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Center for Strategic and International Studies

Wall Street and the Pentagon: Defense Industry Access to Capital Markets, 1990 - 2010

An Annotated Brief

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Abstract

Defense firms rely in part on cash raised from capital markets to finance ongoing operations as well as new investments in long-term assets, independent research and development, and retirement of maturing debt. The ability to access capital markets shapes the depth and breadth of the U.S. defense industry, the capabilities it can offer, and the cost of these capabilities to the Department of Defense. Given the monolithic nature of the defense market, it is paramount that decisionmakers understand the relationship between defense spending and the financial metrics that drive access to – and cost of – capital for defense firms.

This paper presents the data and findings of research conducted by the Defense-Industrial Initiatives Group at the Center for Strategic and International Studies (CSIS) on defense companies' access to capital markets during the period 1990-2010. The analysis shows that for the universe of defense equities analyzed, there exists a positive relationship between defense spending, companies' financial health, and the industry's relative market valuation. However, no evidence was found to suggest that these firms encountered difficulties accessing capital markets either during a period of market contraction (1990-2001) or during the recent budget buildup (2002-2010).

Introduction

In its FY2010 Quadrennial Defense Review (QDR), the Department of Defense (DoD) recognized the importance of the investment community to the well-being of the defense industry, stating, "the Department must ensure that we do not take this access to capital for granted and must work to form a more transparent view of our requirements and long-term investment plans."[1] The reference in the QDR to the industry's ability to access capital markets also reflects industry leaders' concerns. In a newspaper interview, the chief financial officer of a large private firm with a significant defense business said, "The core issue [for defense companies] is the difficulty in matching the heavy demands of customers against the ambitious financial returns expected by investors."[2]

To evaluate the defense industry's ability to access capital markets, a better understanding of the nature of the defense market and the dynamic between its main elements is needed. Although U.S. defense firms belong to the private sector, the industry operates in a near monopsony market environment, where the Department of Defense (DoD) is not only the largest customer, but also the market regulator. Therefore, fluctuations in U.S. defense outlays have a direct impact on the industry's financial health, which in turn affect the value capital markets assign to defense firms, and thus the industry's ability to tap capital markets for funds.

This study provides a historic perspective of how defense budget trends and, to a lesser extent, acquisition policies affected defense firms' access to capital markets. The analysis covers a 20-year period, from 1990 to 2010, which coincides with a full business cycle in the defense market, from the budget peak of the Reagan build-up, through the 1990s budget drawdown and the 2000s buildup associated with the Global War on Terror, until the budget peak in 2010. The research will evaluate whether defense budget fluctuations affected the industry's access to capital in the past 20 years, and provide decisionmakers with a frame of reference to evaluate how the coming budget drawdown may affect the industry's access to capital markets.

The study is divided into four sections. Section 1 reviews DoD outlays between 1990 and 2010. The analysis breaks down top-line budgets into the five main budget categories: procurement, investment, operation and maintenance (O&M), military personnel, and other,[3] and how each of the five categories fared during the 1990s drawdown and 2000s buildup. Section 2 examines a number of fundamental financial metrics for the industry, including profitability, cash flows, and liquidity. Although by no means exhaustive, these metrics are most sensitive to DoD spending and regulations and are important indicators of the financial health of the industry. These metrics are often used by financial analysts and investors to value companies and determine their risk profile. Section 3 focuses on market valuation ratios, including price to earnings (P/E) and Enterprise Value to Earnings before Interest, Taxes, Depreciation, and Amortization (EV/EBITDA). The section also evaluates the industry's weighted average cost of debt. The aim is evaluate how the industry's financial health affected capital markets' valuation

[1] Department of Defense, *Quadrennial Defense Review Report* (Washington, DC: DoD, February 2010).
[2] Daniel Michaels, "Airbus Officials Cite Challenges," *Wall Street Journal*, June 10, 2010.
[3] Other is the sum of military construction, family housing, revolving & management funds, retired pay, and trust and receipt.

of the industry and its borrowing costs. Section 4 analyzes the links between budgets, the financial health of the industrial base, and its market valuations to understand industry's ability to access capital.

Methodology

To examine and assess the financial performance of the defense sector, and to capture the diversity of companies within it, the Defense-Industrial Initiatives Group (DIIG) created the CSIS Defense Index. The Defense Index is composed of 32 public companies with annual revenue ranging from $180 million to $45 billion, representing not only hardware and equipment firms, but also the professional services sector. The Defense Index includes a number of legacy defense firms, as well as foreign companies with significant presence in the U.S. defense market. In choosing companies for the Defense Index, DIIG focused on publicly traded firms with a preponderance of revenue from military-use products and services. At times, the inclusion of a given company depended on the availability of financial data. See Appendix A for the list of companies.

The analysis of the CSIS Defense Index is twofold. First, the CSIS Index is benchmarked against the components of the S&P 500 (excluding financial and defense firms) and the industrial components of the S&P 1500 (excluding financial and defense firms). Second, the CSIS Index is broken down into sub-indices that are measured against their respective commercial counterparts.

Recognizing the diversity of companies in the CSIS Defense Index, the DIIG team divided the defense index into three sub-indices: CSIS Defense Professional Services (DPS) Sub-Index; CSIS Hardware & Equipment (H&E) Sub-Index; and the CSIS Diversified Sub-Index. The CSIS DPS Sub-Index is composed of companies whose majority of revenue derives from services. The CSIS H&E Sub-Index is composed of companies whose majority of revenue derives from manufacturing. The CSIS Diversified Sub-Index is composed of companies with significant revenue from both defense professional services and manufacturing.

To evaluate the performance of the sub-indices of the CSIS Defense Index, the research team identified comparable commercial companies from the S&P 1500 Index. CSIS used Standard & Poor's Global Industry Classification Standards (GICS) to sort the S&P 1500 by sectors, industry groups, industries, and sub-industries. This breakdown allowed the research team to identify commercial companies with comparable business mix to those of the sub-indices of the CSIS Defense Index. Of the comparable companies identified, the research team excluded companies whose most recent three-year average revenue exceeded or fell below the range of the three-year average revenue of the CSIS sub-index they were to benchmark. The three benchmarks are as follows: Commercial & Professional Services; Commercial Hardware & Equipment; Commercial Diversified.

The Commercial & Professional Services benchmark includes companies from GICS Industry Group 2020 *Commercial and Professional Services*, including diversified support services, environmental and facilities services, office services and supplies, security and alarm services, human resources and employment services, and research and consulting services. DIIG also chose to include Information Technology services companies from GICS Industry 451020 *IT Consulting & Other Services* in order to ensure a comprehensive comparison of its CSIS DPS Sub-Index counterpart.

The Commercial Hardware & Equipment benchmark is composed of companies whose majority of revenue derives from manufacturing. It includes companies from three GICS Industries: *Technology Hardware and Equipment* (4520), specializing, among other things, in electronics manufacturing and communications equipment; *Construction & Farm Machinery* (201060), specializing in the design and manufacturing of premium light, medium, and heavy duty trucks; and *Electrical Components & Equipment* (201040), specializing in electrical, electromechanical, and electronic products.

The research team employed a slightly different methodology in selecting a commercial benchmark for the CSIS Diversified Sub-Index. The unique nature of the companies in the CSIS Diversified Sub-Index, encompassing both products and services, did not allow for a parallel comparison to a GICS category. As a result, DIIG identified six companies with comparable size profile (by revenue) to the six companies in the CSIS Diversified Sub-Index. Three of the companies are manufacturers and the other three are services companies. The result is a Diversified Commercial benchmark, whose total revenue is split nearly evenly among services and manufacturing, thus mimicking the profiles of companies within the CSIS Diversified Index. For a list of benchmark companies, see Appendix B.

Having analyzed the industry's financial health and market valuation both historically and compared to its commercial peers, the research team then compares the findings to periods of defense budget drawdown (1990-2000) and buildup (2001-2012) and evaluate the impact budget fluctuations have had on the industry's access to capital markets.

It is important to note that the analysis presented in this paper aggregates financial data for a large number of companies over a period of 20 years. This posed a challenge in data standardization across companies and across time. In the case of extreme data points, which may be the result of extraordinary, one-time charges for any given company, the CSIS research team applied judgment by either excluding a company's financial results for a specific year or using preceding five-year averages to replace extreme nonrecurring data points. Nevertheless, the trends seen in the analysis below are indicative of the performance of the defense industry over the period evaluated, and compared to the broader economy. It provides an analytical foundation for understanding the financial health of the defense industry and its attractiveness to capital markets

Data Presentation & Analysis

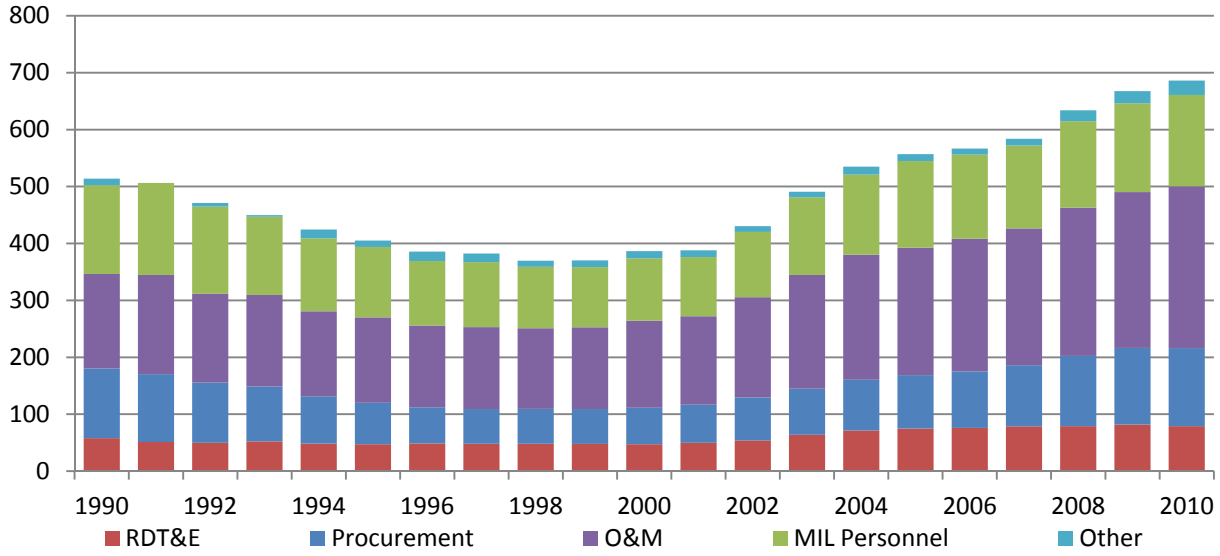
Section 1: Department of Defense Outlays

DoD is the single largest buyer of military-use products and services. The core of the U.S. defense industry derives about 80-85% of revenue from their business with the department. Consequently, fluctuations in defense spending directly affect the industry.

