UNIVERSITY OF LJUBLJANA

SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

THE RISE OF PRIVATE MILITARY AND DEFENSE CONTRACTORS: ECONOMIC AND GEOPOLITICAL IMPLICATIONS

Ljubljana, April 2026 KRISTJAN PUHEK

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ABSTRACT

This thesis analyzes how increased geopolitical risk (GPR) has impacted Europe's defense policy, its potential implications for defense contractors, defense and geopolitical autonomy, and the economic implications of Europe's post-2022 defense spending surge. It also analyzes defense contracting through the lens of public-private interdependence, focusing on the drivers of market failures and inefficiencies. The thesis adopts a theory-driven approach integrating both qualitative and quantitative data, and combines typology construction, meta-synthesis, integrative review, and a study of the EU's defense policy response to the geopolitical shocks, based on document analysis, descriptive indicators, market data, and qualitative interviews.

The findings show that the geopolitical shock after Russia's 2022 invasion of Ukraine increased Europe's threat perception and triggered a direct response from both the EU and NATO in the form of higher defense spending, rapid defense industrial investment, and new initiatives in defense capabilities, deterrence, procurement, innovation, and defense industrial expansion. Increased GPR proxy values coincided with accelerated defense expenditure growth, positive abnormal returns, new entrants, and venture capital funding in the European defense sector, indicating a positive relationship between geopolitical shocks, defense spending surges, and defense contractor performance, consistent with the "flight to arms" phenomenon. The thesis further examines how Europe's rearmament efforts could impact Europe's defense/geopolitical autonomy and reduce dependence on foreign suppliers and fragmented procurement structures. If successful, policies promoting reshoring, diversification, joint procurement, and industrial scaling could strengthen Europe's defense and geopolitical autonomy. At the same time, the economic implications of rearmament remain conditional. Positive outcomes are more likely if spending supports domestic production and procurement, innovation, and utilizes unused industrial capacity, while import dependence and uneven industrial geographic distribution can concentrate gains in stronger defense-industrial states. Finally, the thesis examines market-failure models applied to Europe's post-2022 defense policy. In this context, the thesis reinforces the argument in defense economics and procurement research that defense contracting cannot be adequately understood through standard competitive-market assumptions. Findings show that the implications of the EU defense policy response can diverge. While the spending surge and industrial strategy can reduce long-standing inefficiencies, the same conditions, namely urgency, large funding flows, and potential centralization, can increase exposure to classic defense-procurement failures, namely rent seeking/extraction, concentrated benefits–dispersed costs, opportunism under information asymmetry, vendor lock-in, and supplier market power, with the net effect depending on whether Europe's procurement governance simultaneously raises competition, transparency, and accountability while scaling capacity and autonomy.

KEY WORDS: Geopolitical risk; defense contracting; European defense policy; European rearmament; defense spending; defense procurement; defense industrial base; strategic autonomy; geopolitical autonomy; market failures; public-private interdependence; public choice theory; transaction cost economics; flight to arms

SUSTAINABLE DEVELOPMENT GOALS:

POVZETEK

Magistrsko delo naslavlja vpliv povečanega geopolitičnega tveganja (GPR) na evropsko obrambno politiko, ter preučuje njegove potencialne posledice za obrambne pogodbenike, obrambno in geopolitično avtonomijo ter ekonomske učinke porasta obrambnih izdatkov v Evropi po letu 2022. Delo obravnava tudi obrambno pogodbeništvo skozi prizmo javno-zasebne soodvisnosti, pri čemer se osredotoča na dejavnike tržnih nepravilnosti in neučinkovitosti. Raziskava temelji na teoretsko usmerjenem pristopu, ki združuje kvalitativno in kvantitativno metodologijo, ter vključuje konstrukcijo tipologij, meta-sintezo, integrativni pregled in analizo obrambno-političnega odziva Evrope na geopolitični šok, ki temelji na analizi dokumentov, deskriptivnih kazalnikih, tržnih podatkih in kvalitativnih intervjujih.

Ugotovitve kažejo, da je geopolitični šok po ruski invaziji na Ukrajino leta 2022, povišal percepcijo ogroženosti v Evropski obrambni politiki, ter sprožil neposreden odziv Evropske unije in zveze NATO v obliki višjih obrambnih izdatkov, pospešenih obrambno-industrijskih vlaganj ter novih pobud na področjih razvoja obrambnih zmogljivosti, obrambnega odvračanja, javnega naročanja, inovacij in širitve obrambne industrije. Povečane vrednosti kazalnikov GPR so sovpadale s pospešeno rastjo obrambnih izdatkov, pozitivnimi abnormalnimi donosi v obrambnem sektorju, vstopom novih akterjev na trg ter povečanim obsegom tveganega kapitala v evropskem obrambnem sektorju, kar kaže na pozitivno korelacijo med geopolitičnim šokom, rastjo obrambnih proračunov in poslovnimi izidi podjetij obrambnega sektorja, skladno s pojavom »bega k orožju«. Delo preučuje tudi, kako bi lahko prizadevanja za višanje obrambnih zmogljivosti Evrope vplivala na njeno obrambno in geopolitično avtonomijo ter zmanjšala odvisnost od tujih dobaviteljev in fragmentiranih struktur nabave. V primeru uspešne implementacije bi lahko ukrepi, usmerjeni v vračanje proizvodnje v domače okolje, diverzifikacijo dobavnih verig, skupno nabavo ter obrambno-industrijsko širitev, okrepile evropsko obrambno in geopolitično avtonomijo. Hkrati pa ostajajo ekonomske posledice prioritiziranja obrambnih zmogljivosti pogojene, pozitivni učinki so namreč bolj verjetni, kadar obrambni izdatki podpirajo domestično proizvodnjo in nabavo, spodbujajo inovacije ter izkoriščajo neizkoriščene industrijske zmogljivosti. Nasprotno lahko odvisnost od uvoza

in neenakomerna geografska razporeditev obrambno-industrijskih kapacitet povzročita koncentracijo ekonomske koristi v državah z bolj razvito obrambno-industrijsko bazo. Analiza obrambno-političnega odziva Evrope na geopolitični šok, naslavlja tudi modele tržnih neučinkovitosti/nepravilnosti v kontekstu evropske obrambne politike in trga po letu 2022. V tem kontekstu magistrsko delo utrjuje argument iz obrambne ekonomike in raziskav javnega naročanja, ki pravi da obrambnega pogodbeništva ni mogoče ustrezno razumeti skozi standardne predpostavke konkurenčnega trga. Ugotovitve kažejo, da so učinki Evropskega obrambno-političnega odziva lahko dvojni, kjer lahko na eni strani povečanje obrambnih izdatkov in razvoj industrijske strategije prispevata k zmanjševanju dolgotrajnih neučinkovitosti v obrambnem sektorju, na drugi strani pa lahko isti pogoji, zlasti nujnost ukrepanja, obsežni finančni tokovi in potencialna centralizacija dobavnih sistemov, povečajo tveganje za klasične nepravilnosti/neučinkovitosti pri obrambnih javnih naročilih, kot so »iskanje rente«, koncentracija koristi ob razpršenih stroških, oportunizem v pogojih informacijske asimetrije, zaklepanje dobaviteljev in prekomerna tržna moč ponudnikov. Končni učinek je odvisen predvsem od tega, ali evropski sistemi upravljanja javnih naročil hkrati krepijo konkurenčnost, transparentnost in odgovornost ter omogočajo širitev zmogljivosti in avtonomije.

KLJUČNE BESEDE: Geopolitično tveganje; obrambno pogodbeništvo; evropska obrambna politika; ponovno oboroževanje Evrope; obrambni izdatki; obrambno javna naročila; obrambno-industrijska baza; strateška avtonomija; geopolitična avtonomija; tržna neučinkovitost; tržni neuspehi; javno-zasebna soodvisnost; teorija javne izbire; ekonomika transakcijskih stroškov; beg k orožju

CILJI TRAJNOSTNEGA RAZVOJA:

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LIST OF ABBREVIATIONS

ASAP — Act in Support of Ammunition Production

B2B — Business-to-Business

B2C — Business-to-Consumer

B2G — Business-to-Government

DIB — Defense Industrial Base

EC — European Commission

EDA — European Defence Agency

EDF — European Defence Fund

EDIRPA — European Defence Industry Reinforcement through common Procurement Act

EDTIP — European Defence Technological and Industrial Base

EIB — European Investment Bank

EPRS — European Parliamentary Research Service

EUDIS — European Defence Innovation Scheme

GPR — Geopolitical Risk

LSI — Lead Systems Integrator

M&A — Mergers and Acquisitions

MIC — Military-Industrial Complex

NEC — National Escape Clause

NGO — Non-Governmental Organization

NPV — Net Present Value

OECD — Organisation for Economic Co-operation and Development

PCT — Public Choice Theory

PESCO — Permanent Structured Cooperation

PMC — Private Military Company

PMCon — Private Military Contractor

PMSC — Private Military and Security Company

R&D — Research and Development

RB — Rearmament Bank

RRF — Recovery and Resilience Facility

SAFE — Security Action for Europe

SGP — Stability and Growth Pact

SIPRI — Stockholm International Peace Research Institute

TCE — Transaction Cost Economics

TSI — Transaction-Specific Investments

VAT — Value-Added Tax

1 INTRODUCTION

Since the end of the Cold War, the structures and perceptions of national and international security have undergone significant changes. With the fall of the "Soviet threat from the east", nations of the West, have been convinced that times of war, are those of the past. Simultaneously, the idea of the "peace dividend", which proposed public expenditure savings through defense spending austerity, has become a popular notion. Two years into the 2020s, however, we bore witness to a scenario that has been under considered for decades. Geopolitical turmoil and kinetic warfare at scale have proven to be not an occurrence of the past, but a present reality on European soil.

Facing the new reality, characterized by the perceived threat stemming from the ongoing Russo-Ukrainian war since February 2022, European nations have increased their ambitions for defense capabilities. Explicit statements by U.S. officials that call for Europe to "take ownership of its conventional security on the continent" (Hegseth, 2025) have further incentivized Europe's defense autonomy ambitions. These ambitions materialized with the European Commission presenting, among others, the ReArm Europe Plan/Readiness 2030 in March of 2025. The plan aims to increase the EU's defense deterrence and military capabilities while also stimulating Europe's defense industry. Furthermore, during the Hague NATO summit in June 2025, heads of NATO states have committed to gradually increasing the defense expenditure up to 5 % of GDP annually, which would bring defense expenditure levels not seen by most EU member states in decades (Clapp et al., 2025; NATO, 2025; George et al., 2025).

An era of European underutilization in the defense sector has created difficult circumstances for Europe's rearmament efforts. As a consequence of the abovementioned austere defense spending environment, especially in the context of the European defense sector, defense production capabilities have been severely diminished, while the sector has undergone decades of consolidation, through series of mergers and acquisition, limiting the number of available suppliers, and consequently skewing towards an oligopolistic market structure, decreasing the level of market competition, and increasing the supplier market power. Furthermore, since the onset of the 2022 Russo-Ukrainian war, the European defense sector has been facing inelastic demand for the first time since the Cold War era, leading defense suppliers to the limits of their production capacity (Young, 2023; Clapp et al., 2025).

While the provision of national defense and territorial integrity is one of the state's core responsibilities to its citizens, defense contractors play a critical role in the government's ability to provide the latter. This leads to a public-private resource dependency between the government and defense contractors, in which the government is dependent on contractors to supply assets needed for the government's ability to provide defense, while the contractors depend on governments for revenue (Park, 2023; Keupp, 2021). This leads me to believe that in the context of providing a future that is safe and secure, the role of defense contractors

as key stakeholders is worth examining to the same extent as that of national armed forces or the state.

The set of circumstances in which the European defense public-private relationship stands in 2025 warrants special attention. I posit that the relationship between Europe and its respective defense sectors can be a crucial factor in how this set of circumstances unfolds. If, in fact, we are facing existential security threats, it is of the highest importance to take into account and understand the drivers of inefficiency in providing said security, which in turn means taking into account and understanding drivers of inefficiency and ineffectiveness in defense procurement, defense contractor activity, and their role in defense provision.

For said reasons, this thesis aims to examine defense contracting and its public-private interdependence. I focus on examining the nature of the defense contracting market and analyzing the driving factors of market failures/inefficiencies, which can, in turn, reduce the level of military/defense capability the state can provide while allowing wasteful public expenditure. This thesis also serves to examine defense contractor activity in relation to levels of geopolitical risk, geopolitical autonomy, levels of defense expenditure, and the latter's impact on the broader economy. Furthermore, I take a deeper look at Europe's post-2022 rearmament efforts, the defense sector's market reaction to these efforts, and how the latter could impact geopolitical autonomy and the European economy. I also conduct qualitative interviews with key informants involved in European defense contracting, with the aim of gaining additional insight and perspective on defense procurement from actors currently involved in defense contracting, while taking into account their respective potential biases. The main goals of this thesis are:

- To identify the main drivers of market failures in defense contracting and explain how they can reduce the effectiveness and efficiency of European defense procurement.
- To examine Europe's defense sector and defense policy response to the recent increase in geopolitical risk.
- To assess the potential implications of the European defense policy shift (and the associated defense spending surge) on the European defense sector, economic outcomes, and defense/geopolitical autonomy.

I have posited the following research questions, which I aim to answer throughout this thesis:

- How has heightened geopolitical risk shaped Europe's defense policy, and what are its potential implications for the European defense contractors, defense/geopolitical autonomy, and economic outcomes?
- What mechanisms drive market failures in defense contracting, and what are their implications in the European defense surge?

In order to address the stated research agenda, the structure of the thesis starts with laying out the theoretical foundation of government procurement and contracting, followed by a

chapter presenting the methodology. The next chapter presents a unifying typology of defense and private military contractors, after which I will dedicate the succeeding chapter to the nature of interdependence and market failures between the state/government as the customer and defense contractors as the suppliers in the business-to-government market. I then examine the relationship between geopolitical risk, defense expenditure, economic outcomes, defense contractor activity and defense/geopolitical autonomy, followed by a case study of Europe's rearmament efforts, where the frameworks I have established in previous chapters will be applied.

This thesis contributes to existing literature by firstly using Singer's (2001) private military contractor typology in tandem with legal and EDA definitions to create a broader defense contractor typology that includes both defense and private military contractors. The thesis then contributes to existing literature by providing a synthesis of conclusions coming from different research fields, namely, economic, organizational, defense, and political science literature, and applied to the subject of defense contracting. Namely, it builds on defense contractor to state interdependencies by incorporating the defense market specific structure - "The Iron Triangle", through the lens of market failure characteristics, namely public choice theory (PCT) and transaction cost economics (TCE) failures. The thesis reinforces the argument in defense economics and procurement research that defense contracting cannot be adequately understood through standard competitive-market assumptions, while defense market failures should be treated as a mutually reinforcing bundle rather than as isolated mechanisms.

It then provides a framework pertaining to the interaction between geopolitical risk and defense policy, defense expenditure surges, economic outcomes, defense contractor activity and defense/geopolitical autonomy. The thesis provides a study of Europe's rearmament efforts, where the frameworks I have established in previous chapters are applied. The thesis builds on research of the economic implications of defense spending surges by integrating previous literature with the conclusions of PCT, TCE, and the mechanisms of the iron triangle. Furthermore, it uses Caldara & Iacoviello's (2022) GPR index and contextualizes it in not only the European defense expenditure and sector market reaction but also equips it with relevance pertaining to market structure, namely defense market concentration, as well as market failure correlation implications. The thesis examines a more conditional approach to the economic effects of defense spending surges, in which outcomes depend on the business cycle, domestic value capture in procurement versus imports, country income level, and budget composition (capital-intensive procurement versus consumptive spending). Furthermore, it accounts for the uneven geographical distribution of the EU defense industrial base, implying that the economic benefits of rearmament are likely to be distributed asymmetrically, underscoring the need for research that treats rearmament as a distributional political-economy event within the EU. The thesis also uses Sislin's (1994) process of leverage in weapons system provision, and applies it to European rearmament, and contributes to the defense autonomy and industrial policy literature by reframing import

dependence as a geopolitical vulnerability. It also suggests that the ongoing NATO/EU buildup to 2035 should be studied as a long-horizon institutional and industrial transition in which market structure, autonomy, fiscal capacity, and geopolitical risk interact. Lastly, the thesis provides defense executive insights through qualitative interviews, which, in the current level of geopolitical turmoil, can offer crucial nuances to the framing and understanding of the executive-level actors participating in European rearmament.

2 GOVERNMENT PROCUREMENT AND CONTRACTING

According to the Organization for Economic Co-operation and Development (OECD), public procurement refers to the purchase by governments and state-owned enterprises of goods, services, and works. It is a crucial pillar of service delivery for governments. As it accounts for a large share of public resources, governments are expected to carry it out efficiently and with high standards of integrity to ensure the quality of service delivery and safeguard public interest (OECD, n. d.). Academic literature suggests that the composition of public spending has an impact on broader economic growth, however conclusive findings have yet to emerge regarding the extent of the impact. While some subtypes of government spending can decrease economic growth in the short term, public investment in vital public services has been linked to increasing economic output over longer time horizons. On the other hand, poorly designed public financial stimulus, incentives, and subsidies can lead to economic loss, generate redundancies, financial dependencies, and loss of trust in public institutions (Sosvilla-Rivero et al., 2025). Public spending through fiscal policy can drive economic growth, among others, by boosting aggregate demand. In this regard, the economic impacts of fiscal spending can be quantified by the fiscal multiplier, where public spending with positive fiscal implications is denoted in a fiscal multiplier greater than 1 (Keynes, 1936; Barro, 1990).

As the OECD notes in its definition, public procurement is one of the primary ways public resources are used. Moreover, one of the main modus operandi by which governments and government agencies procure goods, services, and works is through contracting with private entities, thus creating a market commonly referred to as the Business-to-Government (B2G) market (OECD, 2019; Josephson et al., 2019). The global value of the B2G market is assessed to exceed 10 trillion USD (Fazekas et al., 2024; Open Contracting Partnership, 2020), or about 30% of total global government spending (Fazekas et al., 2024), with China spending the most, or approx. 4.2 trillion USD, with the USA as the next runner-up, spending approximately 1.8 trillion USD (Contracting Partnership, 2020). The sheer size of the B2G market attracts numerous private enterprises to partake in government contracting. According to Josephson et al. (2019), more than 60% of the Fortune 1000 companies participated in B2G exchanges. Research on government contracting and public procurement points out that the state of data transparency, availability, and formatting in public procurement is incomplete, opaque, and lackluster. The second fact noted in the

academic and practitioner literature on contracting is that the topic is severely under-researched. The latter two issues can be alarming when adding the fact that public procurement is generally known for anomalies leading to waste and fraud due to the inherent high degree of complexity combined with discretion and financial incentives, which can lead to market inefficiencies (Fazekas & Blum, 2021; Josephson et al., 2019; Bruneau, 2023).

2.1 Characteristics of the B2G market and government contracting

Governments have been trying to "do more with less" which translates to them being faced with budget constraints, demands for transparency and efficiency from the public, while government procurement personnel are faced with accelerated changes in the level of technological sophistication of the goods and services they are set to acquire through contracting out to private entities (Thai, 2017). Regardless of the ever-changing landscape of government contracting, Table 1 presents the main characteristics where B2G markets differ from their B2B counterparts, according to Josephson et al. (2019).

Table 1: Comparison of business-to-government and business-to-business relationships

Criteria	B2G	B2B
Nature of Business	Exchange of goods and services between businesses and government agencies	Exchange of goods and services between businesses
Value Proposition	Driven by stakeholder interests and welfare, required to provide societal welfare to satisfy specific stakeholder requirements set by the government	Driven by value and solutions, procurement decisions are geared toward solving critical problems and optimizing performance of solutions
Procurement Risk Preference	Low risk tolerance; purchase based on prior specifications with little incentive for innovation	Medium to high risk tolerance; purchase based on the needs of the organization; a firm may seek innovative solutions to differentiate itself from competitors
Spending Pressures	Close monitoring of government spending from voters and parliament	Varies depending on the nature of the organization
Regulatory Minutia	Subject to the "Government" Acquisition Regulation and agency-specific regulations	Idiosyncratic to the organization; not subject to the Government Acquisition Regulation
Procedural Transparency	Most aspects of the bidding and procurement process are open to public discourse	Difficult to gain information about competitors' offerings and prices
Relationship-Building Tactics	Subject to Code of Government Regulations: heavy regulations related to providing incentives to procurement officers	Not subject to Code of Federal Regulations; less stringent rules related to providing incentives to buyers

Table continues

Continued

Criteria	B2G	B2B
Size and Variety of Contracts	Multiple contract sizes (small dollar amounts to multibillion-dollar awards); multiple contract structures (fixed price, cost reimbursement, etc.)	Varies
Solvency and Prompt Payment	Timely payment schedule; virtually no solvency issue	Less prompt payment schedules; varying degrees of solvency

Source: Adapted from Josephson et al. (2019).

The B2G market additionally differs from the B2B or B2C market in that the government is often a monopsony[2] buyer as well as the regulator, a specific characteristic discussed in later segments (Park, 2023). Another characteristic intrinsic to public procurement is the procurement cycle. According to Fazekas & Blum (2021), the government procurement process or cycle which forms the basis of government contracting, is generally divided into three stages. Namely tender preparation and advertisement; bid evaluation and contract award; contract execution.

Table 2: Stages in the procurement cycle

Stage	Description
Tender preparation and advertisement	In the first stage of the procurement cycle, preparation and advertisement starts with the decision to procure a specified product or service. The latter stage comes to an end with bidders or tenderers submitting their bids (or with the deadline for submissions). The stage consists of preparing the tendering requirements, publicizing the tender, and negotiating the requirements with the bidding companies.
Bid evaluation and contract award	The bid evaluation and contract award stage begins when the bids are submitted, or the submission deadline ends. The latter stage ends when the respective contracts are awarded and signed with the successful bidder.
Contract execution	The contract execution stage begins when the contract is signed and ends with the successful or unsuccessful completion of the contract. This also includes the estimation of the bidder's performance in their fulfilling of contractual obligations, as well as post-festum monitoring and potential renegotiations.

Source: Fazekas & Blum (2021).

2.2 Economic costs and benefits associated with government contracting

Economic costs specific to businesses participating in the B2G market are closely linked to the rules imposed by the bidding process. The latter implies costs that largely fall under

[2] A monopsony market is signified by a large buyer whose purchases account for most of a market's sales.

learning and compliance costs, along with other restrictions and terms governing businesses' eligibility to acquire government contracts. Moreover, businesses can be subject to additional financial audits, which entail costs and regulations that limit access to financing options and directly influence their operations (Josephson et al., 2019).

Furthermore, the costs associated with the B2G market often entail significant transaction-specific investments[3] or TSIs (Rindfleisch & Heide, 1997). Taking on TSIs can pose an additional level of idiosyncratic risk for the business, since the business's revenue stream becomes increasingly dependent on the government customer and is susceptible to procurement variability stemming from shifts in the government's requirements, which shifts the balance of power in the government's favor. All in all, due to the government's contract enforcement mechanisms which entail ex-ante and ex-post monitoring (Lichtenberg, 1988), TSIs which additionally increase the level of asset and knowledge specificity along with contract specific costs in combination with government procurement regulations lead to B2G firms being less mobile and adaptable to changes in the market compared to their B2B or B2C counterparts (Josephson et. al, 2019; Heide & John, 1988; Thai, 2017).

Economic benefits to businesses associated with government contracting revolve mostly around the scale, scope, and cash flow predictability of working with the government. The latter increases the likelihood of greater economies of scale and operational efficiency (Mahlon & Keane, 2004). Deep B2G relationships also give firms customer domain knowledge and insights, along with procurement process knowledge, which can help counteract the increased idiosyncratic and systematic risks of government customer emphasis, as well as present them with opportunities for expansion across other domains or subsegments of the government to acquire new streams of revenue (Woods, 2017; Josephson et al., 2019; Bruneau, 2023).

Firms that receive a portion of their revenue from government contracts tend to have lower valuations relative to revenue than their B2B or B2C counterparts. The lower valuations can be attributed to lower projected sales growth, a characteristic of firms operating in the B2G market due to limited customer growth opportunities. The phenomenon of lower valuations, however, is not necessary in the case of strategically important industries. The absence of the lower valuation effect is attributed to the fact that strategically important industries must operate regardless of economic conditions, as a cessation of operations would negatively affect national strategic interests. Furthermore, since their undisturbed operation is of strategic importance, governments are incentivized to provide them with lower uncertainty pertaining to cash flows, financial distress risk, and the need for excess cash holdings. The stable cash flow allows incumbent contractors to secure equity capital and debt more easily

[3] Businesses are often required to create product lines and organizational structures required specifically to adhere to the government's requirements. These can extend to the use of accepted audits, marketing strategies, operational processes, human resource rules, supply chain standards, social responsibility rules etc.

and affordably. This unique position allows contractors to achieve positive net present value (NPV) with relatively low uncertainty, as evidenced by abnormal positive returns around the announcements of secured contracts (Esqueda et al., 2019). Moreover, firms that possess a higher level of government customer emphasis[4] were found to achieve higher firm value compared to firms with lower levels of government customer emphasis. Namely, a positive, nonlinear effect on firm value is observed among firms with a high level of government customer emphasis, indicating that the additional learning and compliance costs, along with TSIs, are outweighed by the benefits of economies of scale, government insight/information advantages, and increased operational efficiency. Enterprises that receive a majority of their revenue from government entities were also found to be susceptible to a higher degree of volatility due to idiosyncratic and systemic risks, which are again closely related to the "less mobile" nature of firms with high asset specificity and levels of TSIs (Josephson et al., 2019)

Enterprises with a high level of government customer emphasis often face stringent regulations and oversight, government budget dependence, and high asset-specificity requirements, all of which create difficult conditions for organic growth. Hence, one of the primary ways for businesses operating primarily in the B2G market to achieve revenue growth is through government customer growth driven by mergers & acquisitions (M&A) with other firms with a government customer focus. Such customer growth allows the acquirer to increase its revenues and capture more opportunities through improved upselling and cross-selling, or by selling across different government segments. Furthermore, firms that operate mainly in the B2G market leverage M&As to acquire customer assets, or tacit knowledge concerning government customers' purchase intentions and/or their unique regulatory and procurement environments. Improved firm's relational and contractual knowledge from M&A allows the firm to better align itself to identify, capture, and serve the needs of its core customers. In fact, more than 80% of B2G M&As cite the acquisition of government customer knowledge as the primary motivation for the M&A (Kipps et al., 2018; Antenucci et al., 2018).

3 METHODOLOGY

The thesis employs a theory-driven approach, integrating both qualitative and quantitative data with embedded descriptive indicators to provide a comprehensive understanding of the subject. Conceptual and theoretical frameworks are first developed through a structured literature review and synthesis (chapters 4-6). Those frameworks are then applied and tested through an embedded qualitative study of Europe's defense rearmament efforts (chapter 7, combining document analysis, descriptive indicators, and qualitative interviews. In the first part (chapter 4) of the thesis, the method of simple typology construction is used (Doty & Glick, 1994; Niknazar & Bourgault, 2017) in order to propose a unifying categorization of

[4] Government customer emphasis refers to the extent to which firms focus their operations on business with government enteties, or rather the share of revenue stemming from government contracts.

the different types of defense and private military contractors, usable in the context of economic analysis. This step is necessary since the current typology in the field of research is inconsistent among scholars and practitioners. The latter framework is applied throughout the thesis to minimize inconsistencies and enable coherent analysis.

