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Analyzing the Composition of the Department of Defense Small Business Industrial Base

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Abstract

This paper explores the composition of the Department of Defense (DoD) small business (SB) industrial base by analyzing public records for companies registered to do business with the government and publicly available DoD contract and subcontract award data from 2015 through 2021. We demonstrate that although the amount of money DoD awarded to SBs grew by almost 68% between 2015 and 2021, the total number of SBs in the defense market shrank nearly 23% concurrently. The decline in SBs can be attributed to the fact that SB program policies fail to address the underlying issues that keep small and nontraditional companies from navigating the defense market successfully. Furthermore, SB policies enable the largest SBs—which include companies that generate hundreds of millions or billions of dollars in DoD revenue annually—to expand their market share, irrespective of price, quality, or innovativeness. To contextualize these findings, we provide an overview of the history and stated objectives of DoD SB initiatives and utilize qualitative research to understand the experiences of individual SBs in the defense market. We offer a series of concrete recommendations to improve how the DoD SB program is structured and measured, to enable it to better meet its objectives.

Introduction

For nearly 70 years, the U.S. government (USG) has afforded small businesses (SBs) preferential treatment in the federal procurement process by limiting competition for certain contracts to SBs. Congress justifies SB set-aside contracts (“SB set-asides”) on the basis that “the Government should aid, counsel, assist, and protect ... the interests of small-business concerns in order to preserve free competitive enterprise ... and to maintain and strengthen the overall economy of the Nation” (Small Business Act and Small Business Investment Act, 1). Likewise, the Small Business Administration (SBA) website states that SB set-aside contracts exist to “help small businesses compete for and win federal contracts” and to “help provide a level playing field for small businesses” (U.S. SBA, n.d.-b). In its “Small Business Program Guide for Government and Industry,” the Army Corps of Engineers (n.d.) summarizes that the congressional philosophy for the SB program is to

- Utilize the annual federal budget to promote Small Business Programs
- Promote economic stability through the use of Small Businesses to enhance the nation's defense
- Preserve and promote free enterprise
- Maintain a viable industrial base
- Ensure competitive economic climate
- Provide opportunities for entrepreneurship and inventiveness



A 2007 House committee report stated that the basis for SB contracting programs "is the positive economic benefits they provide, as well as assisting small businesses to overcome the complexities of the system" (Dilger & Blackford, 2022). The report emphasizes that SB programs "are designed to increase and diversify small contractors with the intent of expanding the federal supplier base" so as to increase competition and product diversity, improve product quality, and reduce prices. The report also notes that "these contracting initiatives lower barriers to entry in a wide range of markets for small businesses ... [which] provides greater market access for small firms' [products] and services. ... Such access is critical to generating positive macroeconomic benefits, including higher job creation, wage growth, and greater income distribution."

In spite of these stated objectives, the success of the SB set-aside program has been measured primarily by whether the government meets Congressionally established set-aside procurement goals. Specifically, Congress directs the USG to allocate 23% of eligible procurement spend for SBs annually, with procurement goals from within this spend for subsets of the SB program including woman-owned SBs, small disadvantaged businesses, HUBZone SBs, and service-disabled veteran-owned SBs.

Assessing the amount of money awarded to SBs as a share of overall government spending does little to evaluate the impact of the SB program on the industrial base, the economy, or the competitive environment for products and services in the USG. Our research aimed to provide a more comprehensive assessment of the DoD SB program vis a vis its stated objectives. Specifically, we conducted a quantitative analysis of SB suppliers to DoD annually from Fiscal Year (FY) 2015 through FY2021 and analyzed trends in the data related to SBs' DoD procurement obligations and subcontracting practices. For additional context, we interviewed DoD SBs and reviewed USG contracting policies that impact all suppliers. We conclude that rather than achieving its stated objectives, the DoD SB program reduces opportunities for SBs, creates a less competitive economic climate, and weakens the defense industrial base (DIB); and throughout the paper, we offer a series of recommendations for reforming the program—both how it is structured and how it is measured—to improve its outcome.

Sizing the Small Business Defense Industrial Base

Considering that one objective of the SB set-aside program is to expand and diversify the industrial base, the number of SB contractors supporting the DoD should be increasing over time. We sought to evaluate this metric by calculating the number of SB contractors to DoD (DoD SBs) each year from FY2015–FY2021.

Research Note: Timeframe

We selected FY2015–FY2021 as our analysis period because it allowed us to assess year over year trends as well as a wide range of features associated with DoD SBs. Unless otherwise noted, quantitative analyses referenced in the paper are associated with FY2015–FY2021.

Sizing the Overall DIB

To assess trends in the SB DIB, we needed to identify and isolate SBs from the DoD vendor pool. First we created a mirror of the Federal Procurement Data System (FPDS), the clearinghouse for all USG procurement data. Next, we isolated the data to all DoD-funded procurements from FY2015 through FY2021. To calculate the annual number of DoD-funded vendors, we grouped the data by FY and calculated the number of distinct DUNS numbers across all active procurements from that FY. Table 1 shows the total number of DoD vendors by year.



