

**HEC MONTRÉAL**

The Impact of Government Contracts on Firms Stock Prices

by  
Priska Yuniarti

Matteo Cacciatore  
Supervisor

Nora Traum  
Co-Supervisor

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## Abstract

Despite the significant influence of government procurement on the Canadian economy, there is limited research on how these contracts affect the valuations of contracted companies. This study utilizes government procurement contracts as a tool to investigate the broader influence of public expenditure on goods and services on the US and Canadian stock markets. The thesis focuses on analyzing potential excess returns on companies listed in stock exchanges that secure government contracts, shedding light on the intricate relationship between government spending and the financial performance of these contracted entities.

The findings indicate a positive perception from investors towards government procurement contracts, with positive excess stock returns following in the days after the contract is signed. Companies receiving such contracts, particularly in the aerospace and defense sector, experienced an increase in stock prices or positive abnormal excess returns, emphasizing the sector-specific impact on cumulative excess returns. This study contributes valuable insights into the dynamics that shape the relationship between government spending and the financial performance of contracted firms in these markets.

**Keywords:** Government Procurement Contracts, Company Value, Excess Returns, Media Coverage of Government

## Abstraite

Malgré l'influence considérable des marchés publics sur l'économie canadienne, il existe peu de recherches sur la manière dont ces contrats affectent la valorisation des entreprises sous contrat. Cette étude utilise les contrats de marchés publics comme outil pour étudier l'influence plus large des dépenses publiques en biens et services sur les marchés boursiers américains et canadiens. La thèse se concentre sur l'analyse des rendements excédentaires potentiels des sociétés cotées en bourse qui obtiennent des contrats gouvernementaux, mettant en lumière la relation complexe entre les dépenses publiques et la performance financière de ces entités sous contrat.

Les résultats indiquent une perception positive de la part des investisseurs à l'égard des contrats de marchés publics, avec des rendements excédentaires positifs des actions dans les jours qui ont suivi la signature du contrat. Les entreprises bénéficiant de tels contrats, notamment dans le secteur de l'aérospatiale et de la défense, ont connu une hausse des cours boursiers ou des rendements excédentaires anormaux positifs, soulignant l'impact spécifique au secteur sur les rendements excédentaires cumulés. Cette étude apporte des informations précieuses sur la dynamique qui façonne la relation entre les dépenses publiques et la performance financière des entreprises sous contrat sur ces marchés.

**Mots clés:** marchés publics, valeur de l'entreprise, rendements excédentaires, couverture médiatique du gouvernement

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## 1. Introduction

The United States government spent \$3 trillion or about 14% of its GDP in 2021 on final consumption expenditure<sup>1</sup> while the Canadian government spent \$379 billion or about 22% of its 2021 GDP (Appendix A and Appendix B). The US ranks 1<sup>st</sup> globally in terms of nominal government expenditure whereas Canada ranks 6<sup>th</sup> after Japan, Germany, the UK, and France. Over the past two decades, Canadian government expenditure has experienced a Compound Annual Growth Rate (CAGR) of 2%, resulting in an average spending level of 21% of GDP. The US government, however, has seen a lower CAGR of 0.9%, with an average spending level of 15% of GDP. (The World Bank, n.d.)

Canada's consistently higher average spending as a percentage of GDP indicates a relatively more significant role of the government in the economy compared to the United States. Despite the substantial impact of government procurement contracts on the economy, there hasn't been much research on the impact of such contracts on the valuation of companies. The lack of research underscores the need for more comprehensive studies to understand how government procurement contracts influence company valuations. For simplicity, this thesis utilizes federal procurement contracts as a proxy for federal spending to explore the broader impact of Canadian public spending on goods and services in both the American and Canadian stock markets.

The main objective of this thesis is to use government procurement contracts to study how public spending on goods and services affects the Canadian and US stock markets. To do so, the thesis quantifies the effect on the excess returns, if any, of contracted companies that are listed on the stock exchanges. The results contribute to our understanding of how government purchases affect financial markets and their transmission to the real economy. By analyzing data related to companies involved in government contracts, including annual contract values and contract durations, the thesis aims to ascertain whether there exists a positive correlation between winning government procurement contracts and the subsequent stock returns for the listed companies.

This thesis aims to contribute to the understanding of the relationship between public spending on goods and services, financial markets, and their broader impact on the real economy. By shedding light on these dynamics, the outcomes of the thesis have the potential to inform

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<sup>1</sup> Government final consumption expenditures are expenditures for collective consumption, which benefit society as a whole (e.g., defense, justice) and individual consumption, which is expenditures incurred by government on behalf of an individual household (e.g., healthcare, housing). The expenditures include most expenditures on national defense and security but exclude government military expenditures that are part of government capital formation. (OECD, n.d.)

policymakers, investors, and researchers alike, offering valuable insights into the consequences of government purchases on the financial scene.

In this thesis, we undertake an in-depth analysis of stock market behavior surrounding significant corporate events, namely the government procurement contracts. The methodology employed involves a systematic approach to assessing the influence of federal procurement contracts on the financial performance of companies listed on US and Canadian stock exchanges. The initial step utilizes regression analyses to ascertain the abnormal returns of each company, with abnormal returns serving as a metric for measuring deviations in stock performance from expected market behavior during the periods surrounding the signing of federal procurement contracts. By utilizing the method of calculating abnormal returns, we aim to unveil the impact of these events on stock prices, shedding light on the intricacies of market reactions to government procurement contracts, offering insights into investor sentiment, market efficiency, and the broader implications for financial decision-making.

Our findings indicate that government contracts can exert a significant influence on a company's stock price, with this impact demonstrating a degree of consistency. The observed trend suggests that 15 days post-contract, cumulative abnormal returns for both US and Canadian listed companies follow a consistent upward trajectory, implying a stable pattern in market behavior. The resilience of these observed abnormal return dynamics across different scales of contractual magnitudes underscores the reliability of the findings. This study's implications extend to asset valuation and portfolio diversification, impacting the performance and volatility of overall portfolios, particularly when government-contractor firms are included. These effects vary based on economic conditions and the strategic significance of government contractors, emphasizing the importance for equity investors and portfolio managers to consider these factors when making investment decisions.

## 2. Literature Review

This section reviews the literature on government procurement and stock returns. Several studies have indicated that winning government contracts can lead to favorable investment opportunities, often resulting in positive abnormal returns for the companies involved. These findings highlight the market's perception of government contracts as indicators of financial stability and growth potential for the winning firms

[Diltz](#) (1990) studies the impact of large government procurement contract announcements on the stock returns of award-winning companies. Intuitively, securing a government procurement contract ought to be regarded as favorable news for the company's future and a non-negative stock price reaction should follow.



Hebous and Zimmerman (2016) finds that the creation of new government demand generates additional cash flow, increasing the net wealth of a company and reducing the external financing premium. The authors find that for every \$1 of federal spending, there is about \$0.07 increase in capital investment and that firms demonstrate the most significant increase in investment after receiving a new government contract. Increased investment expenditures can be viewed favorably by investors ([Titman, Wei, and Xie, 2004](#)). First, increased investment spending is likely linked to enhanced investment opportunities for the company. Second, higher investment expenditures may suggest that capital markets, as the providers of financing for these investments, have increased confidence in the company and its management. This suggests that a positive correlation should exist between government procurement contracts (indicative of increased capital investment) and stock returns.

A similar finding can be seen in the study of [Elayan, Pukthuanthong, and Li \(2004\)](#) where they evaluate whether government procurement contracts create value for firms. They hypothesize that firms engaged in government contracting will experience significant earnings increases in the future, which is seen as promising investment opportunities by investors and should result in positive abnormal returns around the announcement date. The study finds that government procurement contracts have a significantly positive impact on the valuation of contracted firms, indicating that winning government contracts adds value to company's shareholders. The authors also find that service contracts earn higher abnormal returns compared to non-service contracts.

The stock market responds quickly to new information about a company's prospects ([Ball and Brown, 1968](#)), however many different types of new information is translated differently by investors. An interesting hypothesis by Diltz (1990) is that investors respond differently to the contracts awarded depending on the procurement process. In a scenario with symmetric information, investors perceive fixed-price contracts as riskier compared to cost-plus contracts due to the potential risk of companies absorbing cost overruns.<sup>2</sup> However, in the presence of substantial informational asymmetries, coupled with variations in risk-return characteristics among different contract formats, there are some differences:

- Abnormal returns during the announcements of fixed-price contract awards are expected to be notably positive and greater than the abnormal returns linked to cost-plus contract awards.

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<sup>2</sup> A cost-plus contract is an agreement in which a company is reimbursed for its incurred expenses along with a specified amount of profit, typically expressed as a percentage of the total contract price.

- Abnormal returns during the announcements of cost-plus contract awards will either be insignificant or minimally positive, contingent on how quickly news of the contract award is reflected in stock prices.

Investors attribute greater significance to fixed-price contracts because cost-plus contracts are theorized to provide no new information about the quality of winning companies, thereby exerting minimal influence on stock returns. On top of that, the potential existence of substantial informational asymmetries could prompt investors to decipher signals regarding inside managerial evaluations of the company's prospects during the bidding process. A low bid on a contract proposal may indicate favorable news, such as heightened sales, lower-than-average overhead costs, and efficient management. The findings indicate that positive valuation effects associated with fixed-price contract awards may be driven by investors interpreting such awards as positive signals about the company's prospects.

According to the Canadian's [Practitioner's Guide for Procurement Pricing](#), cost-plus contracts are applicable to non-competitive contracts. However, it is important to note that the procurement contracts observed in this thesis primarily fall under the fixed-price contract category as they are competitively sourced.

In addition, several studies suggest government spending is granular and affects industry concentration. In their 1983 study, [Elliott, Hawkins, and Hughes](#) examined the impact of government spending on industrial concentration. The research delved into the dynamics of how government expenditures, particularly in areas like defense procurement, may influence the concentration of industrial capacity. Government spending can play a pivotal role in determining the concentration of industrial capacity, influencing whether it becomes centralized or dispersed. Defense procurement, a significant portion of government expenditures, has been suggested to exert modest pressure on overall concentration. Studies, such as one during the Korean Conflict by Adams and Gray, (1955), indicate a rise in concentration in the defense industry. Additionally, [Ornstein et al.](#) (1973) also finds a positive relationship between government expenditures and industrial concentration.

In addition to its primary impact, government spending can exert a secondary influence on industrial concentration. Innovations and technologies created for government contracts may be adapted for the production of consumer goods in the private sector. The development of these processes could confer a competitive advantage to a company by reducing costs, potentially resulting in greater industrial concentration as less competitive firms may be forced out of business by their lower-priced rivals. However, in the long run, as government expenditures increase, concentration levels in industries may decrease. This is attributed to scenarios where primary contractors, unable to fulfill all contractual obligations, subcontract

work to other firms. Subcontractors could expand their operations, gaining a larger market share. Furthermore, primary contractors may find that specialized smaller firms are more efficient in producing certain intermediate items required for the final product sold to the government. These additional orders for small parts could lead to an increase in market share for the smaller firms. In such cases, industrial concentration would likely decline, resulting in a negative relationship.

The Canadian government allows companies winning the procurement contracts to subcontract work to diversify supply chains and alleviate short-term labor shortages. There have been some cases in the past where companies observed in this thesis either subcontracted or were recipients of subcontracts from other companies. In 2021, CAE Inc. received a subcontract worth \$34M from Lockheed Martin to support the design, development, and manufacturing of a suite of C-130J training devices ([CAE, 2005](#)). But as the prime contractor, Lockheed Martin, holds overall responsibility for delivering training devices, the learning management system, and courseware. Another case is where Calian Group subcontracted \$4M of its e-learning contract to Bluedrop Performance Learning in 2019 ([Alex, 2021](#)). The contract spans an additional three years and entails extending e-learning services at the Tactics School Army Learning Support Centre in Gagetown, NB. The collaboration includes ongoing development and support for courseware projects, encompassing eLearning production, distribution, and associated support services.

Tsanov (2021) and Cox et al. (2020) also states that government spending is concentrated in a small group of companies and sectors. From the procurement contract history data of the Canadian federal government agencies, it is found that 80% of total contract value is held by 709 companies or only 0.5% of the total companies.<sup>3</sup>

Another strand of the literature examines the relationship between the customers of a firm and the firm's valuation, suggesting behavior may be different when the government is the main customer. A study by [Dhaliwal et al. \(2016\)](#) looks at the relationship between customer concentration and a supplier's cost of equity. Companies that are heavily dependent on a few major corporate customers have reasons to maintain higher cash reserves, and this can be attributed to several factors. First, the vulnerability to significant fluctuations in cash flow increases due to the elevated risk associated with the potential loss of a major customer. Second, suppliers with major customers may find it necessary to invest in assets specific to their relationships with these customers to demonstrate commitment. Lastly, the bargaining power exerted by major customers often results in suppliers facing pressure to agree to favorable terms, leading to reduced profitability and heightened earnings and cash volatility. Given these

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<sup>3</sup> Derived from the raw data, the current count of companies has not undergone filtering; thus, some companies have not been grouped together.

factors, businesses depending on a focused customer base find themselves compelled to maintain higher levels of cash reserves. This suggests that the composition and concentration of a supplier's customer base significantly impacts a company's financing costs – which could negatively impact valuation.

However, while this holds for having a non-government customer base, a paper by [Huang et al. \(2016\)](#) finds that companies with the government as a primary customer experience a more dependable cash flow. Such companies are also more inclined to enter long-term contracts with the government, diminishing the probability of bankruptcy and cash flow uncertainties, thereby justifying a higher valuation.

[Esqueda, Ngo, and Susnjara \(2019\)](#) also finds that companies contracted by the government experienced a reduction in cost of equity and have a higher company valuation, especially for those deemed to be in strategically important industries such as companies supplying to the Department of Defense. However, the finding does not hold for companies in strategically unimportant industries where they have lower valuations despite the lower cost of equity. The study also explores the relationship between politically connected companies and their valuation, where having contracts with the government can bring in stable cash flow, and such contracts can lead to a potential agency issue where managers invest in projects that do not maximize shareholder value, resulting in decreased future cash flows. Overall, the study highlights that companies contracted by the government have lower cost of equity due to less perceived risk than companies without public contracts.

Finally, some studies suggest that the extent of news coverage for events that can affect the valuation of a firm matter for investors' behaviors. Investors adopt a comprehensive approach in assessing a company's valuation, going beyond conventional financial analyses. In addition to scrutinizing financial reports and performance metrics, they actively seek supplementary information from various media sources. Despite this comprehensive approach, it is noteworthy that news related to government contracts often takes a back seat in media coverage when compared to the prominence given to news about mergers and acquisitions. The latter tends to garner more attention and headlines, potentially influencing investor sentiment and decision-making. This discrepancy in coverage highlights a bias in the media towards certain types of corporate activities, potentially impacting the overall information landscape available to investors.

[Alibašić and Atkinson \(2022\)](#) explore how newspapers frame government procurement, portraying it either as an opportunity or as susceptible to fraud. The study analyzes the sentiment in newspaper stories on public procurement, highlighting a tendency toward negativity, which, when sensationalized, negatively influences policymaking, public discourse,

and trust in the government. Despite the negative impact on the government, media coverage can prove beneficial for companies. As evidenced in a recent article by [Henderson](#) (2023), Rocket Lab USA, an aerospace company, experienced a 20% surge in its stock price after the announcement of securing a U.S. government contract valued at \$515 million.

### 3. Data

The dataset used in this thesis is from the Proactive Publication Contracts on the Government of Canada website. The dataset contains 877,000 contracts reported by federal institutions given to 147,000 companies totaling to \$555 billion between 1999 and 2023.

The initial step in the data cleaning process involves two primary tasks. First, contracts attributed to the same companies are grouped together and contracts happening before the year 2000 are removed. Simultaneously, contracts with incomplete information, such as those lacking a recorded company name, are removed. It is important to note that the grouping of contracts by companies is imperfect due to variations in company names. These discrepancies may arise from different spellings, the inclusion of suffixes like "inc." or "co.," or when a company is part of a larger group also present in the dataset. For instance, Northwestel Inc is affiliated with Bell Canada. As detailed below, a correction for this issue is carried out manually to ensure that contracts awarded to the same company are grouped together with the same name.

Upon completion of the initial data cleaning phase, the dataset is refined to include 145,000 companies, encompassing a total contract value of \$554 billion. This refined dataset, hereafter referred to as the original dataset, serves as the foundation for subsequent analyses and insights into the contractual engagements between federal institutions and companies during the specified period. In the second data cleaning phase, a meticulous manual matching process was applied to 709 companies from the initial dataset of 145,000. This subset represents \$443 billion or 80% of the total \$554 billion in contracts awarded to both listed and non-listed companies. Each company's details were thoroughly scrutinized to guarantee that they were correctly identified and grouped together, contributing to a refined dataset that reflects a more accurate representation of the contracted entities. Through this thorough analysis, it is determined that 191 out of the 709 companies are listed on either the US or Canadian stock exchange, or both. These listed companies collectively contribute to 30% of the initial \$554 billion in contracts, equivalent to \$165 billion.

Following the consolidation of contracts belonging to the same company, a total of 49 companies, amounting to \$117 billion, are listed on the US stock exchange. Additionally, 25 companies, totaling \$66 billion, are listed on the Canadian stock exchange. Among these, 9

companies are listed on both stock exchanges, contributing to a combined contract value of \$17 billion.

Of the 9 companies appearing on both stock exchanges, 8 (Telus Corp., Rogers Communication, CAE Inc., Sun Life Financial, Colliers International, Great-West Life, Stantec Inc., and Brookfield Asset Management) are classified as Canadian companies since they have been listed in Canada longer than they have been listed in the US, while Telesat Corp. is included as a US company.

After aligning contracted companies with listed entities, specific contracts are omitted from the dataset. This exclusion is a result of scenarios where companies were awarded government contracts either before they were listed or after they had been delisted.

Table 1 shows the results of the matched contracts, organized according to the NAICS two-digit code for the industry to which the company belongs, while Table 2 shows the results of the matched contracts, organized according to the GICS classification.

*Table 1 NAICS breakdown*

This figure presents the distribution of contracts received across various NAICS sectors for companies listed in the US and Canada. The figure highlights the top 3 NAICS sectors that receive the highest contract values. Companies with no assigned NAICS number are classified under NAICS 0.

US firms			Canadian firms		
NAICS #	Contract Value	% of total	NAICS #	Contract Value	% of total
0	997,610,655	1%	0	21,672,403,477	33%
22	742,776,587	1%	22	358,520,654	1%
23	181,348,931	0%	23	619,005,065	1%
32	161,285,617	0%	32	544,140,082	1%
33	55,190,331,625	47%	33	7,596,062,812	12%
42	294,248,492	0%	42	90,324,563	0%
45	443,553,349	0%	48	108,202,723	0%
49	94,896,694	0%	51	21,985,549,866	33%
51	27,838,366,574	24%	52	3,901,227,759	6%
52	2,305,480,262	2%	53	657,000,069	1%
53	657,000,069	1%	54	7,723,872,751	12%
54	25,146,873,636	22%	55	349,582,133	1%
56	1,688,977,136	1%	81	79,062,806	0%
62	1,212,537,910	1%			
<b>Total</b>	<b>116,955,287,536</b>	<b>100%</b>	<b>Total</b>	<b>65,684,954,758</b>	<b>100%</b>

The concentration of contracts in both the US and Canada is similar, and the three sectors with the highest concentration of contracts are the same across both groups: NAICS sector 33 (goods – manufacturing), 51 (services – information), and 54 (services – professional, scientific, and technical services).