In the second part of the thesis (chapter 5), meta-synthesis (Noblit & Hare, 1988; Lachal et al., 2017; Walsh & Down, 2005) and integrative review (chapter 6) (Whittemore & Knafl, 2005) methods are used, both following a structured but non-exhaustive approach. Sources in the meta-synthesis are selected based on their relevance to defense procurement, the associated public-private interdependence, nation-state defense provision, and defense economics. They include peer-reviewed journal articles and other publications, policy reports, government documents, authoritative practitioner sources, doctoral dissertations, and investigative journal articles. Literature is iteratively coded according to the following analytical dimensions: 1) market structure and incentives; 2) public-private dependence mechanisms; 3) sources of market failures or inefficiency. The meta-synthesis serves this thesis by creating a multidisciplinary base of insights (economic, organizational, defense, and political science theory) that aid in identifying recurring mechanisms in defense procurement, such as rent-seeking, vendor lock-in, and other market failures. Sources in the integrative review are selected for their relevance to geopolitical risk, defense spending, defense spending surges, and their economic implications, as well as to defense procurement through the lens of geopolitical leverage. They include peer-reviewed publications, policy reports (OECD, EPRS, SIPRI, etc.), government documents and reports, NGO reports, and authoritative practitioner sources. Literature is iteratively coded according to the following analytical dimensions: 1) geopolitical risk and defense spending; 2) defense spending and the economy; 3) defense spending and defense contractor performance; 4) defense procurement and geopolitical leverage. The aforementioned review and synthesis also provide a framework for assessing the current European Rearmament initiative discussed in later segments.

The third part of the thesis (chapter 7) consists of a study which focuses on Europe's recent rearmament policy, where I present EU's policy of defense sector stimulation and defense capability surging, showcasing the public-private interdependency, and demonstrating it both in quantitative and qualitative terms. I do so by analyzing the respective policy reports (OECD, EPRS, SIPRI, etc.), defense equities performance, government documents and reports, NGO reports, and authoritative practitioner sources and publications. In this study, I present the European defense market's response to increased geopolitical turmoil, the recently adopted defense policy, and the associated surge in defense spending. I also present the latter's potential economic and defense/geopolitical autonomy implications, assessed through the lens of the frameworks developed in the integrative review and meta-synthesis.

Validating and illustrating some of the market failure mechanisms I identified in the meta-synthesis proved difficult without informants, which is why I conducted 5 qualitative

interviews with key informants/interviewees. They are used to triangulate and contextualize findings from the meta-synthesis. The qualitative interviews were analyzed using thematic analysis, which is used to identify, analyze, and report patterns (themes) within the data (Braun & Clarke, 2006). Three interviewees from different segments and tiers of the defense industry are used to gain diverse perspectives on their positions in the procurement chain. For the same reason, I aimed to recruit an interviewee who is aiming to penetrate into defense contracting, which would also allow me to gain perspective from new entrants to the market. Lastly, I sought to interview a government procurement official to gain insight into the government's perspective on the state of defense procurement. Gaining insights from stakeholders on different sides of the procurement process helped provide coherent insights and improve the triangulation process. The interviews were conducted in the summer of 2025. They lasted from 45 minutes to 2 hours. The transcription software was Jamie, while QDAcity was used for coding themes. Since the operations of defense contracting firms often entail national security implications, finding new, viable interviewees willing to provide me with answers proved difficult. To focus the discussion on European "rearmament", all interview participants were either executives of European firms or, in the case of the procurement official, European member-state government employees. Due to the national security implications and the rational request of the interviewees to remain anonymous, the identities, respective firms, or governments will remain anonymous, while the transcripts available upon request are redacted, since they could reveal interviewee identities or their respective firms. The interviewee characteristics are shown in Table 3.

Table 3: List of interviewees and their respective characteristics

Code	**Position**	**Classification**	**Segment**	**Customers**
Tier 1 SI	Executive director	Tier 1 and System integrator (SI) firm	The firm specializes in providing command and control, communications and research and development solutions	NATO and non-NATO member states, upstream contractors and contracting partners.
Prime	Executive director of R&D	Prime contracting firm	The firm specializes in the production of weapon systems, namely firearms and firearm-related products, and firearms production solutions.	NATO and non-NATO member states, contracting partners.

Table continues

Continued

Code	Position	Classification	Segment	Customers
LSI	Executive director	Lead system integrator (LSI) and a Prime Reseller	The firm specializes in system integration, consulting to prime contractors, and system life-cycle maintenance for a wide array of weapon and non-weapon systems.	NATO and non-NATO member states, contracting partners.
Penetrator	Executive director	B2C & B2B firearms market	The firm specializes in weapons system production, namely firearm manufacturing, and is in the process of shifting its focus from the B2C to a B2G market, aiming to penetrate the defense contracting	Resellers and end consumers.
Procurement official	Government defense procurement official	/	Defense procurement	/

Source: Own work.

4 DEFENSE CONTRACTING TYPOLOGIES

Similar to contracting and outsourcing discussed previously, the primary mechanism by which defense contractors generate revenue is being awarded contracts. Contracting out refers to a government agency engaging a private firm to perform a function or provide a good or service. The process of defense acquisition is comprised of three main elements (Bruneau, 2023): 1) the budgeting system; 2) the definition of requirements; 3) the awarding of the contracts. In the case of the USA, the Commission on Wartime Contracting in Iraq and Afghanistan (2011) which has overseen one of the most extensive defense and contingency[5] contracting campaigns since the Cold War emphasizes three fundamental pillars an efficient procurement system should be based on: a) full and open competition in which all responsible firms participate; b) transparency through public notice of government

[5] Contingency contracting has become one of the main modus operandi of contracting with regards to deployed contingent elements and operations on foreign soil (particularly when it comes to the United States). Contractors located throughout the Middle East, Southwest Asia and the wider area of operations provide U.S. forces with services such as logistics support that includes parts and equipment distribution, ammunition accountability and control, port support activities, support to weapons systems and tactical vehicles, linguistic support, equipment maintenance, security support, communication services, interpreters who accompany military patrols, base operations support (e.g., food and housing), weapons systems maintenance, intelligence analysis, and a variety of other means of support (U.S. Government Accountability Office, 2021; Bruneau, 2023).

requirements and awards; c) integrity which is enforced through policies and laws, timely audits, and contract oversight.

Defense contractors, as defined by the U.S. Code of Federal Regulations, are “any individual, firm, corporation, partnership, association, or other legal non-Federal entity that enters into a contract directly with the Department of Defense to furnish services, supplies, or construction” (32 CFR § 158.3 - Definitions, 2023). The EU legislature similarly names defense contractors as the tenderers, which are defined as organizations or consortiums that submit an offer in response to a contract bid (tender) for the procurement of military equipment, works and services and to sensitive purchases with a security purpose and involving classified information (Directive 2009/81/EC, 2009; Directive 2009/43/EC, 2009).

Moreover, defense contractors are business entities that comprise the defense industry, or the Defense Industrial Base (DIB). The latter is involved in manufacturing weapons systems and other products, conducting research and development, and providing other services on a large, systematic scale for the broader defense apparatus. Besides economic interests, one of the main roles of defense contractors is supplying and equipping the national armed forces, by which they enable the respective nations to execute their national strategy, as well as allow nations to develop, maintain, and project military power (Parr, 2023; Bruneau, 2023; Nicastro, 2024; Erbel, 2014).

4.1 Defense contractor typology

The European Defense Agency (EDA, 2009) categorizes Defense Contractors into different tiers, along the supply chain: a) Prime Defense Contractors: Also referred to by the EDA as Lead Systems Integrators (LSIs), serve as platform producers or suppliers of weapon systems and other products pertaining to defense provision. They specialize in defense production and serve as the final provider to government customers or the contractor that delivers the final product. In some cases, the LSI can only finalize and procure the product(s) produced by other firms, serving as the final intermediary between the producers and the government customer; b) Tier 1 Defense Contractors: Referred to by the EDA as Sub-System integrators, typically specific system specialists, and producers of complete sub-systems or major components. Tier 1 Contractors are often subcontracted by the prime Contractors and often play the role of risk-sharing partners; c) Tier 2 Defense Contractors: Tier 2 Contractors tend to produce and supply goods and services that help furnish the contract upstream towards the Prime Contractors. Tier 2 Contractors tend to consist of small and medium enterprises (SMEs) or subsidiaries of the major defense contractors. They often produce dual-use goods or services (for military or civilian purposes); d) Tier 3 Defense Contractors: Are often commodity or general service suppliers. Mostly consists of SMEs and subsidiaries of larger Defense Contractors along the supply chain.

Figure 1: Visual representation of the defense contracting chain

Source: Adapted from EDA (n. d.).

The most prominent (Prime) Defense Contracting firms receive the largest portions of the defense budgets and are often publicly traded corporations. Some of the largest European defense contractors include Safran, Rolls-Royce Holdings, Airbus, Rheinmetall, BAE Systems, Thales, MTU Aero Engines, Leonardo, Saab B, and Dassault (Clapp, 2024). Furthermore, Defense Contractors can be viewed as a hypernym, or umbrella term, for Private Military Companies/or Private Military Contractors/or Private Security Contractors, and Private Military and Security Contractors. We can say the latter statement holds true, since all the above-mentioned are contracted private entities that provide capabilities, goods, and services that provide defensive/security capabilities to a state or the respective government agency (in some cases, even a private business entity) (Kinsey, 2006; Bruneau, 2023; Parr, 2022).

4.2 Private military contractor typology

The terms Private Military Companies/or Private Military Contractors/or Private Security Contractors, and Private Military and Security Contractors are used loosely and even interchangeably in academic and practitioner literature, creating inconsistency. Furthermore, the acronym PMC is often used for both Private Military Contractors and Private Military Companies, while in some cases the term PMC even refers to subcontractors in an individual personnel sense, similar to the term mercenary[6]. Moreover, we are faced with another terminological conundrum, since in some literature the term PMC refers to companies that provide strictly military services, or, in other words, companies that work as actual private military companies (Kinsey, 2006; Singer, 2001; Parr, 2022; Bruneau, 2023).

As with all typologies, the ones pertaining to defense and military contractors also differ among scholars and even practitioners. Private Military Contractors are particularly hard to pinpoint and typify compared to defense contractors, since the former companies often seek to be as adaptable as possible, undertaking a range of activities and serving a range of

[6] According to the Geneva Convention (1949) a mercenary is a person who: (a) is specially recruited locally or abroad in order to fight in an armed conflict; (b) does, in fact, take a direct part in the hostilities; (c) is motivated to take part in the hostilities essentially by the desire for private gain and, in fact, is promised, by or on behalf of a Party to the conflict, material compensation substantially in excess of that promised or paid to combatants of similar ranks and functions in the armed forces of that Party; (d) is neither a national of a Party to the conflict nor a resident of territory controlled by a Party to the conflict; (e) is not a member of the armed forces of a Party to the conflict; and (f) has not been sent by a State which is not a Party to the conflict on official duty as a member of its armed forces.

customers, while mergers and acquisitions are prevalent. ArmorGroup, for example, provided military training and assistance, logistics, security services, geopolitical risk analysis, and even crime prevention for both government and commercial customers (Kinsey, 2006). The areas of differentiation and categorization amongst Private Military Contractors often revolve around the size of the contracts themselves, the type of goods or services they provide to the armed forces, whether they provide goods, services, or a combination of the two, the specific segments they address, etc. (Kinsey, 2006; Singer, 2001; Parr, 2022). One of the most commonly adopted typologies of Private Military Contractors is Peter Singer's typology from 2001. Singer's (2001) typology breaks down private military contractors according to the types of services they provide, proximity to the actual front-line combat, and the involvement with hostilities determined in their contracts:

Military provider firms (type 1 firms) provide services at the forefront of the battlespace, engaging in real fighting or direct command and control of field units, or both. Examples of military provider firms include Executive Outcomes, Blackwater (now Academi), Triple Canopy or Sandline. Clients of type 1 firms tend to be those with relatively low military capabilities, facing immediate, high-threat situations (Parr, 2022; Kinsey, 2006).

Military consulting firms (type 2 firms) focus on providing strategic, operational, and organizational analysis, advice, training, and consultation, and possess more experience and expertise than their clients. The latter services often play a role in the restructuring of armed forces, they generally do not perform tactical or warfighting services on the battlefield. An example of such a firm is MPRI, which consulted with and trained the Croatian armed forces during the Balkan War in the 1990s. At one point, MPRI employed more than 12,000 former military officers, including four-star generals. Type 2 firms' clients, as well as their requirements, are generally facing the need for military force restructuring or are aiming to gain transformative capabilities, yet their needs are not as immediate as are those of type 1 clients (Parr, 2022; Kinsey, 2006)

Military support firms (type 3 firms) provide supplementary services, which are typically non-lethal in nature, namely logistics, intelligence, technical support, transportation, construction, and supply. Clients of type 3 firms often include those engaged in long-duration conflicts or interventions. An example of which is KBR, which was crucial in the U.S. involvement in Iraq with its logistic, infrastructure, construction, housing, and accommodation services (Singer, 2001; Parr, 2022; Moore, 2017; Kinsey, 2006; Bruneau, 2023).

Figure 2: Singer's "tip of the spear" typology of Private Military Contractors

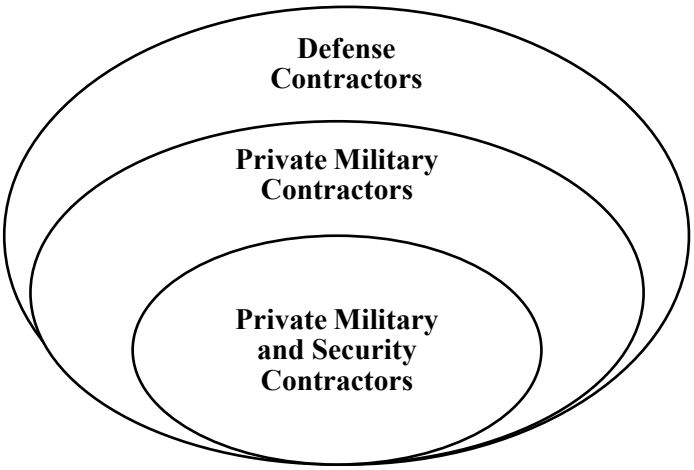
Source: Adapted from Singer (2001).

4.3 Proposed holistic typology

The holistic typology I use throughout this thesis is segmented into three main tiers. Defense contractors are considered as the main umbrella term for all private entities executing defense/security-related contracts for state/government entities. Yet, the term defense contractor is focused on corporations in the DIB, such as Prime Contractors; Private Military Contractors (PMCon) are defined widely as private entities contracted to provide goods or services related to defense/security, similar to the military consulting firms, along with military support firms characterized by Singer. Furthermore, the term is defined as an umbrella term to a) Private Military Companies (PMC); b) Private Security Companies (PSC); c) Private Military and Security Companies (PMSC); d) Other defense/security related private contracted entities, which offer goods/services to military institutions, but do not necessarily provide armed personnel; Private Military and Security Contractors (PMSC) are defined more narrowly as private entities providing capabilities, similar to that of the military provider firms characterized by Singer, which can provide contracted armed personnel and/or security services related to war time contracting (The differentiation PSC and PMC is not agreed upon). To simplify the terminology for later segments (I use differentiation based on their rules of engagement[7]). Namely, PSCs are generally to engage only in defensive and protection operations, as opposed to offensive maneuvers conducted by a narrower category of PMSC (Kovač, 2009). The typology outlined above is not merely a semantic exercise, but a necessary step in creating the framework for the later parts of the thesis. Because the literature on contemporary outsourcing in the defense domain is marked by overlapping labels and inconsistent usage, a clear taxonomy is necessary to avoid conceptual slippage when reviewing studies, policies, and empirical cases.

[7] Conditions under which the respective personnel are to use force.

Figure 3: Diagram representing the holistic typology



Source: Own work.

5 DEPENDENCIES BETWEEN THE STATE AND DEFENSE CONTRACTORS: META SYNTHESIS

5.1 The public-private dependencies in the defense sector

The provision of national defense and territorial integrity is one of the government's core responsibilities[8] and a public good. One of the means by which the government provides the latter is by procuring weapons systems and other defense-related products and services for its armed forces (Keupp, 2021; Matelly & Lima, 2016; Clapp et al., 2025). In fact, with the increased sophistication and technological requirements of war more than a century ago, World War I showed that (defense) industrial capacity became positively correlated with the capacity to conduct war (Bruneau, 2023). To procure defense-related products and services, national defense budgets across governments globally undergo political legitimization each year, in which national decision-makers decide on the required level of financial transfers to be allocated to national defense. As such, the annual defense budget is subject to the political

[8] While the calculation of insurance premiums for hypothetical war-related damage is highly speculative, in the context of political dependency, the government's failing to provide the adequate military/defensive performance can in the case of war result in the infringement of the right to life and liberty, as well as private property right infringement (Rothbard, 1998). Moreover, if invaded, a nation faces their capital productivity hindered due to the national capital stock being either destroyed or expropriated. The net capital stock in this case can be defined as the sum of all replacement values for all capital goods used for production in the economy (ex. assets such as civilian buildings, machinery, equipment, livestock, crops, research and development, intellectual property etc.). Both kinetic and cyber warfare may infringe upon all of the abovementioned. Additionally, a state faces labor supply and skill reduction due to death, injury or fleeing of residents. Total factor productivity can also decrease due to human capital diminishment and productivity decay stemming from the hindered knowledge and technological progress, while intellectual property can be expropriated (Keupp, 2021).

"zeitgeist" and the level of perceived threats to national security. When the level of perceived threats is low, the state is inclined to reduce financing of the armed forces and, in turn, defense procurement. If the case is such that a sufficient threat is present, the state is inclined to allow a larger portion of the public budget for the needs of defense[9]. In the case of inaccurate assessments, military performance can be either inefficient or ineffective (the former implying that the allocated budget is too big, the latter implying that the budget is too small, leading to degraded military capabilities) (Keupp, 2021). While political consensus is required to accept a defense budget and the armed forces' mission, it is often the case that politicians, taxpayers, and combatants disagree on the allocated budget and its use (Duncan & Coyne, 2013; Bruneau, 2023).

In the context of public-private relationships, Park (2023) points out two levels of dependencies that are consistent in the relationship between the state and the defense contractors. Firstly, he addresses the technological (complexity) dependency, which comes from the needs of the government customers. Technological complexity emerges as the government seeks to procure the most technologically advanced products to gain a competitive advantage for its military forces (Metz, 1995). The weapons systems and other acquired goods and services are then used by the government / its military forces to deter or engage in warfare in the future, which is characterized by technological uncertainty. The latter leads to a constant need to stay on the "technological edge". Furthermore, individual contracts often involve maintaining, integrating, and updating the procured systems throughout their lifetime (Park, 2023). Hence, the government is often uniquely dependent on the defense contractors it has used to supply its most strategically important weapons systems, since the latter generally entail the highest level of technological complexity which leads to a high level of contractor involvement throughout the procured systems lifecycle (ex. strategic bombers, nuclear arsenal, advanced aerospace capabilities) (Keupp, 2021; Bruneau, 2023; Mahoney, 2020). Secondly, Park (2023) addresses political (complexity) dependency inherent in the defense procurement process. One of the main reasons the mutual dependance is strong in the case of defense procurement, is the fact that the government is the main (monopsony[10]) buyer and user of the defense contractor products and services, while the defense contractors are the sole domain specific (defense related goods and services) providers to the government's ability to provide defense, leading to resource

[9] It is however important to note that the allocation of financial resources (defense budgets) towards defense does not equate actual military performance. The availability of assets, knowledge, and human capital is a necessary, yet insufficient proxy for measuring organizational capabilities (Kusunoki et. al. 1998), which in turn means that the number weapon systems and the defense expenditure are by themselves not adequate means of measuring military performance (Keupp, 2021). Moreover, without a clearcut definition of military performance or capability, political and military decision makers cannot judge the efficiency and efficacy of said military force. Given that the duty of the military forces to the citizens is not just their existence, but rather actual performance and mission success, the notion of military performance should be clearly defined, since in any other case the armed forces cannot achieve their purpose (Keupp, 2021), which leads us to the next chapter, discussing how resource allocation to defense sector under market inefficiencies can result in inefficiency and ineffectiveness.

[10] Monopsony ends once the home government grants export licenses.

dependency between the government and the defense contractors, where the government is dependent on the contractors for the fulfillment of its political responsibility to provide defense, while the contractors are dependent on the government for revenue.

5.2 The "Iron Triangle" and defense procurement-related market failures

The relationships and interdependencies among defense contractors, political actors, and military actors have given rise to the notorious term known as "the Military Industrial Complex" (MIC) (Coyne & Goodman, 2022). The term "Iron Triangle" can be understood as a synonym to the MIC. The Iron Triangle consists of (Duncan & Coyne, 2013; Park, 2023; Nownes, 2006; Armandha et. al, 2017): 1) The defense segment of the government (defense department/ministry along with the armed forces); 2) The regulator (legislative branch of the government); 3) The defense industry (defense contractors – defense industrial base). The dependencies in the context of the defense iron triangle can be described as an economically self-reinforcing arrangement linking the legislature (as regulator and budget allocator), the defense segment of the government (as the end customer and procurement manager), and defense contractors (as suppliers). Due to the inherent nature of public or, in this case, defense procurement, conflicts of interest between the different parties can arise[11]. The regulator, which can be incentivized by both the industry and the defense branch, shapes the market by authorizing programs, allocating funds, and writing procurement and oversight rules that determine who can enter the market. The defense branch translates political priorities into requirements and procurement programs, which convert public funds into contracts awarded to contractors (suppliers). This distribution creates a political-economic market (discussed in later subchapters) (Nownes, 2006; Keupp, 2021; Bruneau, 2023).

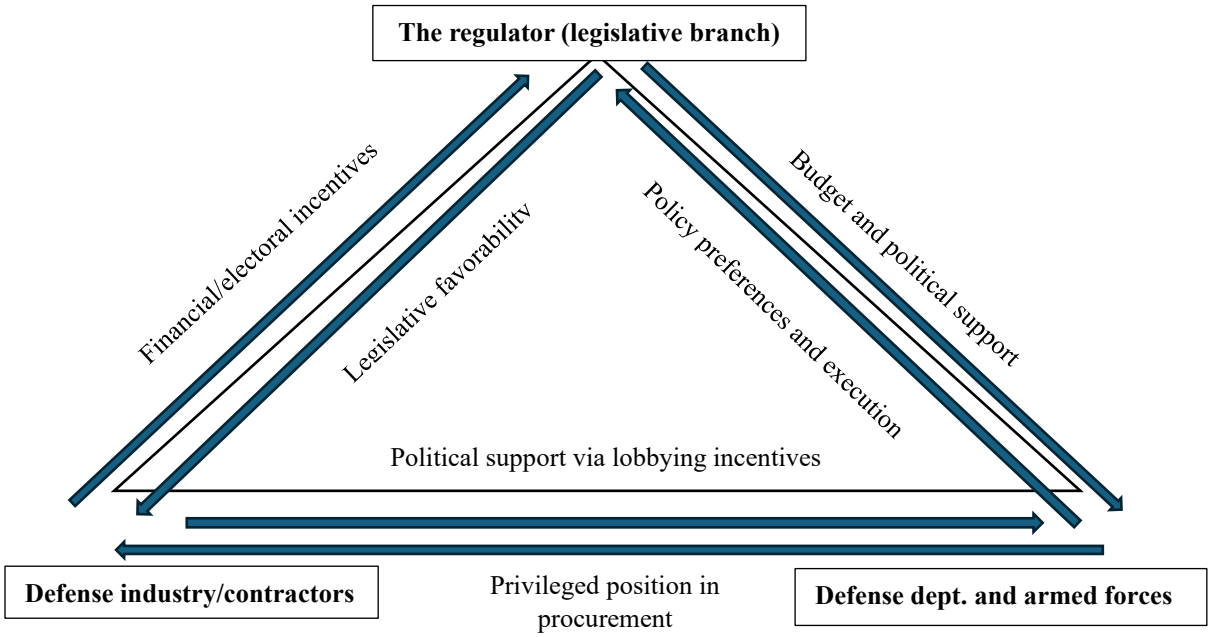
On the supply side of the triangle, defense contractors can seek not only to win contracts but to stabilize and protect revenue streams by shaping the rules and the information environment that governs demand. Defense procurement often involves long development cycles, high technical complexity, and security constraints that raise barriers to entry, reducing the number of credible bidders and strengthening incumbent advantages. Contractors can exert efforts and devote resources to lobbying, campaign support, and relationship-building to secure favorable procurement regulations and legislative favorability, while also supplying technical expertise that can influence requirements, helping to frame defense procurement requirements in ways that align with existing product lines. Meanwhile, incentivized defense department actors can supply the regulator with

[11] Conflicts of interest arise when an organization or its sub-elements are confronted with multiple interests, goals or objectives, that upon execution result in failure to execute responsibilities (Handfield and Baumer, 2006). When transaction cost theory (discussed in later sections), which assumes agents are rational, act in an opportunistic manner and tend to pursue self-interest (Bloom & Milkovich, 1998), conflicts of interest are bound materialize if left unchecked. As King & Sekerka (2017) point out, if you face negative emotions when addressing conflicts of interest, it can be the very sign that they in fact are present and need to be addressed to promote ethical decisions.

military requirements that align with the incentivized contractors' products, while relying on contractor-provided employment promises (revolving door), thereby reinforcing information asymmetry, established supply chains, and vendor locking. Once a platform is chosen, sustainment, upgrades, and lifecycle services create predictable, long-term revenue streams for suppliers and high switching costs for the military. Economically, the triangle persists because it couples a reliable funding source (legislative appropriations) with institutionalized demand (the state's obligation to provide defense) and a supplier ecosystem that converts contracts into jobs, political support, and specialized capabilities forming a feedback loop that makes spending patterns and procurement choices structurally rigid (Depeyre & Dumez, 2010; Keupp, 2021; Duncan & Coyne, 2013; Adams, 1981).

Before the contracts are signed, arbitrary power over who will be the contract's winning bidder rests with the government, thereby subordinating the defense contractor at this stage of the procurement process. After the bid winner is selected and the procurement contract is signed, the government becomes dependent on the contractor for contract execution, shifting the power balance in the contractor's favor. The phenomenon is called the "power shift" (Park, 2023). The power shift puts the government in an unfavorable position, as it is now subject to opportunism by defense contractors through contract breaches. The contractual breaches can occur primarily in the form of a) cost overruns; b) schedule overruns; c) failure to deliver the performance or capabilities agreed to in the contract (Gansler et al., 2009; Schwartz, 2010). Once programs mature, sunk costs (TSIs, specific assets, asset-specific supply chains) make cancellation costly and politically unattractive, pushing incentives toward continuation and incremental budget growth even when performance concerns or cost/schedule overruns appear (Nownes, 2006; Bruneau, 2023).

Figure 4: Visual representation of the key stakeholders of the Iron Triangle and their respective incentives



Source: Own work, based on Park (2023), Keupp (2021)

5.3 The public-private market failures in the defense sector through the lens of public choice theory (PCT)

In this subchapter, I will examine defense market failures through public choice theory, which applies economic methodology to study problems that traditionally adhere to political science. In political science, it is the subset of positive political theory that studies self-interested agents (voters, politicians, bureaucrats, industry) and their interactions (Mueller et. al, 2008; Rowley & Schneider, 2008).

5.3.1 The revolving door

The revolving door process refers to the movement of public and private sector actors between the two positions. In the MIC, the process refers to the movement of actors between the positions of the Iron triangle. In other words, it primarily refers to public officials from either the armed forces, the legislative branch, or the defense departments moving to positions in defense corporations[12] (often used as an incentive in the context of the iron triangle), while prominent defense contractor personnel transition to high-ranking government positions (Coyne & Goodman, 2022). One of the reasons why the revolving door phenomenon is highly entrenched in the defense industry can be attributed to: a) The government being the monopsony buyer in the defense market; b) The oligopolistic[13] nature of the defense industry (Duncan & Coyne, 2015).