Figure 1 depicts DoD spending between 1990 and 2012. The figure shows the topline breakdown of the five main line-items in the defense budget (051): procurement, research, development, testing & evaluation (RDT&E), operation & maintenance (O&M), personnel, and other. The procurement and RDT&E accounts, or investment accounts, as well as a portion of the O&M account represent the bulk of DoD's business with defense contractors. As Figure 1 shows, the 1990s budget drawdown saw topline budgets decrease by 31 percent with the investment, O&M, and personnel accounts, decreasing by 42 percent, 15 percent, and 16 percent, respectively.

The 2001 terrorist attacks on the U.S. and the invasions of Afghanistan and Iraq marked the beginning of a new defense build-up, the "Global War on Terror" (GWOT), which has lasted about nine years and is now coming to an end. Between 2001 and 2010, inflation adjusted defense outlays rose by 77 percent, with investment accounts increasing by 85 percent, O&M by 54 percent, and personnel by 83 percent.

Figure 1: DoD Outlays 1990-2010 (Constant 2012 dollars, billons)



Source: DOD Comptroller, Green Book, FY2011.

Section 2: Defense Industry Financial Fundamentals

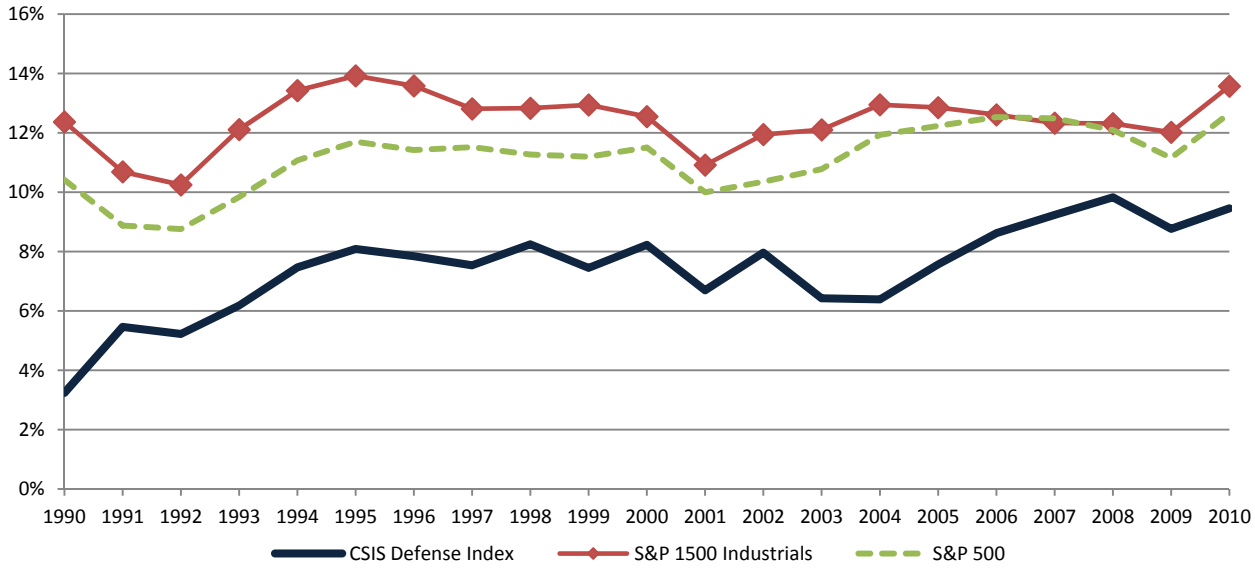
Profitability

Defense firms perform a distinctive function in providing the U.S. military with state-of-the-art equipment and services to carry out its missions. They are also like other private-sector companies in that they exist to earn money for their owners, the shareholders. In fact, increasing shareholders' returns is among the most important priorities for executives of any company, including any defense company. Profitability metrics demonstrate whether the cash flows and earnings of a company enable it to meet its financial obligations and generate value to shareholders.

The first profitability metric, operating profit margin, is the ratio of operating income to revenue. It measures the left-over portion of a company's revenue after paying for variable costs of production such as raw materials, direct labor, and internal research and development, to name a few. The higher the margin, the lower is the risk that a company will default on its interest and income tax obligations. Generally, a higher margin also means that more income is left for shareholders.

Figure 2 compares operating profit margin for the CSIS Defense, S&P 500, and S&P 1500 Industrial Indices between 1990 and 2010. While the CSIS Defense Index's operating margin is higher today than at any point in the past 20 years, it has consistently been lower than those of the commercial indices.

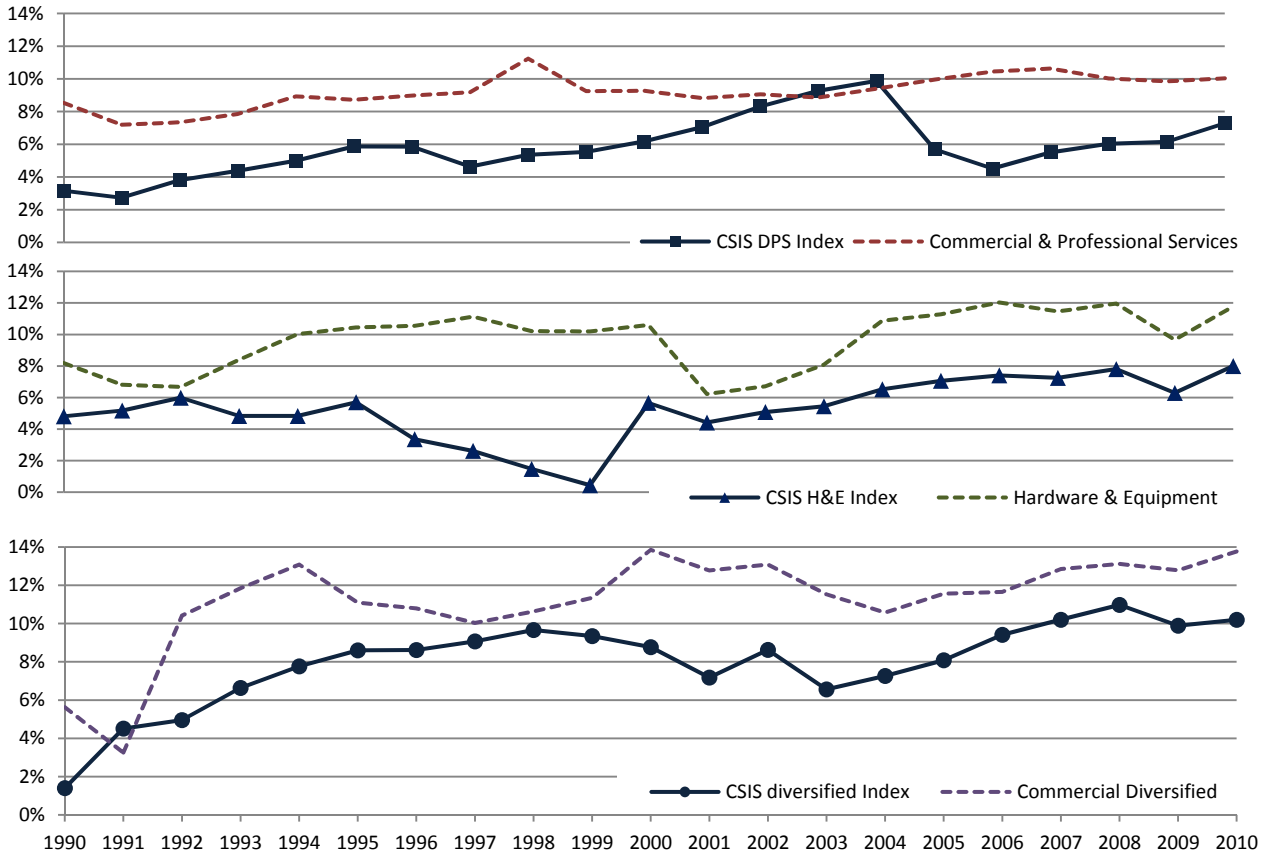
Figure 2: Operating Margin Comparison, CSIS Defense Index and Commercial Benchmarks, 1990–2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Figure 3 compares operating profit margin for each of the CSIS Defense sub-indices and their commercial benchmarks. Operating margins for all the defense sub-indices have been lower than those of their commercial benchmarks. The drop in margin for the CSIS DPS Sub-Index in 2005 likely reflects increased competition as large defense primes entered the professional services market.