Table 1. Total DoD Supplier Base, Annually

Fiscal Year	Count of Distinct DoD Funded DUNS Numbers
2015	68,257
2016	66,290
2017	64,184
2018	61,242
2019	57,746
2020	54,418
2021	52,597

Classifying the Small Businesses

Next, we categorized each distinct vendor as either an SB or an entity other than an SB (“large business” or “LB”). Size standards vary based on industry; government reporting on size standards is inconsistent; and company size can change from one year to the next. To classify each DoD vendor, we developed a classification system that weights multiple features associated with a DUNS number using data from FPDS and the System for Award Management (SAM) Entity Registration Database to designate it as an SB or LB accordingly.¹ For instance, some FPDS contract actions indicate the use of an SB in a field labeled “business size determination,” and there are other references to set-asides in the FPDS data. So, for each DUNS number, the system considers all historic contract actions from FPDS—not just the contract actions associated with it from FY2015–FY2021. SAM data can also reference features such as “Business Type” and “Set-Aside Type,” which often correlate to SBs, so the system considers data from these fields when classifying each DUNS as well. Table 2 outlines the features used to classify each entity by data source.

Table 2. Small Business Classification Features

Data Source	Feature			
	Business Size Determination	Set-Aside Contract Feature	Business Type	Set-Aside Type
FPDS	X	X		
SAM			X	X

Recommendation: “Single Source of Truth” for Defining SBs

The fact that the USG does not adhere to a consistent classification system for defining SBs severely limits any effort to comprehensively evaluate the SB program, including efforts to assess the share of overall DoD spend awarded to SBs.

In a subsequent section, we discuss the need to modify revenue and employee thresholds for what qualifies as “small” by USG standards. However, irrespective of qualification criteria, it is essential that a company’s status as small or large is reported consistently across government data sources. We recommend the USG establish and maintain a “small business registry” for all active DUNS numbers containing detailed information about their SB contract

¹ For the purposes of our technical approach, each DUNS number corresponds to either an SB or an LB. FPDS contains a higher volume of features that, while less accurate than SAM features, in some cases allowed us to categorize a business as an SB even if it is not currently active in SAM; or even if is not currently registered as an SB in SAM, but was considered an SB for the majority of our analysis period.



awards and, if necessary, distinguishing between revenue they generated as an SB versus revenue they generated as a large business (since the same company can qualify as “small” for certain contracts but not others). This registry would eliminate the need to cross-reference FDPS and SAM to determine which contract awards were SB set-asides.

Sizing the SB DIB

Using the previously outlined classification system, we calculated the number of distinct SBs contracting with the DoD annually. **As shown in Table 3, over the last 6 years the number of SBs that were awarded defense-funded contracts declined nearly 23%, from 48,322 to 37,294. Contrary to the stated objectives of the SB set-aside program, the number of small contractors within the defense market is shrinking.**

Table 3. SB Suppliers to DoD

Fiscal Year	Count of Distinct DoD Funded SB DUNS Numbers
2015	48,322
2016	46,952
2017	45,609
2018	43,505
2019	40,940
2020	38,703
2021	37,294

Funding to the SB DIB

Next, we calculated the amount of DoD funding awarded to small versus large businesses. **As shown in Table 4 and Figure 1, while overall defense spending increased by 46%, the amount of money DoD awarded to SBs grew by almost 68%, from ~\$54 billion in 2015 to ~\$91 billion in 2021. In other words, as the pool of SB vendors contracted, the DoD awarded substantially more in contracts to SBs—both in total dollars and as a share of overall spending.**

Table 4. Breakdown of DoD Spend by Business Size

Fiscal Year	Total DoD Funded Procurement	Total DoD Funded Procurement to SBs	Total DoD Funded Procurement to LBs	% DoD Funded Procurement Awarded to SBs
2015	\$294,357,455,264	\$54,500,060,463	\$239,857,394,801	18.51%
2016	\$318,628,870,367	\$58,858,890,994	\$259,769,979,374	18.47%
2017	\$344,813,865,145	\$62,493,984,962	\$282,319,880,183	18.12%
2018	\$386,911,953,179	\$74,865,344,991	\$312,046,608,188	19.35%
2019	\$427,876,600,900	\$81,259,290,822	\$346,617,310,078	18.99%
2020	\$465,451,566,836	\$87,928,706,954	\$377,522,859,882	18.89%
2021	\$428,635,700,550	\$91,584,868,966	\$337,050,831,584	21.37%
Total	\$2,666,676,012,242	\$511,491,148,151	\$2,155,184,864,091	19.18%



INDEX OF RELATIVE SHARE OF 2015 DEPARTMENT OF DEFENSE FUNDED OBLIGATIONS BY BUSINESS SIZE

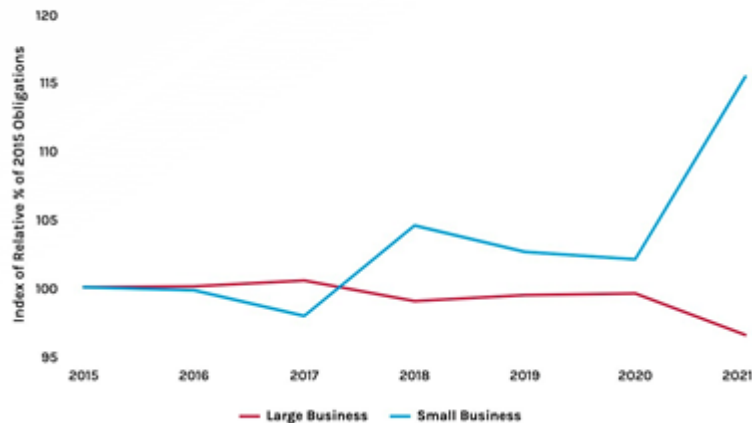


Figure 1. Index of Growth in DoD Procurement to Small vs. Large Businesses

Total Spend to SBs: A Myopic Measure of Success

If you consider the proportion of DoD spend allocated to SBs as the primary performance metric, the DoD SB program appears successful, with nearly 20% of procurement awarded to SBs annually. However, the fact that the pool of SB vendors simultaneously shrank not only runs counter to the intended purpose of the program, but also suggests anti-competitive forces at play. **The more the DoD procured from SBs, the fewer SBs benefited. In a free, competitive market, increasing the amount of money spent on SBs should attract a growing number of SBs into the DIB.**

