rate for the 2003 sample of small new entrants is 1.1%.

The 2003 sample of new entrants who contract specifically with the DoD shows similar changes between the three-, five-, and 10-year rates to those for all federal agencies, although the rates are lower across the board. Again, small new entrants have higher survival rates than their medium or large competitors, but the differences between the two groups is never larger than two percentage points. The graduation rate for those small businesses who started contracting with the DoD in 2003 is 0.42%.

Table 5. 2003 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or Large	T-Stat Ha: diff≠0
Firm Age	17.07	30.77	-7.25***
Foreign Owned	0	0.01	-2.01*
Woman Owned	0.13	0.01	8.45***
Veteran Owned	0.05	0	5.83***
Minority Owned	0.11	0.01	7.64***
Domestic Location	0.99	0.83	9.37***
<i>Significance Level: *p<.1 **p<.05 ***p<.01</i>			



Table 6. 2003 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 1214	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 714	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	62.52%	62.67%	62.27%	3-Year	56.16%	56.53%	55.70%
5-Year	46.79%	47.83%	45.60%	5-Year	41.60%	42.71%	40.19%
10-Year	12.03%	13.94%	9.71%	10-Year	8.26%	8.79%	7.59%
Graduation Rate		1.07%		Graduation Rate		0.42%	

Source: FPDS and SAM

2004 Sample of New Entrants

The mean differences of firm-level characteristics between small and medium or large firms can be viewed in Table 7 and follow the same patterns as the previous three samples. The survival rates for the 2004 sample of new entrants (see Table 8) continue the trend of decreasing consistently from the three-year rate to the 10-year rate. However, a new trend exhibited by the 2004 sample shows the difference in survival rates between small and medium or large new entrants is much greater than the three previous samples. For instance, the three-year survival rate for small new entrants is 6 percentage points higher than medium or large firms, while the five-year rate for small new entrants is about 11 percentage points higher, and the 10-year survival rate for small new entrants is approximately 6 percentage points higher. The graduation rate for the 2004 sample is 1.1%.

The 2004 survival rates of new entrants who contract specifically with the DoD follow similar patterns but are across the board lower than those of new entrants contracting with all federal agencies. Small new entrants contracting with the DoD have higher survival rates than their medium or large competitors across all year categories. Additionally, the lowest survival rate out of all samples examined thus far occurs for medium or large new entrants contracting with the DoD after 10 years, at approximately 4%. On average, 0.91% of newly entered vendors contracting with the DoD in 2004 survive after 10 years.

Table 7. 2004 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or Large	T-Stat Ha: diff#0
Firm Age	16.65	29.35	-7.71***
Foreign Owned	0	0.01	-1.88*
Woman Owned	0.1	0.01	7.85***
Veteran Owned	0.06	0.01	6.22***
Minority Owned	0.09	0.02	6.49***
Domestic Location	0.99	0.84	10.63***
<i>Significance Level: +p<.15 *p<.1 **p<.05 ***p<.01</i>			



Table 8. 2004 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 1507	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 661	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	58.79%	61.93%	55.66%	3-Year	55.07%	60.56%	49.85%
5-Year	41.61%	47.05%	36.32%	5-Year	37.07%	43.79%	30.68%
10-Year	10.02%	13.27%	6.84%	10-Year	7.11%	10.25%	4.13%
Graduation Rate		1.13%		Graduation Rate		0.91%	

Source: FPDS and SAM

2005 Sample of New Entrants

Table 9 displays the mean differences in firm-level characteristics between small and non-small firms who became federal vendors in 2005. These results follow similar patterns to the previous samples; however, the mean difference in age between small and medium or large firms is at its highest in absolute value. The 2005 survival rates, shown in Table 10, follow the same trends as the 2004 sample, where small new entrants have higher survival rates for all three years examined. Again, the magnitude of difference is relatively high—small entrants have 7, 11, and 5 percentage point higher survival rates for three-, five-, and 10-years, respectively. The 2005 sample of new entrants has the lowest three-year survival rates out of all the samples examined thus far, at 54%, 58%, and 50% for all new entrants, small new entrants, and medium or large new entrants, respectively. On average, 0.93% of newly entered small firms contracting with all federal agencies in 2005 graduated from small-firm status.