Figure 3: Operating Margin Comparison, Defense Sub-Indices and Commercial Benchmarks, 1990–2010



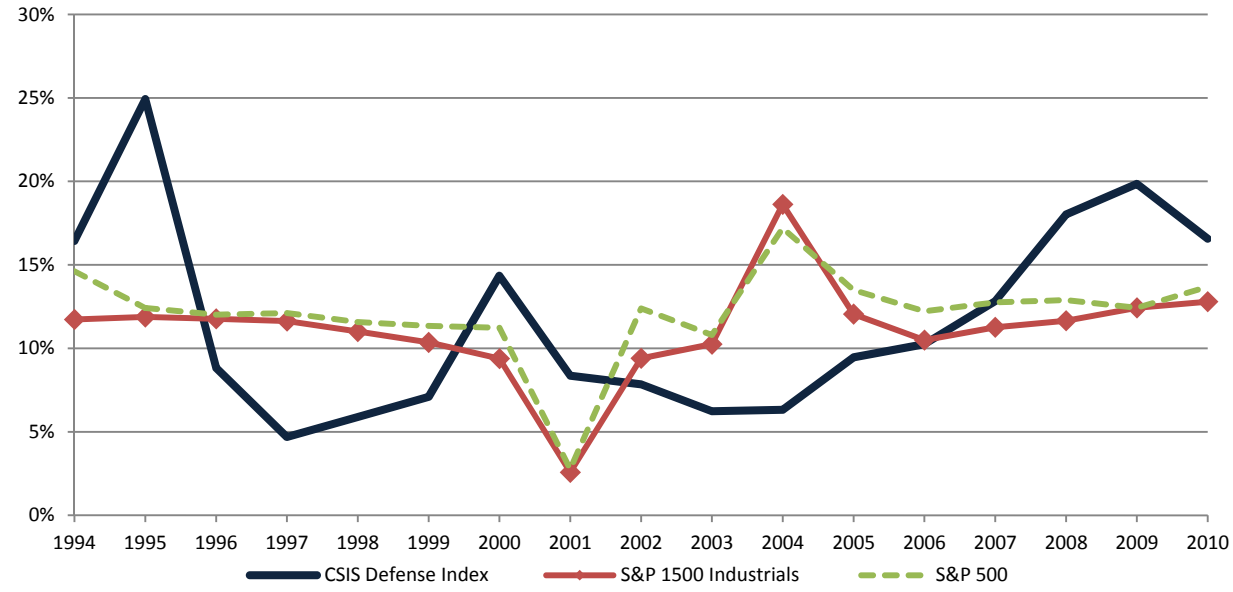
Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Year-to-date, defense firms met and even exceeded Wall Street analysts' margins expectations despite slower-growth or decline in revenue. Margins expanded due to both improved operation costs as well as lower shares outstanding, the latter is the result of increased cash dividend payout and aggressive share repurchase programs.

Nevertheless, as of the third quarter of 2011, the consensus among aerospace & defense equity analysts is that the 'terms of trade' in the industry are changing for the worse as result of DoD budget environment and the Better Buying Power initiative. Consequently, operating profit margins for most defense contractors, which peaked in 2008, are expected to decrease and stabilize at the 8 to 9 percent range in the near future.

A second profitability metric is cash flow return on investment (CFROI). CFROI is the ratio of the cash available after expenses have been paid and sufficient investment has been made to continue current operations. Therefore, it is a good indicator of how effectively a company has invested its capital to return profits. Figure 4 shows CFROI for the CSIS Defense, S&P 500, and S&P 1500 Industrials Indices between 1994 and 2010. By this measure of profitability, CSIS Defense Index companies have generated, on average, higher returns than the broader market for the period. The spike in CFROI between 2007 and 2010 is attributed to strong free cash flow generation (numerator), in tandem with a shrinking capital base (denominator) due in part to debt retirement and share repurchase.[4]

Figure 4: CFROI Comparison, CSIS Defense Index and Commercial Benchmarks, 1990–2010

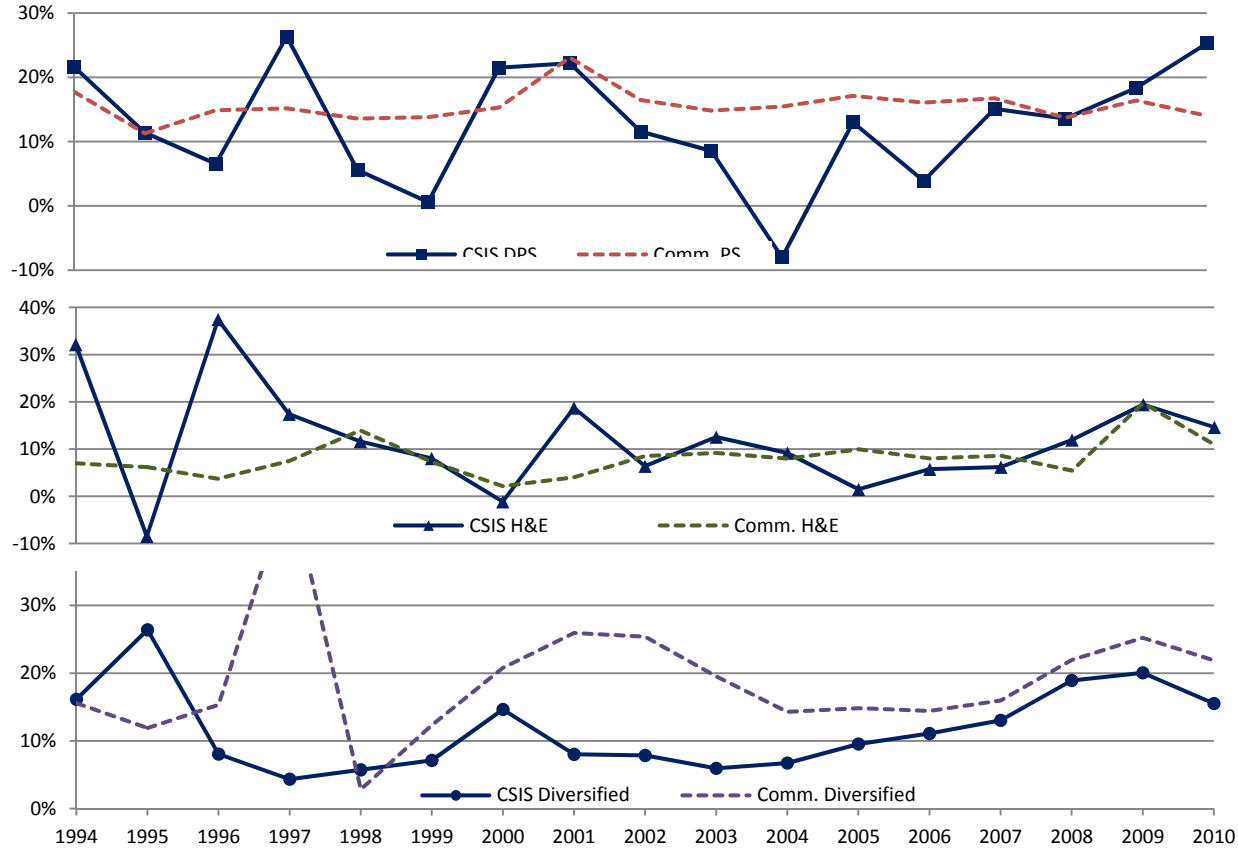


Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

[4] To arrive at Cash Flow we used EBIT plus depreciation and amortization minus capital expenditures minus the increase in net working capital, which in turn is the sum of accounts receivable and inventory, minus accounts payable. Investment is the sum of long- and short-term debt and shareholders' equity (including preferred stock).

Figure 5 compares CFROI for the CSIS Defense sub-indices and the commercial benchmarks. This level of analysis shows a different picture than the previous figure. The CSIS H&E Sub-Index is the only sub-index whose CFROI levels are on par with its commercial benchmark. The CSIS DPS Sub-Index surpassed its commercial benchmark in 2008, at the peak of the current defense cycle. The CSIS Diversified Sub-Index, although trailing its commercial benchmark closely since 2004, has remained historically lower.

Figure 5: CFROI Comparison, Defense Sub-Indices and Commercial Benchmarks, 2001–2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

The Interaction of Margins and Returns

The dynamic between profit margin and CFROI is unique to the defense business model and is important to understand. Defense firms are subject to a form of cost-based profit regulations, broadly referred to as DoD's "profit policy." Two aspects of DoD's profit policy are of particular interest: the weighted guidelines and contract finance.

DoD's profit policy is governed by the Defense Federal Acquisition Regulation Supplement (DFARS) section 215.404. The rules, collectively known as the weighted guidelines, are composed of four pieces: performance risk, contract risk, facilities capital, and working capital. Each component (and subcomponent) has a "base" profit value, to which a contracting officer may add a percentage based on a preset range. The level of profit or fee a contract is awarded—as a percentage of cost—is based on the amount and type of risk assumed by the contractor. Generally, the lower the risk borne by the contractor, the lower the profit as a percentage of total cost.

Contract finance is used to fund contractors' working capital during the development and production of products unique to the military. Contract finance is necessary due to the long acquisition cycle and the high level of uncertainty associated with military technology. Contract finance—or progress payment—is periodic payments to the contractor for the portion of the work completed and includes a share of the profit, or fee. Consequently, contractors use less of their own capital over the life of a program.