Rather than providing “greater market access for small firms’ goods and services,” as the House report asserts, **DoD SB policies have made the DoD increasingly reliant on fewer suppliers, thereby reducing the variety of available products and services and posing risks to the health and resilience of the industrial base.**

The DoD and USG should not measure the success of the SB program exclusively by the share of overall procurement awarded to SBs. **To assess the program relative to its stated objectives, they must consider a subset of key metrics, such as the total number of SB suppliers each year and the number of new SBs working with DoD annually.**

Composition of the SB DIB

For a shrinking number of SBs to receive a substantially greater share of overall DoD procurement suggests that these SBs, or a subset of them, dramatically increased their DoD revenue during our analysis period. To better understand these trends, we explored the distribution of DoD funding to the individual SBs.

SB DoD Revenue

We calculated the total defense funded procurement for each of the 93,306 distinct SB DUNS in our dataset. Table 5 presents the top 20 SBs that received the most DoD funding during the analysis period. It is apparent that **businesses can receive hundreds of millions, or even billions of dollars, in DoD contracts annually and still qualify as small.** Furthermore, **the top 20 SBs alone received more than \$53.6 billion in DoD funded procurement—over 10% of all DoD funding to SBs.**



Table 5. DoD Procurement to the Top 20 Small Businesses

Company Name	Total DoD Funding, FY2015–FY2021	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021
ATLANTIC DIVING SUPPLY INC.	\$15,720,363,970	\$1,114,565,311	\$1,250,613,527	\$1,609,645,315	\$2,509,511,257	\$3,233,362,687	\$3,138,616,046	\$2,864,049,826
MODERNATX INC.	\$8,167,157,644	\$0	\$0	\$0	\$0	\$0	\$1,255,697,789	\$6,911,459,855
FEDERAL RESOURCES SUPPLY COMPANY	\$3,639,062,189	\$191,105,314	\$190,329,295	\$233,348,924	\$288,268,243	\$339,501,133	\$2,017,338,638	\$379,170,642
TORCH TECHNOLOGIES INC.	\$2,793,079,298	\$230,809,413	\$297,477,436	\$343,020,172	\$407,159,701	\$506,888,808	\$534,814,811	\$472,908,957
AMERICAN ROLL-ON ROLL-OFF CARRIER LLC	\$2,127,079,115	\$162,123,014	\$121,500,994	\$299,618,926	\$402,194,232	\$409,332,723	\$401,249,517	\$331,059,709
W. S. DARLEY & CO.	\$2,116,004,701	\$88,187,907	\$104,757,067	\$137,284,656	\$290,071,939	\$447,459,381	\$619,533,680	\$428,710,071
SUPPLYCORE INC.	\$2,063,094,270	\$216,465,938	\$270,658,624	\$287,081,017	\$483,843,845	\$314,088,442	\$238,994,116	\$251,962,287
NOBLE SALES CO. INC.	\$1,596,066,944	\$82,503,610	\$146,790,206	\$214,925,343	\$419,501,578	\$343,312,708	\$163,182,149	\$225,851,349
PATRIOT CONTRACT SERVICES LLC	\$1,527,239,912	\$211,826,458	\$208,532,530	\$202,886,173	\$201,692,062	\$229,600,183	\$249,576,431	\$223,126,075
SCIENCE AND ENGINEERING SERVICES INC.	\$1,504,421,418	\$161,310,210	\$198,748,354	\$203,236,582	\$230,739,555	\$399,540,265	\$201,691,936	\$109,154,516
INTUITIVE RESEARCH AND TECHNOLOGY CORPORATION	\$1,356,791,448	\$243,750,490	\$271,883,798	\$141,934,429	\$132,888,518	\$161,577,735	\$150,588,243	\$254,168,235
REDSTONE DEFENSE SYSTEMS	\$1,348,465,209	\$409,931,908	\$290,605,504	\$268,598,914	\$364,629,509	\$20,055,527	-\$4,559,932	-\$796,221
PETROMAX REFINING COMPANY LLC	\$1,318,910,681	\$0	\$50,639,235	\$168,748,000	\$289,379,308	\$175,004,910	\$210,103,376	\$425,035,852
AASKI TECHNOLOGY INC	\$1,297,017,594	\$268,424,777	\$185,202,403	\$138,632,480	\$73,974,621	\$185,177,343	\$281,011,125	\$164,594,844
LINQUEST CORPORATION	\$1,242,341,667	\$93,040,472	\$116,169,557	\$145,481,202	\$191,800,933	\$246,554,703	\$226,637,383	\$222,657,417
STERLING COMPUTERS CORPORATION	\$1,201,065,386	\$113,739,696	\$139,257,654	\$194,142,865	\$207,344,777	\$206,333,948	\$177,827,869	\$162,418,578
OASIS SYSTEMS LLC	\$1,185,405,811	\$46,900,883	\$90,364,813	\$115,206,223	\$137,248,228	\$282,548,753	\$238,203,287	\$274,933,625
RADIANCE TECHNOLOGIES INC.	\$1,174,024,159	\$74,488,287	\$106,085,426	\$146,400,995	\$160,501,398	\$262,801,414	\$186,364,266	\$237,382,374
PROGENY SYSTEMS CORPORATION	\$1,140,344,606	\$90,349,414	\$187,885,609	\$89,783,297	\$182,629,973	\$172,766,058	\$213,144,546	\$203,785,709
PLACID REFINING COMPANY LLC	\$1,138,393,266	\$261,394,162	\$137,389,081	\$142,381,210	\$228,259,639	\$53,777,964	\$125,369,386	\$189,821,824
Total	\$53,656,329,288							