Under the GICS sub-industry classification, a substantial concentration of contracts is observed in the aerospace and defense sector. Within this sector, 46% of contracts are awarded to companies in the United States, while 38% are allocated to Canadian companies. This signifies a notable emphasis on contracts related to the aerospace and defense sector, showcasing the significance of the sector in the contractual engagements between federal institutions and companies in both the US and Canadian markets.

*Table 2 GICS breakdown*

This figure presents the distribution of contracts received across various GICS sectors for companies listed in the US and Canada. Contract Value represents the overall value of acquired contracts during a specific period, while the Number of Contracts indicates the total count of contracts, the combined total of which contributes to the Contract Value. The figure highlights the top 3 GICS sectors that receive the highest contract values.

US Companies	Contract Value	% of Total	Number of Contracts	% of Total
Aerospace & Defense	53,284,893,240	46%	1,325	8.2%
Air Freight & Logistics	94,896,694	0%	39	0.2%
Alternative Carriers	1,047,995,678	1%	120	0.7%
Application Software	1,028,315,428	1%	303	1.9%
Asset Management & Custody Banks	603,726,447	1%	57	0.4%
Automobile Manufacturers	314,823,215	0%	350	2.2%
Building Products	181,348,931	0%	68	0.4%
Communications Equipment	526,036,234	0%	460	2.8%
Construction & Engineering	1,488,026,489	1%	1,336	8.2%
Health Care Distributors	294,248,492	0%	1,881	11.6%
Health Care Services	1,212,537,910	1%	8	0.0%
Human Resource & Employment Services	1,688,977,136	1%	1,190	7.3%
Industrial Conglomerates	772,204,494	1%	52	0.3%
Integrated Oil & Gas	246,230,841	0%	1,339	8.2%
Integrated Telecommunication Services	6,035,509,342	5%	1,062	6.5%
IT Consulting & Other Services	23,229,214,438	20%	1,652	10.2%
Life & Health Insurance	1,701,753,815	1%	5	0.0%
Life Sciences Tools & Services	215,649,892	0%	313	1.9%
Pharmaceuticals	164,898,389	0%	14	0.1%
Real Estate Services	657,000,069	1%	92	0.6%
Semiconductors	283,079,223	0%	54	0.3%
Systems Software	16,245,316,367	14%	1,502	9.2%
Technology Distributors	443,553,349	0%	697	4.3%
Technology Hardware, Storage & Peripherals	1,523,321,129	1%	2,258	13.9%
Wireless Telecommunication Services	3,671,730,295	3%	70	0.4%
<b>Total</b>	<b>116,955,287,536</b>	<b>100%</b>	<b>16,247</b>	<b>100.0%</b>

Canadian Companies	Contract Value	% of Total	Number of Contracts	% of Total
Aerospace & Defense	24,902,508,579	38%	858	5.5%
Alternative Carriers	1,047,995,678	2%	120	0.8%
Application Software	268,920,602	0%	244	1.6%
Asset Management & Custody Banks	349,582,133	1%	11	0.1%
Construction & Engineering	6,855,568,245	10%	2,538	16.2%
Diversified Support Services	4,365,957,711	7%	1,558	9.9%
Integrated Telecommunication Services	16,996,903,291	26%	2,614	16.7%
Integrated Oil & Gas	544,140,082	1%	2,197	14.0%
IT Consulting & Other Services	2,978,400,902	5%	3,006	19.2%
Life & Health Insurance	2,216,551,147	3%	12	0.1%
Multi-Utilities	358,520,654	1%	160	1.0%
Passenger Airlines	108,202,723	0%	31	0.2%
Real Estate Services	657,000,069	1%	92	0.6%
Technology Distributors	193,585,280	0%	1,423	9.1%
Trading Companies & Distributors	169,387,369	0%	746	4.8%
Wireless Telecommunication Services	3,671,730,295	6%	70	0.4%
<b>Total</b>	<b>65,684,954,758</b>	<b>100%</b>	<b>15,680</b>	<b>100.0%</b>

Similar to [Cox et al. \(2020\)](#) finding that government spending is concentrated in a few industries and companies, the 709 matched listed companies have a high concentration in certain industries. 46% and 38% of contract value given to both US and Canadian companies are given to companies in the aerospace and defense industry, as can be seen from Table 2.

Looking at the NAICS breakdown, it can also be observed that the concentration of government consumption is notably limited to a select few sectors and companies. The most contracted companies come from the manufacturing sector (NAICS 33), information sector (NAICS 51),



professional, scientific, and technical services (NAICS 54), and finance and insurance (NAICS 52) as can be seen on Figure 1.

It is shown that nearly 90% of contracts are concentrated within the top three NAICS two-digit sectors, with manufacturing (NAICS 33) alone accounting for more than half of the contract values. Within the manufacturing sector, another level of granularity is also observed. One company stands out, Lockheed Martin accounts for over half of the contract values assigned to the sector.<sup>4</sup> In contrast, the second and third-largest companies – CAE Inc. and General Dynamics – account for a combined 20%,<sup>5,6</sup> while the remaining companies collectively represent less than a quarter of the contract values. This emphasizes that government contracts are indeed concentrated within a few sectors and companies.

Over time, it can be observed too that contracts awarded to the manufacturing sector consistently exhibit larger values compared to those in other sectors. This observation in Figure 2 signifies a noteworthy financial impact and the allocation of resources favoring the manufacturing economic segment. The recurrent occurrence of sizable contract values in this sector implies a strategic emphasis on manufacturing-related activities, suggesting a notable financial impact and allocation of resources in favor of the sector.

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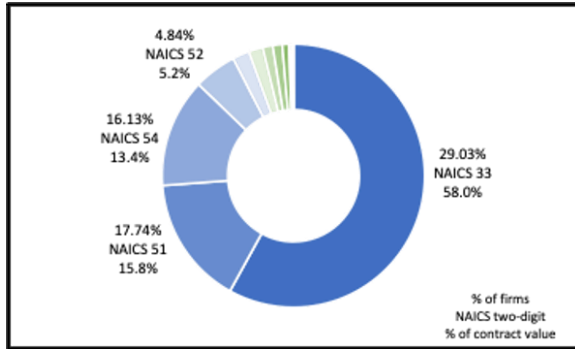
<sup>4</sup> Lockheed Martin is a global aerospace and defense company renowned for its significant contributions to the aerospace, defense, arms, security, and advanced technologies industries. Headquartered in Bethesda, Maryland, US, Lockheed Martin is one of the largest defense contractors in the world. The company operates in various segments, including Aeronautics, Missiles and Fire Control, Rotary and Mission Systems, and Space.

<sup>5</sup> CAE Inc. is a Canadian company specializing in simulation and training solutions for various industries, including aviation, defense, and healthcare. With a focus on providing realistic and immersive training experiences, CAE has established itself as a leading provider of simulation technologies worldwide.

<sup>6</sup> General Dynamics is a prominent American aerospace and defense company with a diverse portfolio of products and services. Headquartered in Reston, Virginia, General Dynamics operates in several business segments, including Aerospace, Combat Systems, Information Technology, and Marine Systems.

*Figure 1 Percentage Breakdown of NAICS Two-Digit Classifications Based on Contract Values*

This figure shows what the top 4 two-digit NAICS sectors account for in terms of contract values. It is calculated based on the non-filtered contracts totaling to \$44 billion. The upper value indicates the percentage of the total number of firms within each NAICS two-digit sector, whereas the lower value represents the percentage of contract value attributed to each NAICS two-digit sector.



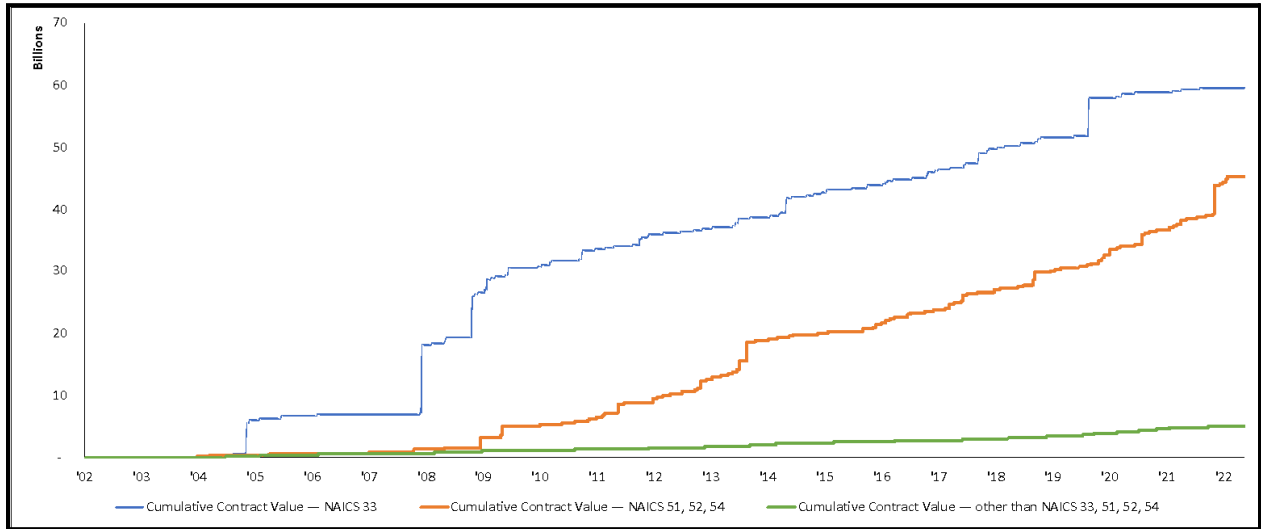
*Table 3 Breakdown of Companies Contracted Belonging to NAICS 33 Classification*

This figure provides a detailed breakdown of contracted listed companies that belong to the NAICS 33 classification. This specific classification refers to the manufacturing sector. The figure highlights the top 3 companies in the sector account for ~90% of total contract values given to the sector (grey highlight) and the top 3 companies account for the greatest number of contracts received (blue highlight). Contracts included have been filtered to have at least a 15-day gap between the completion of one contract and the initiation of another.

NAICS 33 – Manufacturing	Contract Value	% of Total	Number of Contracts	% of Total	Market Cap at end of FY22	% of total market cap
BOEING CO/THE	1,748,221,995	7%	23	2%	113,528,840,192	7%
BOMBARDIER INC-B	117,144,184	0%	33	3%	5,108,203,008	0%
BROADCOM INC	88,695,845	0%	29	3%	233,652,682,752	15%
CAE INC	2,353,595,903	9%	93	9%	6,147,324,928	0%
CALIAN GROUP LTD	503,817,442	2%	64	6%	777,569,728	0%
DANAHER CORP	133,796,520	1%	1	0%	193,215,856,640	12%
FORD MOTOR CO	39,064,476	0%	63	6%	46,758,346,752	3%
GENERAL DYNAMICS CORP	2,241,007,043	9%	104	10%	68,118,343,680	4%
GENERAL ELECTRIC CO	95,520,375	0%	38	4%	91,554,660,352	6%
HONEYWELL INTERNATIONAL INC	164,325,778	1%	2	0%	144,078,651,392	9%
HP INC	613,547,903	2%	101	10%	26,390,257,664	2%
L3HARRIS TECHNOLOGIES INC	1,491,639,100	6%	122	12%	39,643,766,784	2%
LOCKHEED MARTIN CORP	14,797,328,613	58%	100	10%	127,496,364,032	8%
MOTOROLA SOLUTIONS INC	23,948,579	0%	60	6%	43,089,940,480	3%
NORTHROP GRUMMAN CORP	97,867,469	0%	1	0%	83,976,011,776	5%
RAYTHEON TECHNOLOGIES CORP	930,320,277	4%	52	5%	148,358,529,024	9%
THERMO FISHER SCIENTIFIC INC	5,627,917	0%	68	7%	215,978,164,224	14%
XEROX HOLDINGS CORP	1,704,339	0%	42	4%	2,260,817,664	0%
<b>Total</b>	<b>25,447,173,758</b>	<b>100%</b>	<b>996</b>	<b>100%</b>	<b>1,590,134,331,072</b>	<b>100%</b>

Figure 2 Cumulative Contracts Value Given to Specific Sectors Between 2000 and 2023

The figures show the evolution of contract values allocated to the manufacturing sector (NAICS 33) and other sectors over a span of more than two decades.



In Table 4 and Table 5, the contracted listed companies are grouped together based on their GICS classification, where companies are assigned to a distinct economic sector that best encapsulates their business operations. This contrasts with the NAICS classification, where codes range from the two-digit sector level (broad categories) to the six-digit industry level (specific industries). A two-digit NAICS code might represent a broad sector like Manufacturing, as exemplified by the two-digit classification mentioned earlier.

**Table 4 10 GICS Breakdown – US Contracted Listed Companies**

This figure presents the distribution of contracts received across various GICS sectors for companies listed in the US. Contract Value represents the overall value of acquired contracts during a specific period, while the Number of Contracts indicates the total count of contracts, the combined total of which contributes to the Contract Value. The figure highlights the top 3 GICS sectors that receive the highest contract values as well as the top 3 GICS sectors that have the highest market capitalization at the end of 2022.

US Companies	Contract Value	% of Total	Number of Contracts	% of Total	Market Cap at end of FY22	% of total market cap
Aerospace & Defense	53,284,893,240	46%	1,325	8.2%	599,330,414,080	1.79%
Air Freight & Logistics	94,896,694	0%	39	0.2%	43,715,186,688	0.13%
Alternative Carriers	1,047,995,678	1%	120	0.7%	368,596,256	0.00%
Application Software	1,028,315,428	1%	303	1.9%	296,405,507,072	0.88%
Asset Management & Custody Banks	603,726,447	1%	57	0.4%	22,589,276,160	0.07%
Automobile Manufacturers	314,823,215	0%	350	2.2%	46,758,346,752	0.14%
Building Products	181,348,931	0%	68	0.4%	43,949,047,808	0.13%
Communications Equipment	526,036,234	0%	460	2.8%	43,089,940,480	0.13%
Construction & Engineering	1,488,026,489	1%	1,336	8.2%	20,053,481,984	0.06%
Health Care Distributors	294,248,492	0%	1,881	11.6%	53,189,570,560	0.16%
Health Care Services	1,212,537,910	1%	8	0.0%	22,132,160,768	0.07%
Human Resource & Employment Services	1,688,977,136	1%	1,190	7.3%	4,206,859,008	0.01%
Industrial Conglomerates	772,204,494	1%	52	0.3%	235,633,311,744	0.70%
Integrated Oil & Gas	246,230,841	0%	1,339	8.2%	546,459,729,920	1.63%
Integrated Telecommunication Services	6,035,509,342	5%	1,062	6.5%	27,624,650,752	0.08%
IT Consulting & Other Services	23,229,214,438	20%	1,652	10.2%	385,439,973,632	1.15%
Life & Health Insurance	1,701,753,815	1%	5	0.0%	27,220,117,504	0.08%
Life Sciences Tools & Services	215,649,892	0%	313	1.9%	409,194,020,864	1.22%
Pharmaceuticals	164,898,389	0%	14	0.1%	71,935,074,304	0.21%
Real Estate Services	657,000,069	1%	92	0.6%	3,946,597,376	0.01%
Semiconductors	283,079,223	0%	54	0.3%	233,652,682,752	0.70%
Systems Software	16,245,316,367	14%	1,502	9.2%	2,060,348,850,176	6.15%
Technology Distributors	443,553,349	0%	697	4.3%	24,178,120,704	0.07%
Technology Hardware, Storage & Peripherals	1,523,321,129	1%	2,258	13.9%	28,651,075,328	0.09%
Wireless Telecommunication Services	3,671,730,295	3%	70	0.4%	23,856,861,184	0.07%
<b>Total</b>	<b>116,955,287,536</b>	<b>100%</b>	<b>16,247</b>	<b>100.0%</b>	<b>33,498,108,420,000</b>	

**Table 5 GICS Breakdown – Canadian Contracted Listed Companies**

This figure presents the distribution of contracts received across various GICS sectors for companies listed in Canada. Contract Value represents the overall value of acquired contracts during a specific period, while the Number of Contracts indicates the total count of contracts, the combined total of which contributes to the Contract Value. The figure highlights the top 3 GICS sectors that receive the highest contract values as well as the top 3 GICS sectors that that have the highest market capitalization at the end of 2022.

Canadian Companies	Contract Value	% of Total	Number of Contracts	% of Total	Market Cap at end of FY22	% of total market cap
Aerospace & Defense	24,902,508,579	38%	858	5.5%	27,215,415,520	0.08%
Alternative Carriers	1,047,995,678	2%	120	0.8%	498,710,752	0.00%
Application Software	268,920,602	0%	244	1.6%	10,841,837,568	0.03%
Asset Management & Custody Banks	349,582,133	1%	11	0.1%	15,874,867,200	0.05%
Construction & Engineering	6,855,568,245	10%	2,538	16.2%	31,363,578,528	0.09%
Diversified Support Services	4,365,957,711	7%	1,558	9.9%	777,569,728	0.00%
Integrated Telecommunication Services	16,996,903,291	26%	2,614	16.7%	91,560,480,768	0.27%
Integrated Oil & Gas	544,140,082	1%	2,197	14.0%	38,524,870,656	0.12%
IT Consulting & Other Services	2,978,400,902	5%	3,006	19.2%	28,771,290,816	0.09%
Life & Health Insurance	2,216,551,147	3%	12	0.1%	66,021,066,752	0.20%
Multi-Utilities	358,520,654	1%	160	1.0%	4,803,340,288	0.01%
Passenger Airlines	108,202,723	0%	31	0.2%	2,228,277,504	0.01%
Real Estate Services	657,000,069	1%	92	0.6%	5,339,746,304	0.02%
Technology Distributors	193,585,280	0%	1,423	9.1%	1,062,411,392	0.00%
Trading Companies & Distributors	169,387,369	0%	746	4.8%	8,467,133,280	0.03%
Wireless Telecommunication Services	3,671,730,295	6%	70	0.4%	32,278,331,392	0.10%
<b>Total</b>	<b>65,684,954,758</b>	<b>100%</b>	<b>15,680</b>	<b>100.0%</b>	<b>352,610,158,688</b>	

From Table 4, the sectors that receive the most contracts in terms of value also receive in general the highest contract quantity – aerospace and defense, IT consulting and other services, and systems software industries.