A study published by the Institute for Defense Analyses on DoD's profit policy concludes that because defense firms use less of their own money to finance programs, they may earn lower margins and still have high returns.[5] In effect, margins and CFROI are the opposite side of the same coin. Investors have in the past been willing to accept lower profit margins from defense firms, in comparison with other investment opportunities, in exchange for higher cash flows. This dynamic is apparent in the charts in the previous section, as defense firms have continued to experience relatively easy access to capital and higher CFROI despite margins at levels below their non-defense peers.

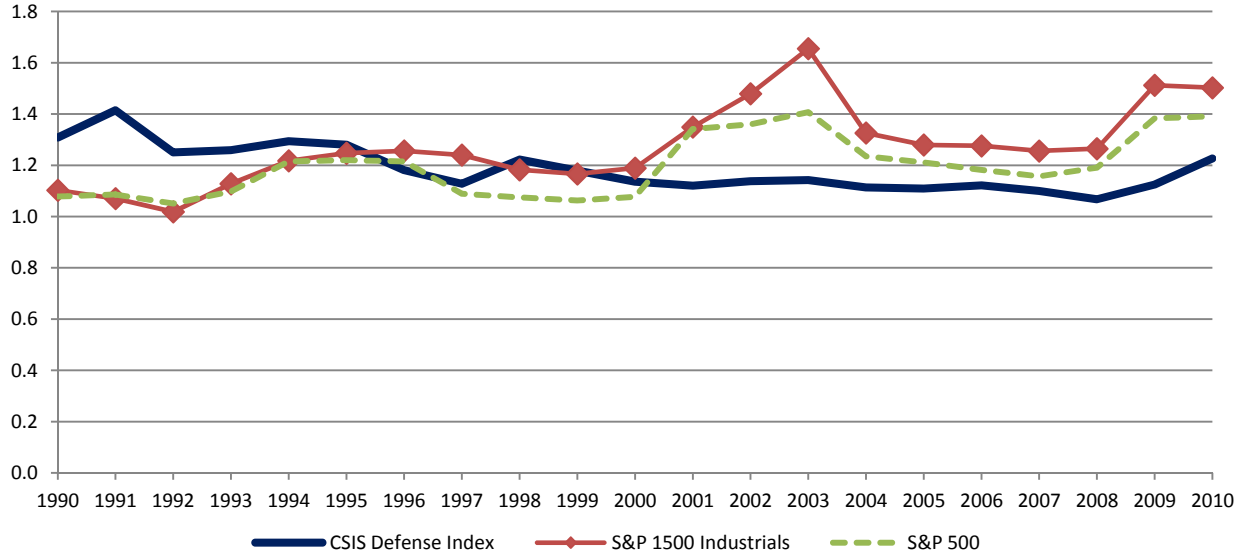
[5] Scot A. Arnold et al., "Defense Department Profit and Contract Finance Policies and Their Effects on Contract and Contractor Performance," Institute for Defense Analyses, Alexandria, VA, February 2009, Revised.

Liquidity

Liquidity ratios indicate a company's ability to meet its short-term financial obligations with its short-term assets. Debt holders usually seek higher liquidity multiples to ensure that a firm will not default on its obligations. Shareholders generally prefer lower liquidity multiples because they prefer more of their money to be at work, generating returns. The DIIG research team focuses on three liquidity ratios, representing a mix of cash flow statement and balance sheet metrics.

The first liquidity metric is the current ratio, which is the ratio of a firm's current assets to its current liabilities. Current assets are the sum of cash and cash equivalents, marketable securities, accounts and notes receivable, and inventories. Current liabilities are the sum of accounts payable, short-term debt, and other short-term liabilities. A current ratio greater than or equal to one implies that a company is able to meet its current obligations with its current assets. Figure 6 shows that the current ratio of the CSIS Defense Index has been relatively constant during the period and slightly below the commercial indices over the past decade.

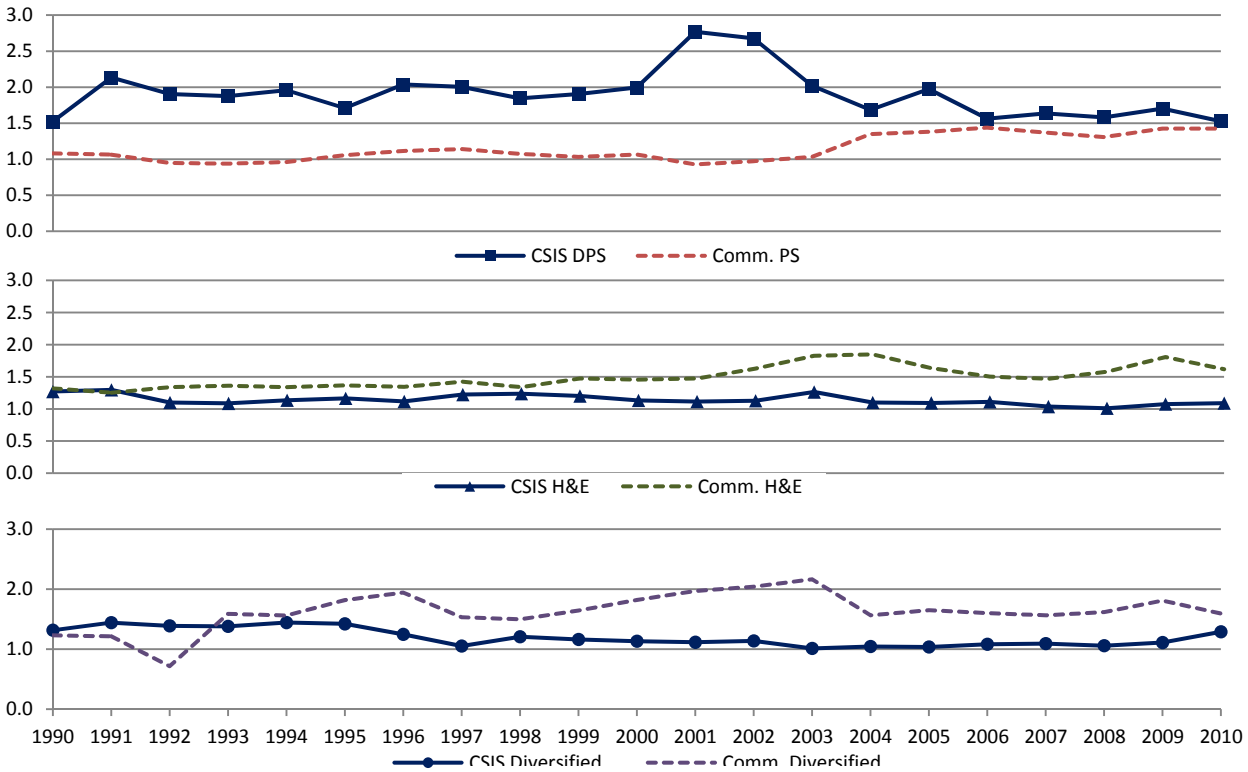
Figure 6: Current Ratio Comparison, CSIS Defense Index and Commercial Benchmarks, 1990–2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Figure 7 depicts the current ratio multiples of the CSIS Defense Sub-Indices and their commercial benchmarks. Among the defense sub-indices, the CSIS DPS Sub-Index has had the highest current ratio, with short-term assets at about 1.5-2 times its current liabilities for the period. The DPS Sub-Index is also the only defense sub-index whose current ratio exceeds that of its commercial benchmark.

Figure 7: Current Ratio Comparison, Defense Sub-Indices and Commercial Benchmarks, 1990–2010

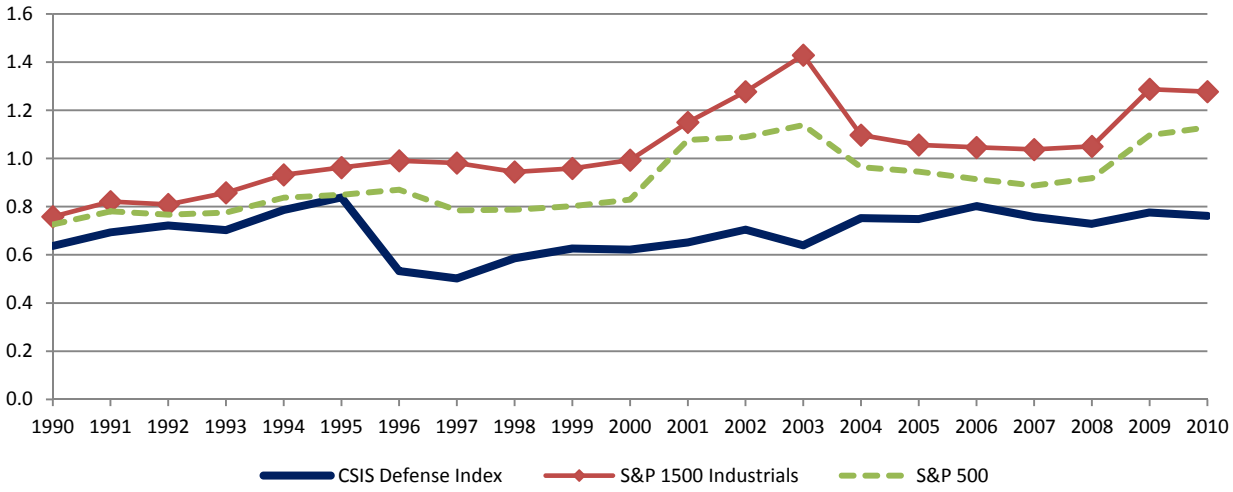


Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

The second liquidity metric is the quick ratio, which is more conservative than the current ratio because it excludes inventories from a company's current assets. The reason is that inventories are harder to convert into cash in a relatively short period.