As shown in Table 6 and Figure 2, the number of SBs that received more than \$100 million in DoD funded procurement in 2021 was 3.23x that of 2015. By comparison, the number of DoD SBs awarded \$1 million or less in DoD procurement *shrank* by 32%. An increase in SB spend has disproportionately benefited the “largest” SBs, enabling them to dramatically expand their DoD market share while the DoD market became less opportune for the smallest businesses.

Table 6. Count of SBs with \$100M+ in DoD Procurement, Annually

Fiscal Year	Count of SBs with \$100M+ DoD Procurement	Count of SBs with <\$1M in DoD Procurement
2015	26	34,205
2016	38	32,727
2017	48	31,100
2018	66	29,070
2019	79	26,538
2020	84	24,352
2021	84	23,337

INDEX OF DISTINCT SMALL BUSINESS DUNS: UNDER \$1M VS OVER \$100M IN TOTAL FISCAL YEAR OBLIGATIONS

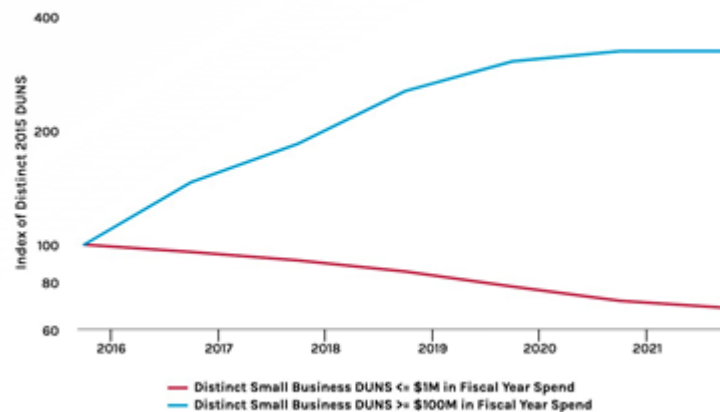


Figure 2. Index of SBs with <\$1M DoD Revenue vs. SBs with \$100M+ DoD Revenue

Small by What Standards?

The SBA defines an SB based on its average number of employees over the past 12 months or average annual receipts (U.S. Department of State, 2020). In the case of Atlantic Diving Supply, for instance, although it generates billions in DoD revenue annually, it has fewer than 500 employees. Based on its NAICS code, it qualifies it as an SB by SBA standards.²

² ADS has faced controversy regarding its SB set-aside status, but ultimately had its SB set-aside status reaffirmed.



The fact that a company with billions in DoD procurement can qualify as an SB offers one explanation for a relatively few number of SBs consuming a disproportionate share of overall DoD SB spend. Because the sole measure of success for the DoD SB program is whether the DoD awards 23% of prime contract spend to SBs, **enabling certain types of companies to compete as SBs regardless of their revenue incentivizes the DoD to work with—and award large contracts to—these larger SBs. Since the DoD is not incentivized to exceed the 23% set-aside goal, smaller SBs are in turn crowded out of the defense market.** It also creates an easily gameable system whereby a company can outsource aspects of work to teaming partners and subcontractors in order to keep employee headcount artificially low to maintain its SB status despite significant revenue.

Recommendation: Redefine SBs

Current policies, which enable—even encourage—firms with hundreds of millions or billions of dollars in DoD revenue to compete for SB contracts, have created an inhospitable environment for smaller companies. Based on our analysis, it is evident that the system favors the largest SBs at the expense of smaller ones, which runs counter to the stated purpose of the SB Program. Furthermore, the size standards the SBA and DoD apply to government contractors are unreasonable. Most Americans do not consider a company that generates hundreds of millions or billions of dollars in revenue, or a company with a multibillion dollar market capitalization, to be “small.” To the extent Congress and the USG permit procurement policies that afford special treatment to SBs, qualifying companies should, at the very least, *be* small. We therefore recommend that the SBA change the criteria for qualifying as an SB.

Further research is required to determine revenue/employee caps for qualifying as an SB, but as a frame of reference, the average revenue for the largest SBs in the private sector (companies with 100–499 employees) was approximately \$41 million in 2007 (Godlewski, 2020). Regardless of NAICS code, revenue, rather than number of employees, should be the primary consideration to qualify as an SB. Employee count is more difficult to track and can be obfuscated through subcontracting/teaming arrangements and/or independent contractors. Additionally, in the age of automation, businesses across sectors can achieve substantial growth without expanding their workforce.