The new entrants who entered the market in 2005 and contract with the DoD exhibit very similar results to those new entrants who entered the market in 2005 and contract with all federal agencies. Just over half of the new entrants survive after three years, around 40% survive after five years, and less than 10% survive after 10 years. Small new entrants tend to survive at higher rates than medium or large new entrants, much like the other samples examined. For those new businesses working with the DoD in 2005, 0.73% of them graduated from small-business status in the 10-year observation period.

Table 9. 2005 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or Large	T-Stat Ha: diff≠0
Firm Age	15.61	31.53	-8.34***
Foreign Owned	0	0.02	-3.02***
Woman Owned	0.09	0.01	5.90***
Veteran Owned	0.07	0	5.92***
Minority Owned	0.13	0.03	6.64***
Domestic Location	0.98	0.72	12.92***
<i>Significance Level: +p<.15 *p<.1 **p<.05 ***p<.01</i>			



Table 10. 2005 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 1078	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 550	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	54.17%	57.65%	50.39%	3-Year	54.36%	58.48%	50.18%
5-Year	40.82%	46.26%	34.88%	5-Year	38.55%	45.85%	31.14%
10-Year	8.16%	10.68%	5.43%	10-Year	7.45%	9.39%	5.49%
Graduation Rate		0.93%		Graduation Rate		0.73%	

Source: FPDS and SAM

2006 Sample of New Entrants

The final sample of new entrants studied are those that entered the market in 2006. The mean differences in firm-level characteristics between small and non-small vendors that began federal contracting in 2006 follow the same patterns as the other five samples (see Table 11). Moreover, Table 12 shows that the survival rates of this sample for those contracting with all federal agencies are very similar to the sample studying new entrants that entered the market in 2005. About 60% of small new entrants survive after three years, while slightly over 50% of medium or large new entrants survive after three years. The difference in the five-year survival rate between small and medium or large entrants in 2006 is the largest across all years sampled, at 15 percentage points. Small new entrants have higher survival rates for all three-year categories. On average, 0.56% of the small firms that started contracting with the federal government in 2005 graduated.

The new entrants that entered the market in 2006 and contract with the DoD follow similar patterns in their survival rates to those that contract with all federal agencies. The 10-year survival rate for medium or large new entrants is the lowest of all samples studied, at around 4%. Consistent with every year sampled, small new entrants contracting with the DoD have higher survival rates than their medium or large competitors. The five-year survival rate for small new entrants is much higher (almost 17%) than the five-year survival rate for medium or large new entrants. For those new businesses working with the DoD in 2006, 0.42% of them graduated from small-business status in the 10-year observation period.

Table 11. 2006 Mean Firm-Level Characteristics Between Small and Medium or Large Firms

	Small	Medium or Large	T-Stat Ha: diff≠0
Firm Age	14.11	29.99	-7.33***
Foreign Owned	0	0.05	-4.25***
Woman Owned	0.12	0	7.59***
Veteran Owned	0.07	0.01	4.90***
Minority Owned	0.15	0.02	6.91***
Domestic Location	0.98	0.71	12.04***
<i>Significance Level: +p<.15 *p<.1 **p<.05 ***p<.01</i>			



Table 12. 2006 New Entrants' Survival Rates

All Federal Agencies				DoD			
Observations: 889	All New Entrants	Small New Entrants	Medium or Large New Entrants	Observations: 475	All New Entrants	Small New Entrants	Medium or Large New Entrants
3-Year	56.47%	61.11%	51.71%	3-Year	53.05%	59.84%	45.58%
5-Year	42.52%	50.00%	34.85%	5-Year	38.95%	46.99%	30.09%
10-Year	6.52%	8.67%	4.33%	10-Year	5.89%	7.63%	3.98%
Graduation Rate		0.56%		Graduation Rate		0.42%	

Source: FPDS and SAM

Discussion

The above results show a severe decline in the number of new entrants entering the market each year from 2001 to 2016. This result is surprising and merits further attention. The study team hypothesizes two factors that could be influencing this result. The first factor that could be significantly decreasing the number of new entrants contracting with the federal government each year is the reporting practices of Dun and Bradstreet or SAM. Second, the large reduction in new entrants working with the government over the study period could be purely due to an outside factor, such as policy or economic conditions. With this in mind, an analysis of the above survival rate results shows that when contracting with the federal government, new entrant small businesses tend to have higher survival rates than their medium or large competitors over three-, five-, and 10-year periods. A similar pattern persists for those new entrants contracting specifically with the DoD. As previously discussed, these results may be an outcome of the U.S. government's small business policies.