The issue of inventories is particularly sensitive in the case of defense companies, because their main customer, the Department of Defense, operates on a preset procurement schedule. Figure 8 compares the quick ratio for the CSIS Defense, S&P 500, and S&P 1500 Industrial Indices between 1990 and 2010. The liquidity of defense firms drops significantly once inventories are excluded from the current assets,. The quick ratio of the CSIS Defense Index has been in the range of 0.5 and 1.0 percent for the period evaluated and below the prevailing ratio of the broader market.

Figure 8: Quick Ratio Comparison, CSIS Defense Index and Commercial Benchmarks, 1990–2010

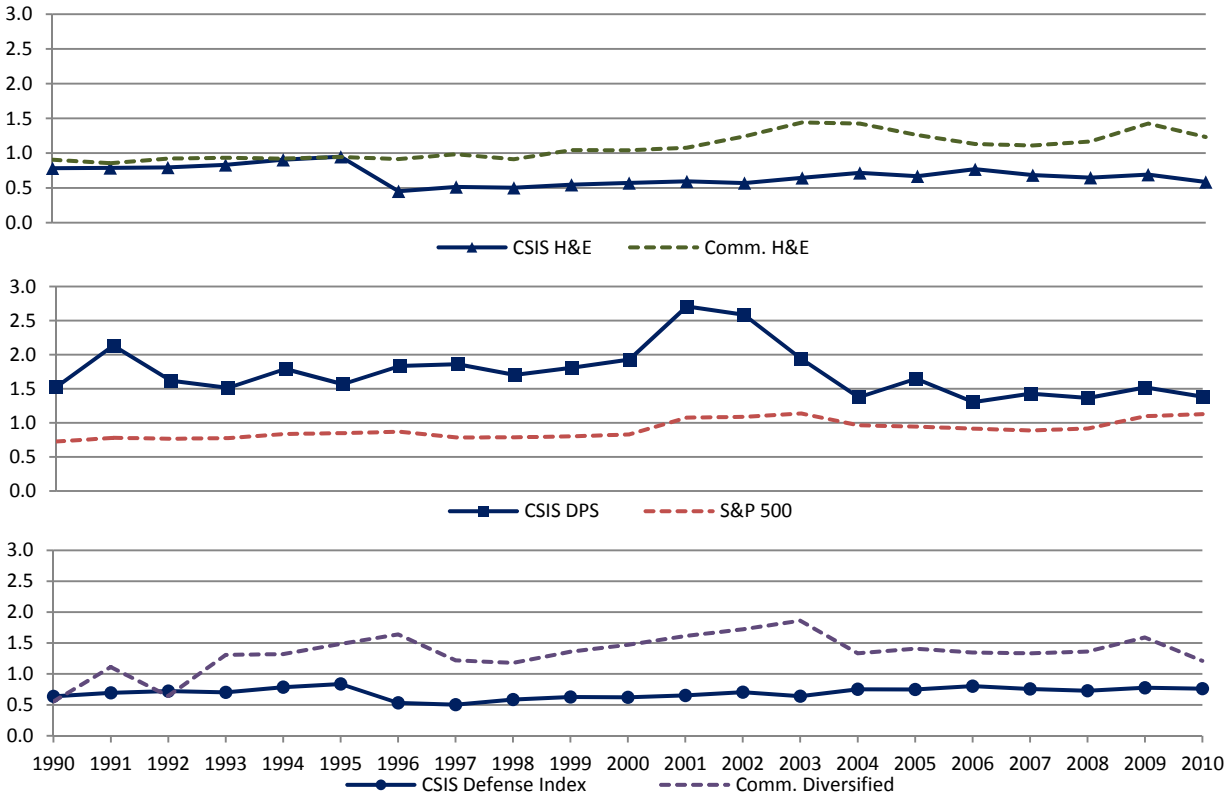


Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Figure 9 depicts the quick ratio multiples of the CSIS Defense sub-indices and their commercial benchmarks. Again, the CSIS DPS Sub-Index companies are the only companies among the CSIS Defense Index whose multiples are higher than their respective commercial benchmarks.

By this measure of liquidity, defense professional services companies are the most liquid among the defense sub-indices as well as compared to their commercial benchmarks. It is important to note, however, that services firms rarely carry any inventories, which explains the similarities between the current and quick ratios for services companies.

Figure 9: Quick Ratio Comparison, Defense Sub-Indices and Commercial Benchmarks, 1990–2010



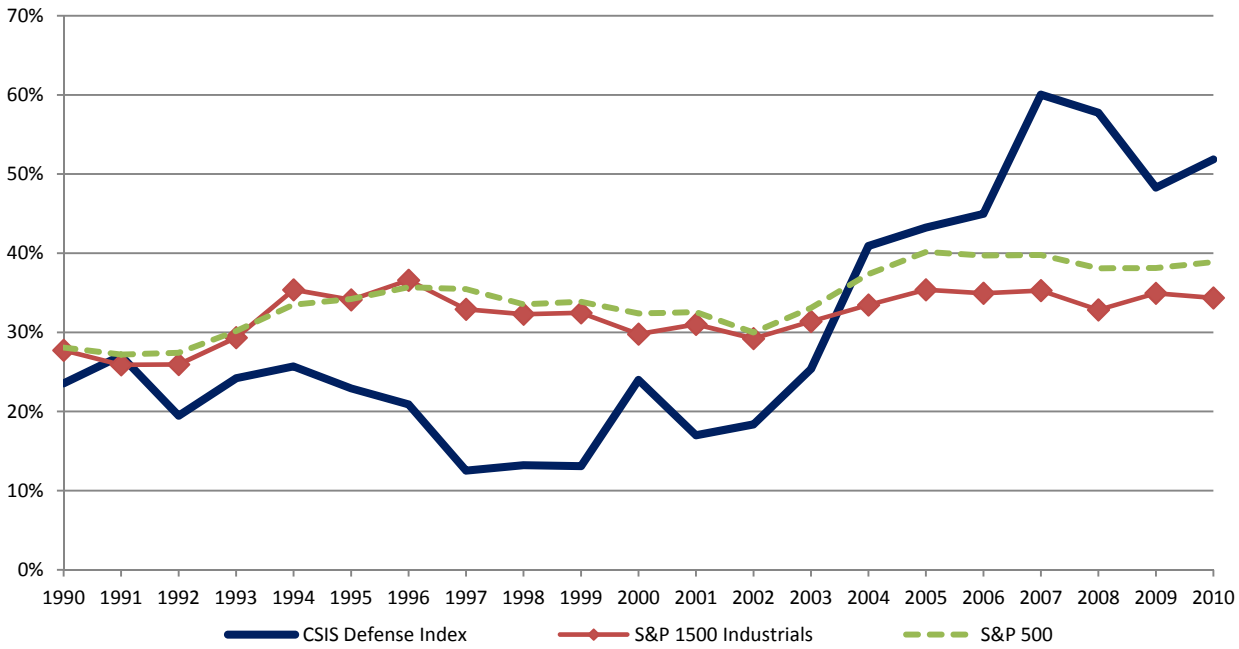
Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

While liquidity multiples for defense companies are lower than those of their commercial benchmarks, defense firms do enjoy a special relationship with their customer, the Department of Defense. As mentioned in the previous section, defense contractors receive advance payments on work done even before the work is completed. These progress payments allow defense firms to meet their short-term financial obligations despite lower liquidity necessitated by the large-scale, long-term nature of many defense contracts.

The cash flow to debt multiple measures a company's operating cash flow to its total debt, and is used to determine a company's ability to repay its debt, specifically with operating cash flow. The higher the cash flow to debt multiple, the more attractive a company is to investors.

Figure 10 compares the cash flow to debt ratio of the CSIS Defense Index, the S&P 500, and S&P 1500 Industrial Indices between 1990 and 2010. The cash flow to debt multiple for the CSIS Defense Index was below that of the commercial indices throughout the 1990s and has climbed with defense budgets beginning in 2002. The strong cash flow to debt multiples in the 2000s are likely due to a mix of strong cash flows and lower debt levels, specifically a reduction in short-term debt toward the end of the period. As defense budgets begin to subside, the general expectation is that the ratio will decrease again.