The revolving door is the practice of government officials who hold some level of authority over defense procurement moving to work at defense contracting entities whose procurement they were previously overseeing. The revolving door mechanism allows (ex)government officials to leverage their personal networks and insights into the inner workings of defense procurement to increase rent-seeking effectiveness. The personal ties held by ex-government officials can often lead to corporate favoritism, ineffective acquisition programs, and, lastly, a delineated and misguided national security, foreign policy, and defense policy. After leaving their public office, one of three routes is usually taken, as per the revolving door. Those include defense contracting firms, defense consulting firms, and lobbying firms. Consultants advise defense contractors, supplying them with the tacit knowledge regarding the practices required to obtain contracts, while lobbyists set up agreements between the government officials and the firms that are to be impacted by the legislation, enacted by the very officials (Coyne & Goodman, 2022; Giorno, 2023; Rowley & Schneider, 2008).

[12] An illustration of the point can be observed in the case of USA, where from 2004 to 2008, 80 % of retiring three and four-star officers went to work as consultants or defense industry executives (Bender, 2010).
[13] Oligopoly can be defined mostly in reference to a market in which a few relatively large firms have moderate to substantial market power and, what is more important, they recognize their interdependence. Each firm knows that its actions or changes will have an effect on other firms and that the other firms will, in response, take actions or make changes that will affect its sales (Thomas and Maurice, 2016).

5.3.2 Rent Seeking and Rent Extraction

While being far from exclusive to the defense industry, rent seeking is a process in which a business entity or an individual invests resources to secure transfers or privileges (Tollison, 2012; Rowley & Schneider, 2008). Franck and Dillard (2006) define rent-seeking as the process by which an entity seeks to profit from manipulating the economic situation, rather than through trade and mutual benefit of the parties. The costs of the rents in public procurement, however, are dispersed into social costs in the form of deadweight costs, similar to the deadweight costs[14] attributable to monopolization, regulation, or other forms of government market intervention (Tullock, 1967; Tollison, 2011). Rent-seeking in public and/or defense procurement refers to the industry's efforts to obtain contracts, subsidies, or favorable regulations through political influence rather than by providing more efficient, economical, or innovative solutions. Rent-seeking in the context of the MIC is most often understood as involving campaign contributions, informal influence, favor exchanges, lobbying, and in-kind payments (Giorno, 2023; Duncan & Coyne, 2013; Duncan & Coyne, 2022, Keupp, 2021).

Rent extraction can be characterized as the opposite side of rent-seeking (McChesney, 1989, 1987). Government actors overseeing (defense) procurement hold a certain level of discretionary power over the procurement process itself. The discretionary power allows them to exert leverage over defense contractors, potentially incurring additional rent-seeking costs for the contractors. Similar to how contractors can spend resources on lobbying contributions as a form of rent-seeking, government actors can extract rents by demanding that the contractor provide them as a prerequisite to winning the contract. Furthermore, government actors can craft ambiguous procurement requirements and use the threat of regulation or budget cuts to coerce defense contractors into rent provision. The culmination of both of the latter mechanisms - rent seeking & rent extraction - can shape defense policy towards the interests of the defense contractors and public officials' political and/or economic interests, rather than the national interest, which in our case is national security (Coyne & Goodman, 2022; Keupp, 2021; Esqueda et al., 2019).

In the competitive marketplace (B2B, B2C), firms adapt their production to market demand, according to information about actual sales and turnover. If a B2G market is driven by rent seekers, the latter generate demand by persuading[15] the taxpayer, the procurement planners,

[14] An empirical study by Laband and Mclintock (2001) suggests that rent extraction, rent seeking, and rent protection cost the United States economy at least $400 billion annually.

[15] One of the means by which defense contractors can influence public opinion is through think tanks. Of the 50 largest think tanks in the USA with disclosed donors, 79% are funded by private actors in the defense industry. Funding think tanks can help guide consensus (Freeman, 2020). Furthermore, a Quincy Institute for Responsible Statecraft report by Freeman (2023) found that the most viewed news sources regarding the war in Ukraine, namely The New York Times, the Washington Post, and the Wall Street Journal, post almost exclusively defense contractor funded think tank reports. To be exact, of the 1,247 think tank media mentions, regarding arming Ukraine and the respective war, 1,064 or 85 % mentions, were that of contractor funded think tanks.

and the regulator to buy a particular quantity of goods and services at a particular price. They attempt to "persuade the market" that the goods and services they offer are required to provide the currently required capability. If successful, the armed forces can be provided with products that are either overpriced (implying inefficiency) or technologically inferior (implying ineffectiveness). In such an environment, the state must increase the defense budget to finance both rent seekers' surcharges. Furthermore, attempts to exert influence over procurement are more effective if the procurement decision-making process is centralized - concentrated in the hands of key decision makers, and exempt from democratic control by citizens. Political competition thus replaces competition in the marketplace (Keupp, 2021). Competitors can be excluded by specific experience requirements or by impossibly short tender submission deadlines. In such cases, the requirements might be tailored to the favored firm (Czibik et al., 2021). The result of rent-seeking activities is a situation where resources are not used solely for the productive creation of (military) capabilities, but for the rent seekers' and extractors' personal benefit (Keupp, 2021).

According to Feinstein et al., (2011), there are intrinsic features of defense procurement and arms trade that make it prone to corruption[16], rent seeking and extraction. Them being: a) confidentiality due to national security implications; b) close informal relationships between buyers, suppliers and brokers; c) complexity, fragmentation and opacity of production, transportation and financial networks surrounding defense contracts; d) technical specificity of defense products; e) pressures to procure arms swiftly due to situations of active or imminent conflict, resulting in overly hasty procurement decisions with limited oversight; f) high monetary value of defense contracts; g) lack of consequences of wrongdoings. Furthermore, procurement practices such as single bidding (one bidder), tailored tenders, and the use of non-competitive contracts have been associated with a higher risk of corruption and rent-seeking (Fazekas & Márk, 2019; Charron et al., 2017).

Academic work in political economy and public procurement suggests that high procurement pressure, characterized by urgency/crisis, shortened timelines, and expanding procurement budgets, tends to increase risk of corruption and rent-seeking opportunities, since said conditions are linked to loosened procurement oversight (Gnaldi & Del Sarto, 2024). At the procurement-process level, research on emergencies provides more direct support for the pressure factor: disasters and emergency contexts are increasingly evident in tender data to be associated with elevated corruption-risk patterns in public procurement, leading to the aforementioned single-bidding practices (Fazekas et al., 2025). On that note, a study by Gupta et al. (2000) examined corruption and its correlation with defense spending, analyzing 120 countries over the 1985 to 1998 period. They found that corruption (as measured by Transparency International's Corruption Perceptions Index and the International Country Risk Guide Index) is associated with higher defense spending, as measured by the share of GDP devoted to defense and total defense spending. A notion concurred with by Czibik et

[16] Can be defined as the abuse of public power for private benefit (Bardhan, 1999; Tanzi, 1998), which can be viewed as a form of rent seeking/extraction in our case.

al. (2021), who, in a 10-year study, find that nearly all EU countries face a higher level of corruption risk in defense procurement contracts than in procurement in general.

5.3.3 Concentrated benefits – Dispersed costs

While it is difficult to coordinate collective action among a large and diffuse group, it is relatively easier to do so in a relatively small group with a narrow interest focus. The latter holds especially true when the smaller group can attain large, concentrated benefits. This leads to small interest groups being able to effectively organize and lobby to achieve concentrated benefits, especially when they can disperse the respective costs upon a broad group (Olson, 1965). Furthermore, the dynamics of concentrated benefits and dispersed costs pertaining to procurement can be characterized as follows. Government procurement is funded through fiscal costs, which are dispersed among all entities contributing to public resources (i.e., taxpayers). Those same resources are awarded as benefits to a concentrated array of suppliers. As a result, defense contractors are more likely to pursue their agenda (rent seek) with public officials (while rent extracting officials can extract value from contractors), due to the high concentration of benefits they are likely to achieve, while the tax providing majority or the rest of the defense market is less likely to interfere with the same agenda, due to the fact that the costs that they incur are marginally dispersed. In other words, a dispersed group paying the dispersed costs finds it less worthwhile to pursue collective action to oppose procurement projects, while defense contractors find it more worthwhile to pursue collective action to propose the same procurement projects (which will be more efficient due to a higher concentration of benefits) (Coyne & Goodman, 2022). Furthermore, while the efficiency and quality of defense spending are of great importance to the public good through their impact on national security, citizens have limited options for monitoring and holding the government accountable in this field due to confidentiality and the relative scarcity of publicly available information (Feinstein et al., 2011).

5.4 The public-private market failures in the defense sector through the lens of transaction-cost economics (TCE)

The government aims to benefit from outsourcing, namely due to the specialization of the entities that are awarded contracts. The benefits attributed to contracting in the ideal sense come down to more and better products, delivered effectively and efficiently. TCE predicts that actors involved in a transaction can benefit from cooperative agreements, yet since they are characterized by self-interest and hold conflicting objectives, they will not always fulfill their ends of the agreements. This holds especially true when transaction-specific assets/investments are involved, in the presence of information asymmetries and imperfections where one party has an information advantage over the other (Franck & Dillard, 2006).

In the context of TCE, Williamson (1975) claims that market failures preclude market exchange and are the main drivers of market inefficiencies. Williamson (1975, 1979) outlined six drivers of market failure situations that preclude competitive markets: 1) Bounded rationality; 2) Opportunism; 3) Uncertainty/complexity; 4) Information impactedness (asymmetry); 5) Small numbers market; 6) Asset specificity.

5.4.1 Bounded rationality, information asymmetry, and opportunism

Bounded rationality and opportunism are the two foundational assumptions of market failures in TCE, both of which are present in defense procurement. In contrast to the B2B market, the B2G market entails an exchange between an economic (business) actor and an economic-political actor, in which only one actor has a profit motive. Furthermore, the government holds a higher level of constraints (boundedness) in its rationality pertaining to accessing and collecting information since it does not possess the asset specific knowledge pertaining to the procured (novel) technology, while the procurements staff cannot efficiently discern whether increases in the price of procured products is attributable technological/quality improvements, inflation, or an attempt by the supplier to realize greater margins[17] (Abdurakhmonov et al., 2020; Crocker & Reynolds, 1993; Keupp, 2021). Information asymmetry regarding the economic and technical aspects of the transaction, as well as a lack of transaction- or asset-specific knowledge, enables the economic partner to act opportunistically (Park, 2023). Keupp (2021) and Hartley (2018) suggest that, due to the increasing level of information asymmetry, the complexity of supplied products, and the opaque cost structures of weapons systems, which are intrinsic to defense procurement, defense procurement planners can no longer defend against rent-seeking. Moreover, public service personnel do not receive compensation for increasing economic efficiency, while finding cost-saving solutions would lead to a partly consumed budget, which would likely incentivize a decrease in the upcoming budget, which is generally disincentivized by the decision makers of defense departments.

5.4.2 Asset specificity

[17] According to Shay Assad, a former chief defense negotiator for Raytheon, and other defense contractors of over 40 years, defense contractors routinely rent seek by overcharging the Pentagon, by 40 to 50 %, up to even 4,451 percent, subsequently both damaging the taxpayer, and the readiness of the defense capabilities. He mentions specific products like Patriot's PAC-3 missiles, which have been reportedly overpaid by hundreds of millions of dollars, oil switches which are sold to NASA for $328 dollars, and to the U.S. DoD for over $10,000, which is a markup of over 3,000 percent for the same product, a shoulder fired stinger missile cost has risen from $25,000 in 1991 to $400,000 in 2023, which even accounting for inflation is 700 % increase. Predominately the agreed upon profitability negotiated in firm fixed price contracts has typically been around 12 to 15 %, yet US DoD analysts have concluded that the realized contractor profitability was approximately 40 %. The excess profitability stemmed from dramatically overexaggerated costs and hours needed to fulfill the contracts (Whittaker, 2023).

The asset specificity of a given asset increases as its value diminishes due to the asset being redeployed. If organization A holds an asset with a high level of asset specificity for a transaction with organization B, then the latter can engage in opportunistic actions against organization A, based on its aversion to asset value diminution (Williamson, 1975). When the B2G market relies heavily on transactions entailing a high level of asset specificity, the first mover or the original winner of the contract gains a first-mover advantage in the form of transaction-specific proprietary technical, managerial, and other asset-specific skills that cannot be acquired outside the contract. Furthermore, once the government awards a contract that entails a high degree of asset-specific investments, the financial entry barriers become high, since the asset/transaction-specific investment cannot be acquired outside the contract (Franck & Melese, 2005; Williamson, 1999).

The abovementioned mechanism surrounding asset specificity can result in "Vendor locking" also known as the "Holdup" or "Lock-in" problem, which arises due to the high entry barriers consisting of specific knowledge and assets. In the holdup problem, the government can become dependent on the contractor, since the switching costs arising from the abovementioned factors become too high[18]. Once in the procurement stage (post-contract award), it is often impossible, both politically and financially, to rebid or procure, due to the inherently high asset- or transaction-specific investments the government has already made (Franck & Melese, 2005). If the government buyer becomes dependent on a winning supplier that makes significant investments in specific assets in the abovementioned manner, then ex-ante competition can lead to an ex-post buyer-seller bilateral monopoly situation, leading to the holdup problem or, as Rubin (1990) puts it, the "fundamental transformation" (Rubin, 1990; Franck & Dillard, 2006). Keupp (2021) adds that the quality of goods and services deteriorates with the length of the buyer-seller bilateral monopoly, or, as he puts it, the institutionalized collaboration between the rent-seeking supplier (contractor) and the state. He attributes the deterioration to the lack of competition-based incentives, which would push the supplier in the "fundamentally transformed" or "held up" partnership to innovate or become more efficient. Similarly, Arthur (1989) states that the government's imperfect knowledge and rent seekers' incentives may coordinate on the procurement of inferior products and services, where even a well-intentioned and well-informed government may "lock in" inferior procurement programs.

5.4.3 Small numbers market

A small numbers market refers to a market with a limited number of suppliers and government buyers. Such a market would disband under fair market conditions due to market pressures (ex. new entrants). In the case of the highly concentrated defense contracting

[18] An example of vendor locking is F-35 Lockheed Martin aircraft program, which is the main single program driver of defense procurement costs in the U.S., and has presented with a decade long development and schedule overrun, along with significant cost overruns. In its lifetime, this single aircraft program will have cost the taxpayer $2 trillion (GAO, 2024).

market, government procurement regulations, high levels of asset specificity, TSIs, and high capital requirements, among other factors, play the role of entry barriers, inhibiting new entrants, while primes become increasingly entrenched (King & Nowack, 2003). In 2003, Merle suggested that barring prime contractors from government contracting is practically impossible. Excluding prime contractors from defense contracts for misconduct or contract breaches, even temporarily, could jeopardize national security, as it eliminates the only available firm to meet a given requirement[19] (Merle, 2003). A small number of prime defense contractors also means that rent-seeking can be more effective, since a smaller number of actors organize efforts more efficiently, allowing all bids on contracts to drive a disproportionately high market price (Keupp, 2021). Effectively, the global defense industry is an oligopoly, which can lead to product price action that closely resembles a cartel[20]-owned market structure. The defense market structure thus allows for market collusion and price setting[21] by the largest defense contractors (Hartley, 2018).

As stated up to this point, defense procurement and defense contracting activity are deeply connected to state requirements, which, due to the nature and structure of the defense B2G market, can, according to PCT and TCE, create market inefficiencies/failures, limiting the state's ability to provide defense effectively and efficiently. As previously stated, the state's need for defense capabilities is, however, not constant, yet dependent, among others, on perceived threats to national defense, which means that the latter is also an important factor influencing defense contracting activity (Smith, 1989; Keupp, 2021; Zhang et al., 2022; Tran & Vo, 2024). For this reason, the next segment of this thesis will examine how perceived threats to national (international) security, or rather one of its proxies - geopolitical risk, can influence the defense contracting activity.

[19] Boeing's space division for example, has been suspended for military contracts multiple times, but the suspension has been overturned every time, since it was the only contractor which could provide space launch services in the required time frames (Merle, 2003).

[20] Cartel market dynamics refer to a group of firms or nations entering an explicit agreement to restrict competition for the purpose of driving up prices. Price-fixing cartel agreements may take the form of open collusion with regards price and other market variables, with members entering into contracts. A more common modus operandi is that secrecy, where the cartel may involve secret collusion among members (Thomas and Maurice, 2016).

[21] There are examples of companies such as TransDigm, which corner spare parts markets, and raise prices of crucial parts used for weapons systems. This led to a situation where such companies, becoming sole suppliers, can practically extort defense procurement. One such specific case was in 2006 when TransDigm had acquired a manufacturer producing a crucial part for the Apache helicopters deployed in a battlefield in Iraq, and increased the prices of said part by 40 %, making the helicopter unusable until the US DoD has agreed to buy at the new price. By 2018, the specific part has increased in price by another 16,000 %. Since the suppliers are limited, the DoD often has no choice but to procure at set price. (Department of Defense Office of Inspector General, 2019).

6 GEOPOLITICAL RISK AND ITS RELATION TO DEFENSE EXPENDITURE, ECONOMIC ACTIVITY, AND THE DEFENSE SECTOR: INTEGRATIVE REVIEW

6.1 Geopolitical risk and defense spending

Geopolitics is a field of study that encompasses research areas such as international rivalry (including war), economics, political economy, and international relations. Traditional geopolitical theory focuses on the implications of international power rivalry, political control of territories, the territorial distribution of political and/or economic leverage, and international policy (Caldara & Iacoviello, 2018, 2022; Flint, 2021; Cohen, 2014). According to Cohen (2014), a nation's (geopolitical) power is founded upon four pillars. He asserts those as: a) Overwhelming military strength and the willingness to use it; b) Surplus economic energy; c) Ideological leadership that serves as a model for other nations; d) Cohesive system of governance. Geopolitical developments and international power rivalries can prompt market-moving decisions by influential actors (state or private entities), introducing uncertainty and volatility in global markets (Yu & Wang, 2023). The uncertainty stemming from said geopolitical developments can also be addressed as geopolitical risk (GPR). Caldara & Iacoviello's (2022) definition of geopolitical risk, on the other hand, defines GPR as risk associated with wars, terrorist acts, and tensions between states, that affect the normal and peaceful course of international relations (both the risk of the materialization of potential destabilizing events, as well as the risk of existing events escalating).

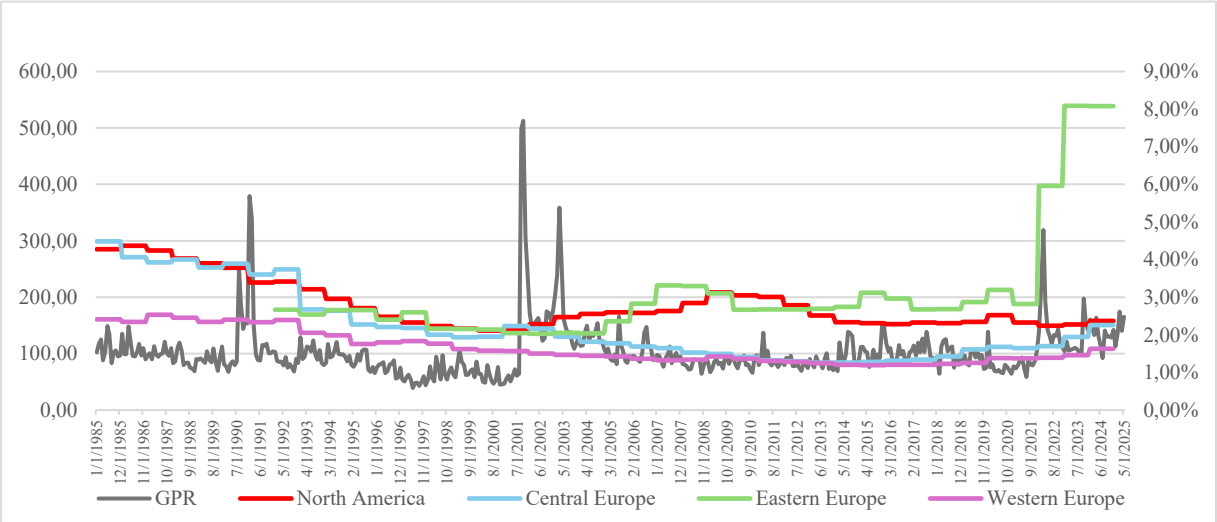
The GPR Index I will be referring to and use as a proxy for perceived military (geopolitical) threats by Caldara & Iacoviello in (2022) is based on the text analysis method and is used to measure the prevalence of adverse geopolitical events[22]. While defense budgets remain a key aspect of national policy, they are influenced by numerous factors, both external and internal to the respective state. One of the main factors that dictates the level of defense spending, however, is the level of perceived military and other geopolitical threats. In essence, the level of perceived threats is low, the state is inclined to reduce financing of the armed forces and, in turn, defense procurement. If the case is such that a sufficient threat is present, it is inclined to allow a larger portion of the public budget for the needs of defense (Tran & Vo, 2024; Smith, 1989). Figure 5 shows the movement of the GPR index by Caldara & Iacoviello (2022), and regional levels of defense expenditure. Moreover, it presents how after the collapse of the USSR which was deemed one of the main threats to the "West", the defense expenditures as shares of GDP have been declining, with the exception of the US,

[22] The index counts the monthly frequency of published articles discussing rising geopolitical risks, divided by the total number of published articles. The search quarry of the index is organized in eight categories: War Threats (Category 1), Peace Threats (Category 2), Military Buildups (Category 3), Nuclear Threats (Category 4), Terror Threats (Category 5), Beginning of War (Category 6), Escalation of War (Category 7), Terror Acts (Category 8).

which has increased its defense efforts after September 11th 2001 with the global war on terror in the middle east, as well as the exception of eastern Europe, which has seen continuous, albeit smaller scale (barring the Russo-Ukrainian war since 2022) tensions even after the cold war.

In recent years, studies analyzing the relationship between geopolitical risk aggregates and defense spending have also been conducted, showing that the two are positively correlated. Both latter have been shown to be positively correlated to an increase in defense industry returns (Zhang et al., 2022; Tran & Vo, 2024). Moreover, Tran and Vo (2024) analyzed the defense spending of 34 countries over 1994-2022 and examined its relationship with the local and global GPR indices adopted by Caldara & Iacoviello (2022). Their results indicate that a 1 percentage point increase in the local GPR risk index leads to a 0.046% increase in defense spending over the subsequent two years. Moreover, they assessed that a local GPR shock can account for over 1% of variance in defense spending in the following year, while a global GPR shock can explain 0.074% in the variance of the national defense expenditure. They also find that one standard deviation increase in local GPR correlates with an increase in defense spending for the 2 following years, after which the effect tends to diminish. Yesilyurt and Elhorst (2017) find that defense spending in neighboring countries affects the spending level of the analyzed country[23].

Figure 5: Defense budgets (% of GDP) by region compared to global GPR index by Caldara & Iacoviello (2022)



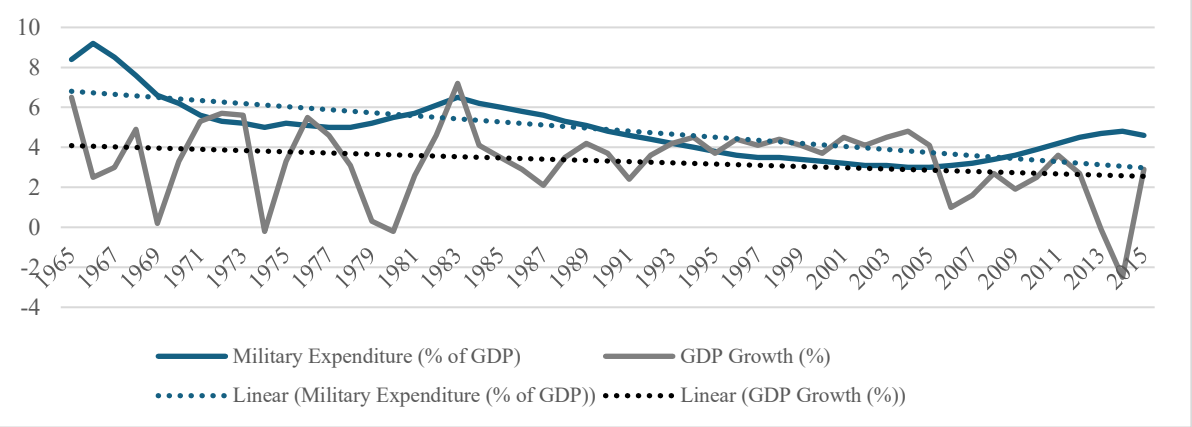
Source: Stockholm International Peace Research Institute (2025); Caldara & Iacoviello (2022).

[23] Furthermore, localized geopolitical tensions can also spill over, and have an effect on GPR levels globally. Namely, when a nation responds to increased local GPR by increasing its defense spending, other local states can perceive the latter as a threat and consequently increase their own defense spending, creating a spending cycle, which can spill over to third countries. In such an environment, where the regional defense spending is increased, reporting on the regional increase in military budgets can be interpreted as an increased level of geopolitical tensions/risk, and in turn increase the GPR or the perceived level of global geopolitical tensions (Balli et al., 2022; Tran and Vo, 2024).

6.2 Defense spending surges and their economic implications

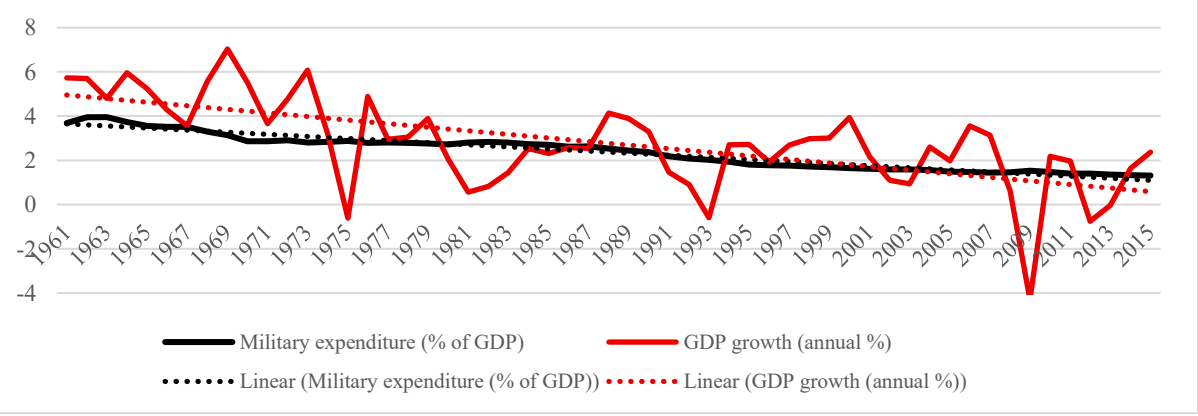
The relationship between defense expenditure and economic growth has been a subject of extensive inquiry, yet yielded no decisive conclusions (Dunne & Coulomb, 2008). Historically, defense spending surges and military buildups have been linked to improvements in industrial capacity and technological breakthroughs (the onset of technologies such as radar, cryptography, rubber, and nuclear power was directly linked to military programs). Moreover, during military buildups, infrastructure investments have been known to increase, while shipbuilding, information, telecommunication, transportation, aerospace and weapons technologies among others were developed at an increased pace, while increased industrial production capacities have been utilized in the private sector after times of war, contributing to the broader economy (Beard & Bear, 1927; Wilson, 2006; Ilzetzki, 2025, Ram, 1995).

Figure 6: US defense spending (% of GDP) and annual GDP growth



Source: World bank (n. d. - a).