The implications of this result are multifaceted. On the one hand, these results suggest that small business policy successfully aids newly entered small businesses because they tend to survive at higher rates than newly entered medium or large firms. On the other hand, this could imply that small businesses face a perverse incentive regarding their business model. Growing firms produce the most jobs and provide more competition because they have reached minimum efficient scale for a wide range of products and services, fulfilling one of the goals of the small business promotion system. However, if the likelihood of survival in the market for federal contracts decreases as a firm grows, newly entered firms contracting with the federal government might not pursue a business model for profit maximization through growth because they would lose their small-business set aside privileges, inhibiting their ability to contract with the government.

Policy makers should pay attention to these perverse incentives when working with small businesses. These results imply that the small business policy that aims to aid small businesses in contracting with the government could be successful; however, the benefits of these policies may be exclusively limited to companies that stay small. Consequently, highly consolidated sectors where the government is reliant on a small number of large businesses, especially a risk for the DoD, might be cut off from a potential source for new competitors, as graduation from small business status is a major obstacle for most firms, who cannot compete with competitors like the big 5 for government contracts without the support of policy.



Compared to the existing body of literature studying the success between small business and medium or large business new entrants, these results are surprising. As previously discussed, the existing literature found that small businesses tend to have lower rates of success as new entrants than their medium or large competitors in different industrial sectors. The key difference here is the focus on federal contracts, and although the study team at this time cannot conclusively state if this change in small business new entrant success is due to contracting with the federal government, it will be a focus of future research.

Furthermore, the results should be taken into consideration with the following limitations in mind. First, these results paint a purely descriptive picture of the success rates for small and medium or large businesses contracting with the federal government. In other words, the calculation of the survival rates fails to control for other factors that could contribute to the success or failure of new entrants contracting with the federal government. Therefore, the reported results could be biased and an outcome of other factors not considered. The study team intends to address this limitation in future work by modeling the hazard rates of new entrants over time. Second, and as previously discussed, the study team is suspicious of potential reporting errors that might be a contributing factor to the large drop-off in new entrants in the beginning of the study period. The study team plans on working towards investigating the data further by cross-referencing with internal data sources and speaking with external experts.

Next Steps

The study team will continue this investigation through a variety of paths. First, the study team is working towards strengthening the statistical capacity of the calculations by examining survival between small and medium or large new entrants through a proportional hazard model. This model will allow the study team to control for the various firm-level factors that could contribute to a new entrant's success, regardless of whether that firm is small or not, as shown by previous research on this issue. Furthermore, this will allow for the control of the industry-level characteristics that, as determined by the existing literature, influence small and medium or large firms' ability to survive, depending on what industry they are operating in. By expanding the analysis in this way, the study team will be better positioned to draw conclusions regarding which factors contribute to the differences between small and medium or large new entrants' survival rates as vendors with the federal government.

Second, the study team has identified further areas of exploration that could productively contribute to the analysis of contracts for small business new entrants and their medium or large competitors when working with the federal government. Primarily, calculating the percent of dollar obligations that go to surviving firms, exiting firms, and graduating firms will increase the reliability of the study's results. These calculations will be made for existing firms in each sample period so that the proportion of work contracted to new entrants by dollar amount is known. Additionally, the study team will explore the survival rates of all existing firms and compare these to the rates calculated for new entrants to further increase the reliability of the study.

Finally, the study team will investigate the 2001–2002 phenomenon that was only lightly touched on in this paper, and will attempt to explain why there are significantly more new entrants contracting with the federal government than compared to the other years examined. Two areas of exploration could confirm whether these high counts are accurate relative to the rest of the observed period; data reporting practices and policy implementations will be examined as possible contributing factors to the phenomenon. The



results of this research will be reported in a subsequent technical report that CSIS will publish later this year.

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