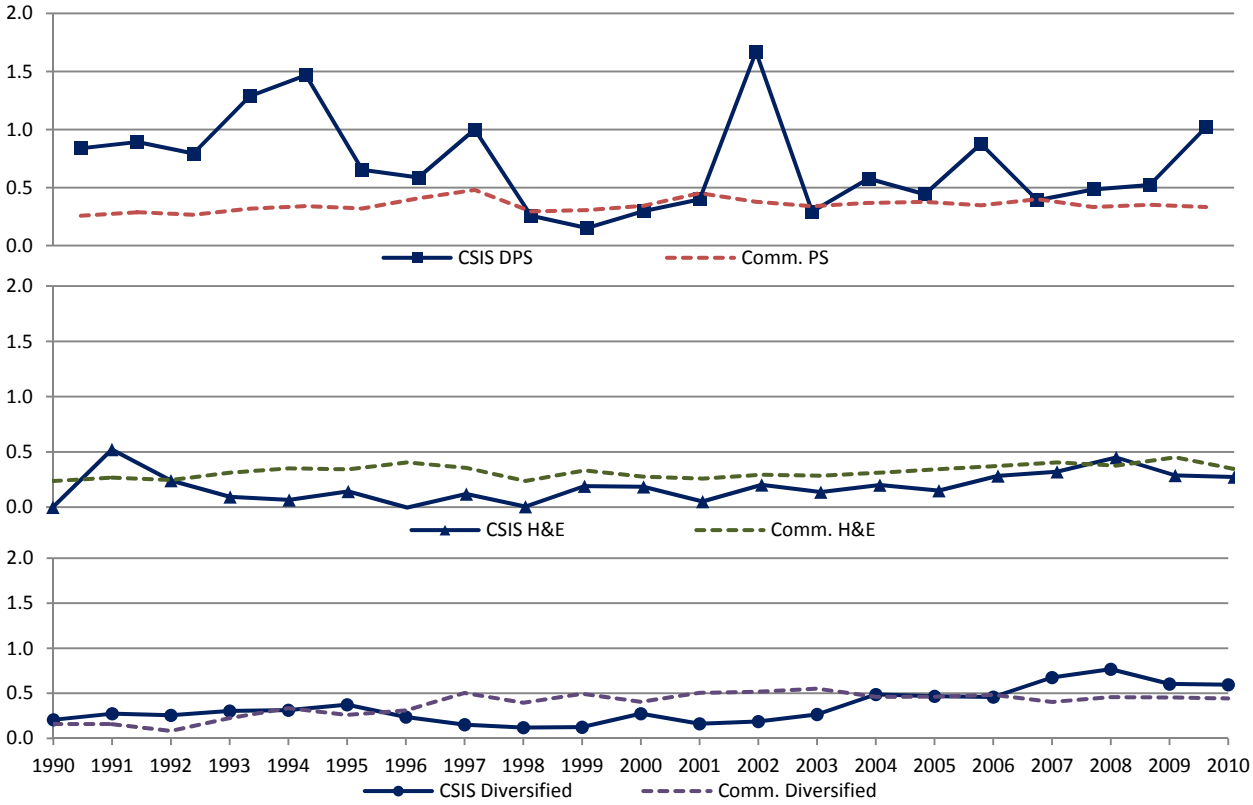
Figure 10: Cash Flow to Debt Comparison, CSIS Defense Index and Commercial Benchmarks, 1990–2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Figure 11 compares the operating cash flow to debt ratio for the CSIS Defense sub-indices and their commercial benchmarks. Both the CSIS DPS and Diversified Indices' ratios are relatively on par with their benchmarks. The CSIS H&E Sub-Index's multiples are slightly lower than those of its commercial benchmark.

Figure 11: Cash Flow to Debt Comparison, Defense Sub-Indices and Commercial Benchmarks, 1990–2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

The analysis so far has looked at profitability and liquidity metrics. In historical terms, the industry is financially healthier today than at any point in the past 20 years. Industry executives were successful in leveraging the up cycle in defense spending to drive profitability, reduce debt, and accumulate significant cash on their companies' balance sheets. Still, when benchmarked against the broader market and against commercial peers, the performance of the CSIS defense Index has been mixed. While operating profit margins for the CSIS defense index have been below those of the broader market, CFROI has been on par or higher. When CFROI for the CSIS sub-indices were benchmarked to the commercial peers, results also were mixed. With regard to liquidity measures, the CSIS indices were less liquid than their commercial peers, with only the cash flow to debt ratio well above the broader market during the 2003-2010 period.

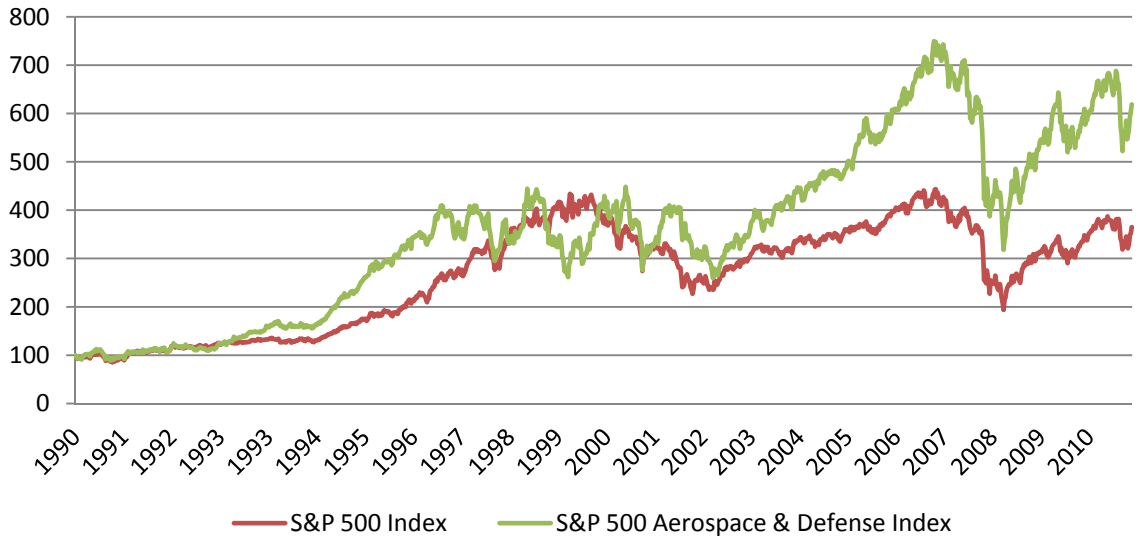
With the previous financial analysis in mind, the following section evaluates relative market valuation metrics that gauge investors' sentiments with regard to defense stocks between 1990 and 2011. Unlike the previous metrics, which are based on companies' full-year financial reports and thus limited to 2010 as the last available full year data, the following analysis is based on daily stock performance. Consequently, the analysis includes data through September 2011.

Section 3: Defense Industry Relative Market Valuation

The following section examines investors' sentiment with regard to defense and security equities as reflected in the price and enterprise value multiples. The analysis indicates how markets are pricing a security, or an industry, both historically and relative to commercial benchmarks.

Figure 12 shows the percentage change in share price for the S&P 500 and the S&P 500 Aerospace & Defense. From 2001 until the stock-market peak in 2007, the Aerospace & Defense index outperformed the S&P 500 Index. This trend was particularly pronounced from March 2003 until late 2007, the period that saw the most intense fighting in Iraq. From 2007 to 2008, the indices have traded closely together, as investors began anticipating the end of U.S. involvement in Iraq and slower growth in the defense budget. The plunge in the Aerospace & Defense in 2008 likely reflects broader investor flight from equity rather than a fundamental change in the financial health of the defense sector. The S&P 500 Aerospace & Defense index underperformed the broader market year-to-date as uncertainty about defense spending increase due to fiscal pressures on the U.S. federal budget.

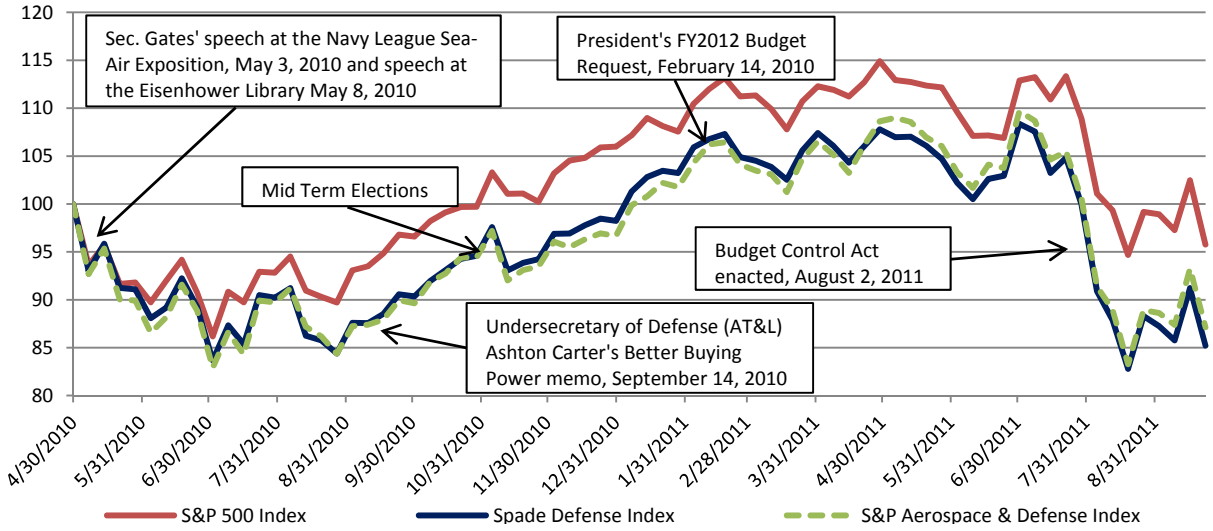
Figure 12: Index Price Performance, 1990–2011 (1990 = 100)



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Figure 13 takes a closer look at the last eighteen months, showing the percentage price change from April 30, 2010 to September 26, 2011[6] for the two indices depicted in Figure 12, as well as the Spade Defense Index.[7] From April 2010 to date, the S&P 500 outperformed the Aerospace & Defense indices, continuing the trends from 2008. The price rally in the Aerospace & Defense indices beginning in August 2010 coincides with a rally in the broader market. Note that Defense Secretary Robert Gates and Under Secretary Ashton Carter's Efficiency Initiatives have done little to affect share price performance of defense companies. One explanation is that by September 2010, markets already anticipated significant cuts in defense outlays, disregarding Secretary Gates' promise for a 1 percent real growth in the base budgets over the FY2011–FY2015 FYDP.