Figure 7: Cumulative EU member states (2025) defense spending (% of GDP) and annual GDP growth



Source: World Bank (n. d. - b).

Figures 6 and 7 show examples of annual GDP growth contrasted with defense spending as a share of GDP in the U.S. and Europe. We can observe that the period characterized by the "peace dividend," or decreasing levels of defense spending (as a share of GDP), has been accompanied by a downward trend in GDP growth.

Higher levels of unemployment (during recessions) could accommodate higher public budgets and public employment, or employment by defense contractors that rely on public resources during defense spending surges, while having a positive impact on GDP and less inflationary effects (Born et al., 2024). Keynesian theory also suggests counter-cyclical public spending increases aggregate demand and GDP, while minimizing inflation (Kaminsky et al., 2008; Ilzetzki, 2014). The latter is attributed to the assumption that low-utilization economies face less inflationary pressure as aggregate demand and employment increase, implying they could accommodate an expansion in government spending. Conversely, an economy operating at full capacity could face greater inflationary pressures due to increased government demand for defense production, while output would see limited growth due to capacity constraints on the supply side (Boehm & Pandalai-Nayar, 2022; Benigno & Eggertsson, 2024; Fornaro, 2024). In the neoclassical school of thought, however, public expenditure ought to be evenly dispersed through both periods (Ilzetzki, 2025). Research by Ramey and Zubairy (2018), Blanchard and Perotti (2002) Ilzetzki et al. (2013), Diaz and Surico (2022), and Sarasa-Flores et al. (2025) find that defense spending fiscal multipliers lie within the range of 0.6 to 2.4, showing that research results differ greatly among authors, which is why I will focus on factors commonly associated with increasing or decreasing the fiscal multiplier.

Research by Ilzetzki et al. (2013) suggests that defense spending surges differ in their effects on the economy, depending on the development of the economy in question. Namely, they posit that government spending shocks in developing economies or lower-income countries can crowd out private consumption and investment, which can in part be attributable to the tendency to outsource procurement by lower-income states. The next factor impacting the multiplier is the level of R&D spillovers to the wider economy. Although total productivity returns of military R&D are deemed to be lower than non-military R&D, Antolin-Diaz and Surico (2022) suggest that the R&D component of defense spending is positive. Moreover, Dyevre (2023) asserts that public R&D has a larger spillover effect to the wider economy than private R&D. Similarly, numerous authors state that publicly funded R&D related to defense research leads to long-lasting positive effects on scientific innovation, entrepreneurship, employment, and the economy (Gross & Sampat, 2023; Kantor & Whalley, 2023; Griliches, 2007).

Sarasa-Flores et al. (2025) finds that capital-intensive defense procurement drives the multiplier positively, while personnel costs and other consumptive outlays have a neutral to negative effect on the multiplier. Similarly, Sheremirov and Spirovska (2022) find that in a

129-country analysis, defense spending multipliers larger than 1.5 for developed economies are driven almost entirely by capital-intensive military purchases. In this regard, Sarasa-Flores et al. (2025) state that increases in one category of defense expenditure may induce increases in other categories, suggesting the presence of complementary relationships among spending components, namely the acquisition of new military equipment, which can necessitate an increase consumption (ex. ammunition and maintenance, or consumption in terms of increased salaries pertaining to increased levels of military personnel). Research by Sarasa-Flores et al. (2025) suggests that, due to its capital intensity, the surge in defense spending in the EU will generate a positive fiscal multiplier.

Factors such as reliance on imports were also shown to negatively impact the defense spending multiplier, with high import reliance leading to fiscal multipliers of zero or negative (Ilzetzki et al., 2013; Sheremirov & Spirovska, 2022; Sarasa-Flores et al. (2025). Similarly, Nakamura and Steinsson (2014) find that, in the U.S., individual states from which defense assets or services were procured experienced a greater positive economic effect than states not included in the procurement. In this context, they find that the effect of defense spending had a fiscal multiplier impact of 1.5 in the "supplier" states, which brings the fiscal multiplier of defense spending in the same range as spending on health care, infrastructure, and local public spending (Reich et al., 2012; Wilson, 2012; Shoag, 2013). In the case of lackluster domestic suppliers, importing weapon systems can be more cost-efficient and offer shorter delivery times, the latter being the most important factor in urgent cases of increasing military capability (Ilzetzki, 2025). Importing instead of producing domestically can also be less inflationary, due to lower domestic consumption pressure, yet it provides less tax revenue. Despite the latter, importing defense assets impacts the fiscal multiplier negatively (Ilzetzki et al., 2013), which, similar to importing any other goods, contributes to the trade deficit. Moreover, the abovementioned positive impacts of a surge in defense spending related to R&D and its effects on production capacity, innovation, and other knowledge spillovers are mitigated when relying solely on imports.

Furthermore, financing defense spending surges according to Goldin (1980), Hall and Sargent (2020), Barro (1979) and Lucas and Stokey (1983), revolves around the combination of government borrowing and tax collection. The models differ in the extent to which fiscal shock is absorbed by tax collections and government debt. In the Barro (1979) model, rapid increases in defense spending should be financed through both taxes and government borrowing. Moreover, defense spending financing should be dependent on the expected duration of the fiscal shock stemming from the defense spending surge. Namely, short-term defense buildups should be financed predominantly through government borrowing, while long-term spending increases should shift financial dependence towards tax collection. On the other hand, the Lucas and Stokey (1983) model asserts that defense spending surges should be financed primarily by borrowing, regardless of whether they are long- or short-term, holding tax revenues constant, since raising them would have an adverse effect on private consumption. The latter model manages borrowing costs primarily by lowering the

ex-post returns to bondholders. Furthermore, taxes impose a non-linear cost to the economy, while high levels of tax variability can pose adverse consequences, since, among other factors, it reduces the efficiency of private-sector planning and predictability (Ilzetzki, 2025). Baxter and King (1993) suggest that relying on taxation reduces the positive GDP effects of government consumption, while Romer and Romer (2010) suggest that relying on taxation in military buildups can lead to negative fiscal multipliers. Authors further building on the Lucas and Stokey (1983) model assert that if defense spending is increased over a longer period, taxes will eventually have to increase to resolve the public debt. In the absence of eventual tax increases in the case of prolonged defense expenses, public debt accumulates, potentially leading to higher borrowing rates (due to lowered perceived credibility of fiscal health, higher risk premiums), inflation, or debt crises (Marzian & Trebesch, 2025), potentially further decreasing the fiscal multiplier (Sarasa-Flores et al., 2025).

More recent research conducted by Marzian and Trebesch (2025) analyzed the financing of 113 instances of military buildups[24] since the 19th century. They concluded that the average military buildup takes 5 years. Over the 5-year period, average defense spending increased by 1.5% of GDP, while many buildups led to even faster growth in defense spending as a share of GDP. They further analyzed the financing of said buildups, focusing on fiscal variables (taxes, deficits, spending cuts) and found that during the periods of large military buildups, non-military expenditures did not decrease; on the contrary, they increased. Marzian and Trebesch (2025) did, however, observe instances of reallocation of public funds from social welfare spending.

Ilzetzki (2025) asserts that setting defense spending targets as a share of GDP neither ensures the procurement of appropriate armaments nor incentivizes cost savings. Setting said targets also leads to pro-cyclical public spending, which does not adhere to strategic defense requirements (Keupp, 2021) and can be suboptimal from the macroeconomic perspective, especially since a decreased GDP would lower defense expenditures, while also lowering the fiscal multipliers it could provide to an economy in a recession (Kaminsky, Reinhard, Végh, 2008; Ilzetzki, 2014). Secondly, setting requirements as a share of GDP ignores that weapon systems are durable, meaning procurement is often made through major purchases that are not evenly distributed over the years. Moreover, it can stimulate under-spending in early buildup stages and overspending in the later stages of the defense buildup cycle. Thirdly, holding requirements constant or increasing them removes defense contractors'

[24] In the case of World War I and II, combatant countries relied primarily on debt financing, which lead to very large increases in debt to GDP for most of the combatant countries (Marzian and Trebesch, 2025). Multiple countries also raised taxes, while decreases in social and other non-military segments of public spending were not common (Hicks et al., 1942; Stasavage and Scheve, 2010). In the case of the Korean war, which the US financed primarily by raising the capital tax by more than 10 percentage points (averaging 62%), along with a labor tax increase (from 16% to 20%). Focus on financing through taxation however reduced US welfare and consumption, when compared to debt financing (Ohanian, 1997). Marzian and Trebesch (2025) concluded that in the largest wars, debt financing was predominant. Increased taxation and fiscal cuts, however, played a secondary role.

incentives to improve productivity and decrease marginal costs. Lastly, focusing on expenditure rather than quantity and quality of procured goods and services can impose inappropriate incentives to the procurement policies (Keupp, 2021). The measurable targets should instead focus on material objectives, such as goals related to the quality and quantity of procured weapon systems, the size of the armed forces, personnel, and munitions stock (Keupp, 2021; Ilzetzki, 2025). Howell et al. (2021) suggest that a possible exception to setting expenditure goals is R&D, since results in the field are uncertain, while expenditure targets can be inevitable.

6.3 "Flight to arms" - geopolitical risk, defense expenditure, and defense contractor activity

Heightened levels of GPR are known to increase the propensity of the "flight to safety" (or quality) phenomenon, which refers to the process where investors reallocate capital from higher-risk assets to assets which hold lower risk, commodities and other "safe-haven" assets (Baur & Lucey, 2010; Troster, Bouri & Roubaud, 2019), since financial markets tend to suffer value depreciation and increased volatility when the values of GPR indexes increase. The defense sector, on the other hand, tends to outperform other industries while defense companies gain in market value. There are two fundamental factors that allow for the increased performance of defense companies in times of increased GPR:

a) Increased defense spending: The level of national defense spending can be impacted by the level of perceived geopolitical risks. When geopolitical threats are perceived as high and/or there are perceived threats to national security, governments tend to increase defense expenditure to sustain the capabilities needed to deter or combat potential aggressors. Part of the defense expenditure flows to defense contractors, since they are responsible for providing assets intended to increase the capabilities of the national armed forces (through defense-related goods and services) (Smith, 1989; Keupp, 2021; Tran & Vo, 2024).

b) Reallocation of private capital to the defense industry or "Flight to arms": The latter term refers to capital flowing to the defense industry in times of increased GPR, a term derived from the "flight to safety" phenomenon. Moreover, increased defense spending incentivizes private capital investors to allocate to defense equity markets, since their investments are in part "subsidized" by the defense budget and its expected growth (Zhang et al., 2022; Tran & Vo, 2024).

In this context, Zhang et al. (2022) examined 36 defense contracting companies and studied their correlation with the GPR index by Caldara & Iacoviello (2022) for the January 2020 – April 2022 period. Their study concluded that defense-sector equity prices have been strongly correlated with GPR since the Russia-Ukraine war, confirming the flight-to-arms phenomenon. They also concluded that long-term investors tend to have a higher interest in defense investments, since they expect to receive returns from the increased defense

spending over a longer time horizon. Additionally, they find that the GPR correlation is region-specific, meaning the economic impacts (defense industry performance) are larger in geographic proximity to the GPR shock's source, while the defense companies most strongly correlated with GPR are market-leading prime defense contractors. Furthermore, they find that GPR is a leading indicator, implying that defense contractors' positive price action is observed after GPR spikes. Their findings concur with Apergis et al. (2017), since they find that GPR can predict volatility of approx. 50 % of the examined global defense companies. Similarly, Gheorge and Panazan (2024) find that the events positively impacting GPR, such as the annexation of Crimea in 2014, and the onset of the Russo-Ukrainian war in 2022, were positively correlated with the gain of stock price to most European defense companies. Namely, they find that 50.6% of the 75 defense companies analyzed experienced immediate effects following the annexation of the Crimean Peninsula. Moreover, the Russia-Ukraine war was found to affect 81.4% of the defense companies in the sample. Both Zhang et al. (2022) and Gheorge and Panazan (2024) assert that the "flight to arms" phenomenon can be observed and confirmed in the respective analyzed periods.

Spending surges or military buildups tend to lead to prime defense contractors reaching capacity constraints, which forces the government customer to diversify procurement to lower-tier contractors, while new entrants emerge (Ilzetzki, 2025). Reichardt (1975) and Ilzetzki (2024) expand on the decentralization of defense procurement during military buildups, even in highly concentrated markets such as the defense aerospace market. Namely, they show how during WWII, market concentration declined in the US. They posit that intense military buildups and wartime appear to have briefly paused a historical trend towards a highly concentrated industry. Moreover, in defense (military) buildup during WWII, defense contractors operating close to or at maximum capacity were forced to innovate, which led to the adoption of new technologies allowing higher capacity, lower costs per unit, and in turn product costs, while wages of the production workers increased.

6.4 Defense procurement as a geopolitical leverage

As stated above, importing military systems can be necessary, yet considering the implications of the absence of domestic defense-related production capabilities and reliance on external defense capabilities is also crucial. In this context, Sislin (1994) asserts that depending on external defense contractors or on foreign defense-related materiel can allow the supplying nation to exert leverage over the receiving nation's policy. He proposes that the process of leverage in weapons system provision works as follows. In this framework, Sislin (1994) proposes that suppliers and recipients are rational actors, in which the recipient initially engages in behavior the supplier does not desire, since the recipient obtains more utility from noncompliance than from compliance (relative to the supplier). Next, since the supplier would prefer that the recipient change its behavior to align with the supplier's desires, thereby providing the supplier with greater utility, the supplier exerts effort to coerce the recipient into compliance. The supplier can then select the influence mechanism from a

variety of arms export policies. The arms export policies can take the form of either positive (rewards) or negative sanctions (threats or punishments).

Figure 8: Arms supply as geopolitical leverage

Source: Sislin (1994).

The recipient's reaction to an influence effort is then conditional. The reaction is thus determined by the nature of the influence attempt itself and the respective cost-benefit analysis. Furthermore, Sislin (1994) proposes that the recipient's decision is based on a cost-benefit analysis of the effects of the supplier's coercion instrument as well as the expected probability of the instrument's usage. The variables organized into 5 categories may explain the efficacy of the sanctions imposed by the supplier.

Category I pertains to the characteristics of the influence instrument (technique): a) Sanction type - positive (carrot) sanctions tend to be more effective, while negative (stick) sanctions work better against nations lacking domestic weapons production or alternative suppliers (Gelb, 1976-1977; Wheelock, 1978; Quandt, 1978; Klare, 1983; Peleg, 1980; Rosh, 1990); b) Deterrence - efforts to deter are generally more successful than efforts to compel new actions (Blechman & Kaplan, 1978; Quandt, 1978); c) Policy type - coercion is historically harder regarding domestic policy than foreign policy (Levite & Platias, 1983; Sislin, 1994).

Category II pertains to Characteristics of the recipient: which have effect on the perception of the influence instrument: a) Regime type - military regimes, valuing arms for power and resource allocation, are generally more susceptible to influence (Muniruzzan, 1992; Brzoska, 1989; Zuk and Thompson, 1982); b) International conflict - nations at war or feeling urgent weapons needs are more open to influence (Neuman, 1986); c) Security threats - nations which hold higher perceived threats, are likely to have higher propensity to procure weapon systems, which makes them more susceptible for influence (Snider, 1978); d) Civil strife - governments facing internal conflict procure weapons to control unrest, making them more susceptible for influence (Avery, 1978); e) Resources - less resource-rich nations are more susceptible for coercion due to difficulty replacing lost weapons or domestic production gaps (Pearson, 1988); f) Domestic (indigenous) defense production capability - nations lacking indigenous weapons production are more susceptible to coercion, while those with strong domestic capacity are less susceptible (Ross, 1988; Sislin, 1994).

Category III pertains to the characteristics of the recipient-supplier interaction: a) Supplier arms dependance - suppliers can create recipient reliance on their arms and related support, increasing susceptibility to influence (Catrina, 1988; Kemp, 1979); b) Trade dependance - greater overall economic dependence on the supplier also raises susceptibility through various leverage means (Sislin, 1994); c) Precedent - if past sanctions threats were not enforced, recipients may be less likely to comply with supplier demands. (Schelling, 1980).

Category IV pertains to the characteristics of the supplier: a) Supplier unity - when a supplier's government is divided or weak, influence attempts are less effective (George, 1991); b) Presidential style - leaders who are active, energetic, and personally engaged tend to achieve greater success in influence efforts (Sislin, 1994).

Category V pertains to systemic variables: a) Hegemony - being a hegemon increases a supplier's success in arms influence (Sislin, 1994); b) Superpower relations - geopolitical rivalry pressures recipient nations to align with a supplier, raising dependence and susceptibility, while reduced competition allows more procurement freedom (Ross, 1988).

7 STUDY: EUROPE'S DEFENSE REARMAMENT EFFORTS

The following study examines Europe's defense sector and defense policy response to the recent increase in geopolitical risk. It also provides an assessment of the likely implications of the European defense policy shift (and the associated surge in defense spending) for the European defense sector, economic outcomes, and European defense/geopolitical autonomy. It applies the framework developed in Chapters 5 and 6 to Europe's post-2022 rearmament efforts. The section analyzing interviews in the end of the chapter aims to examine whether increased defense expenditure under heightened geopolitical risk alleviates or reproduces structural inefficiencies associated with defense procurement, public–private dependency, and market concentration.

7.1 Contextualizing the European defense market

Up until the 2022 Russo-Ukrainian war, defense budgets of Western European states, broadly speaking, have seen substantial decreases, primarily due to a reduced threat perception following the end of the Cold War, consistent with the reversion of the flight-to-arms phenomenon. Alongside decreased defense budgets, defense procurement budgets have also declined, severely impacting the respective defense industries (Zhang et al., 2022; Gheorge & Panazan, 2024; Young, 2023). Consequently, defense contracting firms, seen as their main source of revenue stemmed from government contracts, were faced with decreased revenue, leading to defense contracting firms conducting intense horizontal and vertical integration campaigns through joint ventures, strategic alliances and M&A activity, which is consistent with theory pertaining to the B2G market, since in times of austerity the latter can become

one of primary ways of achieving cumulative revenue growth (Kipps et al., 2018; Antenucci et al., 2018; Czibik, 2021).

The latter resulted in market failures in the form of: a) smaller number market and increased barriers to entry, leading to a decreased level of competition in the defense industry; b) Increased prime contractor market power, which could besides the limited number of suppliers and increase prime market share be attributed to increased tacit knowledge gained through M&A (Kipps et al., 2018) which can lead to; c) close informal relationships between buyers, suppliers and brokers; d) rent seeking in the form of a shift from fixed price contracts, to cost plus contracts, which have been known for increasing cost and schedule overruns (Schwartz; 2010). Meanwhile, the European defense industry has, until recently, been moving away from the success of the early 1990s and losing the role of innovation (Young, 2023). On a similar note, since defense budgets in the EU have, until recently, been under significant austerity, military modernization plans have faced cancellations, while states have adopted models of smaller professional armed forces and ended conscription practices (Young, 2023).

Since the 2022 Russo-Ukrainian war, the EU and other NATO member states' governments have been determined to procure defense-related goods and services at a noticeably higher rate compared with the rest of the post-Cold War era, which has led to the current procurement environment being characterized by high inelastic demand for the first time since the end of the Cold War. At the same time, the current production capacity of the European DIB is assessed to be insufficient relative to the defense procurement demands, while its growth to the required scale is assessed to take years, which, paired with high inelastic demand, resulted in sector-specific inflation. Increasing defense production capacity is expected to face challenges in recruiting and training the required skilled labor force, as well as a high degree of capital intensity, stemming from production complexity and required scale (Young, 2023). Moreover, a large part of the defense industry's products is characterized by complexity, which leads to highly specialized and unique components that, when in high demand, can result in bottlenecks due to a limited number of sources (Jones, 2023).

Despite the fact that the ReArm Europe Plan/Readiness 2030 (2025) discussed below incentivizes European procurement, it is crucial to point out that the global supply of defense-related products and services is geographically concentrated. Namely, U.S. arms exports accounted for 43% of global arms exports in the 2020-2024 period, followed by France (9.6%), Russia (7.8%), China (5.9%), and Germany (5.6%). In fact, the Draghi report (2024) states that during the 2022 – 2023 period, the EU procured roughly 78 % of its defense-related materiel (in value terms) from outside the EU. This puts the EU in the category of defense-related recipients, which are a) facing the danger of international conflict; b) facing security threats; c) facing a lack of domestic production capability; d) under relatively high arms supplier dependence; e) receiving supplies from a hegemonic

state (USA). All of the latter factors are under Sislin's (1994) framework, deemed as factors increasing susceptibility to influence or coercion in a policy/political sense.

Moreover, as asserted in previous sections, importing instead of procuring domestically can negate the potential positive fiscal multipliers of domestic defense procurement (Ilzetzki et al., 2013; Sheremirov & Spirovska, 2022; Sarasa-Flores et al., 2025). While it is true that in case of emergency, procuring from outside the EU can be necessary, it is important to note that by relying on imports, the EU can miss out on domestic employment opportunities, sector-specific knowledge and human capital development, tax revenues, and other potential technology-economic spillovers to the wider economy. Moreover, even if domestic production is currently more costly in the short term, taking into account the long-term decrease in marginal costs due to increasing economies of scale and learning-by-doing aligns with the strategic priority set out by the EC.

Furthermore, while military/defense alliances, can induce an economies of scale effect on the production and procurement of military assets, since they can imply joint procurement, along with an increase the scale of the procurement requirements due to the need to supply a larger cumulative force, defense procurement in the EU has been characterized as being fragmented among national governments which contributed to a procurement environment facing obstacles in achieving economies of scale. The absence of a unified defense market, 27 separate armed forces, 27 national markets, and 27 defense ministries, along with equipment that hasn't been truly standardized, inhibits economies of scale and, among other effects, can lead to higher final product prices (Mejino-López & Wolff, 2024; Robertson, 2022). Further increasing transaction costs in European defense procurement is the lack of unified taxation and rules, such as VAT exemptions, across Europe (Scortecci, 2020).

7.2 Europe's proposed defense spending surge

The EC has been considering ways to stimulate its defense industry ever since the establishment of the European Defense Fund (EDF) in 2017 (Clapp et al., 2024). Yet, the EC advanced in its defense capability ambitions, primarily fueled by the EU's increased perceived threat stemming from Russia's invasion of Ukraine in 2022, which created a new level of urgency pertaining to the need for European defense capabilities, as well as steps taken by the US administration, which urged the EU to "take ownership of conventional security on the continent (Hegseth, 2025)" (Clapp et. al., 2025). The abovementioned circumstances in a "Rapidly deteriorating strategic context" (European Commission, 2025) led the European Commission to present (among others) the White paper on the future of European Defence, the Joint White Paper for European Defence Readiness 2030, and the ReArm Europe Plan/Readiness 2030 in 2025 (Clapp et al, 2025; European Commission, 2025). The broader defense-strategic objectives of the initiative are based on increasing the level of the EU's defense deterrence and military capability, while also increasing the EU's

level of autonomy with regard to its defense capabilities and defense procurement, through European defense industry development (Clapp et al., 2025; De Lemos Peixoto et al., 2025).

The European Commission's Joint White paper for European defence readiness (2025) expressed that the European Defense industry is unable to supply the required quantities of defense systems and equipment at the rate required by the member states, while the fragmentation of the defense industry leads to dominant suppliers catering to domestic markets and lack of production scale (and economies of scale), which is inherent to European defense, due to the 27 separate defense markets and forces. The EC thus proposes the creation of a true common EU-wide Market for defense equipment through the European Defense Industrial Reinforcement through Procurement Act (EDIRPA[25]). According to authors like Keupp (2021) however, centralized defense markets could create circumstances in which attempts to exert influence (rent seeking/extraction) over procurement are more effective, since the procurement decision-making process is centralized - concentrated in the hands of key decision makers, and exempt from democratic control by citizens.

While there have been clear efforts of defense sector integration by the EC, member states with the most developed domestic DIBs (Germany, France, Italy and Spain), rationally pursue their national interests and sovereignty by focusing on their own defense production capabilities and protecting them from competing states (Blavoukos et al., 2023; Remiro et al., 2024). Similarly, the interests of the most prominent defense contractors in the European DIB have, according to Schütte (2023) and Sabatino (2022), historically prevented approaches striving for greater integration of the European defense market in order to maintain their dominant status quo. Since the production capacities are held by dominant prime contractors, procuring through the concentrated set of suppliers can mean recreating conditions for concentrated benefits and dispersed costs market failure, concentrating the economic benefits to the nations in which said suppliers are based, while respective economic (fiscal) costs are dispersed throughout the procuring nations (Draghi, 2024). In this context, it is noteworthy that government spending shocks in smaller countries are more likely to crowd out private consumption and investment (Ilzetzki et al., 2013), potentially leading to negative economic outcomes for smaller countries. Moreover, the imbalanced distribution of defense industries across member states makes the "fair" spending of EU stimulus funds challenging, further exacerbating the aforementioned market failure. Namely, funds from EDIRPA, EDF, Permanent Structured Cooperation (PESCO), and others alike, which are raised from all the EU member states, provide greater levels of economic benefits

[25] EDIRPA established a joint procurement instrument which aims to incentivize common defense procurement among EU Member States (European Commission, n. d.). Depending on the target level of integration, the savings through greater coordination and joint procurement at EU level are assessed to be between €22 and €100 billion per annum in administration costs and spending volumes, (Schütte 2023; Sweeney and Winn 2020; European Defence Agency 2023; European Parliament Research Service 2023;). Other assessments suggest that a single European defense market could result in cost savings in the range of 10-17% in defense procurement terms (Mueller, 2025).

to states with the most developed DIBs in which the entrenched prime contractors are based (Olsson et al., 2022).

Furthermore, the EC aims to increase defense industrial capacity by prioritizing the procurement of defense-related[26] assets produced in the EU, combined with incentives for long-term defense contracts to provide long-term investment incentives for the defense sector, allowing for planning optimization and mitigating uncertainty. The EC has also recognized that Europe's inability to produce adequate defense capabilities on its own puts it in a vulnerable position when it comes to supplier coercion and influence. The reliance of the European defense industry on external sourcing options regarding critical inputs or suppliers of goods and services was recognized in the Joint White Paper (2025), where EC aims to tackle said vulnerabilities by incentivizing investment into reshoring, diversifying and maximizing resilience against weaponization of supplier dependencies and economic coercion of suppliers, highlighting the lack of defense autonomy and supplier market power. The EC also states that the regulation on defense production ought to be simplified, particularly regarding intra-EU defense asset transfers, permit granting, and the mutual recognition of defense-related permits.

According to PCT, said procurement pressure and urgency can, however, lead to an oversight vacuum and an increased risk of rent-seeking/corruption opportunities (Fazekas & Márk, 2019; Charron et al., 2017). Through the TCE lens, high urgency combined with complex, asset-specific systems increases the probability that procurement staff cannot fully specify needs, evaluate offers, or audit cost structures leading to the bounded rationality failure, while suppliers exploit superior technical knowledge and opaque cost structures, leading to information asymmetry/opportunism failure (Williamson, 1999; Crocker & Reynolds, 1993; Park, 2023). This is where vendor lock-in risk grows. Furthermore, procurement pressure can push member states into procuring through existing production lines and legacy platforms. This can lead to high switching costs and incumbent entrenchment (Franck & Melese, 2005; Williamson, 1999). Even policies aimed at scaling capacity (long-term contracts, fast financing) can unintentionally entrench first movers if awards concentrate on the same prices, under the pretense that they are the only ones able to deliver quickly.