However, it is important to note instances where certain industries receive a substantial quantity of contracts that do not translate into significant value. For example, the health care distributors sector receives 1,881 contracts or 12% of the total number of contracts, but it only accounts for less than 1% of the total contract value. This discrepancy highlights a scenario where the sheer number of contracts does not necessarily correlate with the substantial financial impact within a sector.

There are also cases where an industry may exhibit both a high market capitalization and a large quantity of contracts but yields a relatively low total contract value. An example of this is observed in the integrated oil and gas industry. Despite having a substantial market capitalization, the total contract value remains comparatively low. This suggests that while there is a considerable volume of contracts received, the financial impact may be less pronounced in terms of the total value of these contracts within the integrated oil and gas industry.

From Table 5, it is also observed that in Canada, as it is in the US, the aerospace and defense sector ranks first in terms of total contract value received. The integrated telecommunication services industry follows second, where it receives 26% of total contract value and accounts for 17% of the contracts' quantity. The highest market capitalization also comes from the integrated telecommunication services industry, followed by the life and health insurance industry. The third highest recipient of contracts is the construction and engineering sector. Both the integrated telecommunication services industry and construction and engineering sectors also account for the highest number of contracts received at about 16-17% each.

Broken down further on Table 6, among the aerospace and defense companies contracted in both the US and Canada, 3 companies account most for the total contract value – General Dynamics and Lockheed Martin from the US and MDA from Canada.<sup>7</sup> Looking at their market capitalization at the end of 2022, companies that receive the largest contract values from the government, in general, account for a larger proportion of the total index market capitalization compared to companies that receive a lower total amount of contract value.

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<sup>7</sup> MDA Ltd. is a Canadian aerospace and information services company. MDA is known for its expertise in satellite communications, Earth observation systems, space robotics, and geospatial information services. The company has historically been involved in providing satellite technology and solutions for both commercial and government applications.

Looking at the Canadian listed companies that receive contracts, the landscape differs somewhat from that of the US. Specifically, among the top three companies receiving the largest contracts under the aerospace and defense sector, General Dynamics and Lockheed Martin possess a market capitalization that is significantly larger than MDA's. This highlights a notable trend in the Canadian market, revealing a more significant disparity in market capitalization among the leading recipients of contracts when compared to the US.

*Table 6 Breakdown of Contracted Aerospace & Defense Companies*

This figure shows the US and Canadian listed companies receiving procurement in the aerospace and defense sector. The figure highlights companies that receive the highest amount of contract values between the period of 2000 and 2023. Market capitalization at the end of 2022 shows the relative size of each company in comparison to others within this sector. \*Here CAE Inc. is included in both the US and Canadian breakdown, but in subsequent analysis, CAE Inc. is included in the Canadian dataset.

Aerospace & Defense	Contract Value	% of total	Market Cap at end of FY22	% of total market cap
<b>US Companies</b>				
BOEING CO/THE	1,762,535,893	3%	113,528,840,192	0.339%
CAE INC	3,111,367,643	6%	6,147,324,928	0.018%
ELBIT SYSTEMS LTD	92,291,293	0%	7,274,223,616	0.022%
GENERAL DYNAMICS CORP	14,923,017,507	28%	68,118,343,680	0.203%
L3HARRIS TECHNOLOGIES INC	4,251,036,409	8%	39,643,766,784	0.118%
LOCKHEED MARTIN CORP	26,428,793,861	50%	127,496,364,032	0.381%
NORTHROP GRUMMAN CORP	97,867,469	0%	83,976,011,776	0.251%
PARSONS CORP	1,637,384,509	3%	4,787,010,048	0.014%
RAYTHEON TECHNOLOGIES COF	980,598,656	2%	148,358,529,024	0.443%
<b>Total</b>	<b>53,284,893,240</b>	<b>100%</b>	<b>33,498,108,420,000</b>	
<b>Canadian Companies</b>				
BOMBARDIER INC-B	118,737,458	0%	5,108,203,008	0.163%
CAE INC	3,111,367,643	12%	8,324,635,136	0.266%
MDA LTD	21,672,403,477	87%	763,807,616	0.024%
<b>Total</b>	<b>24,902,508,579</b>	<b>100%</b>	<b>3,134,916,400,000</b>	

Based on market capitalization on December 30<sup>th</sup>, 2022, Raytheon Technologies has the largest market capitalization at \$148 billion or 0.44% of the total market capitalization,<sup>8</sup> followed by Lockheed Martin at \$127 billion and Boeing at \$114 billion.<sup>9</sup> Lockheed Martin emerges as a significant player, securing the highest contract values and accounting for half of the contracts received by US listed companies in the aerospace and defense sector. It is worth highlighting that although General Dynamics does not hold the top spot in terms of market capitalization – being approximately half of Raytheon Technologies’ – it commands a significant position in contract values. General Dynamics secures the second-largest contract value overall, accounting for a little over a quarter of the dollar value of total contracts received by US listed companies in the aerospace and defense sector.

<sup>8</sup> Raytheon Technologies is a major American aerospace and defense conglomerate formed through the merger of Raytheon Company and United Technologies Corporation (UTC) in 2020. The company is involved in the design, manufacturing, and support of a wide array of aerospace and defense products.

<sup>9</sup> Boeing designs, manufactures, and sells airplanes, rotorcraft, rockets, satellites, telecommunications equipment, and missiles. Boeing is a major player in the commercial aircraft sector as well as a leading provider in defense systems and space exploration technologies.

In contrast, the landscape for aerospace and defense companies listed and contracted by the government in Canada appears less populated. MDA emerges as a prominent player, securing most contracts received by Canadian listed companies in the aerospace and defense sector.

All of these findings align with the conclusions of [Cox et al. \(2020\)](#) that highlights the granularity of government consumption in two key aspects. First, a significant portion of government consumption is concentrated among a limited number of companies and sectors. Second, this concentration exhibits stability over time, as depicted in Figure 2. The graph illustrates that a notable share of contract obligations consistently flows toward specific sectors (manufacturing) where the size of contracts received in the manufacturing sector is about twice as large as the non-manufacturing sector. And while Cox et al. (2020) finds that more than 60% of contract obligations are received by the top three two-digit NAICS sectors, namely *manufacturing, professional, scientific, and technical services*, and *administrative and waste management*, our findings indicate a higher concentration, where 59% of contract obligations are received by the manufacturing sector alone. Additionally, instead of *administrative and waste management, finance and insurance* is identified as the third-largest sector receiving contract obligations in Canada.

## 4. Methodology

After completing the matching process, an analysis is conducted to ascertain if there is a positive impact on stock prices, as indicated by the presence of positive abnormal returns. The methodology employed in this thesis involves a systematic approach to assessing the impact of federal procurement contracts on the financial performance of companies listed on the US and Canadian stock exchanges. The initial step encompasses the use of regression analyses to ascertain the abnormal returns of each company. Abnormal returns serve as a key metric, indicating the deviation of a company's stock performance from the expected market behavior during the periods around the signing of federal procurement contracts.

Subsequently, the abnormal returns obtained from the regression analysis become a pivotal factor in discerning patterns, trends, and potential relationships that shed light on the dynamics between federal contracts and stock market performance. The following sections delve into the detailed steps of the methodology, providing a thorough explanation of each stage in the process.

The initial regression analysis aims to determine the anticipated stock return by considering the market return. The analysis utilizes stock price data covering the period from 2000 to 2023 where dates corresponding to contract occurrences are excluded from this analysis to ensure a

focused evaluation of the broader market trends and factors influencing stock prices beyond the specific contractual engagements.

The regression model is formulated as follows:

$$\mathbf{Expected\ Stock\ Return}_{i,t} = \alpha + \beta \times \mathbf{Market\ Return}_t + \epsilon \quad \text{Equation 1}$$

The variables are defined as:

- **Expected Stock Return**<sub>*i,t*</sub> represents the anticipated daily stock return for company *i* on day *t*.
- **α** signifies the intercept term in the regression equation.
- **β** represents the coefficient associated with the market return, indicating the sensitivity of the stock return to changes in the market.
- **Market Return**<sub>*t*</sub> refers to the daily market return on day *t*, which is based on either the SP500 or TSX, depending on where company *i* is listed.
- **ε** represents the error term, accounting for unexplained variations in the expected stock return.

The regression aims to identify and quantify the relationship between the contracted listed company's daily stock return and the overall market return (SP500 or TSX) on the same day. By excluding dates that coincide with the contract events, the analysis seeks to isolate the impact of these contracts on stock prices, allowing for a more focused examination of the broader market dynamics and identifying any positive excess or abnormal returns that may be attributed to said contract events.

The regression results are presented in both Table 7 and Table 8. These figures provide a comprehensive display of key statistical parameters, encompassing the constant, coefficient, and standard error values derived from the regression.



*Table 7 Regression results – US*

The figure shows the outcomes of the regression analysis on the US listed companies that receive procurement between the period of 2000 and 2023. Dates corresponding to contract occurrences have been excluded from the analysis.

US Company	Constant	Market Return	
		Coefficient	Standard Error
1 ACN	0.00042	0.95216	0.01692
2 ADBE	0.00057	1.34263	0.02218
3 ACM	0.00023	1.17704	0.02320
4 AMRC	0.00033	1.30519	0.04542
5 BA	0.00026	1.09072	0.01855
6 AVGO	0.00076	1.27348	0.02639
7 CG	(0.00029)	1.29311	0.03029
8 CDW	0.00073	1.21403	0.02849
9 CVX	0.00015	0.91623	0.01513
10 CTXS	0.00033	1.14293	0.02773
11 DHR	0.00046	0.90281	0.01211
12 DXC	(0.00076)	1.58054	0.05437
13 ESLT	0.00042	0.62455	0.01894
14 FDX	0.00023	1.01686	0.01640
15 F	(0.00022)	1.19035	0.02498
16 GD	0.00030	0.77892	0.01411
17 GE	(0.00027)	1.14778	0.01632
18 GSK	(0.00015)	0.60631	0.01314
19 HON	0.00013	1.08213	0.01443
20 HPQ	0.00002	1.15591	0.02148
21 INFY	0.00029	1.10549	0.02543
22 IBM	(0.00010)	0.86341	0.01535
23 JCI	0.00015	1.02303	0.02098
24 LHX	0.00046	0.87033	0.01816
25 LH	0.00057	0.68907	0.01765
26 LMT	0.00053	0.59665	0.01537
27 MAN	0.00011	1.18409	0.02142
28 MCK	0.00065	0.70249	0.02158
29 MSFT	0.00023	1.08239	0.01549
30 MODV	0.00066	1.13500	0.04216
31 MSI	0.00013	1.17962	0.02243
32 NOC	0.00046	0.63566	0.01474
33 ORCL	0.00019	1.19478	0.02121
34 PSN	0.00036	0.81326	0.04039
35 RTX	0.00018	0.98319	0.01342
36 SAP	0.00016	1.12671	0.02006
37 SHEL	(0.00018)	0.97843	0.01899
38 TSAT	(0.00028)	1.21894	0.03260
39 TMO	0.00057	0.91101	0.01584
40 UIS	(0.00030)	1.41379	0.03799
41 VMW	0.00045	1.01863	0.03252
42 XRX	(0.00029)	1.21991	0.03012

*Table 8 Regression results – Canada*

The figure shows the outcomes of the regression analysis on the Canadian listed companies that receive procurement between the period of 2000 and 2023. Dates corresponding to contract occurrences have been excluded from the analysis.

Canadian Company	Constant	Market Return	
		Coefficient	Standard Error
1 ATCO	0.00027	0.46844	0.01712
2 BCE	0.00015	0.54854	0.01820
3 BIRD	0.00022	0.65012	0.02617
4 BOMBARDIER	0.00004	1.24997	0.03865
5 CAE	0.00040	0.86663	0.02476
6 CALIAN	0.00078	0.39503	0.02926
7 CGI	0.00044	0.62975	0.02583
8 COLLIERS	0.00067	0.59842	0.02431
9 CONVERGE	0.00391	1.40076	0.17209
10 EXCHANGE INCOME	0.00053	0.66593	0.02948
11 GREAT-WEST LIFE	0.00019	0.77990	0.01669
12 IMPERIAL OIL	0.00043	1.01888	0.02460
13 MDA LTD	(0.00083)	1.36717	0.13058
14 OPEN TEXT	0.00065	0.78412	0.02866
15 ROGERS COMMUNICAT	0.00024	0.67314	0.01921
16 SNC LAVALIN	0.00044	0.92908	0.02350
17 SOFTCHOICE CORP	0.00032	1.16556	0.19104
18 STANTEC INC	0.00087	0.62019	0.02234
19 SUNLIFE	0.00026	0.97463	0.01757
20 TELUS	0.00023	0.57607	0.02012
21 TOROMONT	0.00057	0.59989	0.01867
22 WAJAX	0.00054	0.80766	0.03037
23 WSP GLOBAL	0.00103	0.62150	0.02564

Following the completion of the regression analysis, the subsequent step involves the computation of the abnormal return (AR). In this step, the actual stock returns of a specific company (referred to as "i") are subtracted by the anticipated stock returns determined through the previous regression analysis results. This is expressed as follows:

$$\mathbf{Abnormal\ Return}_t = \mathbf{Actual\ Stock\ Return}_{i,t} - \mathbf{Expected\ Stock\ Return}_{i,t} \quad \text{Equation 2}$$

The variables are defined as follows:

- **Actual Stock Return**<sub>i,t</sub> refers to the observed returns on the stock of company *i* at time *t*
- **Expected Stock Return**<sub>i,t</sub> refers to the anticipated or predicted stock return for company *i* at time *t* calculated based on the regression results as shown in Table 7 and Table 8.

The formula quantifies the difference between what was observed in terms of the stock return for a specific company and what was predicted by the regression model. The abnormal return

provides insights into the unique factors or events impacting the company's stock performance beyond what is typically accounted for by the broader market trends.

### **Abnormal Returns Analysis**

This section describes the analysis on whether Canadian government procurement contracts impact the valuation of companies. A key condition is imposed where the contracts included in the analysis must exhibit a minimum 15-day gap between the conclusion of one contract and the commencement of another for a given company. This section establishes the baseline, while Sections 5.1 to 5.3 perform the sensitivity analyses.

The 15-day gap requirement is crucial to refining the analysis. It ensures that each contract is considered separately, avoiding a mix-up from overlapping or closely occurring contracts. By requiring a significant time gap between contracts, the analysis aims to treat each contract as a distinct event, so that it helps provide a clearer picture of how each contract impacts the overall performance of listed companies in the US and Canadian markets.

Following the computation of abnormal returns for the periods 15 days preceding and succeeding a contract event (using Equation 2), the cumulative abnormal returns are derived by adding the abnormal return values for day 0 (the event date) and day 1 to day 15 after the event. This yields the cumulative abnormal returns for the range AR+1 to AR+15. Similarly, the cumulative abnormal returns for the period AR-1 to AR-15 are obtained by summing the abnormal return values for day 0 (the event date) and day 1 to day 15 before the event.

The formula for the cumulative abnormal return before the event date (AR-1 to AR-15) is as follows:

$$CAR_t = CAR_{t+1} + AR_t \quad \text{Equation 3}$$

while the formula for the cumulative abnormal return after the event date (AR+1 to AR+15):

$$CAR_t = CAR_{t-1} + AR_t \quad \text{Equation 4}$$

where  $AR_t$  is the abnormal return.

The abnormal returns are then weighted based on the market capitalization of the contracted companies. The weight is determined by the market capitalization on the 16<sup>th</sup> day preceding the date of each contract. Subsequently, these market capitalizations from the same companies are averaged across various contract dates. The resulting averages are then weighted, considering all the companies included in the calculation of the weighted cumulative abnormal returns.

## 5. Results

*Figure 3 Weighted Cumulative Excess Returns – US and Canada*

This figure presents the weighted cumulative abnormal return of US and Canadian contracted listed companies. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.

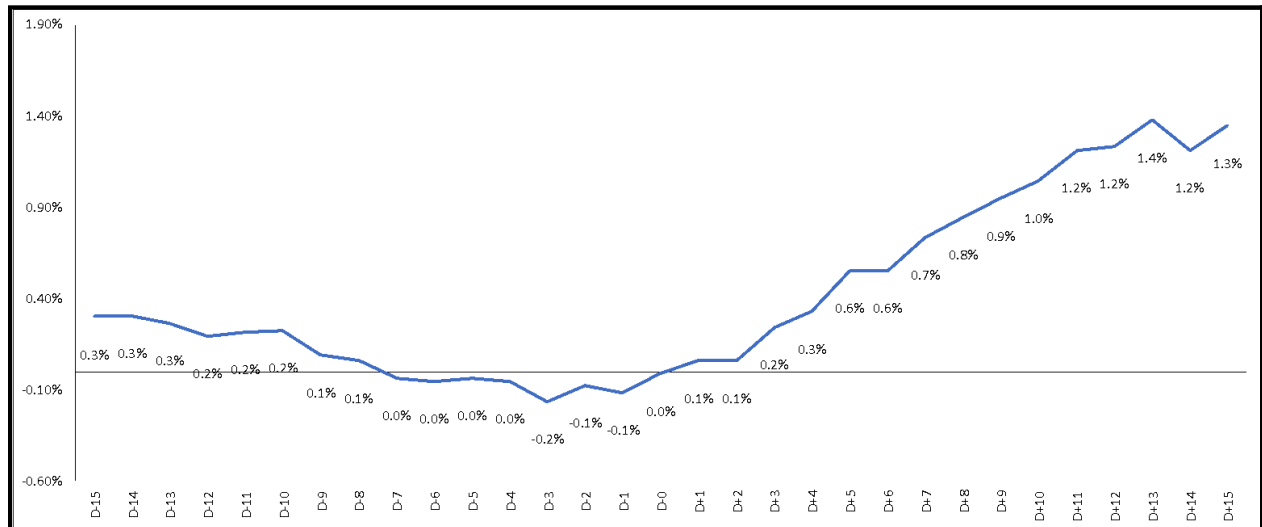


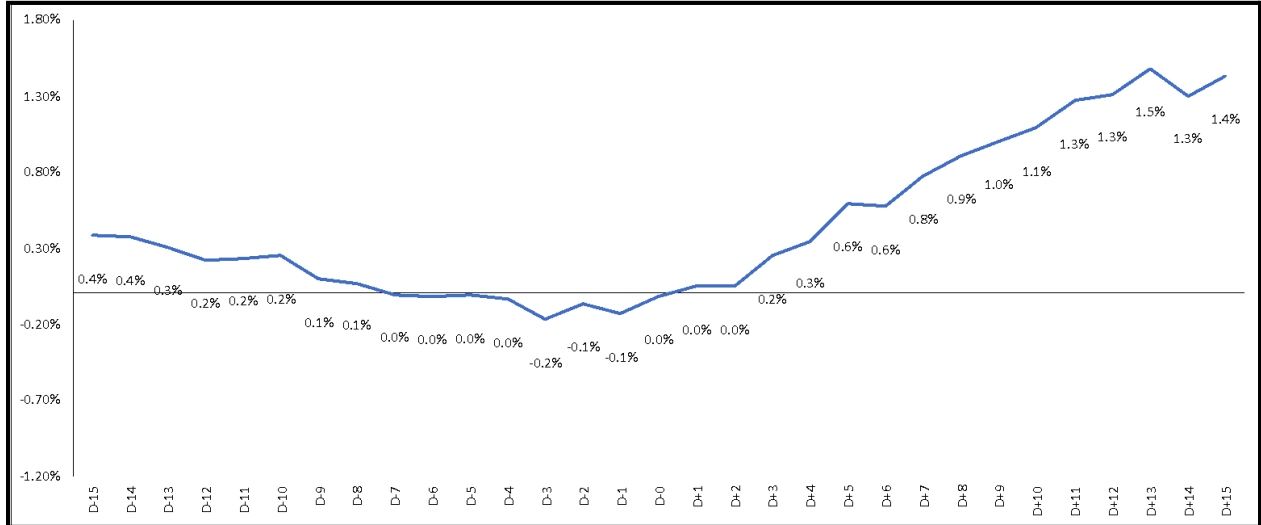
Figure 3 illustrates the cumulative abnormal return of both US and Canadian listed companies. Notably, there is no specific requirement or threshold set for the ratio between the contract value and the company's revenue in the previous year, allowing for a broad exploration of diverse financial dynamics. At D+15, the cumulative abnormal excess return stands at 1.3%. The trend reveals a gradual ascent, reaching its peak at 1.4% at D+13. This upward surge initiates at 0.06% on D+1 and ascends steadily over the subsequent days, registering at 0.55% by D+5 and further increasing to 1.0% by D+10.