Figure 13: Index Price Performance, April 2010–September 2011 (April 30, 2010 = 100)



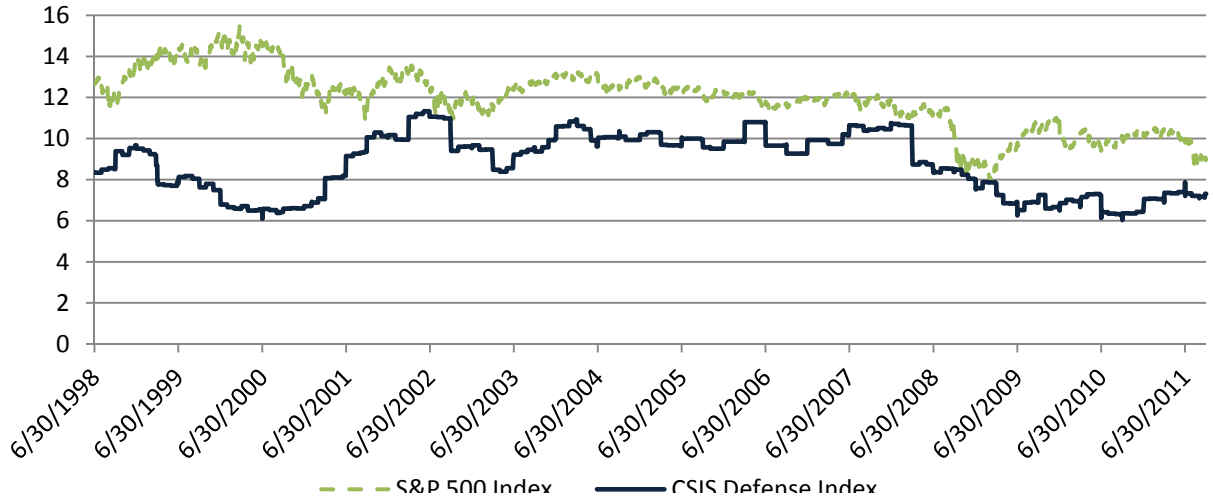
Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

Looking at the market at the end of the third quarter of 2011, it is clear that defense equity prices already reflect the future impact of the Budget Control Act. Throughout the prior year, defense stocks traded at a relatively consistent five percent discount to the broader S&P 500. Once the Budget Control Act was enacted as part of the deal for ending the debt ceiling impasse, the gap between defense firms and the rest of the market rapidly widened. Today, defense securities are trading at over a ten percent discount to the S&P 500.

[6] The May 2010 date was selected because of Secretary Robert Gates' speeches at the Navy League and the Eisenhower Library, which mark the beginning of DoD's Efficiency Initiatives.
[7] The Spade Defense Index includes 58 companies operating in the space, homeland security, and defense markets.

Enterprise Value (EV) to Earnings before Interest, Taxes, Depreciation, and Amortization (EBITDA) is another widely used metric to determine how companies or industries are valued. Enterprise value is the sum of market capitalization, preferred equity, minority interest, short- and long-term debt minus cash and equivalent. Market capitalization is the product of current share price and number of shares outstanding. Unlike the P/E ratio, the EV/EBITDA is capital neutral, meaning that the multiple also accounts for the company's debt. As Figure 14 shows, defense firms are valued at a discount to the broader S&P 500 by this measure.

Figure 14: EV to EBITDA Comparison, CSIS Defense and S&P 500 Indices, 1998–2011

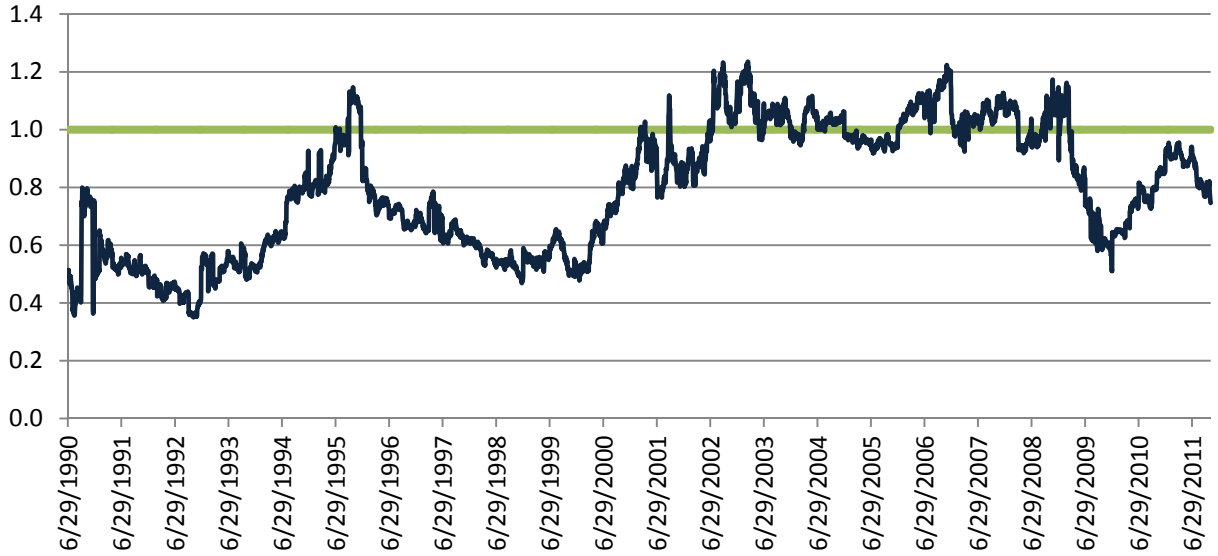


Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

The price to earnings (P/E) ratio is another important indication of investor sentiment. The P/E multiple is the ratio of the current price of a stock and a company's earnings per share (EPS).[8] The DIIG research team used the current year's EPS. The P/E multiple shows how much investors are willing to pay today for every dollar of profit next year and, more importantly, investor expectation of the company's growth prospects. In other words, P/E multiples already account for future expected growth and thus investor sentiment for the future prospect of the company or industry. If investors are optimistic about an industry, its P/E ratio will be above that of its benchmark and vice versa.

Figure 15 shows average current P/E multiples for the CSIS Defense Index relative to the S&P 500 Index. From 2002 through the second half of 2008, the period that saw the buildup to and operations in Iraq, defense stocks traded at a premium to the S&P 500. By 2008, investors became pessimistic regarding future growth prospects in the defense market, as most analysts began anticipating the end of the war in Iraq and slower-growing defense budgets. From 2009 through 2010, the CSIS Defense Index P/E increased, most likely the result of smaller than expected cuts in defense spending, as well as increased confidence in the U.S. economic recovery. The CSIS Defense Index P/E again began to decline in the second half of 2011 as the impasse over the debt ceiling extension and the subsequent passage of the Budget Control Act began to quantify the potential for defense budget cuts.

Figure 15: Current Relative Price Earning, CSIS Defense Index Average relative to the S&P 500 Index, 1990-2011

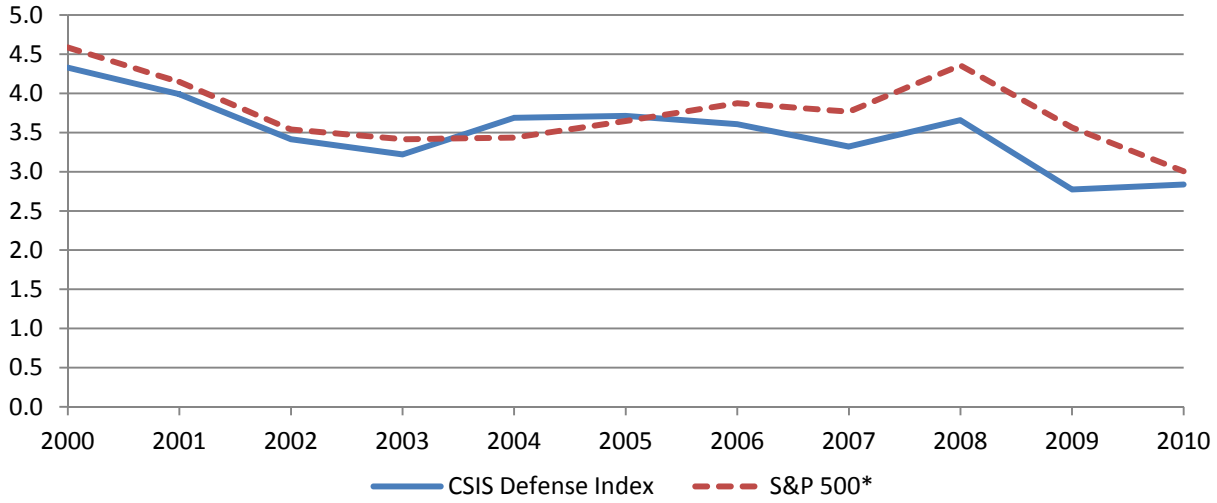


Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

[8] Earnings per share from continuing operations before one-time, extraordinary items.

Finally, Figure 16 looks at the after-tax weighted average cost of debt for the CSIS Defense and S&P 500 indices between 2000 and 2010. Data from the 1990s is not available on Bloomberg Financials. While this metric is not usually used by financial analysts and investors, it is a telling indicator of the industry's access to—and cost of—capital. Weighted average cost of debt is calculated using the government bond rate, debt adjustment factor, and the ratio of the industry's long and short-term debt.[9] The limited data range is insufficient to evaluate how the 1990s drawdown affected the cost of debt for the industry. Still, it shows that cost of debt for the industry, as for the broader economy, declined during the past decade. It is interesting that debt financing for the industry was lower than that of the broader economy from 2005 onwards. However, these costs for the defense industry increased slightly between 2009 and 2010 while those of the broader market continued to decline. It is likely that as investors began anticipating defense budget cuts in the medium-term and significant uncertainty in the short-term, they began demanding higher returns from defense firms.