Finally, the EC proposes that the European defense industry program (EDIP) must actively facilitate the participation of SMEs and new market entrants through simplified access to funding, showing that the EC has realized that relying primarily on higher tier and prime contractors has its drawbacks, namely a lack of competition, innovation, and flexibility of the defense market (European Commission, 2025). For the purpose of stimulating small caps, SMEs, and new entrants, the EU aims to leverage the European Defence Innovation Scheme (EUDIS), the Defense Equity Facility, and the European Investment Fund, in order

[26] The term defense-related expenditure in the ReArm Europe plan refers to defense expenditure as defined by Eurostat (2019) in the classification of the functions of government (COFOG), which defines defense spending as: Military defence; civil defence; foreign military aid, R&D related to defence.

to speed up debt and equity financing access for emerging defense contracting entities (European Commission, 2025b). Here the implications are twofold, firstly the increased access to funding could according to TCE alleviate market failure pressures stemming from small number market and barriers to entry, prime supplier power concentration and asset specificity related vendor locking. However, under pressure and with large new funding streams, a different failure mode appears, namely, adverse selection and opportunism. At the same time, according to PCT, the increased funding, paired with urgency and loosened procurement oversight, could lead to rent-seeking opportunities. When procurement and financing are accelerated, it becomes easier for low-quality entrants, intermediaries, or "defense-washing" ventures to access funds or contracts without robust performance verification; shortened evaluation horizons and complex performance measurement raise the risk that the system selects for actors skilled at narrative/positioning rather than delivery.

When it comes to financing the European defense spending surge, the 2024 European Parliamentary Research Service (EPRS) briefing by Clapp et al. (2024) on Financing the European defence industry states that the main source of funding for the European defense industry will remain (increased) national defense budgets, while the ReArm Europe plan (2025) itself presents the financial means by which the EU aims to increase defense spending and defense industry output. Namely, it proposes to leverage over €800 billion in defense spending through national fiscal flexibility, a €150 billion loan Security Action for Europe (SAFE) instrument for joint procurement, potential redirection of cohesion funds, and an expanded European Investment Bank support. It also aims to incentivize private capital investment in the defense industry through the Savings and Investments Union (European Commission, 2025). The rearmament initiative also provides the EU with authority over promoting the competitiveness of its defense industry through supportive acts like the Act in Support of Ammunition Production (ASAP[27]), EDF, PESCO and others alike.

Security action for Europe (SAFE): The SAFE instrument is a financial mechanism by which the European Commission hopes to incentivize investment in the defense industry, or rather the "European defense technological and industrial base (EDTIP)" via common procurement from EU-based defense contractors. The instrument, which is based on Article 122 TFEU will provide a fund of €150 billion, which will be used for loan provision to Member States in the 2025-2030 timeframe. SAFE is set to procure at least 65 % of the total estimated costs attributable to defense contracting from obligations to contractors from the EU, EEA/EFTA States or Ukraine. SAFE will provide long-maturity loans (with a maximum duration of 45 years and a 10-year grace period for principal repayments) which are "competitively priced". The stated reason for a EU collective borrowing approach is the predicted lower collective borrowing costs compared to the predicted cost of national borrowing The SAFE funds will

[27] ASAP aims to incentivize increased production ammunition capacity across Europe as well as, help Member States refill their stocks and deliver ammunition to Ukraine. Furthermore it promotes preparation for bottlenecks and shortages in the defense supply chains. The program has currently identified projects with a budget close to €1 billion (European Commission, 2025).

be backed by the EU budget, which will be used in cases of defaults (Clapp et al., 2025). What's noteworthy in this regard is that incentivizing common procurement can increase production predictability and economies of scale.

Boosting national defense funding - Making EU instruments more flexible to allow greater defense investment – increasing (national) defense spending through loosening the fiscal rules: The ReArm Europe plan encourages member states to increase their level of indebtedness beyond preconceived fiscal norms, by activating the »Stability and Growth Pact's (SGP[28]) national escape clause«, which applies only to defense-related expenditure. The latter also allows Member States to reallocate/shift their respective EU-provided cohesion funds into defense and/or security-related projects. Moreover, the ReArm Europe plan suggests temporarily adopting new fiscal rules by allowing for the use of two separate escape clauses: a) The General Escape Clause; allows EU Member States to temporarily (one year with the option of renewal, pending on the European Council's approval) deviate from their fiscal rules during a severe economic downturn if it were to affect the euro area or the EU; b) The National escape clause (NEC); which applies to country-specific circumstances which impact the country's state of public/fiscal balance. Activating the NEC enables Member States to allocate additional public resources for the purpose of national defense for up an additional 1.5 % of GDP, with for up to four years Furthermore, additional revisions to the SGP have been made, which allow for a »specific treatment« of defense expenditure, among which is the ability for a Member State to enter into an Excessive Deficit Procedure (EDP) without the repercussions (sanctions/fines) which would be applicable prior to the SGP revision (Clapp et al., 2025).

Contributions from the European Investment Bank: The European Investment Bank (EIB) is incentivized to expand its lending »scope« to defense and security projects, with the goals of providing additional financing to the defense industry as well as increasing market confidence. As of May 2024, the EIB announced relaxing its limits to military project financing and now finances projects that are used in both military, police, and civilian applications. The latter announced that it would provide unlimited loans for non-lethal defense projects if EU countries approved them (weapons and ammunition excluded) (Clapp et al., 2025).

Mobilizing private capital: The latter refers to the EU's efforts through the Savings and Investments Union strategy, which will incentivize private capital to fund the defense sector. Clapp et al. (2025) state that the main focus of private capital investment should be on EU SMEs and Mid-cap defense companies, which could alleviate market failures that typically prevent new entrants in the defense sector.

[28] The Stability and Growth Pact (SGP) is a set of rules designed to ensure that countries in the European Union pursue sound public finances and coordinate their fiscal policies.

Rearmament Bank (RB): As stated by the EPRS (Clapp et al., 2025), the Rearmament Bank could provide means of mobilizing the EU's savings to fund defense expenditure during fiscal downturns, similar to the model of the European Bank for Reconstruction and Development (ERBD). The RB would operate without the "procedural" burdens and limitations that hinder current frameworks". The RB would be able to provide €100 to €500 billion in funding for defense industry investment and would be backed by national guarantees rather than collective EU funds and would allow non-Member States to be involved. Moreover, EPRS proposes that Member States could opt out of partaking in the RB via veto. Under the EPRS proposal, the RB would only play administrative and management functions, rather than have decision-making power over defense investments.

Increasing the EU budget: The EPRS states that the current EU budget is not adequate to finance additional funding of defense expenditure, to the extent that is needed. In fact, in 2024, President of the EU Commission stated that the EU requires an additional €500 billion to provide adequate financial incentives to the defense industry in the coming decade (Clapp et al., 2025).

Unused loans under the Recovery and Resiliance Fund (RRF[29]): EPRS (2025) proposes the use of the unused RRF loans (€93 billion out of the €385 billion are left not depleted since the deadline for a request for RRF in 2023) for the needs of defense purposes (Clapp et al., 2025).

As we can see, the ReArm Europe Plan aims to absorb most of the fiscal shock through debt, which adheres to the Lucas and Stokey (1983) model discussed in chapter 6.3.1. In theory, this minimizes effects on private consumption, while avoiding high levels of tax variability, which can pose adverse consequences to private sector planning and predictability (Ilzetzki, 2025). Although the word "tax" is not mentioned even once in the ReArm Europe Plan (2025) nor the Financing the European Defence industry (2024) text, history as well as the nature of public expenditure suggests that if defense spending is increased for a longer time periods, taxes will have to increase eventually and contribute to public debt resolution, since in the absence of tax increases, public debt accumulates, potentially leading to higher borrowing rates, inflation or debt crises (Marzian and Trebesch, 2025). What's more, we can observe that the Plan prioritizes defense preparedness and national security considerations over fiscal stability (allowing member states to exceed previous fiscal constraints), which could increase the likelihood of excessive debt accumulation over time.

Following the defense spending surge proposed by the EC, on June 25th 2025, the NATO Heads of State and Government participating in the Hague NATO summit committed to investing 5% of GDP annually defense spending in "The Hague Summit Declaration" by 2035. According to the declaration, the spending will consist of core defense requirements

[29] RRF is a performance-based temporary recovery instrument designed to mitigate the economic and social impact of COVID19.

as well as defense and security-related spending. Similarly to the ReArm Europe Plan, the increased NATO defense spending stems from the "profound security threats and challenges, in particular the long-term threat posed by Russia to Euro-Atlantic security" (NATO, 2025). Out of the 5% target, 3.5% of GDP will, according to the declaration, be used for core defense requirements, while 1.5% will be devoted to protecting critical infrastructure, defending networks, ensuring civil preparedness and resilience, "unleashing" innovation, and strengthening the defense industrial base. The spending levels are set to be reviewed in 2029 (NATO, 2025). In regards to the spending surge lasting until 2035, it is important to relate the latter to research by Marzian and Trebesch (2025), which allows us to deduce that the proposed defense buildup lasting ten years (2025 – 2035), outlasts the average military buildup (since the 19th century) by a factor of two, while the allocating more resources to the buildup – compared to an average increase of 1.5 % in 5 years, since NATO agreed to increasing defense allocations by 3 % (from the previous 2 % NATO goal).

Through the lens of PCT, the surge amounts to double the average financial intensity, while at the same time focusing on defense procurement paired with high perceived urgency, leads to increased systemic risks of rent seeking/extraction and corruption in the procurement itself. Lastly, setting defense spending targets as a share of GDP leads to a) pro-cyclical public spending, which does not adhere to strategic defense requirements (Keupp, 2021); b) neither ensures the procurement of appropriate armaments, nor incentivizes cost savings (removes defense suppliers' incentives of improving productivity and decreasing marginal costs) (Keupp, 2021; Ilzetzki, 2025); c) can be suboptimal from the macroeconomic perspective, especially since a decreased GDP would lower defense expenditures, while also lowering the fiscal multipliers it could provide to an economy in a recession (Kaminsky, Reinhard, Végh, 2008; Ilzetzki, 2014). At the same time, setting requirements as a share of GDP ignores the fact that weapon systems are durable, which means that procurement is often conducted in major purchases, which are not evenly distributed throughout the years. Ignoring the nature of defense procurement can lead to underspending in the early stages of the defense buildup cycle and overspending in the later stages (Ilzetzki, 2025).

7.3 The European defense sector reaction following the onset of the 2022 Russo-Ukrainian war

In this subchapter, I will discuss the movement of total (aggregate) European defense expenditure, individual European defense equities' performance, European defense equities index' performance, and European equity index' broader market performance in the time of increased levels of the GPR index by Caldara & Iacoviello (2025) discussed in chapter 6. Namely, the following segment looks at Europe's total aggregate European defense expenditure (up to 2024), monthly (global) GPR index values by Caldara & Iacoviello (2025), as well as the STOXX Europe Total Market Aerospace & Defense (SXPARO[30]) and

[30] The Europe Total Market Aersopace & Defense index is comprised of constituents whose ICB classification belongs to the Aerospace and Defense ICB Sector (502010). The top 10 weighed constituents are comprised

STOXX Europe 600[31] index values, from December 1999 until July 2025. The following segment aims to examine the "flight to arms" phenomenon, as well as whether, and to what extent, the 2022 GPR shock has coincided with both European defense industry performance relative to the broader European economy and European defense spending. I will also address Ukraine's defense procurement adaptation and briefly examine PMCon developments in Ukraine since the onset of the War.

The term "total European expenditure" refers to the sum of defense spending across countries included in SIPRI's Europe category.[32]. I used SIPRI US$ figures at 2023 exchange rates, which were converted to Euro using the 9. 12. 2025 exchange rate for total aggregate defense expenditure. For both the STOXX Europe Total Market Aerospace & Defense (SXPARO) and the STOXX Europe 600, I compute cumulative log returns and rebase each series to 100 on December 1st, 1999, to ensure direct comparability over time. Specifically, monthly log returns are calculated as:

$$r_t = \ln\left(P_t / P_{t-1}\right), \text{ where } P_t \text{ denotes the index level in the month.} \quad (1)$$

The cumulative performance series is then obtained by summing these log returns through time and transforming the result into an index level via $I_t = 100 \times \exp\left(\sum_{\tau=1}^{t} r_\tau\right)$. This approach produces a smooth, time-additive measure of long-horizon performance that is well-suited for visual comparison across indices, because log returns aggregate linearly across periods while preserving the correct compounded growth when converted back into index levels. I also use the compound annual growth rate (CAGR) to measure the mean annual growth rate of the equity returns and the increase in defense expenditure over a specified multi-year period, assuming constant compounding. Specifically, CAGRs will be calculated using:

$$\left(\frac{\text{Ending Value}}{\text{Beginning Value}}\right)^{\frac{1}{n}} - 1, \text{ where } n \text{ is the number of months.} \quad (2)$$

As stated in Chapter 6, research by Tran and Vo (2024) indicates that GPR shocks positively affect defense spending, driven by increases in perceived threats. Similarly, increased levels of GPR are expected to have a positive effect on defense equity price action, stemming from expected increases in defense spending and the consequent reallocation of private capital to

of: Safran, Rolls Royce HLDG, Airbus, Rheinmetall, BAE Systems, Thales, MTU Aero Engines, Leonardo, Saab B and Dassault (as of July 22nd, 2025).

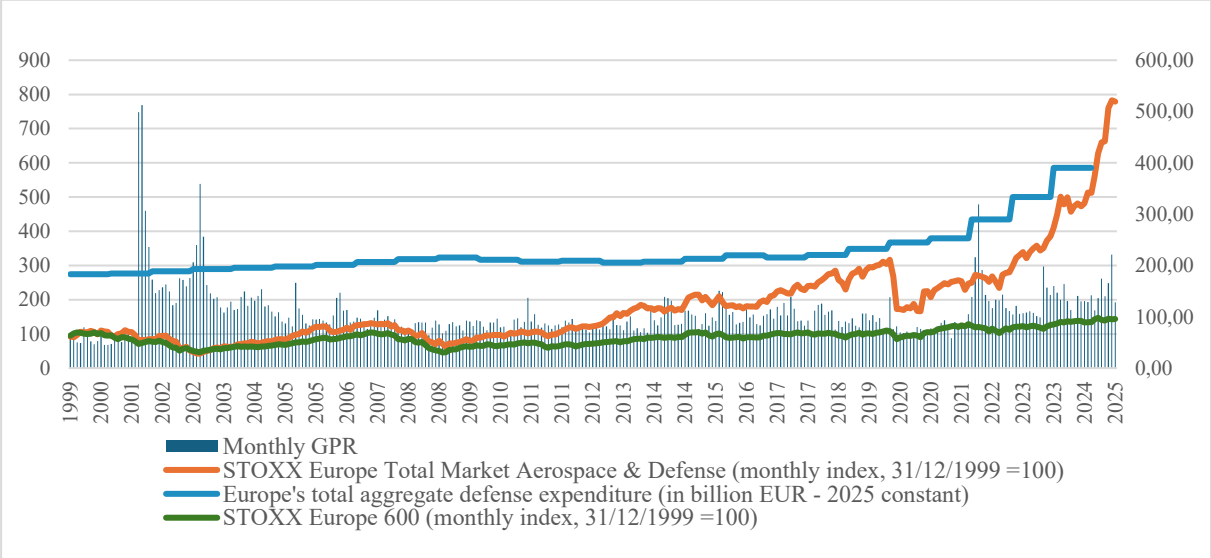
[31] The STOXX® Europe 600 is a broad measure of the European equity market. With a fixed number of 600 components, the index provides extensive and diversified coverage across 17 countries and 11 industries within Europe's developed economies, representing nearly 90% of the underlying investable market.

[32] The category includes: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Estonia, Hungary, Kosovo, Latvia, Lithuania, North Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Moldova, Russia, Ukraine, Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Malta, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom

the defense sector (Smith, 1989; Keupp, 2021; Zhang et al., 2022; Tran & Vo, 2024; Gheorge & Panazan, 2024, 2025). In Figure 9, we can observe that from December 1999 until the start of the Russo-Ukrainian war, the total aggregate defense expenditure of Europe rose from 265 billion € to 435 billion €, yielding a compound annual growth rate (CAGR) of roughly 2.25 %. In the same period, the Europe Total Market Aerospace & Defense index increased by 149%, with a CAGR of 4.24%. Following the onset of the Russo-Ukrainian war in February of 2022, we can observe the largest global GPR index spike in almost 20 years, or since the beginning of the U.S. invasion in Afghanistan. In the period from February 2022 to December 2024, Figure 9 shows that Europe's cumulative defense expenditure increased from 435 billion € to 583 billion €, with a CAGR of 10.89 %. In the period from February 2022 to July 2025, the Europe Total Market Aerospace & Defense returned 213%, with a CAGR of 39.5%, outperforming the STOXX Europe 600 index by 192% points since the onset of the war.

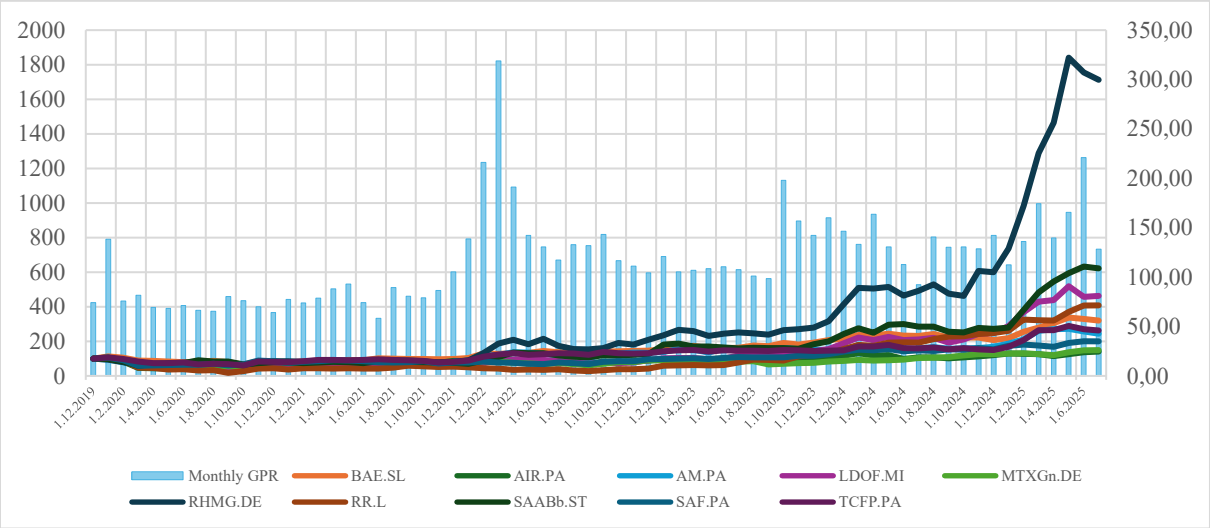
As we can observe, the Caldara & Iacoviello (2025) GPR index captures the geopolitical risk shock at the onset of the February 2022 Russia–Ukraine war, while the captured shock coincides with the beginning of abnormal positive returns in European defense equities and is followed by a pronounced acceleration in European defense expenditure. As shown in Figure 10, all ten largest constituents of the STOXX Europe Total Market Aerospace & Defense index outperformed the European market (STOXX Europe 600). The divergence between defense-sector equities/indices and broader market indices following the onset of the war/GPR shock illustrates a sector-specific "flight to arms" dynamic, consistent with the literature on geopolitical risk and capital reallocation to defense-related assets, as discussed in Chapter 6. (Figure 10 illustrates relative price paths rebased to 2019).

Figure 9: Monthly GPR; STOXX Europe Total Market Aerospace & Defense; Europe's cumulative defense expenditure; STOXX Europe 600.



Source: SIPRI (n. d.); Caldara & Iacoviello (2025); Refinitiv Workspace (n. d.).

Figure 10: SXPARO top 10 constituents Index - (base: 1/12/2019 = 100)



Source: Refinitiv Workspace (n. d.); Caldara & Iacoviello (2025).

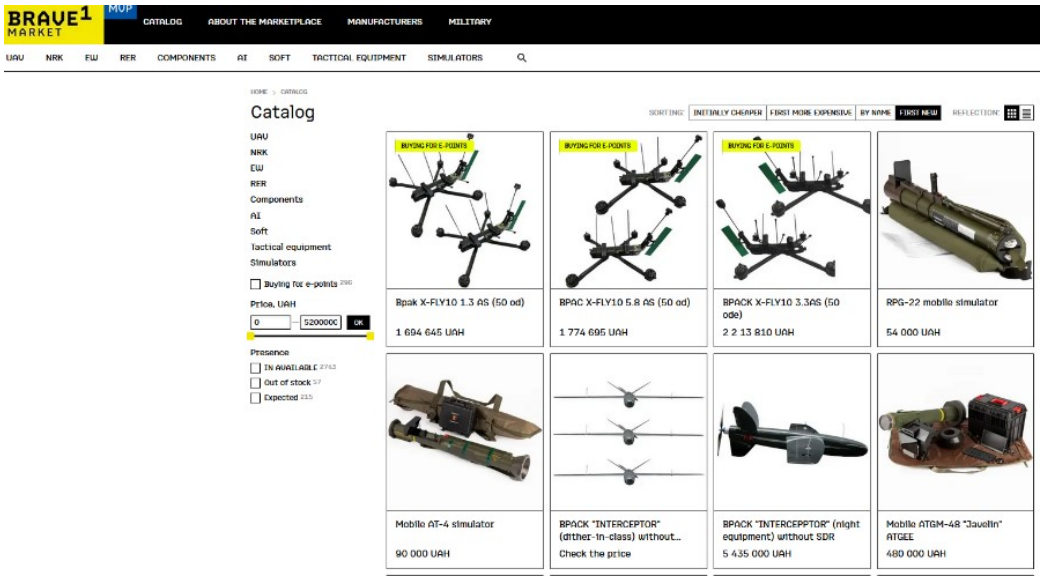
The flight-to-arms phenomenon was not limited to prime contractors and LSIs. The European defense market has also seen a significant increase in new entrants. From February 2022 until October 2025, it has seen more than 230 defense-tech startups, while venture capital investment in the sector has reached an all-time high of more than 1.5 billion US$. Compared to the 2017 – 2020 period, investment in European defense tech start-ups has increased by over 500% in the 2021 to 2024 period, while the median European VC defense tech valuation has increased from 42.8 million US$ to 146 million US$ in the same period. Moreover, defense-tech accounted for 6.2 percent of total European VC funding in September 2025, up from less than 1 percent before 2020 (European Commission, 2025b; Lawrence, 2025; Chinn et al., 2025). The increased number of new entrants into the defense market coincides with the conclusions of Ilzetzki (2024, 2025) and Reichardt (1975), which assert that in times of high inelastic demand and limited production capacity, defense procurement opportunities shift to lower-tier contractors, creating opportunities for new entrants.

Ukraine itself can serve as an example of one of the richest contemporary cases for wartime defense contracting developments. Besides the noticeable increase in defense contracting operations within the DIB, Ukraine has seen the emergence of an interesting PMCon subsector: private military schools certified by the Ukrainian Ministry of Defense for training military personnel, which could fall under Singer's type 2 military consulting firms. The latter include: a) Private schools for ground robotic system operators, which are financed by the state, and serve to train thousands of service members, helping scale up the use of ground robotic systems on the battlefield (Ministry of Defence of Ukraine, 2025); b) Private schools for unmanned aerial vehicle (UAV) operators, which aim to expand the pool of

specialists trained in Ukraine and improve the quality of training (Ministry of Defence of Ukraine, 2024).

Modern warfare has shown a vastly increased tempo of procurement demand shifts, outpacing the classical procurement cycle. To address the latter, the Ukrainian government undertook an evolutionary wartime procurement adaptation, with the establishment of Ukraine's BRAVE1 platform. It serves as a "bridge" connecting the state, the military forces, defense contractors, and investors around military-related systems.

Figure 11: BRAVE1 marketplace homepage



Source: BRAVE1 (n. d.).

Since 2025, companies can accredit and list their products on the BRAVE1 marketplace, where accredited users of the system can procure said products. In the beginning stages of the marketplace, military units used unit budgets for procurement. In 2025, however, Ukrainian military units registered in the system can provide confirmation of target destruction and receive "points," which accumulate and can be used as procurement currency in the BRAVE1 marketplace (Interfax-Ukraine, 2025; Al Majdalani, 2026). BRAVE1 enables units to address capability gaps more quickly, while new entrants to the market can align their business with military requirements more directly through demand signaling. The system also pushes grant programs and prototype by making them buyable on the marketplace, allowing for testing on the battlefield and direct access to military customers, where once concepts are battle-proven, the state and other investors can help the contractor produce at scale (Siebold, 2025; Cabinet of Ministers of Ukraine, 2025; Ministry for Digital Transformation of Ukraine; 2025, 2025b).

Amid immense procurement pressure, a lack of oversight became apparent in Ukrainian defense procurement, with cases of rent-seeking and corruption becoming noticeable. Such

was the case in 2025 when National Anti-Corruption Bureau of Ukraine and Specialized Anti-Corruption Prosecutor's Office outlined that an organized group misappropriated local defense funds in 2024–2025 by steering procurement of UAVs and electronic warfare systems through contracts signed at knowingly inflated prices, then extracting economic rents via kickbacks reportedly up to 30% of contract value in one electronic-warfare deal and through an FPV-drone purchase, with part of the overpayment paid back to participants as bribes (National Anti-Corruption Bureau of Ukraine, 2025).

The Russo-Ukrainian war has also raised attention and involvement from PMCons from the West (non-Ukraine). While Western PMCon operations on Ukrainian territory have been mostly non-overt. There are instances of firms acting as type 3 military support firms, falling under the PMCon category. Some of the latter include AMS Integrated solutions (UK based), which provided repair/support services for the donated artillery pieces, Rheinmetall's joint venture with the Ukrainian defense industry which provided armored vehicle repair and maintenance services, as well as Flensburger Fahrzeugbau which provided the repair hubs for Leopard 1 tanks (Andersson & Ditrych, 2024; AMS Global, 2024). While training of Ukrainian armed forces was conducted mostly by Western armed forces, firms and NGOs such as Mozart Group acted as type 2 military consulting firms, providing training falling under the PMCon category (Ram, 2022). The number of firms operating largely under the PMSC category as PSCs has also been noticeable, namely International SOS (UK based), Pilgrims Risk Management Group (UK based), ControlRisks (USA based), Crisis24 (USA based), GardaWorld (Canada based), and Prevail Partners (UK based) to name a few. The latter provided security services related to the war in the means of intelligence/security analysis, evacuation services, convoy security, close protection, cybersecurity and transportation services (Pilgrims Risk Management Group Limited, 2022; International SOS, n.d.; Control Risks, 2024; GardaWorld Security, n.d.; Crisis24, n.d.). Furthermore, PSCs conducting hostile environment awareness and other security training for personnel operating in high-risk zones (journalists, NGOs etc.) have emerged (Artan Center, n. d.). At the same time, numerous PMCons, which tackle the problem of demining and explosive ordnance disposal (EOD) have become prominent (Demine Ukraine, 2025). There have, however, been no confirmed cases of Western PMSCs partaking in frontline combat on the Ukrainian side.

7.4 Qualitative Interviews

The following interview analysis is used to triangulate and contextualize findings from the meta-synthesis and integrative review by validating and further illustrating certain market failure mechanisms. In the following section, I present the analysis of the qualitative interviews. I identified 5 core themes (codes), namely: a) The state of the defense sector in Europe prior to the European Rearmament initiative; b) Defense market inefficiencies/failures; c) Defense procurement and geopolitical autonomy; d) The effects of the European rearmament initiative; e) Path forward.