Furthermore, there is a tremendous amount of opacity around size standards in general. The SBA Table of Size Standards is 49 pages long and contains confusing and arbitrary criteria. For instance, NAICS 339112, “Surgical and Medical Instrument Manufacturing,” has an SB size standard of 1,000 employees while NAICS 339113, “Surgical Appliance and Supplies Manufacturing” has a size standard of 750 employees (U.S. SBA, 2017). NAICS 448110, “Men’s Clothing Stores,” has a size standard of \$12 million in revenue; NAICS 448120, “Women’s Clothing Stores,” has a size standard of \$30 million in revenue; and NAICS 448130, “Children’s and Infants’ Clothing Stores,” has a size standard of \$35 million in revenue. Firms can and do register for multiple NAICS codes, and the government can also issue waivers to enable companies that exceed these standards to qualify as small. Collectively, these inconsistent, complex, and subjective standards are difficult to enforce, favor entrenched businesses that understand the system and how to maximize it to their advantage, and discourage new entrants. We recommend the SBA engage an independent panel of U.S. demographic experts, data scientists, and industry experts to overhaul and streamline SBA size standards.

Subcontracting in the SB Ecosystem

Because a DoD SB, like a large business, can win a contract as the prime and allocate work to teaming partners and/or subcontractors, we sought to evaluate the effects of subcontracting practices on the SB DIB. Depending on the contract type, there are certain



restrictions on how much of the work an SB is permitted to outsource to subcontractors/partners, as shown in Figure 7. **If these requirements are met, SBs can outsource work to subcontractors regardless of size, including large businesses.**

Contract Type	Rule
Services	SB Prime must provide 50%+ of the contract cost for personnel
Supply	SB Prime must perform work for 50%+ of the cost of manufacturing the supplies, not including the cost of materials, unless the business qualifies as a non-manufacturer
General Construction	SB Prime must perform 15%+ of the cost of the contract with its own employees, not including the cost of materials
Specialty Construction	SB Prime must perform 25%+ of the cost of the contract with its own employees, not including the cost of materials
<i>The SB Prime can utilize “similarly situated subcontractors,” or subcontractors with the same required size and SB program status as the SB Prime, to meet these performance requirements.</i>	

Figure 7³. SB Subcontracting Limitations

Sizing the SB Subcontractor Industrial Base

To analyze the subcontracting data, we leveraged data from USASpending, which contains information about subcontract awards, including instances in which an entity served as the prime contractor, and how much and to whom it awarded subcontracts. We isolated subcontracting data from USASpending for FY2015–FY2021, where the prime contract award was funded by the DoD and where the prime contractor was a vendor from our DoD SB dataset.

For this analysis, we isolated all prime contractor SBs with at least \$10,000 in defense-funded procurement between FY2015–FY2021. Doing so streamlined the data and reduced the potential impact of government reporting errors on the results. Of the 76,286 SBs with at least \$10,000 in defense-funded procurement, we identified 863 SBs that awarded DoD-funded subcontracts during our analysis period (“SB Primes”).

It is important to note that while we were able to associate a subcontract award to its prime contractor and we were able to verify that both prime and subcontract funding came from the DoD, due to computational limitations, we could not link the subcontract action to its specific prime contract award action. To proxy the prime/subcontractor relationships, we linked DoD-funded subcontract awards from FY2015–FY2021 that were affiliated with the 863 SB Primes into our data set.

As shown in Figure 8, these 863 SB Primes received approximately \$242 billion in defense funded procurement from FY2015–FY2021. During that same timeframe, they collectively subcontracted ~\$91 billion in defense-funded subcontract awards.

³ These limitations apply to SB set-aside contracts \$150K+.



Total SB Prime DoD Procurement, FY 2015–FY2021	Total DoD-Funded Outlays to Subcontractors by SB Primes, FY2015-FY2021
\$242,013,278,183	\$91,171,095,487

Figure 8. DoD-Funded Subcontract Awards Associated with SB Primes

Who Are the Subcontractors?

Next we sought to analyze the universe of companies that performed as subcontractors to DoD SB Primes (“subcontractors”). Filtering the USASpending subcontracting data associated with our SB Primes to isolate unique DUNS, we determined that the 863 DoD SB Primes collectively worked with 13,924 unique subcontractors. At first glance, we recognized many of the world’s largest government contractors among the names. Figure 9 provides a snapshot of 10 large government contractors that perform as subcontractors to DoD SB Primes and the DoD subcontracting dollars awarded to them during our analysis period.

Subcontractor Name	Total DoD-Funded Subcontract Awards, FY2015–FY2021
ACCENTURE	\$7,427,637
BOEING	\$183,412,223
BOOZ ALLEN HAMILTON	\$1,326,752,662
DELOITTE	\$120,403,176
GENERAL DYNAMICS	\$542,271,351
HARRIS CORPORATION	\$572,658,238
L3	\$861,609,111
LOCKHEED MARTIN	\$284,056,045
NORTHROP GRUMMAN	\$541,770,770
RAYTHEON	\$341,913,820

Figure 9. Snapshot of Large Subcontractors

As evidenced by the revenue generated by these 10 companies through DoD SB set-asides, DoD SB policies benefit the most entrenched government contractors. We were interested in understanding the extent to which other LBs also performed as subcontractors to DoD SB primes. We classified the 13,924 subcontractors in the data as “small” or other than small (“large”) using the same approach we employed when classifying SBs from the overall pool of DoD vendors. However, the process requires the subcontractor DUNS to be associated with a procurement action directly funded by DoD from FY2015 through FY2021—in other words, for us to determine whether a subcontractor was an SB, that subcontractor also needed to have been a prime contractor to DoD from FY2015–2021. Of the 13,924 subcontractors in the data, 6,537 had no associated DoD prime contract awards during the analysis period. Because we were unable to determine the size of these businesses, we labeled them “unknown.”