This trend suggests the possibility that stock market returns can be predicted to some extent for these contracted companies. The observed fluctuations suggest that, over time, the cumulative abnormal excess returns of these companies exhibit a discernible pattern, featuring periods of both gradual growth and peak performance approximately two weeks after a contract event, on average.

In order to assess whether both US and Canadian listed companies follow a comparable trajectory, the weighted abnormal returns are further split by the 2 countries and plotted separately – see Figure 4 and Figure 5.

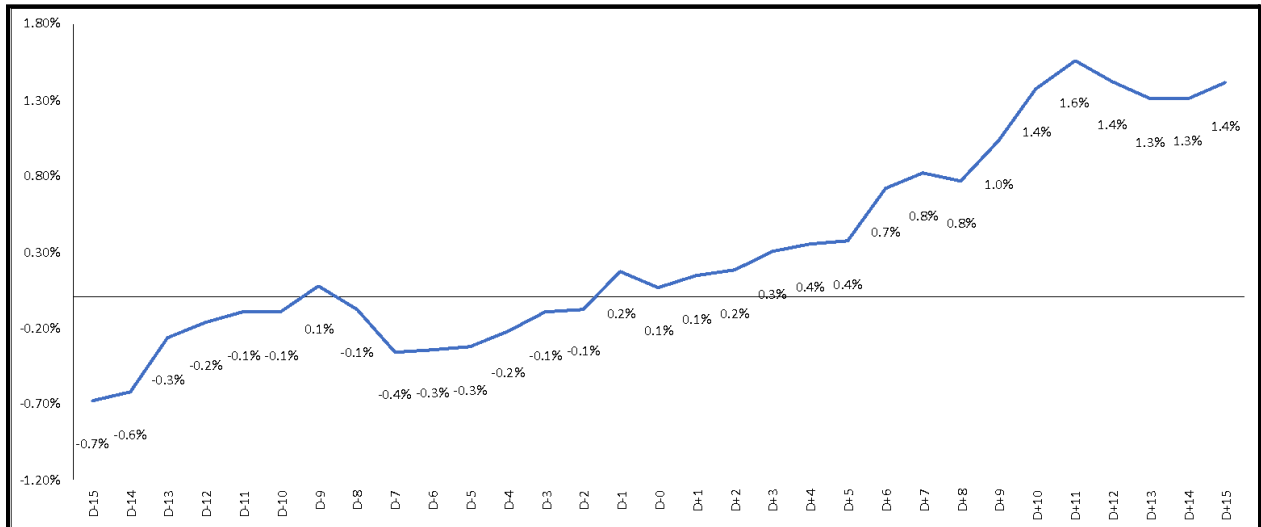
*Figure 4 Weighted Cumulative Excess Returns – US*

This figure presents the weighted cumulative abnormal return of US listed companies. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



*Figure 5 Weighted Cumulative Excess Returns – Canada*

This figure presents the weighted cumulative abnormal excess return of Canadian listed companies. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



As can be seen on Figure 4 and Figure 5, the cumulative abnormal returns follow a trajectory similar to Figure 3, exhibiting an upward ascent starting in D+1. The magnitude of the returns does not vary significantly, with 1.4% cumulative abnormal returns at D+15 for the US and Canada vs 1.3% at D+15 for the combined dataset in Figure 3. Notably, the US and combined

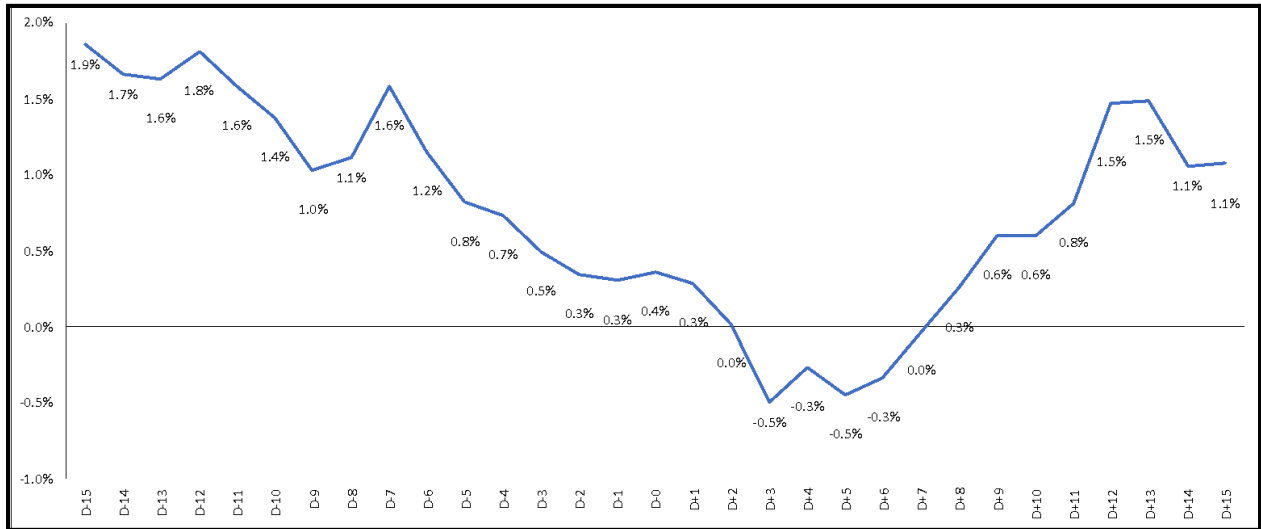
dataset reach their peak at D+13, in contrast to Canada's peak at D+11, as observed in Figure 5. This observation indicates a notable delay in the peak of abnormal returns for US companies compared to their Canadian counterparts.

Elayan, Pukthuanthong, and Li (2004) also argues that abnormal returns for companies in the services, civil, and international contracts differ from those associated with non-services, military, and national contracts. This distinction arises from the inherent characteristics of service contracts, which are more intangible than their non-service counterparts. Service companies, in this context, exert greater control over contract performance. On the other hand, military contracts often need significant investments in research and development and the companies have a less diversified customer portfolio compared to companies involved in civil contracts. While civil contract-oriented companies are typically smaller, they benefit from more diverse sources of clientele.

In the following Figure 6 and Figure 7, the abnormal returns are further split into different NAICS two-digit classifications, namely the NAICS 33 and NAICS 51, 52, and 54. Notably, abnormal returns for companies in the service sectors (NAICS 51, 52, 54) exhibit a similar trajectory to the average contracted listed companies, diverging from the pattern observed for companies in the manufacturing sector. For manufacturing companies, abnormal returns exhibit positivity 15 days prior to a contract, followed by a decline approaching the contract date, before experiencing an upward trend at D+7. This observation highlights the variations in abnormal returns among different industry sectors in the lead-up to and following contract events. An underlying rationale for this may be attributed to the fact that certain manufacturing companies are larger and more prominent, garnering increased media coverage in the lead-up to the contract date. This heightened visibility potentially contributes to the observed positive abnormal returns prior to a contract event.

*Figure 6 Weighted Cumulative Excess Returns – NAICS 33*

This figure presents the weighted cumulative abnormal excess return of listed companies with NAICS two-digit code of 33. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



*Figure 7 Weighted Cumulative Excess Returns – NAICS 51,52,54*

This figure presents the weighted cumulative abnormal excess return of listed companies with NAICS two-digit code of 51, 52, and 54. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.

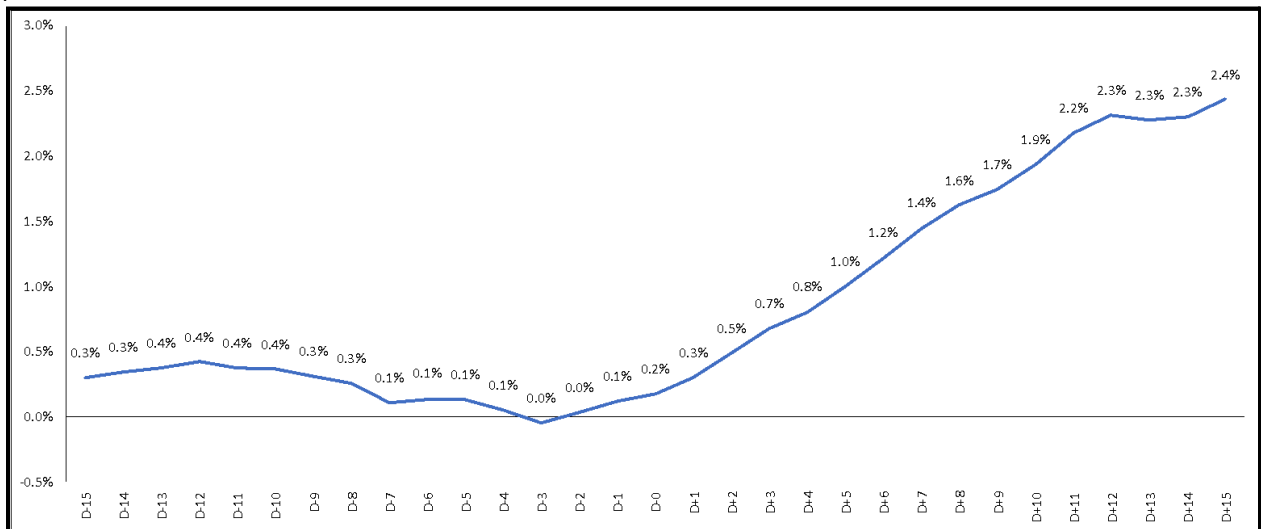
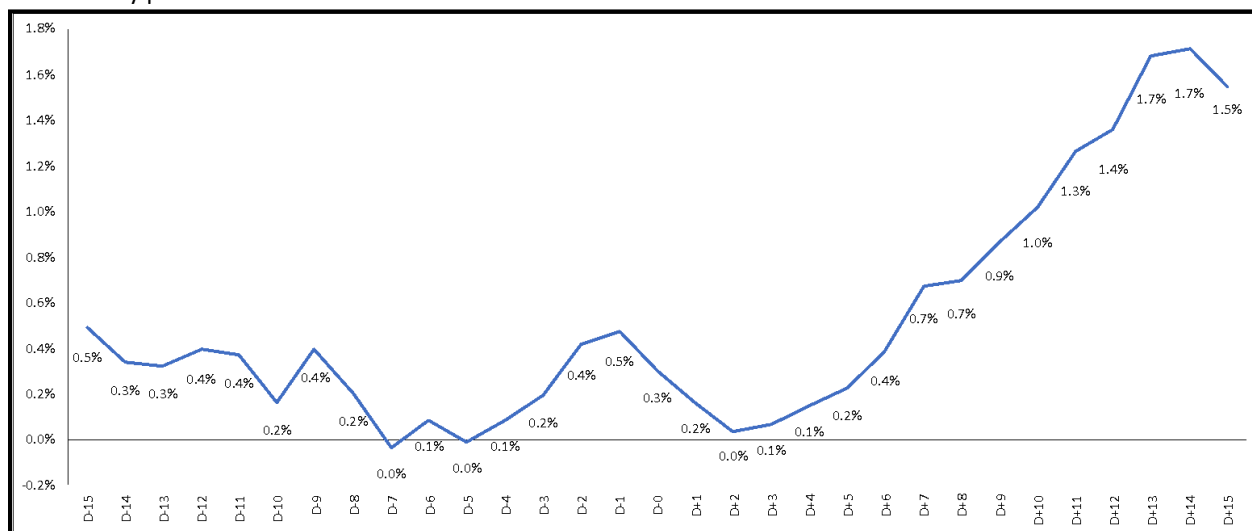


Figure 8 illustrates the weighted cumulative abnormal excess return of listed companies that account for the largest 80% of contract values ranging from \$117 million to \$5 billion in a single day. The objective is to investigate whether companies that receive larger contracts

demonstrate a similar pattern of ascending abnormal returns over time. While the magnitude of abnormal returns is indeed higher by about 1 bps, it is not high enough to be significant. However, what adds an interesting dimension to this finding is that the underlying pattern in abnormal returns remains consistent across both categories. In other words, companies with larger contracts exhibit a parallel trend in abnormal returns compared to the overall average.

*Figure 8 Weighted Cumulative Excess Returns – Largest 80% Contract Values*

This figure presents the weighted cumulative abnormal excess return of listed companies that account for the top 80% of the total contract values. Contracts included in the analysis must have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



Companies receiving the highest contract values have likely been contracted by the government for more than 10 years (see Appendix E). Over the past two decades, these companies have, on average, secured 33 contracts annually. Notably, McKesson Corp in the Health Care Distributors sector stands out,<sup>10</sup> having garnered the highest number of contracts, reaching 251 in 2020. Despite the high number of contracts, the contract value averaged only \$140,000 (overall, the contract value averaged \$19 million) – consistent with Table 4 where health care distributors account for the highest contract quantity but do not account for a significant contract value.

The construction and engineering sector stands out with the highest contract value, as companies in this sector receive 29 contracts annually, each averaging \$16 million. Notably, companies like Accenture, Converge Technology, DXC Technology, CGI, IBM, Infosys, and Unisys Corp. within the IT consulting sector receive an average of 1 contract annually with values ranging between \$150,000 and \$330 million. This variance in contract values contributes to the

<sup>10</sup> McKesson is one of the largest healthcare services and information technology companies globally. The company is involved in various aspects of the healthcare supply chain, including distribution of pharmaceuticals, medical supplies, and healthcare technology solutions.



outlier average contract value shown in Table 9. In the past 2 decades, the aerospace and defense sector secured an average of \$44 million per contract, with companies in this sector receiving a total of 9 contracts annually from the government.

*Table 9 Top 10 Highest Average Contract Value Based on GICS Sub-Industries*

This table presents the top 10 sectors with the highest average annual contract values over the past two decades and their corresponding average number of contracts received annually.

GICS Sub-Industries	Average Number of Contract	Average Contract Value
IT Consulting & Other Services	1	331,339,823
Life & Health Insurance	3	314,113,720
Wireless Telecommunication Service	4	107,467,297
Health Care Services	2	96,861,145
Industrial Conglomerates	3	85,340,958
Life Sciences Tools & Services	16	67,004,413
Aerospace & Defense	9	43,818,513
Construction & Engineering	29	16,060,534
Real Estate Services	9	10,933,100

*Figure 9 Weighted Cumulative Excess Returns*

This figure presents the weighted cumulative abnormal return of US and Canadian listed companies as well as only the companies that received the largest 80% contract values. This figure combines Figure 4, Figure 5, and Figure 8, making it easier to compare the three datasets.

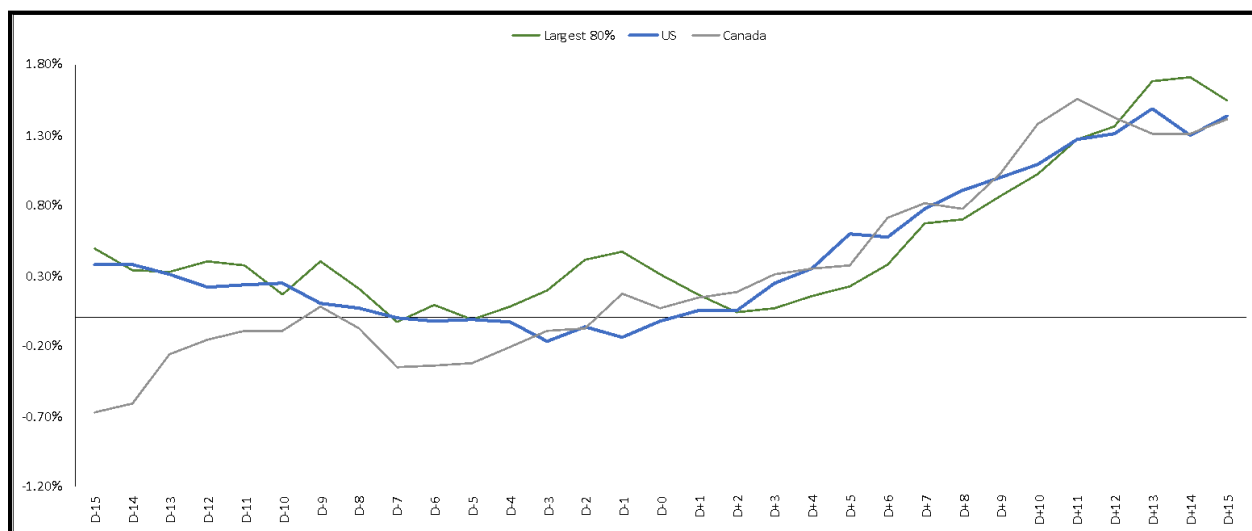


Figure 9 illustrates a consistent pattern in abnormal returns for companies securing government contracts, implying a discernible trend in the influence of such contracts on a company's stock price. This pattern could serve as a foundation for investors to anticipate the average returns for these contracted companies over the specified period. While market dynamics and external factors may introduce variations, the graph provides a valuable reference for understanding the general trend in returns for the given set of contracted companies.

The cumulative abnormal return denotes that, on average, companies receiving government contracts tend to surpass market performance by 1.4% to 1.7% within a span of 2 weeks after securing the contract. This finding implies that investors can leverage this data to anticipate the potential impact of winning a government contract on a company's stock price. This level of consistency can prove valuable for investors seeking well-informed decisions about their investments.

In the next subsection, we focus on conducting sensitivity analyses to evaluate the strength and reliability of our findings. The analyses aim to discern the influence of contract size versus revenue on abnormal returns, offering valuable insights into how variations in contract value contribute to the observed patterns in market responses. By delving into the nuances of these refined datasets, we seek to add a deeper layer of understanding to the comprehension of market reactions to investment activities, further enriching the overall analysis.