7.4.1 The state of the defense sector in Europe prior to the European Rearmament initiative

In the first part of the interview, interviewees were asked about their opinion of the state of the defense sector prior to European rearmament initiative. Taking into account that four of the interviewees have profit incentives, all five of the interviewees share the opinion that the current state of the European defense industry is marked by underinvestment, and relatively low levels of defense expenditure since the end of the cold war, which has led among others to the current capacity constraints, human capital shortages, and sector specific knowledge in Europe's rearmament efforts. In this regard, the LSI stated**: "…***increasing defense/military capability is not simply a matter of increasing defense budgets, since Europe must now face a defense sector which has lost a large portion of its sector-specific knowledge, sector-specific human capital, production capacity, supply chains and procurement personnel with adequate expertise...".*

The interviewees also stated that some defense contractors, due to the lack of opportunities had to look for contracts outside of Europe, with the Tier 1/SI stating: *"...prior to the Russo-Ukrainian conflict, there was limited resources/contracts available in our line of work, coming from EDF and NATO projects, which led our firm to expand activity outside Europe and NATO"*.

Three out of four executives stated that, prior to the European Rearmament incentives, defense firms were having difficulty securing financing from commercial banks and other lending institutions. Tier 1 SI proposed that one of the legislative solutions could be legally preventing banks from declining financing to the defense industry solely on the grounds of it being the defense industry. The Penetrator stated*: "…banks were reluctant to provide credit. They were incentivizing their constituents in defense or other weapons manufacturing sectors to terminate their accounts…".* Thee of the industry executives agreed that due to the high level of TSIs and financial entry barriers in defense production, a lack of financing meant some defense firms were unable to take on larger contracts, enabling only highly liquid contractors, or those with adequate asset specific production capacities to take on larger contracts, which according to TCE (asset specificity and small number market failures) leads to further entrenchment of the incumbents.

7.4.2 Defense sector market inefficiencies/failures:

In the second part of the interview, interviewees were asked about market failures and inefficiencies related to defense contracting/procurement as seen from their point of view. When asked about the level of market concentration, market power, and competition in defense contracting, all five of the interviewees agreed that the defense market has, until recently (as of summer 2025), been highly concentrated, yet they provided different perceptions of the latter. What's more, throughout the interviews, I identified mechanisms

that are consistent with assertions made in PCT and TCE. From Tier 1 SI's response I identified that he attributes the lack of competition to a) rent seeking and extraction (revolving door, lobbying efforts, informal interorganizational ties); b) small numbers market; c) asset specificity. He stated:*" Fair market competition, in defense? Do I need to say more? …The largest primes, they have a high degree of lobbying power, right? The largest contracts have been awarded far away from most of the defense industry… You have about 10 largest contractors, then the rest of the industry. When it comes to equipping at scale, only the primes have the production capacity and the political favorability".*

I also identified cases of market cornering, which can occur under circumstances described by TCE (small-numbers market, asset specificity, opportunism) and PCT (rent-seeking). Namely, the Tier 1 SI commented on "cornering the market". The practice he proposes is often driven by opportunism. He stated that, while opportunism is far from being exclusive to the defense industry, there are examples of defense firms buying up entire stocks of products and disproportionately increasing the prices (ex. of rent seeking and opportunism). A practice made more accessible by the low number of individual suppliers (ex. of small numbers market failure). The militaries in question, however, still proceeded to buy said products at the new prices, since it was still cheaper to do so, instead of refitting the product at the scale of the entire military, and looking for new suppliers (ex. of fundamental transformation/ex-post buyer-seller bilateral monopoly, lock-in problem), since they would likely match the new (high) price (ex. of cartel price setting). Furthermore, the Tier 1 SI added, that the oligopolistic nature of the defense industry, creates incentives for cartel price agreements*: "There is a wide palette of deviations from a healthy market, or rather from the goals of the military-defense logic as such. Even in highly regulated markets, you have firms which are competitors yet still co-decide on which contracts they will bid. I mean, it is more profitable if you divide the contracts, than if you actually compete on the contract bid, since you will end up lowering each other's prices on the bids…".*

A similar notion of the small numbers market was provided by the LSI, who stated that the European defense market can be characterized as a highly concentrated supplier's market, where due to the limited number of suppliers, the latter hold the market power, setting prices (cartel price setting) and choosing customers (small number market failure): *"It's a suppliers market, states are lucky if they get to receive an offer…"*. He added that without a shift in the market, stemming from additional suppliers and/or production capacity, the prime suppliers will continue to consolidate (lock-in, hold up problem), while new entrants will proceed to become subcontractors, or get acquired*: "…the smaller players inevitably either end up subcontracting or get bought up…".* According to PCT, since the defense sector demand is higher than the supply, the current level of urgency could imply that state actors rely on their informal relationships with suppliers, in order to secure preferential treatment in the supply order, further presenting opportunities for rent seeking and corruption.

The Prime agreed that the largest prime contractors will remain the key element in defense procurement. In his opinion, the largest primes hold the highest level of technical expertise and sector-specific knowledge, adding that it is risky to work on new projects, using emerging suppliers, which are still in the process of "learning": *"The big players will stay. I think it's the right way, they (primes) know the subject best. It is not wise to learn or risk by using new suppliers…"*

When asked about the economic implications of market failures, all interviewees stated that they lead to increased defense procurement costs.

The government procurement official asserted that the balance of market power towards the supplier, along with the oligopolistic structure (small number market) of the defense market, limits the government consumers' ability to conduct competitive procurement of the required capabilities: *"In numerous subsegments of military systems, there is often only one realistically viable supplier. In such cases, if the state wishes to acquire a certain capability, it will have to agree to the terms and pricing the supplier brings to the table. Some of the products we need to procure have more than quadrupled in price, while the technology they're using has remained the same for 20 years. But there is just no cheaper supplier, or no other supplier at all..."*.

Industry executives also addressed the heavy reliance on subcontracting and reselling in the defense industry, where primes, or LSIs, end up subcontracting a large share of their contractual obligations to subsidiaries, which, in their view, increases product prices. The Tier 1 SI stated that as will all monopolies, the monopolist will aim to earn higher profits*: "The monopolist will always decide to take the profit. The largest corporations acquired large amounts of what would be smaller providers, which actually could theoretically provide reasonably priced solutions. The product gets repackaged as the prime product, with the prime supplier's price, while the cheaper input costs of smaller producers and the additional margin gets charged by the prime…"* The Prime shared a similar opinion regarding high levels of subcontracting and increased prices, stating*: "Just think about the synergies you have to achieve, and all the management associated with coordinating the firms. These overhead costs are bound to increase with the number of subcontractors…"*

The LSI similarly stated that reliance of states on a concentrated number of defense contractors (small number market) leads to negative outcomes for the government customer, stating*: "Put simply, you see less competition and consequently innovation, higher prices, the quality probably stays the same, there's definitely more political ties involved, the capacity I think remains the same, since the demand stays the same, the supply chain I believe tends to become more streamlined though due to the integration."*

The Prime, however, states that we are in a time of rapid technological innovation and transition, historically marked by initially increased costs and failed development projects,

which should be expected. Furthermore, he asserts that in times of technological transition, cost and schedule overruns are to be expected, especially with more ambitious projects*: "Take a historic view here. Any army that failed to incorporate new technologies was doomed to lose… Developing new projects on the frontier of technology always has risks to fail. You can easily run into unpredictable costs or schedule delays. With these technologies, it's not easy to predict with low uncertainty how the project will work out, that's the nature of being on the frontier."* His account however does not coincide with the assertion made by the government procurement official, who stated that even defense systems/products, which have been used for *"20 years"*, implying that the rise in costs can not be attributed solely to innovation.

When discussing the effect of defense market inefficiencies/failures on defense/military capability, I received different opinions.

The Tier 1 SI posits that, in peacetime defense procurement, the state and the contractor have fundamentally opposing goals, which are the core issues of efficient and effective military procurement. Namely, the divergent goals of the state in acquiring goods and services economically and of the contractor in making a profit. In his opinion, this leads to over-complexity of products, for the sake of complexity-induced added value (information asymmetry market failure), rather than higher levels of system capability, leading to inefficiencies with regard to cost and schedule overruns*: "…The Ukrainian defense industry, for example, primarily aims to provide the most capable products at the most economical price. Basically, they have to provide military capability and success in warfighting. The military-industrial complex, as we know it in the West, however, has a primary goal that is not successful warfighting or economic military capability. Its goal is to provide the most complex supply chain, the most expensive system maintenance, and the most expensive system training. Take, for example, shipbuilding in [redacted]. The new [redacted] still faces numerous issues after decades of development. You would expect that after building ships for 80 years, the ships would be the best ever built, not the worst ever built. This leads me to believe that these defense contractors, which will get paid budget overruns… their goal probably isn't the most economic, capable product…".* A similar opinion was shared by the Penetrator*: "Up until recently, the industry didn't work to increase the capability of a conventional army or conventional warfare, but rather for conventional profit…".*

Tier 1 SI expanded, elaborating on how rent-seeking behavior contradicts rearmament initiatives and common European military capabilities. Namely, how the (rent-seeking) industry actors actively oppose defense strategic goals of standardizing equipment of European militaries: *"…the profit incentive seeks to go around NATO's legal standardization efforts… The problem lies in more complex systems, which on paper are standardized but are made purposefully not interoperable upon deployment. The suppliers find loopholes, which make their systems usable only with the equipment they can supply."*

The LSI stated that one effect of increased market concentration on defense/military capability is reduced flexibility and adaptability in the defense industry, as large corporations are generally slower to incorporate changes and take innovative risks. The lower level of competition also disincentivizes innovation and reduces the government customers' options, which in turn increases the supplier's power in the transaction. Higher prices also mean the state can procure less of the necessary goods and services, which in turn negatively impact the state's defense/military capabilities: *"Higher concentration means less competition and larger, less maneuverable defense industry actors. The largest corporations can't afford to take on extreme risk, and right now, we need to adapt quickly to the changing landscape of war. Relying on a concentrated market is also risky for the state, since if you have one or two available contractors, they get to set the terms, you have nowhere else to go."*

The government procurement official stated that due to the limited supply in the defense market, and the corresponding power shift towards the existing suppliers, the ability to seek optimal defense capabilities is hindered, while in some instances suppliers fail to deliver on promised capabilities: *"Instead of the expected defense-strategic analysis, the most common theme of discussion is simply the value of procurement, both from the government and the supplier's side. Some of the procured systems are not nearly as effective or reliable as advertised, and we know it, but the options are limited."*

Since consistent, undisturbed operation of defense contractors is crucial for consistent defense capability, all the interviewees agreed that potential bottlenecks stemming from a high level of defense system complexity, geographically dispersed subcontractors and key component suppliers present a vulnerability: *LSI: "Due to the highly sophisticated or complex nature of a lot of our weapon and non-weapons systems, the supply chains are unavoidably complex, hence they will have bottlenecks. Firms as well as customers right now are constantly looking for new suppliers and partners.* Similarly, Tier 1 SI stated*: "Due to the globalized nature of the market, not just the defense market, autonomy is very hard to achieve… every process is optimized to the point of just in time delivery… There are no safety buffers. If a critical part is not deliverable, production stops. This supply chain weakness should be one of the key considerations of all governments."*

7.4.3 Defense procurement and geopolitical autonomy

In the third part of the interview, the interviewees were asked about their views on the level of geopolitical/defense autonomy, related to European defense procurement. In this context, all five of the interviewees stated that Europe's extensive reliance on external suppliers is both a strategic and economic mistake, which deserves more attention. While Europe's supply chains rely heavily on sources and subcontractors outside of Europe, also present a systemic strategic vulnerability, which is hard to address. In my discussion with interviewees regarding geopolitical autonomy, I identified instances of interviewees describing some of Sislin's (1994) variables regarding weapon procurement as geopolitical leverage, namely:

a) Characteristics of the supplier (presidential style): Tier 1 SI: *"Who guarantees us that at one point, the* [redacted] *president doesn't decide that Europe is no longer allowed to import defense related products from the US?"*
b) Systemic variables (hegemony and superpower relations) and characteristics of the recipient (security threats): Tier 1 SI: "…*especially in these geopolitical circumstances, the industry has more leverage with regards to politics"*
c) Characteristics of the recipient (domestic defense production capability)*:* Procurement official*: "Europe is enormously reliant on external partners when it comes defense production. Even procuring products as simple as military uniforms, you probably couldn't get them without your contractors subcontracting outside of Europe…";* Tier 1 SI: *"…you have to find at least something, munition production, weapon system production, medicine materiel production domestically."; Prime: "I think that even every state should have its defense industry covered, at least in part, they should be able to source critical defense materiel domestically."*
d) Characteristics of the recipient-supplier interaction (supplier arms dependance), and systemic variables (hegemony): *LSI: "I don't think we'll lose our defense procurement dependency on* [redacted] *anytime soon. I think the small states will stay dependent on suppliers from suppliers coming from large economies, same as it was. This does of course impact the diplomatic leverage. It is a whole lot easier to be a diplomat when you have a strong military backing your word…"*; Procurement official: *"…it is totally unrealistic to think we can fly American provided fighters (military aircraft), if they don't want us to. American contractors are literally the only ones who can legally service those planes…"*

7.4.4 The effects of the European rearmament initiative

In the fourth part of the interview, interviewees were asked about the effects of the European rearmament initiative on their own firm, as well as the broader European defense sector.

When asked about the effects of the European rearmament initiative on their firm, all four of the industry executives stated that they've seen an increase in demand for their products, while the nature of their work, focus, and segment remained relatively unchanged. As a result of increased demand, all defense industry executives stated that their operations had to expand. This is consistent with the flight to arms phenomenon, which posits that increased defense spending and geopolitical turmoil coincide with increases in defense contractor performance.

Tier 1 SI: *"After the onset of the Russo-Ukrainian conflict, there was more contracting opportunities, so we stared to re-engage the European defense market. What the increased spending has meant for us is easier customer acquisition. And we as a firm are growing alongside the spending, with a slight delay of course, it's not an overnight thing… When it*

comes to our focus, segment, vision, mission, it all remained unchanged. Except that for once, we were in the right place at the right time."

The Prime's firm also noticed increased operations stating: *"The situation right now is totally different… Even last year (2024) we could see a growing amount of work coming in, the snowball has indeed rolled towards us too. Well this year, I can say that growth is extremely good… The nature of our work hasn't changed much since the rearmament initiative. Our strategic focus was set years ago, I guess it was the correct one."*

Meanwhile the LSI stated, that due to the lack of production capacity, the backlogs have increased considerably, which is consistent with expectations during high defense sector demand during times of limited capacity: *"We are expecting an increase in our scale of work. It is not instant though, it will take time for production to pick up all the demand. Right now, the biggest problem is still the production capacity. Our backlog right now will take about 2 years to fill as it stands. For most systems, states will have to wait at least 2 years…"*.

When asked about the effects of the European rearmament initiative on the European defense market, all five of the interviewees were convinced that the market concentration will decrease, as a result of the rearmament initiative by the EU and NATO's proposed defense budget increases, both of which focus among others on increasing defense production capacity, new entrants and SME stimulation. They also agreed that the rearmament initiative will lead to spillovers into other non-military domains.

The Prime stated that dispersion of suppliers, as well as new entrants are inevitable with the increased demand in the defense sector. He adds that similarly to how the end of the cold war meant centralization and stagnation of the defense sector in Europe, the new ongoing conflicts present us with the reversion of the trend: **"***… (market) dispersion will definitely happen. It is inevitable. There are needs on the market, there are projects, and more and more companies see an opportunity here. In fact, in the nineties, the exact opposite happened to what is happening to us now. In other words, I can say that we are definitely in a cold war now, or we compare it to that, because the tendency is the same."*. Similarly, tier 1 SI stated that the defense market de-centralization will also result in dispersion of market power to lower tiers: "*When you put this (supplier market power) in the context of increased defense spending and European rearmament, you are just dispersing or increasing the amount of firms which will have the potential for impact. It doesn't matter what industry it is."*

The Prime also noted that the Europe's incentives to procure from European suppliers has already taken effect to a certain extent, with the trend moving towards European defense procurement autonomy: *"Quite a few companies are opening up, every day there is a new one for these needs, so basically everyone wants to create / produce as much as possible in Europe and be independent. This transition, as I mentioned before, is happening very clearly now."*.

While not working in the defense sector yet, the Penetrator noted that entering the sector appears to be more accommodating of new entrants compared to past years*: "Since we're not yet defense contracting, there hasn't been a notable increase in demand, not for state militaries. We do think though, that the opening to enter the defense contracting market right now is growing."*

Similarly, the LSI is convinced that the increased demand in the defense sector will yield new entrants in order to accommodate the increase in the scale and scope of demand. He added that emerging companies are also necessary drivers of innovation*: You will also most likely see decentralization of the defense market. The primes simply aren't able to keep up with the demand, new entrants will inevitably emerge and will at the very least work as demand buffers. The new entrants will probably be the ones leading innovation, especially since the giants tend to fall asleep when it comes to it. This is why the ratio between the giants and the small innovative companies is important… "* The LSI also stated that the vast amounts of procured materiel set to be procured also imply higher levels of defense service and maintenance contracting, especially since the influx of military personnel is lower than that which is needed, pertaining to the procured systems: *"One key thing to note in the regard of procurement right now, is that the amount of both weapon and non-weapon systems getting procured is not linearly proportional to the number of personnel militaries are gaining. Despite the lower level of military personnel compared to the materiel, those systems will still have to be maintained, operated, and integrated. You will most likely see defense service contracting grow immensely for this very reason… "*

Interviewees were also asked about the potential obstacles in European rearmament, related to achieving the desired outcomes and goals set by the EC's strategic documents and accepted policy.

All five of the interviewees stated that one of the main obstacles with regard to the European rearmament and increasing defense/military capabilities of EU lies in the divergent interests between protecting national interests versus supplying capability to the common defense cause.

The LSI pointed out that coherent strategic goals must entail both a strategically dispersed defense industry among member states, as well as a unified command and control structure for the armed forces of the member states*: "It will also be crucial for the European states to work on cohesion, not just on the defense industry level, but on the military-political cooperation. Firstly, we will need to correctly organize which state builds what, it's no use if everyone decides to build warplanes, and no one produces artillery… Second, states will have coordinate and create a common command and control system, and crisis centers."*

Tier 1 SI stated that due to the historic experience, nations will inevitably hold a level of mistrust when it comes do defense procurement, which leads them to reservations pertaining to total strategic co-dependance*: "…each state wants to prioritize their own defense industry, at least as a part of their strategic defense. We could see in the 90s, when the war actually starts, you suddenly have no friends, that would actually supply arms. So logically, every government desires to have at least some minimal production capability, that would allow for its own defense, even though your allies are here in Europe. Well, it's even worse, if you as a state are reliant on sources outside of Europe."*

Procurement official added that strategic military preparation is a prerequisite for efficient use of the procured defense related goods and services: *"Increased levels of procurement and production are necessary, but what's equally important is European cohesion and strategic implementation, which is precondition for the efficient use of all of the accumulated materiel. The level of utility of the procured goods can vary greatly depending on how you do it."* Moreover, the procurement official stated that the EU should have set out goals, which prioritize desired military capabilities and not resources spent on procurement: *"On the European scale, I see way more discourse about the shares of GDP, not nearly as much about what we want our forces to look like."* His notion coincides with research by Keupp (2021), who states that nations, in their efforts to increase military capability overweigh their focus on procurement, and underweigh their efforts on strategic and tactical preparation.

The LSI also pointed out that the incentives coming in the form of increased defense budgets and defense sector demand, can be mitigated with lacking financial support from the financial institutions, similarly how all of the executives pointed out in previous sections*: "If you have orders, contracts, but you can't finance to build a production line, you are still stuck".*

The Tier 1 SI also noted that ultimately the cohesion and determination of all of the defense-related actors is key to the successful rearmament campaign: "If the political agenda is *rearmament and resilience, then we should all strive for it… What is needed is diligent fulfillment of policy".*

When asked about legislation, procurement laws, and other legal standards the European defense industry must adhere to, none of the executives had significant complaints. Tier 1 SI, however, expressed that legislative obstacles can come mainly in the form of import/export permissions, or lack thereof: "…generally, with the current state of Europe-wide *incentivization of defense manufacturing, this isn't an issue. You will sooner than later receive weapons -defense production licenses, since the administrative processes appear to be shortened. There can be, however, certain complications when it comes to exporting. Especially when different levels of government must approve individual exports, as is the case in some countries in the EU".* The answer also implies that procurement timelines have

shortened. If the latter is attributed to lowered levels of oversight, it can according to PCT imply increased opportunities for rent-seeking.

The executive interviewees stated that they haven't sensed any preferential legislative treatment of certain firms, with regards to the European rearmament. Tier 1 SI, the government procurement official, and the LSI in this instance referred to the mechanisms consistent with PCT expectations, namely the revolving door, rent seeking, and extraction within the iron triangle context, which can result in the political market fundamentally shaping economic competition. Tier 1 SI stated*: "I haven't noticed such preferences. I think that's attributable to the fact that the largest defense corporations have other means of exerting leverage to receive preferential treatment. It comes down to lobbying, personal ties between the political sphere and industry. Political actors and campaigns need cash for their operations, the industry provides the cash, and once the industry-funded political actor gets the appropriate amount of political power, he needs to return the favor in some way, end of discussion."*

7.4.5 Path forward

I asked the interviewees about how they see the European and NATO-wide increases in military capability affecting the world in the coming years, as well as how they see the defense sector unraveling. While other interviewees were inconclusive, Tier 1 SI and Prime provided interesting perceptions.

Tier 1 SI suggests that one of three outcomes of European rearmament are possible. Either a defense market expansion followed by a sector-specific recession, a hot war, or a cold war, with the first scenario being the most likely. *"I think the most likely scenario is a burst, similar to the dot-com bubble. Except that with the dot-com bubble, most of the companies that failed were small, gained in value, and then flopped. There were no serious strategic consequences. With our defense sector right now, I think there are three ways this could end. War, new cold war or a bubble burst and then disarmament. None of these is ok, strategically speaking. War is not okay right? Cold war? Well the industry might like it, but then again those can get hot, while a bubble burst would once again mean oscillation between states of armament and disarmament, rising and falling tensions, meaning we would again fall into insufficient investment in defense."*

When asked about the likelihood of large-scale conflicts emerging and the possibility of the redistribution of global powers Tier 1 SI stated: *"I mean eventually yes, statistically speaking. These things happen periodically. But I think the conflict in Ukraine will, if we exclude all external influences, I think it will last about as long as it takes for the large investments in large and expensive defense systems to pay off. That is, if, for example, the development of one* [redacted] *system cost* [redacted]*, right? I'm pretty sure that we'll be in conflict with Russia until the investments are repaid and the development is finished? And on*

average, the development of one new missile takes five years to pay off, so we're good to go in five years, right? If nothing crazy happens in between. And then I see myself in retirement." In his response, the Tier 1 SI hinted towards the financial incentives underlying beneath the surface of the current geopolitical tensions, namely the fact that the investors in the defense sector are expecting further continuation of the defense industry's excess performance, a notion which is consistent with rent seeking literature.

The prime similarly believes that, excluding a large-scale hot war, the defense market will become saturated, and the defense materiel stockpiles will accumulate, while defense industry production will exceed the demand, leading to a cooling of the sector, yet in his opinion, only after several years: "*...there will be a surplus. Everything accumulates and you can't really throw more than that. Today, the warehouses are empty, they will fill up, it will be necessary to continue training, but this doesn't go on indefinitely. Once you have a surplus and a bunch of these companies, there will be a collapse here too. Now it's just a matter of time, but I would say definitely not for the next ten years".*

All five of the interviewees agreed that falling into defense spending austerity, similar to that of the past decades, Europe would once again face obstacles (production capacity constraints, sector specific knowledge diminishment, supply chains, human capital, market concentration) regarding its efforts in addressing military/defense/security threats, a notion which is consistent with research by Kaminsky, Reinhard and Végh (2008), Ilzetzki (2014) and Ilzetzki (2025).

Both the Prime and the Tier 1 SI suggested that, if done accordingly, the level of states'/governments' involvement in stimulating, co-owning, or overseeing their respective national defense industries could increase throughout rearmament and could potentially be beneficial to the strategic outcome. Namely, the Prime stated that he sees the states acquiring stakes in defense sector firms as one of the likely means of increasing alignment between states and the industry*: "The state, as a co-owner of the company, has the right to direct priorities. It has always been that way, and it will be no different here. Certain companies will go in this direction."* On a similar note, Tier 1 SI also suggested that if done correctly, the state's increased involvement in the defense industry, either through acquisition or consortium guidance, could have a beneficial impact on procurement itself, while minimizing uncertainty*: "Creating a state-owned-like holding, for example, which would use domestic contractors, to provide the domestic MoD… If domestic contractors, which would cover all the segments they could, while having fixed price contract guarantees, and without needing to fight on the market for survival. I could see a smart state doing that kind of consolidation."*

8 DISCUSSION AND FINDINGS

This section will present the main findings and discussion on the topic. It will also provide contextualization of the interviews and present answers to the research questions I set out to answer with the thesis.

8.1 Presenting findings and answers to research questions

This thesis aimed to answer two broader research questions, namely: RQ 1) How has heightened geopolitical risk shaped Europe's defense policy, and what are its potential implications for the European defense contractors, defense/geopolitical autonomy, and economic outcomes?; RQ 2) What mechanisms drive market failures in defense contracting, and what are their implications in the European defense surge?

- Geopolitical risk and defense policy

Firstly, addressing RQ 1, we can observe that the heightened geopolitical risk, captured both conceptually by the increase in armed conflicts or wars since 2022 and empirically by geopolitical (GPR) index shocks, has increased Europe's threat perception levels related to state security. Namely, the EU advanced its defense capability ambitions, primarily fueled by the increased threat perception stemming from Russia's invasion of Ukraine in 2022, which created a new level of urgency for increasing European defense capabilities (Clapp et al., 2025), leading to a surge in defense procurement pressure.

In terms of defense policy, we can observe a direct response to the GPR shock by both the EU and NATO's reaction in terms of the increased realized and proposed defense spending increases and rapid investment into the defense sector, paired with numerous initiatives. The GPR shock effects in terms of EU's further defense policy implications materialized in The European Commission's Joint White paper for European Defence Readiness 2030 (2025), and The ReArm Europe Plan/Readiness 2030 interconnected issues at once, namely: a) Increase defense and deterrence capabilities; b) Develop European defense industrial capacity; c) Increase European defense autonomy; d) Increase unity in European defense procurement; e) Boost defense technology innovation and defense startups and SMEs. Furthermore, ReArm Europe/Readiness 2030 plan presents the financial means by which the EU aims to increase defense spending and defense industry output. Namely, it proposes to leverage over €800 billion in defense spending through national fiscal flexibility, a €150 billion loan Security Action for Europe (SAFE) instrument for joint procurement, potential redirection of cohesion funds, and an expanded European Investment Bank support. It also aims to incentivize private capital investment in the defense industry through the Savings and Investments Union (European Commission, 2025).

- Geopolitical risk and the defense contracting implications

The study reinforces prior research (Tran & Vo, 2024; Zhang et al., 2022), which finds that geopolitical risk shocks are associated with increases in both defense expenditure and defense contractors' returns. Defense contractors increased returns in times of increased GPR can be attributed to two main factors, namely the increased levels of defense spending and accompanied increase in defense sector demand, and the reallocation of private capital to the defense sector or the "flight to arms phenomenon", the culmination of which results in abnormal positive returns of the defense sector during heightened GPR (Zhang et al., 2022; Tran & Vo, 2024). We can observe both the EU and NATO's reactions to the GPR shock in terms of increased realized and proposed defense spending and rapid investment in the defense sector, paired with numerous initiatives. Secondly, we can observe the flight to arms phenomenon, especially during Europe's recent rearmament efforts, which can be seen in the abnormal positive returns since the initial GPR shock, where the Europe Total Market Aerospace & Defense index outperformed the broader European market index (Stoxx Europe 600) by 192 % since the onset of the War in Ukraine.