Figure 16: Weighted Average Cost of debt Comparison, CSIS Defense and S&P 500 Indices, 2000-2010



Source: Bloomberg, analysis by CSIS Defense-Industrial Initiatives Group.

[9] Cost of Debt = [[(SD/TD) * (CS * AF)] + [(LD/TD) * (CL * AF)]] * [1-TR]

Section 4: Findings

The previous sections presented DoD budget outlays, three categories of financial metrics – profitability, cash flows, and liquidity – and three metrics for relative market valuation for the years 1990-2010. For the purpose of this research, the market valuation metrics are used to gauge investors' appetite for – and earning expectations of – defense firms. This section of the report analyzes the links between defense budgets, financial metrics, and market valuation.

The trend analysis for the CSIS Defense Index shows mixed results. In a historical context, defense firms were less profitable, as measured by operating profit margins and CFROI, during the 1990s budget drawdown than during the recent budget buildup. The poor returns during the 1990s reflect a number of factors. Externally, shrinking defense budgets and loss of revenue placed pressure on margins as competition for contract awards intensified among defense firms. Internally, once told during the 1993 "Last Supper" to "consolidate or perish," defense firms amassed considerable debt to execute large merger and acquisitions deals (Lockheed and Martin Marietta, Boeing and McDonnell Douglas, etc.). Both high debt levels and difficulties in integrating and streamlining operations among merged or acquired companies placed further downward pressure on profitability.

Compared to the commercial peers of the defense companies, the analysis again shows mixed results. While defense firms' operating profit margins have been lower than those of their commercial peers throughout the period of analysis, CFROI was, on average, on par with that of commercial peers during the 1990s and exceeded that of the broader economy during the 2000s. This dynamic between operating profit margin and CFROI is emblematic of the defense industry's relationship with it main customer, DoD.

The liquidity analysis shows that both commercial and defense firms maintain relatively constant ratios, with defense firms' liquidity slightly below that of the broader market. The current ratio analysis shows that defense firms keep slightly higher liquidity ratios during a downturn than during a defense buildup, as firms seek to expand and capture higher market share during the latter period. The analysis shows that beginning in 2008, defense executives have been ramping up their liquidity in anticipation of a budget builddown. The higher ratios in 2008, 2009, and 2010 are the result of both higher cash and equivalents on companies' balance sheets, concurrent with lower liabilities due to debt retirement. This is also apparent in the cash flow to debt ratio analysis, which increased from just over 10 percent at its lowest point in 1997 and 1998 to 60 percent, its highest point, in 2008.

The market valuation metrics show that from 1990-to-date, defense share-price appreciation has outstripped that of the broader market (when using the S&P 500 and S&P 500 Aerospace & Defense as proxies). The outperformance was particularly pronounced between 2003 and 2007, the period that saw the intense fighting in Iraq and Afghanistan as well as year-over-year record defense spending. From April to June 2010, the indices traded closely together, reflecting a broader equity market conditions following the 2008 financial crisis. However, from July 2011, defense share-price decline outpaced that of the broader economy, likely the result of the Budget Control Act and uncertainty with regard to the success of the Congressional Super Committee.

The P/E multiple shows that defense equities were valued at a discount to the S&P 500 Index during the 1990s and on par or at a slight premium to the broader market during the 2000s. As the P/E ratios indicates how much investors are willing to pay for future defense earnings, it is not surprising that, as earning expectations for defense earning wane, so do P/E multiples. Similarly, the EV/EBITDA ratio

shows that defense firms are valued at a discount to the broader economy. While that discount narrowed during the last decade, valuations are dropping again as investors expect tougher market conditions ahead for the industry.

Finally, while the analysis shows that defense firms fared financially worse during the last budget drawdown, and defense equities' valuation were correspondingly lower, defense equities still generated investor interest as seen by the weighted average cost of debt of the industry. The unique relationship between defense firms and DoD, and the fact that the global security environment has become more volatile over the past two decades, mean that while defense spending may contract in the coming years, demand for military products and services will continue to support defense enterprises over the longer-term.

In the short- to medium-term, however, the main concern for industry executives and DoD is that as defense budgets begin to fall, defense financials, and consequently companies' valuation, could further deteriorate. Since this summer's legislative gridlock over the debt ceiling increase, the market has experienced significant volatility as investors have become wary of the compounding financial issues of the recurrence of the Eurozone debt crisis, the uncertain effects of the Budget Control Act, and the increasing threat of a renewed recession. Chief among these concerns for defense firms is the budget outlook. A decade of double-digits growth in the defense budget ended in 2010, and the fiscal pressures faced by the government going forward threaten the key source of revenue for these firms. If the Super Committee were to enact serious defense cuts this fall, defense firms could find capital markets less accessible or, alternatively, could see their cost of capital increase, as debt investors will demand higher interest payments to compensate for the increased risk. The consensus among Wall Street analysts is that the relatively favorable 'terms of trade' the industry enjoyed in the past decade are giving way to a more austere spending environment. This is reflected in the market valuation metrics, which have seen a general decline in defense securities' relative valuation since the end of 2008, with a more precipitous decline appearing in the most recent quarter.

While the research presented here is historical in nature, it provides decisionmakers a frame of reference through which to evaluate the relationship between the financial health of the defense industry and its access to capital markets during both a budget drawdown and a budget buildup environment. The profitability, liquidity and valuation metrics employed in this analysis demonstrate how a changing budget environment can drastically affect the financial health of defense firms. Nonetheless, while their valuations and investors' sentiments declined during the past downturn, these firms have not actually experienced significant barriers to capital markets.

Decisionmakers contemplating the extent of austerity measures to apply to the defense budgets in the coming years should consider the effects of the past drawdown on the financial health of the defense industry. While in the past the decline in financial health has not caused a subsequent decrease in the ability to rely on capital markets for funds, the coming budget drawdown and the macroeconomic environment (both in equity and in bond markets) may have unique characteristics that could alter this dynamic and affect companies' access to markets more significantly.

Further analysis is required to validate these findings for the broader defense industrial base. The CSIS Defense Index (like other defense industry indices) tracks only large, publicly traded firms. The major caveat to these findings is that they should not be taken to represent the mid-sized and small companies that are also an integral part of the defense industrial base.

Appendix A

CSIS Defense Index

CSIS Diversified Sub-Index	CSIS DPS Sub-Index
Lockheed Martin	GEOEYE
Northrop Grumman	KBR
BAE Systems	VSE
General Dynamics	SAIC
Raytheon	CACI
L-3	ManTech
CSIS H&E Sub-Index	**Legacy Companies**
Finmeccanica	Martin Marietta
Thales	Lockheed Corp
Alliant Techsystems	Grumman Corp
ELBIT Systems	McDonnell Douglas
GenCorp	Litton Industries
Aerovironment	DRS Technologies
Todd Shipyards	Logicon
Force Protection	Engineered Support Systems
Loral Space & Co	Integrated Defense Technologies
Flir Systems	Newport News

Appendix B

Benchmarks

Commercial & Professional Services		
Commercial & Professional Services		
ABM	GEO	REPUBLIC SERV
ADMINISTAFF	HEALTHCARE SERV	ROBERT HALF
AVERY DENNISON	HEIDRICK & STRUGGLES	ROLLINS
BRINK'S	HERMAN MILLER	SCHOOL SPECIALTY
CDI	HNI	SFN
CINTAS	INTERFACE	STERICYCLE
CLEAN HARBORS	IRON MOUNTAIN	SYKES ENTR
COPART	KELLY SERVICES	TETRA TECH
CORP EXEC BOARD	KORN/FERRY	TOWERS WATSON
CORRECTIONS OF AMER	MANPOWER	TRUEBLUE
DOLAN	MINE SAFETY APP	UNIFIRST
DUN & BRADSTREET	MOBILE MINI	UNITED STATIONER
EQUIFAX	NAVIGANT	VIAD
FTI	ON ASSIGNMENT	WASTE CONN
G & K	PITNEY BOWES	WASTE MGMT
IT Consulting		
ACXIOM	GARTNER	SRA INTL
CIBER	MAXIMUS	TERADATA
FORRESTER	NCI	

Commercial Hardware & Equipment		
Electronics Manufacturing		
BENCHMARK ELEC	METHODE	PULSE
CTS	MOLEX	RADISYS
JABIL CIRCUIT	PARK	TRIMBLE
MERCURY	PLEXUS	TTM
Technology Hardware & Equipment		
ADTRAN	EMS	POLYCOM
ARRIS	F5	QUALCOMM
BEL FUSE	HARMONIC	RIVERBED
BLACK BOX	HARRIS	SYMMETRICOM
BLUE COAT	JDS UNIPHASE	TEKELEC
CIENA	JUNIPER	TELLABS
COMTECH	NETGEAR	VIASAT
DG FASTCH	OPLINK	
DIGI	PLANTRONICS	
Electrical Components & Equipment		
ACUITY BRANDS	EMERSON	ROPER INDUSTRIES
AMETEK	HUBBELL	THOMAS & BETTS
BELDEN	REGAL-BELOIT	WOODWARD
BRADY	ROCKWELL	
Construction & Farm Machinery		
AGCO	JOY	TORO
BUCYRUS	OSHKOSH	TRINITY
CUMMINS	PACCAR	WABTEC
DEERE	TEREX	

Commercial Diversified		
Services		
JABIL CIRCUIT	MANPOWER	ORACLE
Hardware		
HONEYWELL	ITT	TEXTRON

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