### 5.1. Sensitivity Analysis #1

[Jones, Danbolt, Hirst](#) (2004) finds that the market generally reacts positively to investment announcements. The market demonstrates a more positive response to investments that generate future opportunities as opposed to those that involve the utilization of existing opportunities. Additionally, the size of the firm influenced market reactions, with larger companies generally experiencing less pronounced responses compared to their smaller counterparts.

To see if project size does impact abnormal returns, the next data analysis involves refining the dataset by applying specific filters. In this process, only contracts having a ratio of contract/previous year revenue exceeding 0.0015 are retained. This approach aims to provide a clearer understanding of how variations in contract value contribute to the observed patterns in abnormal returns, thereby adding a deeper layer of understanding to the comprehension of market responses to investment activities.

The ratio 0.0015 is derived from the average of the minimum contract-to-revenue ratio across all contracts. This ratio serves as a threshold to ensure that the contracts chosen for the analysis are substantial enough to have a meaningful impact on the company's financials. By setting this threshold, the aim is to make the dataset both meaningful and representative, focusing on contracts that are significant contributors to the financial dynamics of the listed companies.

After implementing these filters, the dataset used for the second data analysis is narrowed down to 218 contracts. These contracts represent a total contract value of \$40 billion. In essence, this refined dataset, characterized by a more stringent set of criteria, is employed for a

more focused and targeted analysis, capturing specific contractual engagements that meet the specified ratio.

*Table 10 List of contracted listed companies with >0.0015 contract/revenue ratio*

This figure shows a detailed breakdown of contracted companies in both the US and Canada. The term "Contract Value" in this context refers to contracts that exhibit a contract-to-previous-year-revenue ratio exceeding 0.0015.

Company Name	Contract Value	# of contracts
ACCENTURE PLC-CL A	78,258,799	1
ADOBE INC	268,073,210	1
AECOM	55,285,211	2
AMERESCO INC-CL A	676,323,292	15
ATCO LTD-CLASS I	13,930,533	1
BCE INC	702,464,596	5
BIRD CONSTRUCTIO	415,026,646	15
BOEING CO/THE	1,690,342,748	3
BOMBARDIER INC-B	116,111,279	1
BROADCOM INC	70,688,765	2
CAE INC	2,331,340,941	11
CALIAN GROUP LTD	508,251,438	19
CARLYLE GROUP INC/THE	88,032,136	7
CGI INC	302,315,979	5
CITRIX SYSTEMS INC	63,535,718	5
COLLIERS INTERNA	332,339,203	18
ELBIT SYSTEMS LTD	84,867,507	2
EXCHANGE INCOME	84,319,188	3
GENERAL DYNAMICS CORP	1,987,612,259	10
GREAT-WEST LIFEC	514,540,899	1
GSK PLC-SPON ADR	53,103,659	1
HONEYWELL INTERNATIONAL INC	318,816,572	2
HP INC	505,061,000	1
INTL BUSINESS MACHINES CORP	280,204,614	2
JOHNSON CONTROLS INTERNATIO	68,493,598	1
L3HARRIS TECHNOLOGIES INC	1,407,208,136	15
LABORATORY CRP OF AMER HLDGS	109,565,217	1
LOCKHEED MARTIN CORP	14,077,426,597	5
MDA LTD	806,721	1
MICROSOFT CORP	1,415,125,901	4
MODIVCARE INC	807,598,615	3
PARSONS CORP	113,666,796	1
RAYTHEON TECHNOLOGIES CORP	797,513,818	3
ROGERS COMMUNI-B	3,300,085,859	13
SAP SE-SPONSORED ADR	240,363,249	3
SNC-LAVALIN GRP	3,691,593,598	12
STANTEC INC	26,332,442	3
SUN LIFE FINANCI	1,661,431,007	3
TELUS CORP	26,389,454	1
TOROMONT INDS	5,095,500	1
UNISYS CORP	791,657,328	7
VMWARE INC-CLASS A	165,990,289	6
WAJAX CORP	5,477,986	1
WSP GLOBAL INC	31,845,064	1
<b>Total</b>	<b>40,284,513,366</b>	<b>218</b>

Table 10 provides insights into the distribution and composition of contracts in both the US and Canadian markets while Table 11 grouped companies in the aerospace and defense sector to show that 3 out of the 10 aerospace and defense companies account for 80% of the total contracts given to the sector or 45% of the total contracts.

*Table 11 Aerospace and Defense Companies (>0.0015 contract/revenue ratio)*

This figure shows aerospace and defense contracted companies listed in either the US or Canadian stock exchanges. Some of the numbers are different from Table 6 due to filtering where here contracts included have contract/previous year revenue ratio exceeding 0.0015.

<b>Aerospace &amp; Defense</b>		
<b>Company name</b>	<b>Contract Value</b>	<b>% of total</b>
BOEING CO/THE	1,690,342,748	7%
BOMBARDIER INC-B	116,111,279	1%
CAE INC	2,331,340,941	10%
ELBIT SYSTEMS LTD	84,867,507	0%
GENERAL DYNAMICS CORP	1,987,612,259	9%
L3HARRIS TECHNOLOGIES INC	1,407,208,136	6%
LOCKHEED MARTIN CORP	14,077,426,597	62%
MDA LTD	806,721	0%
PARSONS CORP	113,666,796	1%
RAYTHEON TECHNOLOGIES CORP	797,513,818	4%
<b>Total</b>	<b>22,606,896,802</b>	<b>100%</b>

*Table 12 GICS breakdown – US and Canadian Contracted Listed Companies*

This figure presents the distribution of contracts received across various GICS sectors for companies listed in the US and Canada. Contract Value represents the overall value of acquired contracts during a specific period. The figure highlights the top 4 GICS sectors that receive the highest contract values.

<b>GICS Sub-industries</b>	<b>Contract Value</b>	<b>% of total</b>
Aerospace & Defense	22,606,896,802	56%
Application Software	571,972,177	1%
Asset Management & Custody Banks	88,032,136	0%
Building Products	68,493,598	0%
Construction & Engineering	4,896,406,253	12%
Diversified Support Services	501,122,958	1%
Health Care Services	917,163,832	2%
Industrial Conglomerates	160,158,286	0%
Integrated Telecommunication Services	728,854,050	2%
IT Consulting & Other Services	1,452,436,720	4%
Life & Health Insurance	2,175,971,906	5%
Multi-Utilities	13,930,533	0%
Passenger Airlines	84,319,188	0%
Pharmaceuticals	53,103,659	0%
Real Estate Services	332,339,203	1%
Semiconductors	70,688,765	0%
Systems Software	1,581,116,190	4%
Technology Hardware, Storage & Peripherals	505,061,000	1%
Trading Companies & Distributors	10,573,486	0%
Wireless Telecommunication Services	3,300,085,859	8%
<b>Total</b>	<b>40,118,726,601</b>	<b>100%</b>

Figure 10 illustrates that a positive trend in the cumulative abnormal return, which is weighted according to the market capitalization of companies on the 16th day preceding each contract's date, observed 15 days after the contracts have been executed. The daily abnormal return averages 0.04% between the 1<sup>st</sup> and 15<sup>th</sup> day post-contract. It is important to note that outliers, specifically the largest 20% of negative returns between the 11th and 15th days post-contract, are excluded from the analysis.

Unlike Figure 3 which shows an average abnormal return of 1.3% at D+15, Figure 10 shows a lower average abnormal return of 1.1% at D+15. This discrepancy can be attributed to either a reduction in the number of contracts included in the analysis or variations in the specific contracts included in each analysis. Additionally, the observed pattern diverges, revealing that the peak duration is extended from D+11 to D+14 for companies with larger contract sizes relative to their revenue. This variation in both the magnitude and duration of abnormal returns underscores the impact that contract size can have on the market response.

*Figure 10 Cumulative Excess Returns (>0.0015 contract/revenue ratio)*

This figure presents the cumulative abnormal excess return of US and Canadian contracted listed companies where only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0015 are kept. Contracts included in the analysis must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.

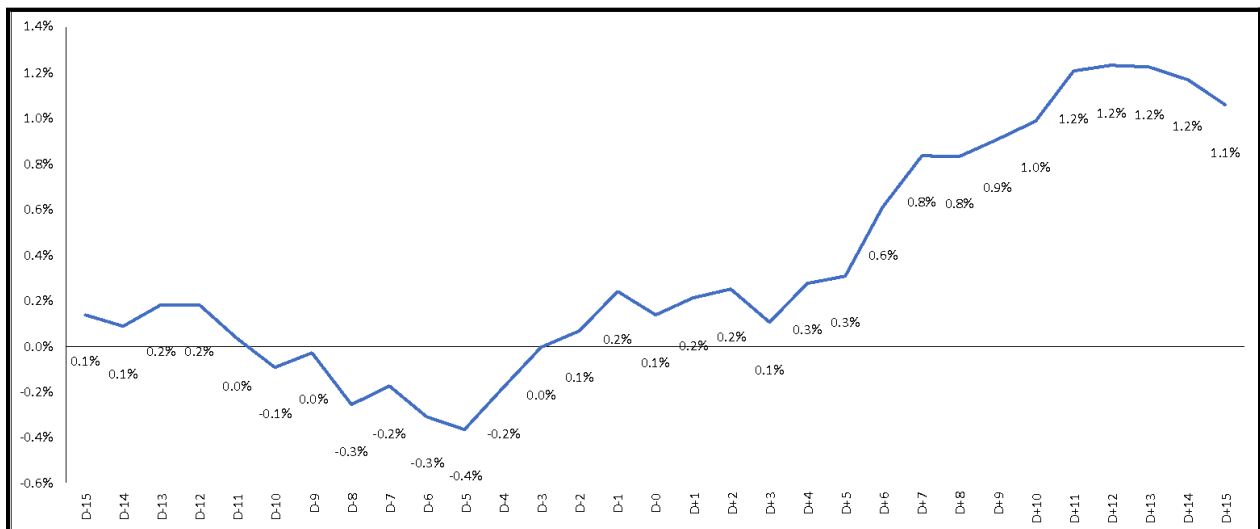


Figure 12 shows that the cumulative excess abnormal return for non-aerospace and defense contracted companies aligns with the trend depicted in the consolidated cumulative excess abnormal return shown in Figure 10. However, a notable deviation emerges with aerospace and defense companies where their trend diverges by showcasing a continuous upward trajectory instead of the hump-shaped pattern observed in the consolidated and non-aerospace and

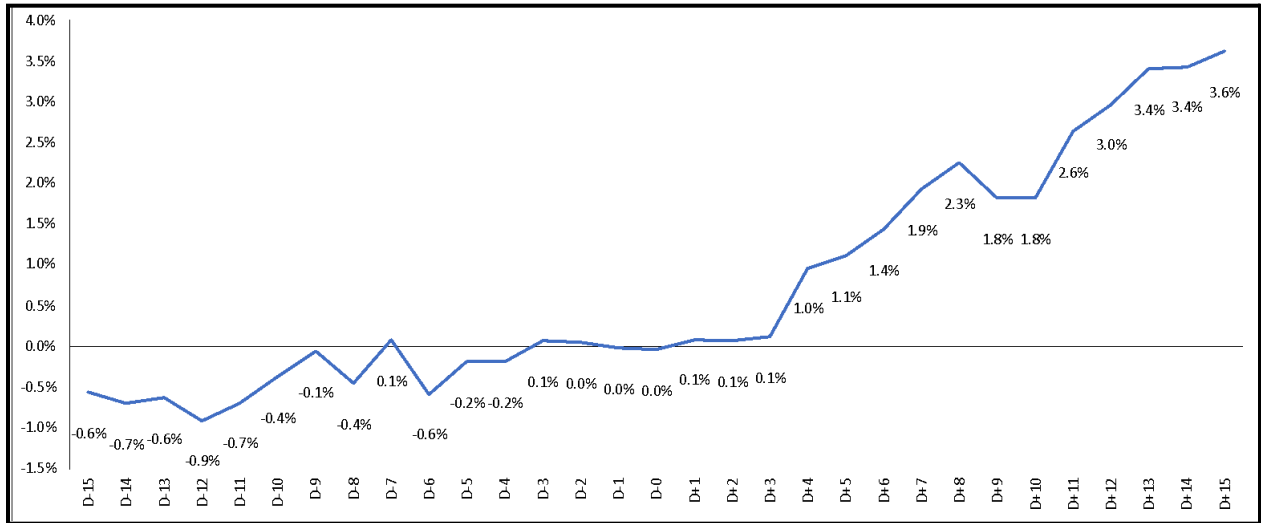
defense sector towards the conclusion of the two-week period. This divergence highlights a distinct market behavior among aerospace and defense companies during the latter part of the two-week post-contract period, suggesting potential sector-specific factors influencing their abnormal returns.

The average daily excess return between the 1<sup>st</sup> and 15<sup>th</sup> days post-contract for the aerospace and defense sector is 0.9%. This figure stands in contrast to industries beyond the aerospace and defense sector, where the average daily excess return during the same timeframe is slightly lower at 0.75%. Notably, the cumulative abnormal return at D+15 for industries outside of aerospace and defense is observed to be 1.4%, whereas the aerospace and defense sector exhibits a significantly higher cumulative abnormal return of 3.6%. This discrepancy underscores a distinct and comparatively more robust performance in terms of abnormal returns within the aerospace and defense sector during the specified post-contract period, suggesting unique market dynamics or favorable conditions specific to this sector.

This observation is consistent with the findings of [Esqueda, Ngo, and Susnjara \(2019\)](#), where they find that companies operating in strategically important industries, particularly those supplying to the US Department of Defense, exhibited positive abnormal returns. Previous research on defense contractors suggests that their specialized knowledge provides significant negotiating leverage, anticipating a positive net present value from the contracts. This anticipation is reflected in positive abnormal returns observed around winning bid announcements. As a result, it is emphasized that companies classified as strategically important government contractors deserve particular attention, not only compared to other government contractors but also in relation to non-contractor firms.

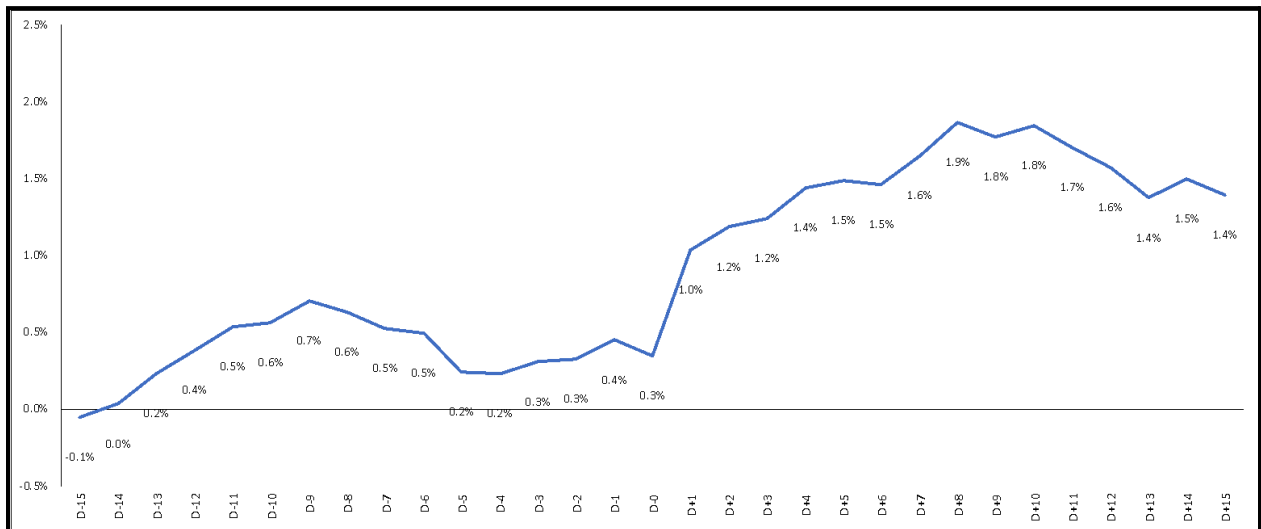
*Figure 11 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – Aerospace and Defense*

This figure presents the cumulative abnormal excess return of listed companies in the aerospace and defense sector. Only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0015 are included. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



*Figure 12 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – Industries other than Aerospace and Defense*

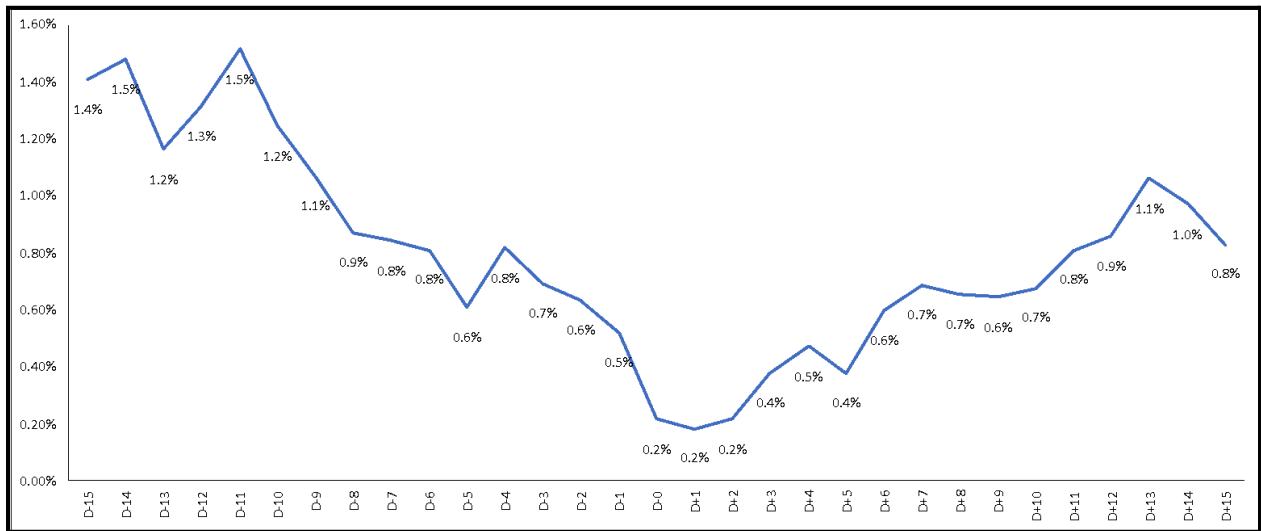
This figure presents the cumulative abnormal excess return of listed companies in sectors other than the aerospace and defense sector. Only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0015 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



To delve deeper into the examination of potential differences in the timing of excess market return delays between listed companies in the US and Canada, a more detailed analysis is undertaken. This involves the segregation of contracts into US- and Canadian-listed companies, as illustrated in Figure 13 and Figure 14. This focused analysis contributes to a more detailed assessment of observed market behaviors, providing insights into how abnormal market returns vary in each country.