The flight to arms phenomenon was also demonstrated by the increase in new entrants, with record highs in defense sector VC funding, a 500 % increase in European defense-tech startups investments, and an increase of the median VC defense tech valuation by roughly 340 % (2021-2024 compared to 2017 – 2020) (Lawrence, 2025; Chinn et al., 2025). The market dispersion and a growing number of new entrants coincide with the conclusions of Ilzetzki (2024, 2025) and Reichardt (1975).

Furthermore, following the GPR shock, PMCon activity (alongside the DIB and other suppliers) and operations in Ukraine increased, with PMCons operating as type 3 military support firms providing EOD, repair, maintenance, and construction services, and firms and NGOs operating as type 2 military consulting firms providing training to the armed forces. PMSCs operating as PSCs have also taken advantage of the increased security risks in Ukraine, providing security services, intelligence/security analysis, evacuation services, convoy security, close protection, cybersecurity, and transportation services, while PMCons operating as type 3 military support firms have increasingly been operating as EOD providers. Furthermore, two potentially paradigm shifting developments in defense procurement came from war-torn Ukraine: a) State's reliance on PMCons operating as type 2 military consulting firms providing private schools and training to armed forces; b) Delegated procurement system (BRAVE1), which connects the state, the military forces, defense contractors and investors around military related systems, while delegating procurement decisions down the chain of command, bypassing the classical procurement cycle. The spread of PMCons/PMSCs and delegated procurement models illustrates how urgency can drive institutional innovation: shorter procurement cycles, closer user-to-supplier feedback loops, and faster experimentation. In the model, that can reduce bounded rationality by improving information flow from end users and speeding iteration, but it also raises governance risks because delegation can dilute oversight and make influence or

opportunism harder to detect if transparency and audit trails are not built in (Williamson, 1999; Park, 2023; Gnaldi & Del Sarto, 2024).

- Geopolitical/defense autonomy

EC's efforts to increase domestic defense production can imply an increase in European geopolitical/defense autonomy. EC has since the Russo-Ukrainian war realized that Europe's inability to produce adequate defense capabilities with its domestic defense contractors puts it in a vulnerable position when it comes to coercion and influence, and aims to tackle said vulnerabilities by incentivizing investment into reshoring, diversifying and maximizing resilience against weaponization of supplier dependencies and economic coercion of suppliers (Clapp et al., 2025; De Lemos Peixoto et al., 2025). The latter addresses some of Sislin's (1994) categories of coercion success. The fact that the EU procured roughly 78% of its defense related materiel in the 2022 – 2023 period, which put's the EU in the category of defense related recipients which are a) facing the danger of international conflict; b) facing security threats; c) facing lacking domestic production capability; d) under relatively high arms supplier dependance; e) receiving supplies from a hegemonic state (USA); f) facing increasing levels of global power competition. All of the latter factors fall under Sislin's (1994) framework, which deems them factors increasing susceptibility to influence or coercion. The European rearmament, if successful in its goals, could alleviate these leverage points. Supporting these findings, all qualitative interviewees agreed that the level of self-reliance and autonomy in defense procurement in the EU is critically low, which, according to them, constitutes both a strategic and an economic mistake. Some of the interviewees, however, stated that the trend toward autonomy is increasing, namely that defense contractors and governments are seeking and incentivizing European procurement.

- Economic outcomes shaped by a concentrated-benefits/dispersed-costs mechanism

For economic outcomes, the literature suggests that the macroeconomic effects of defense spending surges are conditional rather than uniform. Theory, however, suggests that defense spending surges have a more positive impact on an economy in a downturn, facing slack, with industrial capacities underutilized (Born et al., 2024; Kaminsky et al., 2008; Ilzetzki, 2014; Boehm & Pandalai-Nayar, 2022; Benigno & Eggertsson, 2024; Fornaro, 2024). Marzian and Trebesch (2025) also find that during periods of large military buildups, non-military expenditures increased, while instances of reallocation of public funds from social welfare spending were observed. Smaller/lower-income economies or states will, according to Ilzetzki et al. (2013), face the least economic benefits of the rearmament, partly due to the higher likelihood of it crowding out private investment compared to larger economies, and the higher likelihood of outsourcing procurement, which has been shown by Ilzetzki et al. (2013), Sheremirov and Spirovska (2022), and Sarasa-Flores et al. (2025) to have a negative impact on the fiscal multiplier. This interacts with the uneven geography of the European defense industrial base, namely EU-level stimulation instruments funded collectively

(EDF/EDIRPA/PESCO and related initiatives) are likely to concentrate gains in states hosting entrenched primes, while fiscal costs are dispersed across member states, thus creating predictable political friction and uneven economic benefits, recreating conditions for concentrated benefits and dispersed costs market failure (Olsson et al., 2022; Draghi, 2024).

This distribution can distort procurement choices, namely, political incentives may push spending toward incumbent capacity and producer states rather than toward the highest marginal capability gained (Coyne & Goodman, 2022; Keupp, 2021). Additionally, debt financing and relaxed fiscal constraints can weaken cost discipline and increase the risks of overspending and procyclicality, especially when spending targets are tied to % of GDP rather than capability requirements (Lucas & Stokey, 1983; Ilzetzki, 2025; Keupp, 2021; Marzian & Trebesch, 2025).

Finally, the fiscal strategy chosen to finance rearmament follows the Lucas & Stokey (1983) model, focusing on debt. The strategy also shapes medium-term economic risk. Absorbing a large share of the shock through debt can, in theory, smooth near-term consumption effects and avoid tax volatility that undermines private planning (Ilzetzki, 2025). However, debt-servicing costs, inflation dynamics, and the ECB's interest-rate response become critical determinants of net outcomes, and historical experience suggests that taxes often rise to stabilize debt paths. Conversely, accumulating debt can increase borrowing costs and raise risks of inflation or fiscal stress (Marzian & Trebesch, 2025). Interviewees' expectation of a potential post-buildup "boom–bust" cycle, followed by renewed austerity and re-emerging capacity constraints implies renewed knowledge erosion, supply-chain weakening, and market reconcentration, undermining both autonomy and long-run efficiency.

Addressing RQ 2, we can observe that the heightened geopolitical risk since 2022 has created a classic "procurement under pressure" environment. Since the EU's threat perception increased sharply, urgency rose, and defense procurement pressure budgets and tempo expanded (Clapp et al., 2025; European Commission, 2025). In market-failure terms, this shock not only changes the level of spending but also changes the incentive strength, information environment, and governance constraints under which procurement decisions are made. Namely, by compressing timelines and loosening oversight conditions associated with crisis procurement (Gnaldi & Del Sarto, 2024). The EU's policy response (Readiness 2030, ReArm Europe/SAFE financing, and broader industrial initiatives) aims to simultaneously increase deterrence, industrial capacity, autonomy, procurement unity, and innovation (European Commission, 2025; European Commission, 2025b; Clapp et al., 2025). These goals can reduce structural weaknesses (capacity constraints, overreliance on imports, limited innovation), but the same policy package also introduces new failure modes that follow directly from public choice and transaction-cost mechanisms (Keupp, 2021; Coyne & Goodman, 2022; Williamson, 1999). Furthermore, insights from the qualitative interviews were consistent with the market failure expectation by PCT and TCE, namely: a)

lack of competition or market concentration; b) the revolving door; c) small numbers - oligopoly market; d) asset specificity - vendor locking; e) market cornering - cartel price setting; f) rent seeking/extraction -opportunism; g) information asymmetry. Three out of five interviewees also referred to mechanisms consistent with the iron triangle rent-seeking opportunities and addressed them as entrenched in the defense procurement system.

The findings of this thesis reinforce the argument in defense economics and procurement research that defense contracting cannot be adequately understood through standard competitive-market assumptions. A second implication is that defense market failures should be treated as a mutually reinforcing bundle rather than as isolated mechanisms (concentration and procurement urgency strengthen supplier leverage; leverage increases lock-in; lock-in reduces contestability; reduced contestability weakens price discipline; and weaker price discipline increases the returns to rent-seeking and political competition).

- Public-choice failure risks intensify under a spending surge and urgency

The planned mobilization of large pools of resources (fiscal flexibility, SAFE loans for joint procurement, EIB support, private capital mobilization) can create high-value rent streams, which, under PCT, increase incentives for rent-seeking/extraction. It leads to more opportunities for suppliers to devote resources to securing favorable positioning, program design, eligibility rules, and award outcomes rather than competing primarily on price to performance ratios (Coyne & Goodman, 2022; McChesney, 1987, 1989; Keupp, 2021; Tollison, 2012; Rowley & Schneider, 2008). The structural conditions that can amplify PCT market failures revolve around urgency, rapid policy activity, and common EU-level market (Clapp et al., 2025; European Commission, 2025). The same applies to the “flight to arms” and increased private capital flows (Tran & Vo, 2024; Zhang et al., 2022). When investors expect defense spending to be politically protected, incumbents have stronger incentives to pursue policy designs (technical standards, eligibility thresholds, “Buy European” definitions) that preserve dominant positions. The latter was also confirmed by interview findings, stating that suppliers often try to find loopholes in NATO standards and production directives. This risk is structurally reinforced by concentrated benefits–dispersed costs failure, where producer states and large primes capture visible benefits (jobs, contracts, profits, industrial rents), while the fiscal burden and opportunity costs are dispersed across taxpayers and other procurer member states, which is also the distributive configuration that makes policy capture durable (Olsson et al., 2022; Draghi, 2024; Coyne & Goodman, 2022).

- Fragmentation remains a structural inefficiency, but integration attempts can trade fragmentation costs for centralization risks.

If procurement becomes more centralized through joint procurement and common-market initiatives, influence attempts may become more effective per resource spent because decision-making is concentrated in fewer nodes, which is consistent with Keupp’s argument

that centralized defense markets can increase the effectiveness of rent seeking/extraction (Keupp, 2021). Europe, therefore, faces a governance trade-off: fragmented procurement is inefficient and limits scalability, while centralized procurement can be more scalable but becomes more vulnerable to capture unless transparency, competition, and accountability are strengthened simultaneously.

- Transaction-cost failures become more likely when urgency meets capacity constraints.

The European Commission recognized insufficient production capacity and reliance on a concentrated supplier base (European Commission, 2025). Through the TCE lens, high urgency combined with complex, asset-specific systems increases the probability that procurement staff cannot fully specify needs, evaluate offers, or audit cost structures, leading to the bounded rationality failure, while suppliers exploit superior technical knowledge and opaque cost structures, leading to information asymmetry/opportunism failure (Williamson, 1999; Crocker & Reynolds, 1993; Park, 2023). This is where vendor lock-in risk grows. Furthermore, procurement pressure can push member states into procuring through existing production lines and legacy platforms. This can lead to high switching costs and further incumbent entrenchment (Franck & Melese, 2005; Williamson, 1999). Said dynamics are amplified in a small-numbers market, since excluding a prime supplier can be framed as jeopardizing security, which weakens credible sanctions and increases supplier power (Merle, 2003; Hartley, 2018; Keupp, 2021) Even policies aimed at scaling capacity (long-term contracts, fast financing) can unintentionally entrench first movers if awards concentrate on the same primes, under the pretense that they are the only ones able to deliver quickly or have the adequate production capacity, a notion also backed up by the qualitative interview findings: *"You have about 10 largest contractors, then the rest of the industry. When it comes to equipping at scale, only the primes have the production capacity and the political favorability".*

- The SME/startup push can reduce some market failures but can also introduce adverse selection and "innovation theatre" risks under pressure.

Supporting new entrants and SMEs could disperse market power and alleviate small-number market failures, as supported by Reichard (1975) and the interview insights. Since 2022, we have observed growth in new entrants and VC activity in the defense sector (European Commission, 2025b; Ilzetzki, 2024, 2025; Lawrence, 2025; Chinn et al., 2025). More credible bidders can strengthen competitive discipline and reduce incumbent rents, improving efficiency (Fazekas & Márk, 2019; Charron et al., 2017; Feinstein et al., 2011). However, under pressure and with large new funding streams, a different failure mode appears, namely, adverse selection and opportunism. When procurement and financing are accelerated, it becomes easier for low-quality entrants, intermediaries, or "defense-washing" ventures to access funds or contracts without robust performance verification; shortened evaluation horizons and complex performance measurement raise the risk that the system

selects for actors skilled at narrative/positioning rather than delivery. This does not negate the benefits of entry, rather it means the entry boom is most efficiency-enhancing when procurement rules, testing pathways, and scaling mechanisms prevent opportunistic participation (Abdurakhmonov et al., 2020; Crocker & Reynolds, 1993; Keupp, 2021).

8.2 Limitations of the research

This research is firstly limited by the fact of restricted data availability, as many defense procurement contracts remain undisclosed for security reasons, which limits the comprehensiveness of the analysis, which is a difficult limitation to overcome. Secondly, differences in data collection standards and the lack of harmonized reporting across countries limit the comparability and reliability of defense contracting data, a limitation that can be mitigated through enforcing standardization and common harmonization of reporting. Thirdly, the politicized nature of defense procurement can present an institutional bias into data sources as well as expert opinions, influencing the objectivity of findings, while the rapidly shifting security environment along with technological innovation, means the generalizability of the findings is constrained by contextual factors which implies that the subject deserves renewed research when new evidence emerges, which could simultaneously show how and why some research was skewed or politicized. Furthermore, the GPR index used in the thesis has an important drawback, stemming from the fact that it collects data only in English, which severely diminishes the value of its usage when analyzing regional or state-specific GPR, which is greatly underreported in non-English speaking sources, hindering region/country-specific GPR analysis. The latter could be addressed by developing country-language-specific GPR indexes. Lastly, access to key informants within the defense sector was limited, while many participants were bound by confidentiality and preferred not to discuss matters sensitive or unfavorable to their position in the sector, a limitation once gain hard to overcome.

9 CONCLUSION

This thesis first examines how increased geopolitical risk (GPR) has impacted Europe's defense policy and its implications for the European defense sector, defense/geopolitical autonomy, and economic outcomes.

In terms of defense policy, we can observe a direct response to the GPR shock from both the EU and NATO, with increased realized and proposed defense spending and rapid investment in the defense sector, paired with numerous defense capability-building initiatives. The defense capability requirements resulted in immense defense procurement pressure that directly impacts European defense contractors. This leads to a conclusion regarding GPR and defense contractor performance that coincides with established theory, which asserts that geopolitical risk, defense spending surges and defense contractor activity are positively correlated, with defense contractors benefiting from increased defense budgets and

procurement demand stemming from increased threat perception by the states, while private investors also take advantage of said circumstances allocating larger shares of capital to the sector. I also examine a GPR aggregate index by Caldara & Iacoviello (2022), and its relation to defense expenditure and the defense sector performance. In this regard, the increased value of the abovementioned index' (largest increase in almost 20 years) coincided with the onset of the high abnormal positive returns by the European defense sector and the accelerated rise in European defense expenditure, serving as a leading indicator to the "flight to arms phenomenon".

Furthermore, established theory suggests that the EU exhibits several conditions associated with higher susceptibility to policy coercion and influence by defense materiel suppliers. Namely, the EU faces a) danger of international conflict; b) security threats; c) lacking domestic production capability; d) high arms supplier dependence; e) increasing levels of global power competition, to name a few. This set of circumstances led the EC to aim its efforts to expand domestic defense production, through incentivizing reshoring, and diversification as means to increase resilience against the weaponization of dependencies and economic coercion of suppliers, leading to greater European defense/geopolitical autonomy if successful The EC also aims to unify European defense procurement, which can introduce economies of scale through joint procurement, yet is burdened by fragmentation due to separate markets and national political-economic agendas.

In terms of economic outcomes of defense spending surges, theory remains inconclusive, yet there are crucial factors influencing the possible outcomes: i) economies in economic downturn seem to benefit more from defense spending surges, than those in expansion; ii) importing defense assets instead of procuring domestically can lead to loss of employment opportunities, sector specific knowledge, human capital development and tax revenues, the sum of which lowers economic benefits; iii) lower income countries are more likely to face negative economic outcomes in defense spending surges due to higher likelihood of crowding out of private investment and higher likelihood of importing versus producing. Moreover, the imbalanced distribution of defense suppliers in the EU among member states makes "fair" economic outcomes of rearmament challenging and provides greater economic benefits to states with the most developed DIBs, where the entrenched prime contractors are based. Furthermore, European rearmament aims to absorb most of the fiscal shock through debt, which minimizes the effect on private consumption while avoiding tax variability, yet creates the possibility of excessive public debt accumulation, potentially leading to higher borrowing rates, inflation, or debt crises.

Lastly, the thesis examines defense contracting and its public-private interdependence, focusing on the nature of the defense contracting market and analyzing the driving factors of market failures/inefficiencies that, as a result, decrease the level of military/defense capability the state can provide while allowing wasteful public expenditure. The thesis reinforces the argument in defense economics and procurement research that defense

contracting cannot be adequately understood through standard competitive-market assumptions, while defense market failures should be treated as a mutually reinforcing bundle rather than as isolated mechanisms. Applying the market-failure model to Europe's post-2022 defense policy presents diverging implications. Namely, the spending surge and industrial strategy can reduce long-standing inefficiencies (capacity constraints, lack of entry, underinvestment, market concentration, import reliance), yet the same conditions, namely urgency, large funding flows, and potential centralization can heighten exposure to classic defense-procurement failures, namely rent seeking/extraction, concentrated benefits–dispersed costs, opportunism under information asymmetry, vendor lock-in and excessive supplier market power. The net effect on procurement effectiveness and efficiency will therefore depend less on the size of the surge than on whether Europe's procurement governance simultaneously raises competition, transparency, and accountability while scaling capacity and autonomy.

LIST OF KEY REFERENCES

1 Adams, G. (1981). *The politics of defense contracting: The iron triangle*. Routledge. https://doi.org/10.4324/9780429338304

2 Caldara, D., & Iacoviello, M. (2022). Measuring Geopolitical Risk. *American Economic Review 112 (4): 1194–1225.* https://doi.org/10.1257/aer.20191823

3 Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025). ReArm Europe plan/readiness 2030. *European Parliamentary Research Service.* https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI%282025%29769566_EN.pdf European Parliament

4 Czibik, Á., Fazekas, M., Hernández Sánchez, A., & Wachs, J. (2021). Networked corruption risks in European defense procurement. In O. M. Granados & J. R. Nicolás-Carlock (Eds.), *Corruption networks: Understanding complex systems, (67–87). Springer*. https://doi.org/10.1007/978-3-030-81484-7_5

5 Feinstein, A., Holden, P., & Pace, B. (2011). *Corruption and the arms trade: sins of commission.* https://doi.org/10.1093/sipri/9780199695522.003.0002.

6 Keupp, M. M. (2021). *Defense Economics*. Springer International Publishing.

7 Kinsey, C. (2006). *Corporate Soldiers and International Security - The rise of Private Military Companies*. Routledge.

8 Rowley, C., & Schneider, F.. (2008). *Readings in Public Choice and Constitutional Political Economy.* Springer. https://doi.org/10.1007/978-0-387-75870-1.

9 Sislin, J. (1994). Arms as influence: The determinants of successful influence. *Journal of Conflict Resolution*, *38*(4), 665-689. https://www.jstor.org/stable/174334

10 Williamson O., & Masten, S. (1999). *The economics of transaction costs*. Edward Elgar Publishing.

REFERENCE LIST

1 Abdurakhmonov, M., Ridge, J. & Hill, A. (2020). Unpacking Firm External Dependence: How Government Contract Dependence Affects Firm Investments and Market Performance. *Academy of Management Journal. 64(1)*. https://doi.org/10.5465/amj.2018.0067

2 Adams, G. (1981). *The politics of defense contracting: The iron triangle*. Routledge. https://doi.org/10.4324/9780429338304

3 Al-Majdalani, H. (2026). Gamified war in Ukraine: Points, drones, and the new moral economy of killing. *War on the Rocks.* https://warontherocks.com/2026/01/gamified-war-in-ukraine-points-drones-and-the-new-moral-economy-of-killing/

4 AMS Global. (2024). *MRO contract awarded in partnership with BAE Systems to maintain and repair light guns in Ukraine.* https://www.ams.global/bae-systems-awarded-contract-to-maintain-and-repair-light-guns-in-ukraine/

5 Antenucci, A., Gabay, S., & Beuren, G. (2018). Government services 2018 year in review. *Houlihan Lokey.* http://cdn.hl.com/pdf/2018/gover nment-services-year-in-review-2018.pdf

6 Antolin-Diaz, J., & Paolo, S. (2022). The long-run effects of government spending. *Centre for Economic Policy Research, 115 (7),* 2376-2413. https://doi.org/10.1257/aer.20231278

7 Apergis, N., Bonato, M., Gupta, R., & Kyei, C. (2018). Does geopolitical risks predict stock returns and volatility of leading defense companies? Evidence from a nonparametric approach. *Defence and Peace Economics*, *29*(6), 684-696. https://doi.org/10.1080/10242694.2017.1292097.

8 Armandha, S. T., Sumari, A. D. W., & Rahmadi, H. B. (2017). Technological Parity Awareness Toward International Defense Iron Triangle: A Case from KF-X/IF-X Joint Development. *Asian Conference on Defence Technology. https://www.researchgate.net/publication/330619200_Technological_Parity_Awareness_Toward_International_Defense_Iron_Triangle_A_Case_from_KF-XIF-X_Joint_Development*

9 Artan Center. (n.d.). *Artan Training Center.* https://artancenter.com/en/#Courses

10 Arthur, B. W. (1989). Competing technologies, increasing returns and lock-in by historical events. *Economic Journal (99),* 116–131. https://doi.org/10.2307/2234208

11 Balli, F., Balli, H.O., Hasan, M. & Gregory-Allen, R. (2022) Geopolitical risk spillovers and its determinants. *The Annals of Regional Science, 68(2),* 463–500. https:// doi.org/10.1007/s00168-021-01081- y

12 Barro, R. J. (1979). On the Determination of the Public Debt. *Journal of Political Economy, 87(5). 940–971.* https://doi.org/10.1086/260807

13 Barro, R. J. (1990). Government Spending in a Simple Model of Endogeneous Growth. *Journal of Political Economy*, *98*(5), 103–125. https://doi.org/10.1086/261726

14 Baur, D. G., & Lucey, B. M. (2010). Is gold a hedge or a safe haven? An analysis of stocks, bonds and gold. *Financial Review, 45(2)*, 217–229. https://doi.org/10.1111/j.1540-6288.2010.00244.x

15 Beard, C. A., & Beard M. R. (1927). The Rise of American Civilization. *The Macmillan Company.*

16 Bender, B. (2010). *From the Pentagon to the private sector.* Boston Globe, 26. http://www.boston.com/news/nation/washington/articles/2010/12/26/defense_firms_lure_ retired_generals/.

17 Benigno, P., & Eggertsson, G. B. (2024). Slanted-L Phillips Curve. *AEA Papers and Proceedings*, *114,* (84-89). https://doi.org/10.1257/pandp.20241051

18 Blanchard, O., & Perotti, R. (2002). An empirical characterization of the dynamic effects of changes in government spending and taxes on output. *The Quarterly Journal of economics. 117(4)*, 1329–1368. https://www.jstor.org/stable/4132480
19 Blavoukos, S., Politis-Lamprou, P., & Dellatolas, T. (2023). Mapping the EU Defence Collaboration: One Year from the Versailles Declaration. *ELIAMEP, (133)*. https://www.researchgate.net/publication/370180334_Mapping_EU_Defence_Collaboration_-_One_year_on_from_the_Versailles_Declaration
20 Bloom, M., & Milkovich, G. (1998). Relationships among risk, incentive pay, and organizational performance. *Academy of Management Journal, 41(3),* 283-297. https://www.researchgate.net/publication/37149463_The_Relationship_Between_Risk_Incentive_Pay_and_Organizational_Performance
21 Boehm, C. E., & Pandalai-Nayar, N. (2022). Convex supply curves. American Economic Review, 112(12), 3941-3969. https://doi.org/10.1257/aer.20210811.
22 Born, B., D'Ascanio, F., Müller, G. J., & Pfeifer, J. (2024). Mr. Keynes meets the classics: government spending and the real exchange rate. *Journal of political economy, 132(5),* 1642-1683. https://doi.org/ 10.1086/727707
23 Braun, V. in Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3(2),* 77–101. https://doi.org/10.1191/1478088706qp063oa
24 BRAVE1. (2023). *BRAVE1 Newsletter #4.* https://www.linkedin.com/pulse/brave1-newsletter-4-brave1ukraine/
25 Brave1. (n.d.). *Ukrainian defense innovations*. https://brave1.gov.ua/en/
26 Bruneau, T. C. (2023). *Outsourcing National Defense: Why and How Private Contractors are Providing Public Services*. Lynne Rienner Publishers.
27 Cabinet of Ministers of Ukraine. (2025b). *Ministry of Digital Transformation: Brave1 launches grant competitions and updated programme with up to UAH 150 million for product development.* Cabinet of Ministers of Ukraine. https://www.kmu.gov.ua/en/news/mintsyfry-do-150-mln-hrn-na-rozrobku-brave1-zapuskaie-hrantovi-konkursy-ta-onovlenu-hrantovu-prohramu
28 Caldara, D., & Iacoviello, M. (2022). Measuring Geopolitical Risk. *American Economic Review 112 (4): 1194–1225.* https://doi.org/10.1257/aer.20191823
29 Carril, R., & Duggan, M. (2020). The impact of industry consolidation on government procurement: Evidence from Department of Defense contracting. *Journal of Public Economics*, *184*, 104141. https://doi.org/10.1016/J.JPUBECO.2020.104141
30 Charron, N., Dahlström, C., Fazekas, M., & Lapuente, V. (2017). Careers, connections, and corruption risks: Investigating the impact of bureaucratic meritocracy on public procurement processes. *The Journal of Politics, 79*(1), 89–104. https://doi.org/10.1086/687209
31 Chinn, D., Stöber, J., Köhler, J., Fischer, H., Wagner, K., & Grießmann, N. (2025). *European defense tech start-ups: In it for the long run?* McKinsey & Company. https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/european-defense-tech-start-ups-in-it-for-the-long-run
32 Clapp, S. (2024). Reinforcing the European defence industry (EPRS Briefing No. 749 805). *European Parliamentary Research Service.* https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/749805/EPRS_BRI(2023)749805_EN.pdf
33 Clapp, S., Delivorias, A., Lazarou, E., & Pari, M. (2024). Financing the European defence industry (Briefing; PE 762.383). *European Parliamentary Research Service.*

https://www.europarl.europa.eu/RegData/etudes/BRIE/2024/762383/EPRS_BRI(2024)762383_EN.pdf
34 Clapp, S., Höflmayer, M., Lazarou, E., & Pari, M. (2025). ReArm Europe plan/readiness 2030 (Briefing; PE 769.566). *European Parliamentary Research Service.* https://www.europarl.europa.eu/RegData/etudes/BRIE/2025/769566/EPRS_BRI%282025%29769566_EN.pdf European Parliament
35 Code of Federal Regulations. (2022). Title 32: National defense: Subtitle A—Department of Defense: Chapter I—Office of the Secretary of Defense: Subchapter F—Security: Part 159—Private security contractors (PSCs) operating in contingency operations, humanitarian or peace operations, or other military operations or exercises. https://www.law.cornell.edu/cfr/text/32/159.
36 Code of Federal Regulations. (2023). Title 32: National defense: Subtitle A—Department of Defense: Chapter I—Office of the Secretary of Defense: Subchapter F—Security: Part 158—Operational contract support (OCS) outside the United States § 158.3 Definitions. https://www.law.cornell.edu/cfr/text/32/158.3.
37 Cohen, S. B. (2014). *Geopolitics: The geography of international relations*. Rowman & Littlefield.
38 Commission on Wartime Contracting in Iraq and Afghanistan. (2011). *Final report.* Washington, DC: U.S. Government Printing Office.
39 Control Risks. (2024). *Protection services for a secure Ukraine visit.* https://www.controlrisks.com/campaigns/investing-and-operating-in-ukraine/case-studies/protection-services-for-a-secure-ukraine-visit
40 Council of the European Union. (n.d.). *Excessive deficit procedure.* https://www.consilium.europa.eu/en/policies/excessive-deficit-procedure/
41 Coyne, C. & Goodman, N. (2022). The Military-Industrial Complex. *SSRN Electronic Journal. (22-32). https://doi.org/*10.2139/ssrn.4135811.
42 Coyne, C. J., & Hall, A. R. (2019). Cronyism: Necessary for the minimal, protective state. *The Independent Review, 23(3),* 339–410. https://ssrn.com/abstract=3223013
43 Crisis24. (n.d.). *Ukraine.* https://www.crisis24.com/search?prod_crisis24%5Bquery%5D=ukraine
44 Crocker, K. J., & Reynolds, K. J. (1993). The efficiency of incomplete contracts: an empirical analysis of air force engine procurement. *The RAND Journal Of Economics, 24(1),* 126–146. https://doi.org/10.2307/2555956
45 Czibik, Á., Fazekas, M., Hernández Sánchez, A., & Wachs, J. (2021). Networked corruption risks in European defense procurement. In O. M. Granados & J. R. Nicolás-Carlock (Eds.), *Corruption networks: Understanding complex systems,* (67–87). *Springer*. https://doi.org/10.1007/978-3-030-81484-7_5
46 De Lemos Peixoto, S., Loi, G., Mazzocchi, R., Stieber, H., & Sabol, M. (2025). Defence financing and spending under the economic governance framework. *European Parliament, Economic Governance and EMU Scrutiny Unit*. https://www.europarl.europa.eu/RegData/etudes/IDAN/2025/764354/ECTI_IDA(2025)764354_EN.pdf
47 Department of War. (2026). *2026 NDS: National Defense Strategy.* https://media.defense.gov/2026/Jan/23/2003864773/-1/-1/0/2026-NATIONAL-DEFENSE-STRATEGY.PDF