As shown in Figure 10, 2,177 subcontractors—approximately **16% of all subcontractors to DoD SB Primes during our analysis period—were large businesses. Collectively these LBs were awarded more than \$24 billion in DoD-funded subcontract awards, which represents nearly 27% of all DoD-funded subcontract procurement from**



FY2015–FY2021. Taken as a percentage of the total ~\$511.4 billion DoD SB procurement during the same period, **\$24 billion represents 4% of DoD SB spend.**⁴

Subcontractor Type	Count	Total DoD Funded Subcontracts from DoD SB Primes, FY2015–FY2021
SMALL BUSINESS	5210	\$43,194,628,990
OTHER THAN SMALL BUSINESS	2177	\$24,207,193,451
UNKNOWN	6537	\$23,769,273,045

Figure 10. Breakdown of Subcontractors to DoD SB Primes, by Business Size

Recommendations: Subcontracting Reforms

There are merits to permitting LBs to subcontract to SBs. The policy allows certain SBs to compete for and win work they would be unable to perform without the assistance of a large, experienced contractor. The streamlined procurement process for set-asides also incentivizes LBs to engage with the SB community, which helps SBs’ innovative capabilities reach the warfighter. However, the policy has resulted in LBs receiving a substantial amount of money earmarked for SBs. We therefore recommend that contract dollars that flow through SBs to LBs be excluded from SB procurement goals.

Furthermore, there is no evidence to suggest that current subcontracting policies enable more SBs to participate in the defense market—on the contrary, the SB DIB continues to contract in spite of them. Liberal teaming and subcontracting policies also create opportunities for the largest SBs to partner with one another as similarly situated contractors, making the defense market even harder for smaller SBs to penetrate. Just as the USG and DoD must reconsider how they define SBs to be more reasonable and aligned with the views of taxpayers, so too must they reassess subcontracting policies.

Subcontracting Data: Limitations & Further Research

Pursuant to FAR 4.1403(a), all contracts that report to FPDS with subcontracts over \$30,000 must report first-tier subcontract data. However, from working with the data, we believe that public records pertaining to government subcontract awards are to some extent incomplete and are less reliable than prime contract award data. There can also be significant lags between when the DoD awards a prime contract and when subcontract dollars are outlaid. Further research is required to ascertain gaps in public records for subcontracting data. While we cannot determine how this limitation may affect the efficacy of our results, the broader trends we identified in the subcontracting data provide valuable insights.

Additionally, as shown in Figure 11, when we analyzed the amount of DoD procurement SB Primes awarded to subcontractors from FY2015–FY2021, we found that 37 SB Primes appeared to have outlaid more in DoD-funded subcontract awards than they received in DoD-funded prime contract awards during the same period. In other words, according to the data, from FY2015–FY2021 Torch Technologies had ~\$5.5 billion in DoD-funded procurement, yet there were ~\$27.2 billion worth of DoD-funded subcontract awards associated with Torch during that same period. Likewise, A&D Fire Sprinklers received ~\$8.8 million in DoD procurement but had ~\$71 million in affiliated DoD-funded subcontract awards.

⁴ Because we cannot resolve subcontract awards to specific prime contract actions, it is possible that some portion of subcontract awards are associated with prime contract awards that predate our analysis period. It is also possible that some subcontract awards are associated with classified prime contracts wherein the prime contract value is not made public, but certain subcontract procurement data is unclassified. As a result, this calculation is a proxy.



SB Prime	Total DoD Procurement, FY2015–FY2021	Total Associated DoD Subcontract Award Outlays, FY2015–FY2021	%Total DoD Procurement Subcontracted
IE-PACIFIC INC	\$414,933,772	\$3,951,765,106	952.38%
A&D FIRE SPRINKLERS INC	\$8,810,415	\$71,040,705	806.33%
TECOLOTE RESEARCH INC	\$1,423,163,688	\$8,269,466,123	581.06%
RA BURCH CONSTRUCTION CO INC	\$627,474,597	\$3,371,236,769	537.27%
TORCH TECHNOLOGIES INC	\$5,583,425,252	\$27,207,753,458	487.30%
ADGC BONITA PIPELINE JV	\$9,629,749	\$42,865,581	445.14%
A&D-DORADO JOINT VENTURE LLP	\$14,576,277	\$64,534,551	442.74%
NOREAS ENVIRONMENTAL SERVICES LLC	\$81,476,858	\$335,706,927	412.03%
ASSURANCE TECHNOLOGY CORPORATION	\$812,546,967	\$3,256,627,173	400.79%
ALUTIIQ GENERAL CONTRACTORS LLC	\$103,568,080	\$387,876,239	374.51%
ANALYSIS COMPUTING & ENGINEERING SOLUTIONS INC	\$32,076,047	\$114,361,141	356.53%
STORMWATER PLANS LLC	\$50,045,437	\$141,033,739	281.81%
WALGA ROSS GROUP 2 JV	\$52,833,910	\$148,203,722	280.51%
BLACK RIVER SYSTEMS COMPANY INC	\$432,776,550	\$1,200,501,496	277.40%
1CYBERFORCE LLC	\$13,539,676	\$36,611,639	270.40%
ALUTIIQ GENERAL CONTRACTORS LLC	\$110,308,752	\$294,784,776	267.24%
SOLVUS GLOBAL LLC	\$227,036	\$600,000	264.28%
APTIMA INC	\$395,504,344	\$972,253,276	245.83%
MUNRO CONSTRUCTION COMPANY INC	\$2,478,218	\$5,492,610	221.64%
ALUTIIQ CONSTRUCTION SERVICES LLC	\$72,611,308	\$150,799,451	207.68%
ROSS GROUP CONSTRUCTION CORPORATION	\$328,251,640	\$665,465,786	202.73%
WALGA ROSS GROUP JV	\$175,234,420	\$355,115,556	202.65%
A&D GC INC	\$74,203,984	\$149,927,006	202.05%
ITSTARS2 LLC	\$10,163,613	\$19,640,936	193.25%
LUKOS-VATC JV LLC	\$199,797,768	\$347,746,602	174.05%
H F WEBSTER ENGINEERING SERVICES INC	\$7,521,910	\$12,840,503	170.71%
WALGA MTE LLC	\$17,151,826	\$26,804,564	156.28%
SHEFFIELD KORTE TEAM LLC	\$56,054,522	\$85,963,900	153.36%
MILSUP LLC	\$12,326,498	\$16,891,230	137.03%
ASRC BUILDERS LLC	\$360,278,865	\$482,793,017	134.01%
ALUTIIQ COMMERCIAL ENTERPRISES LLC	\$845,764,485	\$1,112,413,698	131.53%
TECH-MARINE BUSINESS INC	\$555,375,489	\$696,846,588	125.47%
BRISTOL-CANNON JV LLC	\$8,550,879	\$10,728,642	125.47%
GRACON LLC	\$47,128,505	\$55,839,532	118.48%
ALUTIIQ MANUFACTURING CONTRACTORS LLC	\$36,366,794	\$39,115,654	107.56%
ASSURED INFORMATION SECURITY INC	\$1,687,968,801	\$1,810,475,399	107.26%
AKIMA GLOBAL LOGISTICS LLC	\$2,071,751	\$2,129,336	102.78%