*Figure 13 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – US*

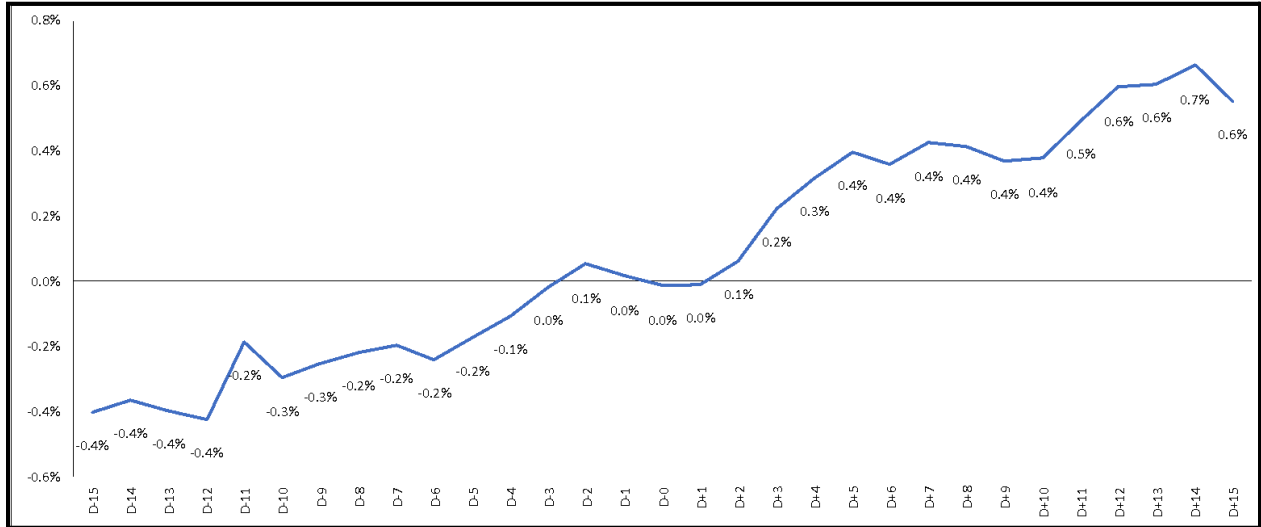
This figure presents the cumulative abnormal excess return of US listed companies where only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0015 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.





*Figure 14 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – Canada*

This figure presents the cumulative abnormal excess return of Canadian listed companies where only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0015 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



While there is an initial disparity in the starting point, between the D-15 to D-1, between contracted listed companies in the US and Canada, an interesting convergence in abnormal returns occurs between D-0 and D+15. Canadian companies showing a marginal 20 basis points lower of cumulative abnormal return at D+15 compared to their counterparts in the US. This implies that, despite the initial disparity, the abnormal returns for the two groups of companies tend to align or converge as the post-contract period progresses, showcasing a similar pattern in the market reactions for both US and Canadian contracted firms.

A notable observation is that, when analyzed separately for each country, the cumulative abnormal returns appear to be lower in comparison to the consolidated abnormal returns of 1.1%, as depicted in Figure 10. This discrepancy could potentially be attributed to variations in the weighting methodology employed during the calculation of each company's weight in the consolidated analysis as opposed to when calculated independently for their respective countries.

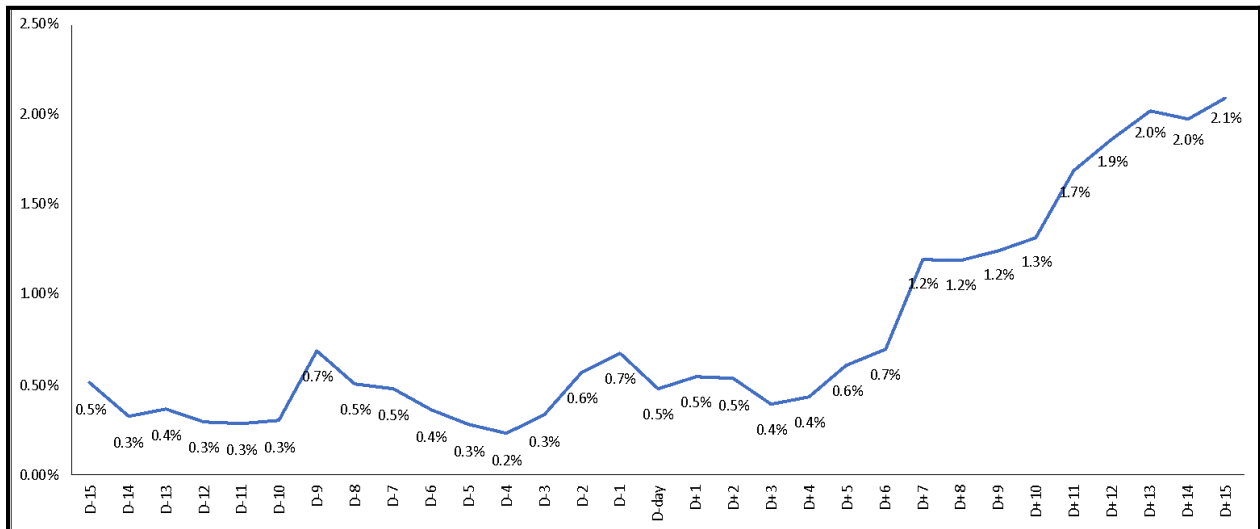
## 5.2. Sensitivity Analysis #2

Esqueda, Ngo, and Susnjara (2019) explored the potential drawbacks associated with supplying the US government. Despite the stable and/or higher cash flows offered by government contracts, they may give rise to governance issues, potentially increasing agency costs and diverting investment toward projects that don't maximize shareholder value.

Building on the insights of Esqueda, Ngo, and Susnjara (2019), in this second sensitivity study, the analysis is extended. While acknowledging the stability and potential for higher cash flows associated with government contracts, the implications are explored by incorporating a lower contract/revenue ratio of 0.0005. In this second sensitivity analysis, the aim is to provide a more comprehensive understanding of how variations in contract sizes may influence the observed patterns in abnormal returns among companies engaged in government contracting.

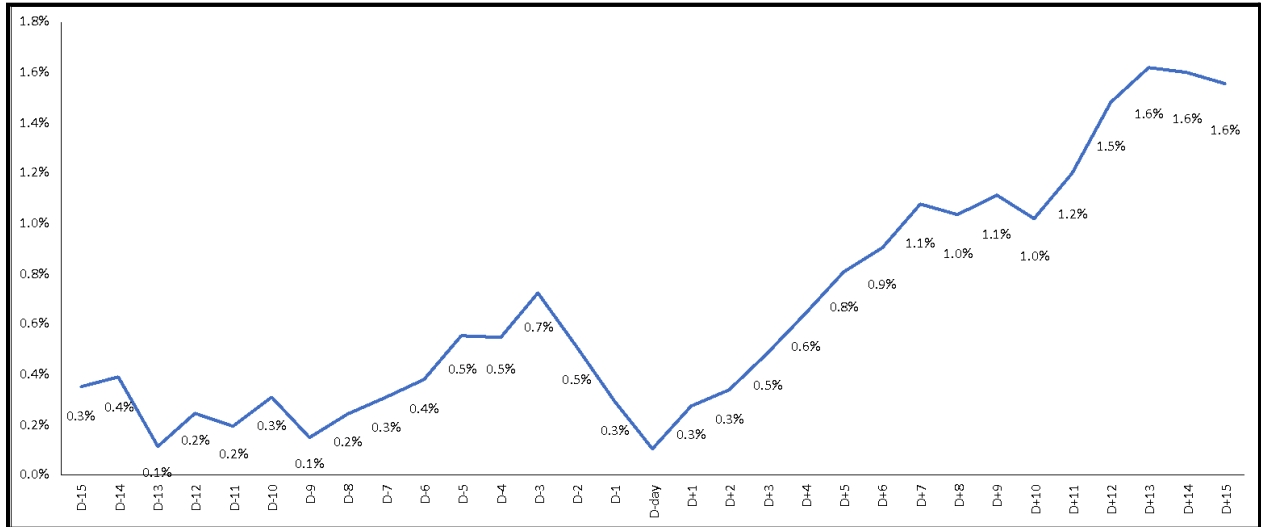
*Figure 15 Cumulative Excess Returns (>0.0005 contract/revenue ratio)*

This figure presents the cumulative abnormal excess return of US and Canadian listed companies where only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0005 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



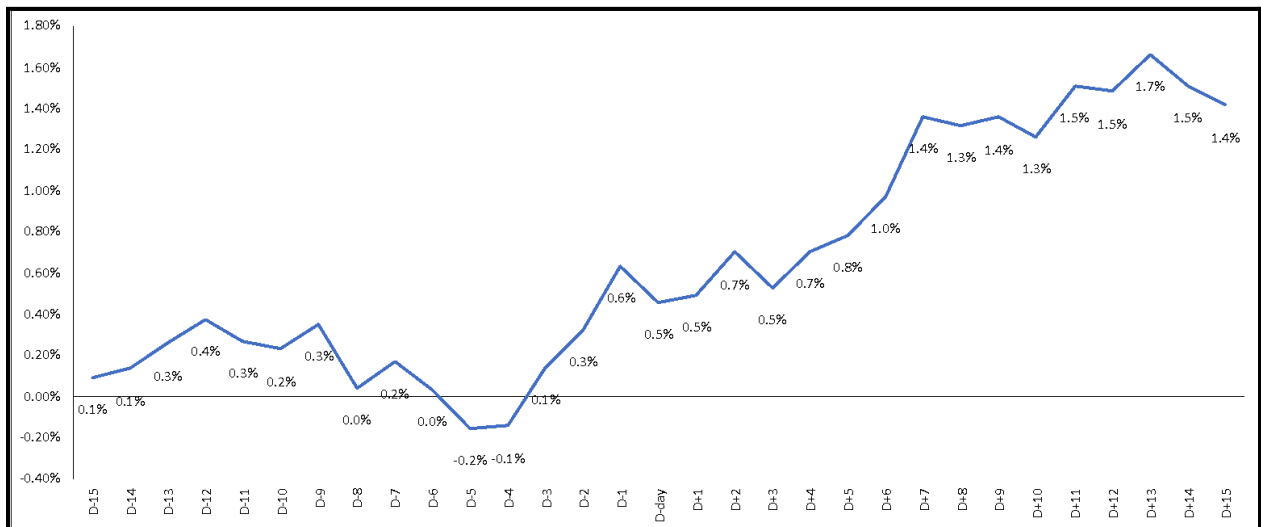
*Figure 16 Cumulative Excess Returns (>0.0005 contract/revenue ratio) – Aerospace and Defense*

This figure presents the cumulative abnormal excess return of listed companies in the aerospace and defense sector. Only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0005 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



*Figure 17 Cumulative Excess Returns (>0.0005 contract/revenue ratio) – Industries other than Aerospace and Defense*

This figure presents the cumulative abnormal excess return of listed companies in sectors other than the aerospace and defense sector. Only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0005 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.

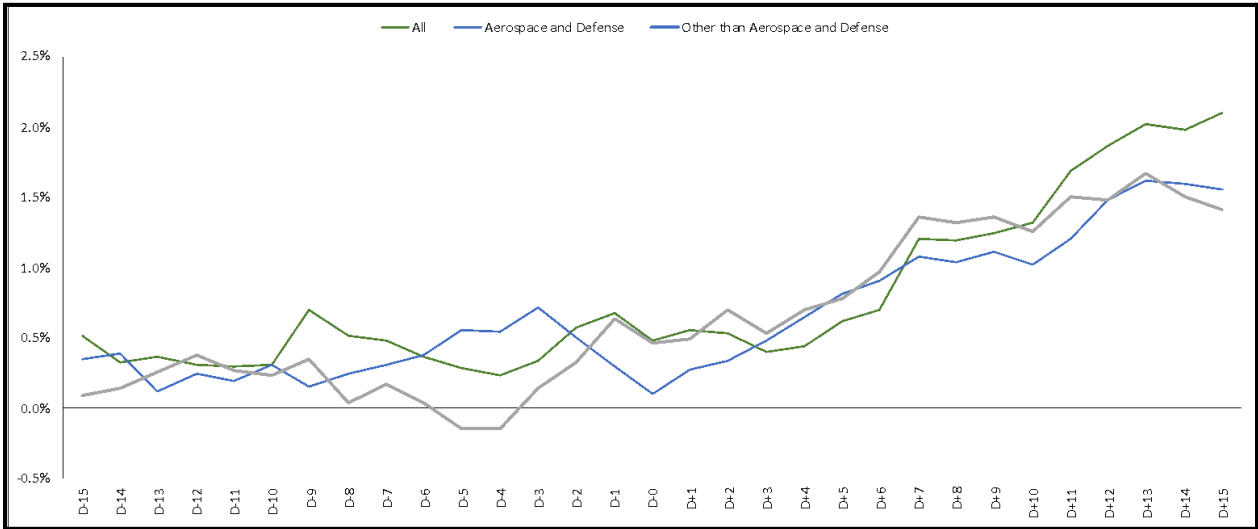


There are 330 contracts with a ratio greater than 0.0005 and a gap of more than 15 days between contract dates, amounting to a total value of \$42 billion. In comparison, there are 218 contracts with a ratio greater than 0.0015, totaling \$40 billion. Despite the slight difference in numbers, the consolidated cumulative excess return is nearly double at 2.1%, as illustrated in Figure 15. This mirrors the upward trajectory observed in Figure 3 Weighted Cumulative Excess Returns – US and Canada, in contrast to the hump-shaped peak seen in Figure 10 Cumulative Excess Returns (>0.0015 contract/revenue ratio).

However, in line with Esqueda, Ngo, and Susnjara (2019), the aerospace and defense sector still exhibits higher cumulative excess returns at 1.6%, in contrast to those outside of the sector, which stand at 1.4%, albeit lower than the 3.6% in Figure 11 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – Aerospace and Defense. The cumulative excess return for sectors other than the aerospace and defense sector at D+15 is at 1.4%, similar to Figure 12 Cumulative Excess Returns (>0.0015 contract/revenue ratio) – Industries other than Aerospace and Defense.

*Figure 18 Cumulative Excess Returns (>0.0005 contract/revenue ratio)*

This figure presents the weighted cumulative abnormal return of US and Canadian listed companies in the aerospace and defense sector and sectors other than aerospace and defense. This figure combines Figure 15, Figure 16 and Figure 17, making it easier to compare the two datasets.



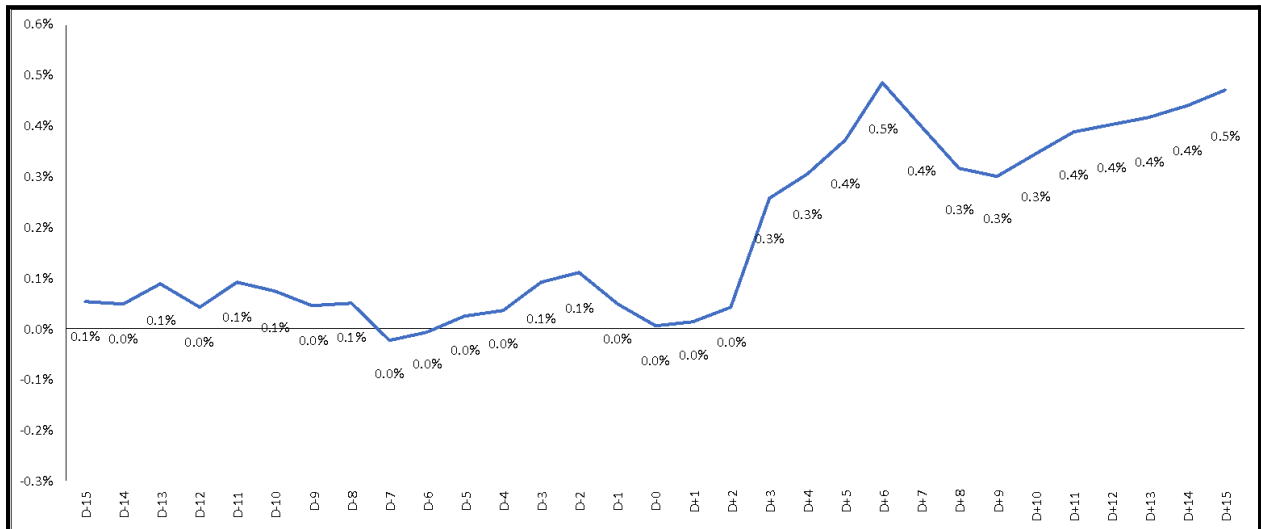
Similar to Figure 9, Figure 18 shows a consistent pattern in abnormal returns for companies receiving contracts with >0.0005 contract/revenue ratio albeit with a different magnitude where consolidated excess returns for higher contract/revenue ratio is higher at 2.1% compared to 1.3% in Figure 3 Weighted Cumulative Excess Returns – US and Canada.

### 5.3. Sensitivity Analysis #3

The third data analysis involves refining the dataset by applying specific filters. In this process, only contracts meeting two criteria are retained. In this process, only contracts having a ratio of contract/previous year revenue exceeding 0.0030 are retained. The ratio 0.0030 is derived from the average of the contract-to-revenue ratio median across all contracts. This specific ratio is selected with the aim of examining whether larger contract sizes have a substantial impact on abnormal returns. By using this threshold, the analysis seeks to understand if contracts with a higher proportion of value relative to the company's revenue influence the observed abnormal returns.

*Figure 19 Cumulative Excess Returns (>0.0030 contract/revenue ratio)*

This figure presents the cumulative abnormal excess return of the US and Canadian listed companies where only contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0030 are kept. Contracts must also have at least a 15-day gap between the completion of one contract and the initiation of another. Contracts with abnormal returns in the bottom 20<sup>th</sup> percentile are excluded. The abnormal excess return is adjusted by the market capitalization of the companies on the 16th day prior to the date of each contract.



Prior to removing contracts with abnormal returns in the bottom 20<sup>th</sup> percentile, there are 158 contracts with a ratio of contract value to the company's revenue in the previous year exceeding 0.0030. After the removal of those with abnormal returns in the bottom 20<sup>th</sup> percentile, there are only 7 contracts left. Although the trend in Figure 19 looks the same as the general trend in Figure 3, Figure 10, and Figure 15, the number of contracts is too small to make any reliable conclusions. The small sample size diminishes the statistical robustness and generalizability of the findings, underscoring the need for caution in interpreting the observed trends in abnormal returns associated with contracts exceeding the specified contract-to-revenue ratio threshold.

#### 5.4. Media Coverage

In this section, we shift our focus to a distinct aspect of our study by delving into the realm of media coverage. Understanding how media portrays and disseminates information about companies is crucial, as it plays a pivotal role in shaping public perception and, consequently, investor behavior. The significance of media coverage, highlighted in studies such as Fang and Peress, emphasizes its profound impact on stock prices.

The methodology involves an examination of media coverage from specific newspapers accessed through the Factiva database. In cases where media coverage is not available through Factiva, additional searches are conducted using Google to explore alternative sources that might not be covered in Factiva.<sup>11</sup>

Through the analysis of media coverage, correlations between the information presented in the media and observed market responses are sought. The objective is to unravel these connections, providing a comprehensive understanding of how external factors, particularly media representation, contribute to the intricate relationship between government contracts and stock market performance.