Figure 11. DoD SB Primes With More in Subcontracting Outlays Than Prime Contract Awards



We contacted 15 of these companies via email indicating that they appeared to have outlaid more in DoD-funded subcontracts than they received in direct procurements and invited them to provide us with feedback and context. Two companies responded, one via email and one by phone. Both simply stated that the figures we cited were inaccurate but offered no further explanation. Despite their feedback, our data is accurate according to USASpending. We also emailed USG points of contact associated with a subset of Torch Technologies' largest subcontract actions in hopes of gathering more information, but we did not hear back. Additionally, we spoke with several DoD contracting experts about these findings. They were surprised by the data and had no clear explanation as to how or why a contractor would outlay substantially more in subcontracts than it received in direct procurements.

Possible theories included administrative errors (government personnel inputting data incorrectly); instances where monies were awarded to a company in an earlier year and used in later years; and/or instances where classified prime contract award data was not in the public realm, but subcontracting data associated with that contract was publicly available. Further research is required to better understand this finding; if, when and why this activity is permitted in prime/subcontractor relationships; reporting practices inside of the government that obfuscate how companies partner and subcontract; and how these practices affect the composition of the DoD SB industrial base. In future research, we would also strive to link subcontract actions with their prime contract.

Consolidation of the SB DIB

As the largest SBs expanded their DoD market share, thousands of other SBs ceased working in the defense market. As previously referenced in Table 3, the number of DoD SBs shrank nearly 23% from FY2015 to FY2021, from 48,322 to 37,294. While we have concluded that SBA size standards and subcontracting policies favor larger SBs and measuring the success of the DoD SB program based on the share of DoD spend awarded to SBs incentivizes DoD stakeholders to award larger contracts to fewer suppliers, we were interested in understanding other factors contributing to SB attrition from the defense market.

Technical Approach & Research Limitations

For the purposes of our research, we define a company as “leaving” the defense market if it had associated DoD contract actions at one point during our analysis period, but not in the subsequent year(s). For instance, an SB with DoD contract actions in FY2016 and FY2017, but no DoD contract actions from FY2018–FY2021, was treated as “leaving” the DoD market in FY2018.

There are generally four explanations for why a company would no longer appear in the dataset during the analysis period:

- It went out of business entirely.
- It ceased working in the defense market but continued to work commercially.
- It ceased working in the defense market but began working, or continued to work, with other USG customers.
- It was acquired or it merged with another company (and it may or may not continue to support the DoD through this new entity).

We cannot discern which of these explanations applies to an individual SB in our data. We recommend further research to explore the possibility of joining additional data sources for analysis, including non-DoD-funded USG procurement data, to help determine the status of an SB. Irrespective of this limitation, the results of a shrinking SB DIB are the same: a less robust



industrial base, with less supplier diversity. The consolidation also undermines the purported economic benefits of the SB program.

Why SBs Leave the DoD: The Cost of Doing Business

One significant factor that has resulted in SBs leaving the DoD market is the rising costs associated with working with defense customers.

In 2020, the DoD implemented the Cybersecurity Maturity Model Certification (CMMC), a mandatory security requirement for contractors and subcontractors. Compliance burdens companies with numerous hard and soft costs. Companies must now devote internal resources for planning, documentation, training, and assessments. Outsourcing an assessment comes with an estimated cost of \$15,000–\$45,000, and investments to reach requisite certification levels range from \$3,000–\$100,000 (Dawson, 2021).