[Fang and Peress](#) (2009) conducted a study on the correlation between mass media coverage and stock returns, discovering that companies not extensively covered by the media tend to achieve significantly higher future returns compared to heavily covered companies. Mass media outlets, including newspapers, play a crucial role in disseminating information to a wide audience, especially individual investors. On a daily basis, approximately 21 million newspaper copies are sold to individual readers in the United States ([Pew Research Center](#), 2023). When considering online subscriptions and multiple readers per copy, the actual readership of printed press is even more extensive, surpassing other sources of corporate information such as analyst reports. Given the broad reach of mass media, one would expect it to impact the securities markets.

The interest in exploring the relationship between media and the market has been growing among both researchers and practitioners. Fang and Peress (2009) found an economically significant return premium for stocks with no media coverage. A portfolio comprised of stocks without media coverage outperforms a portfolio with high media coverage by 3% annually. Interestingly, [Liao et al.](#) (2003) discovered that, while companies with elevated media coverage experience positive returns leading up to acquisitions, they encounter negative returns after the acquisition.

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<sup>11</sup> Factiva is a comprehensive global news and business information database provided by Dow Jones & Company. It offers a vast collection of news articles, business information, and other content from thousands of sources worldwide, including newspapers, magazines, journals, newswires, and multimedia outlets.

*Table 13 Media Coverage for Companies with the Top 100 Largest Contract*

This table shows the companies that are featured in the media for securing government procurement contracts. Contracts included in the analysis are the 100 largest in contract value. Count of media coverage shows the number of contracts received by the company that are featured in the media at least once within 2-weeks before and after a contract date. Number of contract in Top 100 shows the number of Top 100 largest contracts received by the company. Highlighted are companies in the manufacturing (NAICS 33) sector.

NAICS #	GICS Sub-Industries	Company Name	Count of Media Coverage	Number of Contract in Top 100	Market Cap at end of FY22
22	Construction & Engineering	AMERESCO INC-CL A	1	10	2,966,376,960
23	Construction & Engineering	BIRD CONSTRUCTIO	2	11	436,005,792
33	Aerospace & Defense	BOMBARDIER INC-B	1	1	5,108,203,008
33	Aerospace & Defense	CAE INC	5	5	2,966,376,960
33	Diversified Support Services	CALIAN GROUP LTD	1	2	2,966,376,960
33	Aerospace & Defense	GENERAL DYNAMICS CORP	2	3	68,118,343,680
52	Life & Health Insurance	GREAT-WEST LIFEC	1	1	2,966,376,960
33	Aerospace & Defense	L3HARRIS TECHNOLOGIES INC	1	5	39,643,766,784
33	Aerospace & Defense	LOCKHEED MARTIN CORP	1	1	127,496,364,032
33	Aerospace & Defense	RAYTHEON TECHNOLOGIES CORP	1	1	148,358,529,024
54	Construction & Engineering	SNC-LAVALIN GRP	3	6	2,966,376,960
54	IT Consulting & Other Services	UNISYS CORP	1	7	346,394,368
<b>Total</b>			<b>20</b>	<b>53</b>	

The analysis of the 100 largest government contracts reveals that only a modest 20% of them garner media attention, as indicated by Table 13. This suggests that a significant portion of substantial government procurement activities, represented by these top contracts, may not be widely publicized, or discussed in the media. Additionally, there is no correlation between market capitalization and media coverage. Companies featured in the media do not necessarily exhibit large market capitalizations.

A noteworthy trend emerges when considering the companies featured in the media for securing government contracts over the past two decades. Half of these companies belong to the aerospace and defense sector. This highlights a distinct emphasis on and recognition of companies within the aerospace and defense industry in media narratives surrounding government contracts.

CAE Inc. is the most covered company in the media where 5 out of 5 of its large contracts are covered in the news. In fact, almost all the contracts received by aerospace and defense companies are 100% covered in the media, except for L3Harris Technologies where only 20% of its large contracts are mentioned in the news.

This provides additional insight into the observed positive abnormal returns for companies in the manufacturing sector, specifically aerospace and defense, 15 days prior to a contract (Figure 6). In contrast, Figure 7 illustrates a comparatively near-zero cumulative abnormal return for companies in the service sector. The aerospace and defense sector parallels Liao et al.'s (2003) discovery that companies experienced positive returns leading up to acquisitions (in this case leading up to the contract date).

The excess returns for these 20 contracts are averaged and calculated to obtain a cumulative excess return of 1.2% at D+15. Interestingly, even though aerospace and defense contracts constitute half of these contracts, the cumulative excess return is lower than the 1.3% observed in Figure 3 Weighted Cumulative Excess Returns – US and Canada. This observation aligns with Fang and Peress (2009), indicating that companies with more media coverage tend to perform worse than those with less media coverage.

## Conclusion

Despite the limited media coverage given to government procurement contracts and the absence of a clear correlation between media coverage and market capitalization, government procurement contracts do impact stock returns. On average, companies contracted by the government saw a cumulative excess return of 1.3% two weeks after a contract event.

The aerospace and defense sector stands out as the most extensively covered in the media, but this does not explain why companies within this sector achieved a higher cumulative excess return of 3.6%, in contrast to the 1.4% observed in sectors other than aerospace and defense. The higher cumulative excess return is more likely attributed to the fact that companies winning government contract awards are seen as favorable investment opportunities by investors due to the contract characteristics such as longer contract terms (Huang et al., 2016), stabler cash flow (Esqueda, Ngo, and Susnjara, 2019), and higher investment expenditures (Diltz, 1990). Government contracts also hold a distinctive value in safeguarding companies during substantial economic downturns. There is a possibility that governments are less inclined to default on or neglect the renewal of existing contracts, and they might even amplify spending as part of an economic stimulus package.

Furthermore, a significant deviation is apparent with aerospace and defense companies, as their excess returns exhibit a continuous upward trajectory, in contrast to the hump-shaped pattern observed in the non-aerospace and defense sector during the two-week period following a contract date (Figure 11 and Figure 12). Therefore, it is worth emphasizing that companies recognized as strategically important government contractors could be a favorable investment, not only in comparison to other government contractors but also concerning non-contractor companies.

It is important to note that receiving numerous procurement contracts does not automatically equate to substantial contract values. The sheer number of contracts awarded may not directly correlate with a significant financial impact on the sector, indicating that factors like the value or magnitude of individual contracts could play a more pivotal role in determining the overall economic impact within a particular industry. Notably, aerospace and defense companies



contribute to the highest cumulative contract amount, despite not securing the highest number of contracts. In contrast, healthcare distributors claim the highest number of contracts but with a comparatively lower cumulative contract value.

In summary, the data observed suggests that government contracts can significantly impact a company's stock price, and this influence can be somewhat predictable. The trajectory of the trend shows that 15 days after the contract date, the cumulative abnormal returns for both US and Canadian listed companies follow a similar pattern. The commonality in the upward trend 15 days post-contract implies a stable pattern. A thorough examination of the three additional sensitivity analyses further underscores a consistent trend in market behavior, highlighting the resilience of observed abnormal return dynamics across various scales of contractual magnitudes.

The implications of this study can be extended to asset valuation and portfolio diversification, influencing both the performance and volatility of overall portfolios when government-contractor firms are part of the mix. These portfolio effects are contingent on economic conditions, whether in a recessionary or non-recessionary environment, and on the strategic importance of the government contractors. Equity investors and portfolio managers should carefully factor in these considerations when making class and asset selections.

In concluding the thesis, it is crucial to acknowledge several inherent limitations. While the study identifies correlations between variables, establishing causation necessitates a more in-depth analysis and consideration of potential confounding variables. The broad categorization of companies into sectors, while informative, may mask variations within sectors. A more granular examination of industry-specific dynamics could unveil additional insights. Moreover, the thesis highlights positive market reactions, but the underlying reasons for investor behavior are intricate and may involve psychological, institutional, or speculative factors not explicitly addressed. External macroeconomic influences, such as interest rates or geopolitical events, which can significantly impact stock market movements, are not extensively explored in the thesis.

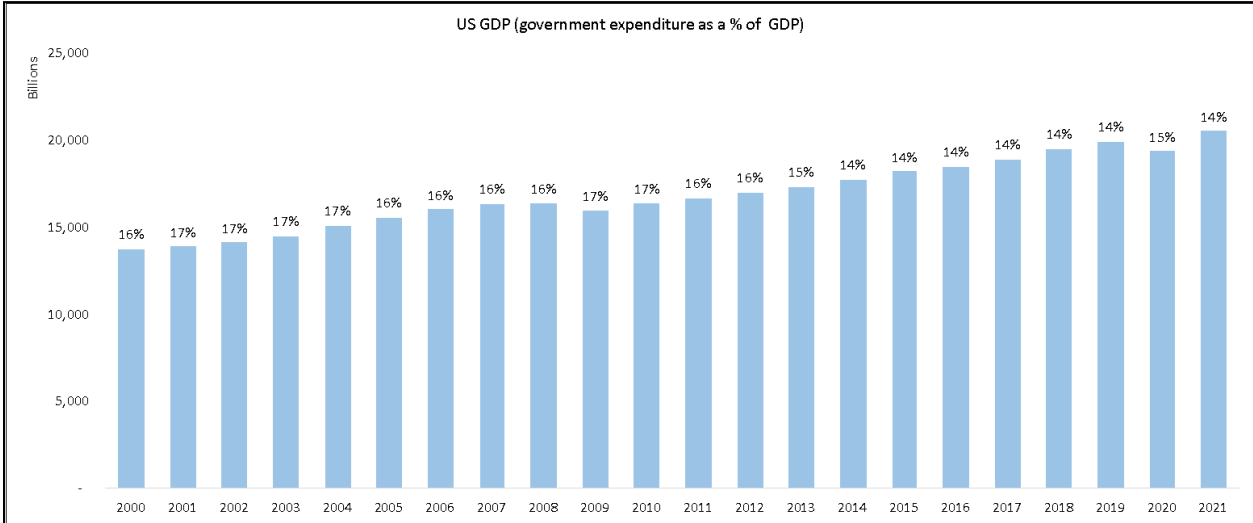
Furthermore, it is important to recognize that excess returns may not be solely influenced by Canadian procurement contracts. Instances involving other governments or financial news, like Raytheon Technologies Corp's contract from the Qatar government in November 2017 or SNC-Lavalin's profit increase coinciding with a Canadian government contract in 2016, indicate that multiple factors may contribute to observed excess returns. Future research could delve into these complexities, providing a more comprehensive understanding of the intricate dynamics shaping market responses.

# Appendix

The appendix section provides supplementary information crucial for a comprehensive understanding of the thesis' findings. Included are graphs showing the evolution of US and Canadian final consumption expenditures in the past 2 decades as well as tables detailing the listed US and Canadian companies per GICS sub-industry classification, as well as a table that ranks contracted companies along with the corresponding years of services, offering a deeper insight into the dataset's composition. These tables serve as references, enhancing transparency and accessibility to the underlying data that supports the conclusions drawn in the main body of the thesis.

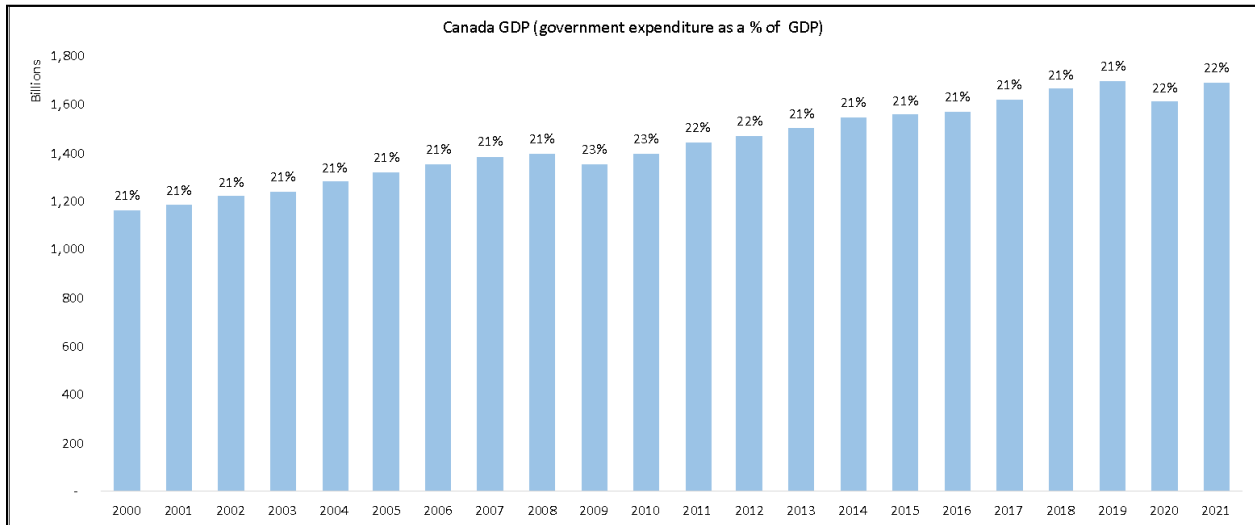
## Appendix A Evolution of US government expenditure as a % of GDP since 2000

The figure shows the evolution of US government expenditure since 2000, where the x-axis represents the amount in billion dollars. The data labels on the graph denotes government expenditure as a percentage of Gross Domestic Product (GDP).



*Appendix B Evolution of Canadian government expenditure as a % of GDP since 2000*

The figure shows the evolution of Canadian government expenditure since 2000, where the x-axis represents the amount in billion dollars. The data labels on the graph denotes government expenditure as a percentage of Gross Domestic Product (GDP).



## Appendix C Listed US companies per GICS sub-industry classification

The table provides a detailed breakdown of listed US companies according to the Global Industry Classification Standard (GICS) sub-industry classification after the matching of companies with listed entities. It categorizes and presents information on these companies based on specific industry segments, offering a comprehensive overview of their distribution within the broader GICS framework.

US Companies	Contract Value	% of total	# of contracts	% of total	Market Cap at end of FY22	% of total market cap
<b>Aerospace &amp; Defense</b>	<b>53,284,893,240</b>	<b>46%</b>	<b>1,325</b>	<b>8.2%</b>	<b>599,330,414,080</b>	<b>1.79%</b>
BOEING CO/THE	1,762,535,893	2%	29	0.2%	113,528,840,192	0.34%
CAE INC	3,111,367,643	3%	175	1.1%	6,147,324,928	0.02%
ELBIT SYSTEMS LTD	92,291,293	0%	4	0.0%	7,274,223,616	0.02%
GENERAL DYNAMICS CORP	14,923,017,507	13%	535	3.3%	68,118,343,680	0.20%
L3HARRIS TECHNOLOGIES INC	4,251,036,409	4%	274	1.7%	39,643,766,784	0.12%
LOCKHEED MARTIN CORP	26,428,793,861	23%	166	1.0%	127,496,364,032	0.38%
NORTHROP GRUMMAN CORP	97,867,469	0%	1	0.0%	83,976,011,776	0.25%
PARSONS CORP	1,637,384,509	1%	75	0.5%	4,787,010,048	0.01%
RAYTHEON TECHNOLOGIES CORP	980,598,656	1%	66	0.4%	148,358,529,024	0.44%
<b>Air Freight &amp; Logistics</b>	<b>94,896,694</b>	<b>0%</b>	<b>39</b>	<b>0.2%</b>	<b>43,715,186,688</b>	<b>0.13%</b>
FEDEX CORP	94,896,694	0%	39	0.2%	43,715,186,688	0.13%
<b>Alternative Carriers</b>	<b>1,047,995,678</b>	<b>1%</b>	<b>120</b>	<b>0.7%</b>	<b>368,596,256</b>	<b>0.00%</b>
TELESAT CORP	1,047,995,678	1%	120	0.7%	368,596,256	0.00%
<b>Application Software</b>	<b>1,028,315,428</b>	<b>1%</b>	<b>303</b>	<b>1.9%</b>	<b>296,405,507,072</b>	<b>0.88%</b>
ADOBE INC	294,625,038	0%	30	0.2%	156,452,798,464	0.47%
QTRIX SYSTEMS INC	78,214,642	0%	36	0.2%	13,183,360,000 *	0.04%
SAP SE-SPONSORED ADR	655,475,748	1%	237	1.5%	126,769,348,608	0.38%
<b>Asset Management &amp; Custody Banks</b>	<b>603,726,447</b>	<b>1%</b>	<b>57</b>	<b>0.4%</b>	<b>22,589,276,160</b>	<b>0.07%</b>
CARLYLE GROUP INC/THE	254,144,314	0%	46	0.3%	10,849,982,464	0.03%
BROOKFIELD ASSET MGMT-A	349,582,133	0%	11	0.1%	11,739,293,696	0.04%
<b>Automobile Manufacturers</b>	<b>314,823,215</b>	<b>0%</b>	<b>350</b>	<b>2.2%</b>	<b>46,758,346,752</b>	<b>0.14%</b>
FORD MOTOR CO	314,823,215	0%	350	2.2%	46,758,346,752	0.14%
<b>Building Products</b>	<b>181,348,931</b>	<b>0%</b>	<b>68</b>	<b>0.4%</b>	<b>43,949,047,808</b>	<b>0.13%</b>
JOHNSON CONTROLS INTERNATIO	181,348,931	0%	68	0.4%	43,949,047,808	0.13%
<b>Communications Equipment</b>	<b>526,036,234</b>	<b>0%</b>	<b>460</b>	<b>2.8%</b>	<b>43,089,940,480</b>	<b>0.13%</b>
MDTOROLA SOLUTIONS INC	526,036,234	0%	460	2.8%	43,089,940,480	0.13%
<b>Construction &amp; Engineering</b>	<b>1,488,026,489</b>	<b>1%</b>	<b>1,336</b>	<b>8.2%</b>	<b>20,053,481,984</b>	<b>0.06%</b>
AECOM	387,944,470	0%	283	1.7%	11,775,567,872	0.04%
AMERESCO INC-CLA	742,776,587	1%	27	0.2%	2,966,376,960	0.01%
STANTEC INC	357,305,432	0%	1,026	6.3%	5,311,537,152	0.02%
<b>Health Care Distributors</b>	<b>294,248,492</b>	<b>0%</b>	<b>1,881</b>	<b>11.6%</b>	<b>53,189,570,560</b>	<b>0.16%</b>
MCKESSON CORP	294,248,492	0%	1,881	11.6%	53,189,570,560	0.16%
<b>Health Care Services</b>	<b>1,212,537,910</b>	<b>1%</b>	<b>8</b>	<b>0.0%</b>	<b>22,132,160,768</b>	<b>0.07%</b>
LABORATORY CRP OF AMER HDGS	188,751,732	0%	3	0.0%	20,863,528,960	0.06%
MODIVCARE INC	1,023,786,178	1%	5	0.0%	1,268,631,808	0.00%
<b>Human Resource &amp; Employment Services</b>	<b>1,688,977,136</b>	<b>1%</b>	<b>1,190</b>	<b>7.3%</b>	<b>4,206,859,008</b>	<b>0.01%</b>
MANPOWERGROUP INC	1,688,977,136	1%	1,190	7.3%	4,206,859,008	0.01%
<b>Industrial Conglomerates</b>	<b>772,204,494</b>	<b>1%</b>	<b>52</b>	<b>0.3%</b>	<b>235,633,311,744</b>	<b>0.70%</b>
GENERAL ELECTRIC CO	119,237,069	0%	48	0.3%	91,554,660,352	0.27%
HONEYWELL INTERNATIONAL INC	652,967,425	1%	4	0.0%	144,078,651,392	0.43%
<b>Integrated Oil &amp; Gas</b>	<b>246,230,841</b>	<b>0%</b>	<b>1,339</b>	<b>8.2%</b>	<b>546,459,729,920</b>	<b>1.63%</b>
CHEVRON CORP	161,285,617	0%	652	4.0%	347,068,792,832	1.04%
SHELL PLC-ADR	84,945,224	0%	687	4.2%	199,390,937,088	0.60%
<b>Integrated Telecommunication Services</b>	<b>6,035,509,342</b>	<b>5%</b>	<b>1,062</b>	<b>6.5%</b>	<b>27,624,650,752</b>	<b>0.08%</b>
TELUS CORP	6,035,509,342	5%	1,062	6.5%	27,624,650,752	0.08%
<b>IT Consulting &amp; Other Services</b>	<b>23,229,214,438</b>	<b>20%</b>	<b>1,652</b>	<b>10.2%</b>	<b>385,439,973,632</b>	<b>1.15%</b>
INFOSYS LTD-SP ADR	464,975,214	0%	2	0.0%	75,674,034,176	0.23%
ACCENTURE PLC-CL A	778,542,958	1%	175	1.1%	175,940,452,352	0.53%
DXC TECHNOLOGY CO	1,213,483,030	1%	6	0.0%	6,096,728,576	0.02%
INTL BUSINESS MACHINES CORP	19,919,310,079	17%	1,391	8.6%	127,382,364,160	0.38%
UNISYS CORP	852,903,157	1%	78	0.5%	346,394,368	0.00%
<b>Life &amp; Health Insurance</b>	<b>1,701,753,815</b>	<b>1%</b>	<b>5</b>	<b>0.0%</b>	<b>27,220,117,504</b>	<b>0.08%</b>
SUN LIFE FINANCIAL INC	1,701,753,815	1%	5	0.0%	27,220,117,504	0.08%
<b>Life Sciences Tools &amp; Services</b>	<b>215,649,892</b>	<b>0%</b>	<b>313</b>	<b>1.9%</b>	<b>409,194,020,864</b>	<b>1.22%</b>
DANAHER CORP	138,796,520	0%	1	0.0%	193,215,856,640	0.58%
THERMO FISHER SCIENTIFIC INC	81,853,372	0%	312	1.9%	215,978,164,224	0.64%
<b>Pharmaceuticals</b>	<b>164,898,389</b>	<b>0%</b>	<b>14</b>	<b>0.1%</b>	<b>71,935,074,304</b>	<b>0.21%</b>
GSK PLC-SPON ADR	164,898,389	0%	14	0.1%	71,935,074,304	0.21%
<b>Real Estate Services</b>	<b>657,000,069</b>	<b>1%</b>	<b>92</b>	<b>0.6%</b>	<b>3,946,597,376</b>	<b>0.01%</b>
COLLIERS INTL GR-SUBORD VDT	657,000,069	1%	92	0.6%	3,946,597,376	0.01%
<b>Semiconductors</b>	<b>283,079,223</b>	<b>0%</b>	<b>54</b>	<b>0.3%</b>	<b>233,652,682,752</b>	<b>0.70%</b>
BROADCOM INC	283,079,223	0%	54	0.3%	233,652,682,752	0.70%
<b>Systems Software</b>	<b>16,245,316,367</b>	<b>14%</b>	<b>1,502</b>	<b>9.2%</b>	<b>2,060,348,850,176</b>	<b>6.15%</b>
MICROSOFT CORP	13,831,622,096	12%	712	4.4%	1,787,731,771,392	5.34%
ORACLE CORP	2,220,044,196	2%	737	4.5%	220,391,718,912	0.66%
VMWARE INC-CLASS A	198,650,075	0%	53	0.3%	52,225,359,872	0.16%
<b>Technology Distributors</b>	<b>443,553,349</b>	<b>0%</b>	<b>697</b>	<b>4.3%</b>	<b>24,178,120,704</b>	<b>0.07%</b>
CDW CORP/DE	443,553,349	0%	697	4.3%	24,178,120,704	0.07%
<b>Technology Hardware, Storage &amp; Peripherals</b>	<b>1,523,321,129</b>	<b>1%</b>	<b>2,258</b>	<b>13.9%</b>	<b>28,651,075,328</b>	<b>0.09%</b>
HP INC	1,080,426,270	1%	591	3.6%	26,390,257,664	0.08%
XEROX HOLDINGS CORP	442,894,859	0%	1,667	10.3%	2,260,817,664	0.01%
<b>Wireless Telecommunication Services</b>	<b>3,671,730,295</b>	<b>3%</b>	<b>70</b>	<b>0.4%</b>	<b>23,856,861,184</b>	<b>0.07%</b>
ROGERS COMMUNICATIONS INC-B	3,671,730,295	3%	70	0.4%	23,856,861,184	0.07%
<b>Total</b>	<b>116,955,287,536</b>	<b>100%</b>	<b>16,247</b>	<b>100.0%</b>	<b>5,273,929,453,856</b>	<b>15.74%</b>

## Appendix D Listed Canadian companies per GICS sub-industry classification

The table provides a detailed breakdown of listed Canadian companies according to the Global Industry Classification Standard (GICS) sub-industry classification after the matching of companies with listed entities. It categorizes and presents information on these companies based on specific industry segments, offering a comprehensive overview of their distribution within the broader GICS framework.

Canadian Companies	Contract Value	% of total	# of contracts	% of total	Market Cap at end of FY22	% of total market cap
<b>Aerospace &amp; Defense</b>	<b>24,902,508,579</b>	<b>38%</b>	<b>858</b>	<b>5.5%</b>	<b>14,196,645,760</b>	<b>0.04%</b>
BOMBARDIER INC-B	118,737,458	0%	54	0.3%	5,108,203,008	0.02%
CAE INC	3,111,367,643	5%	175	1.1%	8,324,635,136	0.02%
MDA LTD	21,672,403,477	33%	629	4.0%	763,807,616	0.00%
<b>Alternative Carriers</b>	<b>1,047,995,678</b>	<b>2%</b>	<b>120</b>	<b>0.8%</b>	<b>498,710,752</b>	<b>0.00%</b>
TELESAT CORP	1,047,995,678	2%	120	0.8%	498,710,752	0.00%
<b>Application Software</b>	<b>268,920,602</b>	<b>0%</b>	<b>244</b>	<b>1.6%</b>	<b>10,841,837,568</b>	<b>0.03%</b>
OPEN TEXT CORP	268,920,602	0%	244	1.6%	10,841,837,568	0.03%
<b>Asset Management &amp; Custody Banks</b>	<b>349,582,133</b>	<b>1%</b>	<b>11</b>	<b>0.1%</b>	<b>15,874,867,200</b>	<b>0.05%</b>
BROOKFIELD ASS-A	349,582,133	1%	11	0.1%	15,874,867,200	0.05%
<b>Construction &amp; Engineering</b>	<b>6,855,568,245</b>	<b>10%</b>	<b>2,538</b>	<b>16.2%</b>	<b>31,363,578,528</b>	<b>0.09%</b>
BIRD CONSTRUCTIO	619,005,065	1%	32	0.2%	436,005,792	0.00%
SNC-LAVALIN GRP	4,052,721,824	6%	320	2.0%	4,188,724,480	0.01%
STANTEC INC	357,305,432	1%	1,026	6.5%	7,188,412,928	0.02%
WSP GLOBAL INC	1,826,535,924	3%	1,160	7.4%	19,550,435,328	0.06%
<b>Diversified Support Services</b>	<b>4,365,957,711</b>	<b>7%</b>	<b>1,558</b>	<b>9.9%</b>	<b>777,569,728</b>	<b>0.00%</b>
CAIJIAN GROUP LTD	4,365,957,711	7%	1,558	9.9%	777,569,728	0.00%
<b>Integrated Telecommunication Services</b>	<b>16,996,903,291</b>	<b>26%</b>	<b>2,614</b>	<b>16.7%</b>	<b>91,560,480,768</b>	<b>0.27%</b>
BCE INC	10,961,393,949	17%	1,552	9.9%	54,179,221,504	0.16%
TELUS CORP	6,035,509,342	9%	1,062	6.8%	37,381,259,264	0.11%
<b>Integrated Oil &amp; Gas</b>	<b>544,140,082</b>	<b>1%</b>	<b>2,197</b>	<b>14.0%</b>	<b>38,524,870,656</b>	<b>0.12%</b>
IMPERIAL OIL	544,140,082	1%	2,197	14.0%	38,524,870,656	0.12%
<b>IT Consulting &amp; Other Services</b>	<b>2,978,400,902</b>	<b>5%</b>	<b>3,006</b>	<b>19.2%</b>	<b>28,771,290,816</b>	<b>0.09%</b>
CGI INC	1,293,724,290	2%	996	6.4%	27,795,421,184	0.08%
CONVERGE TECHNOL	1,684,676,611	3%	2,010	12.8%	975,869,632	0.00%
<b>Life &amp; Health Insurance</b>	<b>2,216,551,147</b>	<b>3%</b>	<b>12</b>	<b>0.1%</b>	<b>66,021,066,752</b>	<b>0.20%</b>
GREAT-WEST LIFE C	514,797,333	1%	7	0.0%	29,166,598,144	0.09%
SUN LIFE FINANCI	1,701,753,815	3%	5	0.0%	36,854,468,608	0.11%
<b>Multi-Utilities</b>	<b>358,520,654</b>	<b>1%</b>	<b>160</b>	<b>1.0%</b>	<b>4,803,340,288</b>	<b>0.01%</b>
ATCO LTD-CLASS I	358,520,654	1%	160	1.0%	4,803,340,288	0.01%
<b>Passenger Airlines</b>	<b>108,202,723</b>	<b>0%</b>	<b>31</b>	<b>0.2%</b>	<b>2,228,277,504</b>	<b>0.01%</b>
EXCHANGE INCOME	108,202,723	0%	31	0.2%	2,228,277,504	0.01%
<b>Real Estate Services</b>	<b>657,000,069</b>	<b>1%</b>	<b>92</b>	<b>0.6%</b>	<b>5,339,746,304</b>	<b>0.02%</b>
COLLIERS INTERNA	657,000,069	1%	92	0.6%	5,339,746,304	0.02%
<b>Technology Distributors</b>	<b>193,585,280</b>	<b>0%</b>	<b>1,423</b>	<b>9.1%</b>	<b>1,062,411,392</b>	<b>0.00%</b>
SOFTCHOICE CORP	193,585,280	0%	1,423	9.1%	1,062,411,392	0.00%
<b>Trading Companies &amp; Distributors</b>	<b>169,387,369</b>	<b>0%</b>	<b>746</b>	<b>4.8%</b>	<b>8,467,133,280</b>	<b>0.03%</b>
TOROMONT INDS	90,324,563	0%	252	1.6%	8,040,909,312	0.02%
W AJAX CORP	79,062,806	0%	494	3.2%	426,223,968	0.00%
<b>Wireless Telecommunication Services</b>	<b>3,671,730,295</b>	<b>6%</b>	<b>70</b>	<b>0.4%</b>	<b>32,278,331,392</b>	<b>0.10%</b>
ROGERS COMMUNI-B	3,671,730,295	6%	70	0.4%	32,278,331,392	0.10%
<b>Total</b>	<b>65,684,954,758</b>	<b>100%</b>	<b>15,680</b>	<b>100.0%</b>	<b>352,610,158,688</b>	<b>1.05%</b>

## Appendix E Ranked Contracted Companies and Its Year of Services

This table ranks companies based on their cumulative contract value over the observed period. The total contract value observed here is \$140B encompassing more than 25,000 contracts. The "Earliest Contract Date Observed" and "Latest Contract Date Observed" columns display the earliest and latest contract dates each company received during the observed period. The "Number of Years" column indicates the total duration a company has been contracted by the Canadian government, calculated by taking the difference between the earliest and latest contract years. Calculating the average contract value involves determining the yearly average of received contract values over the past two decades, and a similar approach is applied for the average number of contracts.

Company Name	Earliest Contract Date Observed	Latest Contract Date Observed	Number of years	Average Contract Value	Average Number of Contract
1 LOCKHEED MARTIN CORP	April 6, 2004	June 10, 2021	17	156,189,886	10
2 INTL BUSINESS MACHINES CORP	September 16, 2002	March 31, 2022	20	14,371,071	68
3 GENERAL DYNAMICS CORP	April 20, 2004	November 9, 2021	17	51,322,178	29
4 MICROSOFT CORP	April 1, 2004	April 1, 2022	18	15,984,197	37
5 BCE INC	November 5, 2002	March 31, 2022	20	12,409,380	76
6 TELUS CORP	January 24, 2002	March 31, 2022	20	4,754,651	55
7 CALLIAN GROUP LTD	January 12, 2004	June 2, 2022	18	3,426,518	84
8 L3HARRIS TECHNOLOGIES INC	April 16, 2004	September 29, 2020	16	15,845,057	16
9 SNC-LAVALIN GRP	August 26, 2008	March 31, 2022	14	46,430,849	22
10 ROGERS COMMUNI-B	July 28, 2003	March 24, 2022	19	107,467,297	4
11 CAE INC	August 30, 2004	February 24, 2022	18	23,690,486	9
12 ORACLE CORP	December 16, 2003	June 1, 2022	19	4,449,331	38
13 WSP GLOBAL INC	June 2, 2006	April 1, 2022	16	888,332	68
14 BOEING CO/THE	April 23, 2004	March 24, 2016	12	83,014,906	3
15 SUN LIFE FINANCI	October 23, 2006	April 16, 2018	12	499,564,316	2
16 MANPOWERGROUP INC	April 1, 2004	March 31, 2022	18	970,628	65
17 CGI INC	April 14, 2003	March 28, 2022	19	1,982,431	52
18 HP INC	April 1, 2004	January 17, 2022	18	4,268,373	33
19 TELESAT CORP	March 20, 2008	October 12, 2021	13	8,434,122	8
20 MODIVCARE INC	August 30, 2018	July 2, 2021	3	154,129,034	2
21 CONVERGE TECHNOL	April 30, 2018	June 21, 2022	4	1,205,853	177
22 RAYTHEON TECHNOLOGIES CORP	December 11, 2006	February 16, 2022	16	16,490,119	4
23 UNISYS CORP	April 1, 2004	April 9, 2019	15	20,024,171	5
24 ACCENTURE PLC-CLA	April 1, 2004	March 7, 2022	18	6,858,431	10
25 AMERESCO INC-CLA	November 1, 2010	March 31, 2022	12	25,244,350	2
26 COLLIERIES INTERNA	September 9, 2011	March 15, 2022	11	10,933,100	9
27 HONEYWELL INTERNATIONAL INC	September 1, 2004	April 3, 2017	13	164,519,713	1
28 SAP SE-SPONSORED ADR	April 1, 2004	April 25, 2022	18	3,896,292	13
29 BIRD CONSTRUCTION	April 27, 2007	October 1, 2020	13	21,602,451	4
30 IMPERIAL OIL	July 14, 2005	March 24, 2022	17	227,561	155
31 MOTOROLA SOLUTIONS INC	October 18, 2011	March 31, 2022	11	1,380,384	40
32 GREAT-WEST LIFEFC	April 1, 2020	November 30, 2021	1	128,663,124	4
33 INFOSYS LTD-SP ADR	January 22, 2019	March 10, 2022	3	331,339,823	1
34 XEROX HOLDINGS CORP	January 24, 2002	March 22, 2022	20	212,688	83
35 CDW CORP/DE	July 22, 2013	June 29, 2022	9	550,428	65
36 AECOM	February 24, 2009	April 2, 2022	13	1,961,198	21
37 STANTEC INC	August 9, 2005	April 2, 2022	17	236,023	58
38 ATCO LTD-CLASS I	November 1, 2008	March 29, 2022	14	4,101,731	11
39 FORD MOTOR CO	November 24, 2009	March 14, 2022	13	461,761	26
40 ADOBE INC	April 1, 2004	June 2, 2021	17	17,605,905	2
41 MCKESSON CORP	April 2, 2009	March 30, 2022	13	136,218	140
42 OPEN TEXT CORP	July 16, 2004	April 1, 2022	18	644,966	13
43 BROADCOM INC	February 1, 2010	October 1, 2021	11	2,367,020	3
44 VMWARE INC-CLASS A	June 28, 2010	March 23, 2022	12	3,319,595	5
45 LABORATORY CRP OF AMER HLDGS	June 21, 2021	March 30, 2022	1	39,593,257	2
46 JOHNSON CONTROLS INTERNATIO	March 1, 2012	March 8, 2022	10	1,903,576	6
47 CHEVRON CORP	March 5, 2007	October 16, 2017	10	184,985	65
48 CARLYLE GROUP INC/THE	November 13, 2012	October 4, 2018	6	6,026,888	5
49 DANAHER CORP	August 23, 2021	August 23, 2021	0	133,796,520	1
50 PARSONS CORP	May 15, 2019	March 30, 2022	3	751,351	6
51 GENERAL ELECTRIC CO	May 11, 2004	February 24, 2022	18	6,162,202	4
52 BOMBARDIER INC-B	July 22, 2004	June 5, 2020	16	9,744,581	4
53 EXCHANGE INCOME	June 18, 2009	October 13, 2021	12	8,065,097	3
54 NORTHROP GRUMMAN CORP	December 20, 2012	December 20, 2012	0	97,867,469	1
55 FEDEX CORP	April 1, 2009	June 30, 2021	13	2,429,407	3
56 ELBIT SYSTEMS LTD	July 3, 2015	December 21, 2016	1	23,072,823	2
57 TOROMONT INDS	March 17, 2010	March 11, 2022	12	277,352	21
58 SHELL PLC-ADR	July 7, 2006	July 13, 2019	13	109,707	47
59 THERMO FISHER SCIENTIFIC INC	February 21, 2012	March 17, 2022	10	212,305	31
60 WAJAX CORP	April 13, 2010	March 30, 2022	12	197,708	40
61 CITRIX SYSTEMS INC	April 27, 2007	March 31, 2022	15	2,211,091	3
62 MDALTD	April 12, 2021	March 30, 2022	1	4,014,790	16
63 GSK PLC-SPON ADR	June 10, 2004	September 1, 2020	16	7,037,473	2
64 SOFTCHOICE CORP	May 28, 2021	June 20, 2022	1	112,388	68
65 DXCTECHNOLOGY CO	August 28, 2017	February 12, 2019	2	152,714	1

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