New security requirements have also resulted in additional insurance requirements, including new and/or increased professional liability and cyber insurance policies. According to Insureon, an online insurance marketplace for SBs, the median cost for cyber liability insurance for SBs is \$1,675 annually (“How Much Does Cyber Liability Insurance Cost?”). Coverage requirements for DoD SBs, however, often far exceed the average. For example, PW Communications is a certified woman-owned SB that has performed on contracts for the Defense Information Systems Agency (DISA) since 2012. In 2020, PW Communications was required to obtain additional professional liability/cyber insurance policies to continue supporting DISA. PW Communications paid \$13,576 for these new policies in 2021, and \$18,333 in 2022. Robert Chamberlain, the Founder and President of Monterey Technologies, Inc., an engineering firm that has supported DoD customers since the 1980s, estimates that his firm had to invest more than \$100,000 over the last 2 years to satisfy new security requirements.

As these costs rise, larger SBs have the ability to absorb them more easily. They further benefit because these costs, which are untenable for smaller SBs, drive competitors out of the market.

Balancing the Risks

While increased security requirements are necessary to respond to evolving threats, the DoD must be cognizant of the impact current and future requirements have on SBs. At a certain point, SBs will not be able to justify the costs, particularly relative to the ease with which they can work in the commercial market. The DoD should consider offset strategies to reduce the cost burdens on SBs.

Shifting Procurement Strategies

Shifts in DoD and Defense Logistics Agency (DLA) procurement strategies over the last decade have also severely impacted the ability for specialized SBs to support DoD customers. In 2012, the DoD and DLA began implementing a contract bundling practice called “Captains of Industry” (COI) that involves awarding multi-year, multi-billion dollar sole-source contracts to large Original Equipment Manufacturers (OEMs) and large aerospace integrators. These contracts bundle a large number of National Stock Numbers (NSNs) that were historically purchased individually into one single contract. The intention of the COI program was to deliver cost savings, value, and other benefits to the DoD (DoD IG, 2021). According to a February 2021 DoD Office of Inspector General (IG) report along with a study conducted by the Small Business Aerospace Industrial Coalition (SBAIC), there is no indication that COI bundling policies have yielded cost savings or on-time deliveries (Small Business Aerospace Industry Coalition, 2021).



COI has, however, rerouted millions in DoD contract dollars from components manufacturers and other SBs to large integrators and OEMs. **The IG report estimates that SB participation has declined by 61% in the COI program.** SBAIC has reported that many of its 200 member companies—which have gross revenue under \$20 million and specialize in manufacturing and supplying military aerospace spare parts, components, and assemblies—have been financially devastated as a result of these bundling policies. Several have gone out of business entirely, with others on the brink of bankruptcy.

Other factors that inhibit small and nontraditional companies' ability to succeed in the defense market, which we identify and explore in earlier research, include but are not limited to:

- Complex, anticompetitive solicitation processes: It is extremely difficult for companies to identify relevant requirements due to the design of SAM.gov. If and when companies find relevant opportunities, the majority of DoD solicitations require responses within 21 days of when they are published, and the vast majority of these solicitations/requirements are not written clearly (Bresler & Bresler, 2021).
- Redundant requirements: USG/DoD stakeholders do not coordinate outreach efforts. As a result, dozens and sometimes hundreds of distinct stakeholders solicit the same capabilities concurrently. SBs cannot participate in all of them and have limited ability to prioritize them.
- Lack of awareness across the DoD about what capabilities SB suppliers possess: DoD stakeholders rely on certain suppliers because they do not know that other qualified vendors exist—even if these alternative vendors already support other defense customers.

Simply limiting competition for certain contracts to SBs does not address these underlying issues. **Until the SBA, DoD, and USG address them, the defense market will continue to prove inhospitable for non-entrenched suppliers.** The fact that the procurement process, even for set-aside contracts, disproportionately benefits companies with institutional knowledge of the system also means that the DoD ends up awarding contracts to SBs that understand the system, rather than companies with the “best” or most competitive offering—particularly considering the DoD is *obligated* to award a certain percentage of annual procurement to SBs. **Thus, just as SB policies contribute to the failure of some SBs, they also prop-up certain companies that would and/or should naturally go out of business.** Permitting SBs to evade full and open competition for certain opportunities, in general, is also the opposite of “preserving free competitive enterprise.” With a portion of the market excluded from the competitive process, SBs are not incentivized to innovate and/or reduce costs in ways they would be if free market forces were at work.

Conclusions

Rather than “leveling the playing field,” government set-aside policies enrich the largest SB vendors and fail to benefit the groups they were designed to serve. They afford preferential treatment to entities that understand the system and how to maximize it to their advantage. As these entities consolidate power, they can withstand the costs and procedural challenges that keep smaller, would-be competitors from succeeding. Compounding these issues is the fact that arbitrariness, opacity, and lack of standardization around USG and DoD size-standards make it difficult to evaluate the results of the set-aside program in general.

While this paper focuses on the SB program broadly, the issues we identified become more acute in the context of set-aside policies for companies that qualify for preferential treatment in the procurement process based on other USG-defined criteria, such as where the



business is located and the socioeconomic and/or demographic features of a company's owners. **These initiatives do not make it easier for members of set-aside communities to navigate the defense market on a practical level. Instead, they create new, increasingly insulated/anticompetitive avenues for entities well-versed in government contracting to exploit the system.**

In conclusion, **until the real challenges keeping small and nontraditional companies from succeeding in the public sector are addressed, the DoD and USG must award contracts based on technical merit, innovativeness, price, and ability to perform**—not based on the size of a company or the demographic features of its owners. They must rigorously analyze the composition of the industrial base on an ongoing basis using consistent, verifiable data; and commit to addressing the underlying causes if and when certain types of businesses are underrepresented.

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