48 Depeyre, C., & Dumez, H. (2010). *The role of architectural players in coopetition: the case of the U.S. defense industry. In: Coopetition Winning strategies for the 21st century,* 124-140 *Edward Elgar Publishing.* https://hal.science/hal-00539561
49 Doty, D. H., & Glick, W. H. (1994). Typologies as a Unique Form of Theory Building: Toward Improved Understanding and Modeling. *The Academy of Management Review*, *19*(2), 230–251. https://doi.org/10.2307/258704.
50 Draghi, M. (2024). The future of European competitiveness: A competitiveness strategy for Europe. *European Commission.* https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en
51 Duncan, T. K., & Coyne, C. J. (2013). The Origins of the Permanent War Economy. *The Independent Review*, *18*(2), 219–240. http://doi.org/10.2139/ssrn.2235729
52 Duncan, T. K., & Coyne, C. J. (2015). The revolving door and the entrenchment of the permanent war economy. *Peace Economics, Peace Science and Public Policy*, *21*(3), 391-413. https://doi.org/10.2139/ssrn.2547996
53 Dunne, J. P., & Coulomb, F. (2008). Peace, war and international security: Economic theories. *Contributions to conflict management, peace economics and development, 6,* 613–36. Emerald. https://doi.org/10.1016/S1572-8323(08)06002-5
54 Dunne, J. P., & Smith, R. (2020). Military expenditure, investment and growth. *Defence and Peace Economics, 31(6), 601–614.* https://doi.org/10.1080/10242694.2019.1636182
55 Dyevre, A. (2024). Public R&D Spillovers and Productivity Growth. *European Central Bank.* https://www.ecb.europa.eu/press/conferences/ecbforum/shared/pdf/2024/EFCB_2024_Dyevre_paper.en.pdf
56 Engle, R. F., & Campos-Martins, S. (2020). *Measuring and hedging geopolitical risk.* NYU Stern School of Business. https://doi.org/10.2139/ssrn.3685213.
57 Erbel, M. N. (2014). *Contractors and defence policy-making: Examining the drivers, process and future of military outsourcing. (Doctoral dissertation).* King's College London. https://kclpure.kcl.ac.uk/ws/portalfiles/portal/122540530/2014_Erbel_Mark_0839667_ethesis.pdf.
58 Esqueda, O. A. and Ngo, T., and Susnjara, J. (2019). The Effect of Government Contracts on Corporate Valuation. *Journal of Banking and Finance. 106,* 305-322. https://doi.org/10.1016/j.jbankfin.2019.07.003.
59 European Commission, Directorate-General for Defence Industry and Space. (n.d.). *EDIRPA: Addressing capability gaps*. https://defence-industry-space.ec.europa.eu/eu-defence-industry/edirpa-addressing-capability-gaps_en
60 European Commission. (2025). *Joint white paper for European defence readiness 2030*. https://defence-industry-space.ec.europa.eu/document/download/30b50d2c-49aa-4250-9ca6-27a0347cf009_en?filename=White%20Paper.pdf
61 European Commission. (2025b). *EU Defence Industry Transformation Roadmap: Unleashing Disruptive Innovation for Defence Readiness*. https://defence-industry-space.ec.europa.eu/document/download/513de692-d08c-40cc-80c3-cb6611ace178_en?filename=EU-Defence-Industry-Transformation-Roadmap.pdf
62 European Defence Agency. (2009). *Study on the innovative and competitive potential of the defence-related supplier base in the EU12.* https://eda.europa.eu/docs/documents/Study_on_the_innovative_and_competitive_potential_of_the_defence-related_supplier_base_in_the_EU12_1

63 European Parliament & Council of the European Union. (2009). Directive 2009/81/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security, and amending Directives 2004/17/EC and 2004/18/EC, 76–136. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0081

64 European Parliament & Council of the European Union. (2009). Directive 2009/43/EC of the *European Parliament and of the Council of 6 May 2009 on simplifying terms and conditions of transfers of defence-related products within the Community*. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32009L0043

65 Fazekas, M., & Blum, J. R. (2021). Improving Public Procurement Outcomes. Review of Tools and the State of the Evidence Base. *World Bank Policy Research Working Paper*, *9690*, 1–39. http://hdl.handle.net/10986/35727

66 Fazekas, M., & Márk, L. (2019). *Objective corruption risk indicators using donor project and contract data.* https://www.govtransparency.eu/wp-content/uploads/2019/04/Fazekas-Mark_donor-procurement-corruption-proxies_validity_tests_GTI_1709.pdf

67 Fazekas, M., Nishchal, S., & Soreide, T. (2025). The impact of emergencies on corruption risks: Italian natural disasters and public procurement. *Regulation & Governance, 19(4)*, 1137–1157. https://doi.org/10.1111/rego.12491

68 Fazekas, M., Tóth, B., Abdou, A., & Al-Shaibani, A. (2024). Global Contract-level Public Procurement Dataset. *Data in Brief, 54.* https://doi.org/10.1016/j.dib.2024.110412

69 Feinstein, A., Holden, P., & Pace, B. (2011). *Corruption and the arms trade: sins of commission.* https://doi.org/10.1093/sipri/9780199695522.003.0002.

70 Flint, C. (2021). *Introduction to geopolitics (4th ed.)*. Routledge.

71 Fornaro, L. (2024). Fiscal stimulus with supply constraints. *Barcelona School of Economics, 1458.* https://bse.eu/sites/default/files/working_paper_pdfs/1458.pdf

72 Franck, R. & Melese, F. (2005). *A Transaction Cost Economics View of DOD Outsourcing.* NPS Acquisition Research Program. https://www.researchgate.net/publication/235036048_A_Transaction_Cost_Economics_View_of_DOD_Outsourcing

73 Franck, R., & Dillard, J. (2006). *A transactions cost economics approach to defense acquisition management*. Naval Postgraduate School. https://dair.nps.edu/handle/123456789/2794

74 Freeman, B. (2020). *U.S. government and defense contractor funding of America's top 50 think tanks (Foreign Influence Transparency Initiative report)*. Center for International Policy. https://3ba8a190-62da-4c98-86d2-893079d87083.usrfiles.com/ugd/3ba8a1_c7e3bfc7723d4021b54cbc145ae3f5eb.pdf

75 Gansler, J. S., Lucyshyn, W., & Arendt, M. (2009). *Competition in defense acquisitions.* Center for Public Policy and Private Enterprise, University of Maryland. https://calhoun.nps.edu/server/api/core/bitstreams/a32d3220-bef3-473c-a4df-5bbe7dce0026/content

76 GardaWorld Security. (n.d.). *Ukraine*. https://www.garda.com/en-int/locations/ukraine

77 Gelb, L. H. (1976). Arms Sales. *Foreign Policy, 25,* 3–23. https://doi.org/10.2307/1148021

78 George, M., Djokic, K., Hussain, Z., Wezeman, P. D., & Wezeman, S. T. (2025). *Trends in international arms transfers, 2024*. Stockholm International Peace Research Institute. https://doi.org/10.55163/XXSZ9056

79 Gheorge, C., & Panazan, O. (2024). Investigating the effect of geopolitical risk on defense companies' stock returns. *Heliyon*. *10(24).* https://doi.org/10.1016/j.heliyon.2024.e40974.
80 Giorno, T. (2023). *Federal lobbying spending tops $1 billion in first quarter of 2023.* OpenSecrets. https://www.opensecrets.org/news/2023/05/federal-lobbying-spending-tops-1-billion-in-first-quarter-2023/
81 Gnaldi, M., & Del Sarto, S. (2024). Measuring corruption risk in public procurement over emergency periods. *Social Indicators Research, 172(3),* 859–877. https://doi.org/10.1007/s11205-023-03171-y
82 Griliches, Z. (2007). *R&D, patents and productivity.* University of Chicago Press
83 Gross, D. P. & Sampat, B. N. (2023). America, Jump-Started: World War II RD and the Takeoff of the US Innovation System. *American Economic Review 113(12)*, 3323–3356. https://doi.org/10.1257/aer.20221365.
84 Gupta, S., De Mello, L., & Sharan, R. (2001). Corruption and military spending. *European Journal of Political Economy, 17(4)*, 749–777. https://doi.org/10.1016/S0176-2680(01)00050-6
85 Hall, G. J., & Sargent, T. J. (2020). *Debt and taxes in eight U.S. wars and two insurrections.* National Bureau of Economic Research. https://doi.org/10.3386/w2711
86 Handfield, R., & Baumer, D. (2006). Managing conflict of interest issues in purchasing. *Journal of Supply Chain Management, 42(3),* 41-50. https://doi.org/10.1111/j.1745-493X.2006.00016.x
87 Hartley, K. (2018) The profitability of non-competitive defence contracts: The UK experience. *Defence and Peace Economics, 29(6), 577-594.* https://doi.org/10.1080/10242694.2017.1287157
88 Hegseth, P. (2025). *Opening remarks by Secretary of Defense Pete Hegseth at Ukraine Defense Contact Group. U.S. Department of War.* https://www.war.gov/News/Speeches/Speech/Article/4064113/opening-remarks-by-secretary-of-defense-pete-hegseth-at-ukraine-defense-contact/
89 Hicks, J. R., Hicks, U. K., & Rostas, L. (1942). *The Taxation of War Wealth.* Oxford: Calderon Press. https://doi.org/10.1177/000271624222000130
90 Ilzetzki, E. (2014). *Fiscal policy during recessions and recoveries* [Video]. Lecture delivered at the Centre for Macroeconomics, London School of Economics. YouTube. https://www.youtube.com/watch?v=vBjOjlGyoS4
91 Ilzetzki, E. (2025). *Guns and growth: The economic consequences of defense buildups (2).* Kiel Report.
92 Ilzetzki, E., Mendoza, E. G., & Végh, C. A. (2013). How big (small?) are fiscal multipliers? *Journal of Monetary Economics 60(2),* 239–254. https://doi.org/10.1016/j.jmoneco.2012.10.011.
93 Interfax-Ukraine. (2025). *Ministry of Digital Development creates marketplace of defense innovations for Brave1 participants, military*. Interfax-Ukraine. https://en.interfax.com.ua/news/telecom/1067504.html
94 International SOS. (n.d.). *Situation in Ukraine and bordering countries: Frequently asked questions.* https://www.internationalsos.com/insights/frequently-asked-questions-ukraine-situation
95 Jones, S. G. (2023). *Empty bins in a wartime environment: The challenge to the US defense industrial base*. Center for strategic & international studies. https://csis-website-prod.s3.amazonaws.com/s3fs-public/2023-01/230119_Jones_Empty_Bins.pdf?VersionId=y_iEwCalRVFiVedETHwrcuwDaenf7zez

96 Josephson, B. W., Lee, J. Y., Mariadoss, B. J., & Johnson, J. L. (2019). Uncle Sam Rising: Performance Implications of Business-to-Government Relationships. *Journal of Marketing*, *83(1),* 51–72. https://doi.org/10.1177/0022242918814254

97 Kaminsky, G. L., Reinhart, C. M., & Végh, C. A. (2005). When it rains, it pours: Procyclical capital flows and macroeconomic policies. In M. Gertler & K. Rogoff (Eds.), *NBER Macroeconomics Annual 2004. 19,* 11-53. MIT Press. https://www.nber.org/chapters/c6668/c6668.pdf

98 Kantor, S., & Whalley, A. (2025). Moonshot: Public R&D and growth. *American Economic Review, 115(9), 2891-2925. https://doi.org/10.1177/000271624222000130.*

99 Keupp, M. M. (2021). *Defense Economics*. Springer International Publishing.

100 Keynes, J. M. (1937). The general theory of employment. *The quarterly journal of economics*, *51(2)*, 209-223. https://doi.org/10.2307/1882087

101 *King, D. R., & Driessnack, J.* (2007). Analysis of competition in the defense industrial base: An F-22 case study. *Contemporary Economic Policy. 25(1),* 57-66. https://doi.org/10.1111/j.1465 7287.2006.00019.x.

102 King, D. R., & Nowack M. (2003). The Impact of Government Policy on Technology Transfer: An Aircraft Industry Case Study. *Journal of Engineering and Technology Management, 20(4),* 303–18. https://doi.org/10.1016/j.jengtecman.2003.08.007

103 King, D. R., & Sekerka, L. E. (2017). Managing competing interests: A review of ethics in military procurement. *Public Integrity, 19(5),* 444–468. https://doi.org/ 10.1080/10999922.2016.1276789

104 Kinsey, C. (2006). *Corporate Soldiers and International Security - The rise of Private Military Companies*. Routledge.

105 Kipps, R., DeSanto, K., & Misantone, M. (2018). *Aerospace/Defense & Government Services 2018 M&A Survey.* KippsDeSanto investment Banking. https://kippsdesanto.com/aerospace-defense-government-services-2018-ma-survey/

106 Kovač, M. (2009). Legal Issues Arising from the Possible Inclusion of Private Military Companies in UN Peacekeeping. *Max Planck Yearbook of United Nations Law*, *13(1)*, 307–374. https://doi.org/10.1163/18757413-90000043

107 Kusunoki K, Nonaka I, & Nagata A (1998) Organisational capabilities in product development of Japanese firms: A conceptual framework and empirical findings. *Organisation Science*, *9(6)*, 699–718. https://doi.org/10.1287/orsc.9.6.699

108 Laband, D.N., & McClintock, G.C. (2001). *The Transfer Society. Washington.* The Cato Institute

109 Lachal, J., Revah-Levy, A., Orri, M., & Moro, M. R. (2017). Metasynthesis: An original method to synthesize qualitative literature in psychiatry. *Frontiers in Psychiatry, 8(269)*. https://doi.org/10.3389/fpsyt.2017.00269

110 Lawrence, C. (2025). *Europe's defencetech investment hits new highs — yet lags in critical technologies. Tech.eu.* https://tech.eu/2025/09/29/europes-defencetech-investment-hits-new-highs-yet-lags-in-critical-technologies/

111 Lichtenberg, F. R. (1988). The Private R&D Investment Response to Federal Design and Technical Competitions. *American Economic Review, 78(3), 550–59. https://ideas.repec.org/a/aea/aecrev/v78y1988i3p550-59.html*

112 Mahlon, A., & Keane, J. M. (2004), New Business with the New Military. *Harvard Business Review, 82 (9),* 45–56. https://www.researchgate.net/publication/8265184_New_business_with_the_new_military

113 Mahoney, C. W. (2020). United States defense contractors and the future of military operations. *Defense & Security Analysis, 36(2),* 180–200. https://doi.org/10.1080/14751798.2020.1750182
114 Marzian, J., & Trebesch, C. (2025). How to finance Europe's military buildup? Lessons from history. *Kiel Policy Brief (184).* https://www.econstor.eu/bitstream/10419/313631/1/1919739106.pdf
115 Matelly, S., & M. Lima. (2016). The Influence of the State on the Strategic Choices of Defence Companies: The Cases of Germany, France and the UK After the Cold War. *Journal of Innovation Economics Management 20(2), 61–88*. https://doi.org/10.3917/jie.020.0061
116 McChesney, F. S. (1989). *Money for Nothing: Politicians, Rent Extraction, and Political Extortion.* Harvard University Press.
117 McChesney, F.S. (1987). Rent Extraction and Rent Creation in the Economic Theory of Regulation. *Journal of Legal Studies 16(1)*, 101–18. https://doi.org/ 10.1086/467825.
118 Mejino-Lopez, J., & Wolff G. (2024). *What role do imports play in European defence?* Brugel. https://www.bruegel.org/analysis/what-role-do-imports-play-european-defence
119 Merle, R. (2003). *Boeing wins contract despite suspension. Washington Post.* https://www.washingtonpost.com/archive/business/2003/10/01/boeing-wins-contract-despite-suspension/aeafe5bd-b615-40e1-9ce6-52ffe9216fda/.
120 Metz, S. (1995). *Strategy and the revolution in military affairs: From theory to policy.* US Army War College Press. https://press.armywarcollege.edu/cgi/viewcontent.cgi?article=1233&context=monographs
121 Ministry of Defence of Ukraine. (2024). *The Ministry of Defence certified the first private school for drone operators.* https://mod.gov.ua/en/news/the-ministry-of-defence-certified-the-first-private-school-for-drone-operators
122 Ministry of Defence of Ukraine. (2025). *MoD certified the first seven schools for ground robotic system operators.* https://mod.gov.ua/en/news/mo-d-certified-the-first-seven-schools-for-ground-robotic-system-operators
123 Ministry of Digital Transformation of Ukraine. (2025). *Ukraine launches new EU-backed program to boost defense tech and support startups.* Digital State UA. https://digitalstate.gov.ua/news/tech/ukraine-launches-new-eu-backed-program-to-boost-defense-tech-and-support-startups
124 Ministry of Digital Transformation of Ukraine. (2025a). *Ukraine launches Brave1 Market for defense innovation. Digital State UA.* https://digitalstate.gov.ua/news/tech/brave1-market-ukrayina-zapuskaye-marketpleys-viyskovykh-innovatsiy
125 Moore, A. (2016). US military logistics outsourcing and the everywhere of war. *Territory, Politics, Governance*, *5(1),* 5–27. https://doi.org/10.1080/21622671.2016.1160837
126 Mueller, D., Rowley, C. & Schneider, F. G. (2008). *Public Choice: An Introduction.* In Book: Readings in Public Choice and Constitutional Political Economy, 31-46. https://doi.org10.1007/978-0-387-75870-1_2.
127 Mueller, T. (2025) Drivers and Impact of European Defence Market Integration: A Literature Meta-Synthesis with Economic Focus, *Defence and Peace Economics, 36(5),* 577-612, https://doi.org10.1080/10242694.2024.2396416
128 National Anti-Corruption Bureau of Ukraine. (2025). *Corruption in defense: DZVIN system embezzlement scheme uncovered.* https://nabu.gov.ua/en/news/koruptciia-v-oborontci-vykryto-skhemu-rozkradannia-koshtiv-na-systemu-dzvin/
129 NATO. (2025). *The Hague Summit Declaration.* https://www.nato.int/cps/en/natohq/official_texts_236705.htm?selectedLocale=en

130 Nicastro, L. A. (2024). The U.S. Defense Industrial Base: Background and Issues for Congress. *Congressional Research Service: Report 47751*. https://www.congress.gov/crs-product/R47751

131 Niknazar, P., & Bourgault, M. (2017). Theories for classification vs. classification as theory: Implications of classification and typology for the development of project management theories. *International Journal of Project Management*, *35(2),* 191-203. https://doi.org/10.1016/j.ijproman.2016.11.002.

132 Noblit, G. W., & Hare, R. D. (1988). *Meta-ethnography: Synthesizing qualitative studies.* Sage Publications.

133 Nownes, A. J. (2006). *Total lobbying: What lobbyists want (and how they try to get it).* Cambridge University Press. https://doi.org/10.1017/CBO9780511840395

134 Ohanian, L. (1997). The Macroeconomic Effects of War Finance in the United States: World War II and the Korean War. *American Economic Review 87(1),* 23–40. http://www.jstor.org/stable/2950852

135 Olson, M. (1965) *The Logic of Collective Action. Public Goods and the Theory of Groups.* Harvard University Press.

136 Olsson, P., Dalberg, S., & Junerfällt, T. (2022). *Defence Industrial Outlook: A Global Outlook with a Special Focus on the European Defence Fund.* Swedish Defence Research Agency. https://www.researchgate.net/publication/365470177_Defence_Industrial_Outlook_A_Global_Outlook_with_a_Special_Focus_on_the_European_Defence_Fund

137 Open contracting partnership. (2020). *How governments spend: Opening up the value of global public procurement*. https://www.open-contracting.org/wp-content/uploads/2020/08/OCP2020-Global-Public-Procurement-Spend.pdf

138 Organization for Economic Co-operation and Development (2019). *Reforming Public Procurement: Progress in Implementing the 2015 OECD Recommendation. OECD Public Governance Reviews.* OECD Publishing. https://doi.org/10.1787/1de41738-en.

139 Organization for Economic Co-operation and Development. (2025). *Implementing the OECD Recommendation on Public Procurement in OECD and Partner Countries: 2020-2024 Report. OECD Public Governance Reviews*. OECD Publishing. https://doi.org/10.1787/02a46a58-en.

140 Organization for Economic Co-operation and Development. (n.d.). *Public Procurement.* https://www.oecd.org/en/topics/public-procurement.html

141 Panazan, O., & Gheorghe, C. (2025) Impact of geopolitical risks and innovation on global defense stock return. *PLoS ONE 20(2)*. https://doi.org/10.1371/journal.pone.0312155

142 Park, S. (2023). *A Review and Assessment of the Unique Resource Dependance Relationship between Business and Government in the Defense Industry. (Doctoral dissertation).* University of Alabama Institutional Repository. https://ir.ua.edu/handle/123456789/10553

143 Parr, R. (2022). *Private Security and National Military Power The Ethical Legitimacy of Security Outsourcing (Doctoral dissertation).* Kings's College London, Defence Studies Department.

144 Perotti, R. (2014). Defense Government Spending Is Contractionary, Civilian Government Spending Is Expansionary. *NBER Working Paper Series*, *20179*. http://www.nber.org/papers/w20179.pdf

145 Pilgrims Risk Management Group Limited. (2022). *Capability statement for Pilgrims Risk Management Group: Eastern Europe*. https://hostileinsurance.com/wp-content/uploads/PRMG-EE-Capabilities.pdf

146 Rahn, R., & Fox, H. (1996). *What is the optimal size of government?* Vernon K. Krieble Foundation.

147 Ram, E. (2022). *Mozart Group: The western ex-military personnel training Ukrainian recruits.* The Guardian. https://www.theguardian.com/world/2022/aug/05/mozart-group-western-ex-military-training-ukrainian-recruits

148 Ram, R. (1995). Defense expenditure and economic growth. *Handbook of Defense Economics, 1,* 251–274. https://doi.org/10.1016/S1574-0013(05)80012-2

149 Ramey, V. A. (2011). Identifying government spending shocks: It's all in the timing. *The Quarterly Journal of Economics 126(1)*, 1–50. https://doi.org/10.1093/qje/qjq008

150 Ramey, V. A., & Zubairy, S. (2018). Government spending multipliers in good times and in bad: evidence from US historical data. *Journal of Political Economy, 126(2),* 850–901. https://doi.org/10.1086/696277

151 Reichardt, O. H. (1975). Industrial Concentration and World War II: A Note on the Aircraft Industry. *Business History Review, 49(4),* 498–503. doi:10.2307/3113172

152 Remiro, L., Calatrava, A., Bueno A., & Martinez, R. (2024). Political Culture and Defence Policy: A Model of Five-Subtypes to Explain the Spanish Defence Political Culture. *European Politics and Society, 25(5),* 1–22. https://doi.org/10.1080/ 23745118.2024.2324888

153 Rindfleisch, A., & Heide, J. B. (1997). Transaction cost analysis: Past, present, and future applications. *Journal of Marketing*, *61(4),* 30–54. https://doi.org/10.2307/1252085

154 Robertson, P.E. (2022). The real military balance: International comparisons of defense spending. *Review of Income and Wealth, 68(3)*, 797-818. https://doi.org/10.1111/roiw.12536

155 Romer, C. D., & Romer, D. H. (2010). The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks. *American Economic Review, 100(3)*, 763– 801. https://doi.org/10.1257/aer.100.3.763.

156 Rothbard, M. N. (1998). *The ethics of liberty.* New York University Press.

157 Rowley, C., & Schneider, F.. (2008). *Readings in Public Choice and Constitutional Political Economy.* Springer. https://doi.org/10.1007/978-0-387-75870-1.

158 Rubin, P. H. (1990). Managing business transactions: *Controlling the cost of coordinating, communicating, and decision making.* New York: Free Press.

159 Sabatino, E. (2022). The European Defence Fund: A Step Towards a Single Market for Defence? *Journal of European Integration 44(1)*, 133–148. https://doi.org/10.1080/07036337.2021.2011264.

160 Sarasa-Flores, D., García Serrador, A., & Ulloa Ariza, C. (2025). Buy Guns or Buy Roses?: EU Defence Spending Fiscal Multipliers. *SUERF Policy Brief, (1209).* http://dx.doi.org/10.2139/ssrn.5338966

161 Scheve, K., & Stasavage, D. (2010). The Conscription of Wealth: Mass Warfare and the Demand for Progressive Taxation. *International Organization, 64(4),* 529–561. https://dx.doi.org/10.2139/ssrn.1535443

162 Schütte, L. (2023). *What Future European Defence and Technological Industrial Base (EDTIB) Do We Want/Need? The German Case.* Armament Industry European Research Group. https://www.iris-france.org/wp-content/uploads/2023/10/ARES-85-Comment.pdf

163 Schwartz, M. (2010). *Defense acquisitions: How DoD acquires weapon systems and recent efforts to reform the process.* Library of Congress, no. CRSRL34026. https://defenseinnovationmarketplace.dtic.mil/wp-content/uploads/2018/02/RL340261.pdf

164 Scortecci, G. (2020). *The European Defence Industry: From Fragmentation to Innovation. (Master's thesis).* Luiss. https://tesi.luiss.it/28498/1/637242_SCORTECCI_GIANMARCO.pdf

165 Sheremirov, V., & Spirovska, S. (2022). Fiscal multipliers in advanced and developing countries: Evidence from military spending. *Journal of Public Economics*, *208, 104631.* https://doi.org/10.1016/j.jpubeco.2022.104631

166 Shoag, D. (2013). Using State Pension Shocks to Estimate Fiscal Multipliers since the Great Recession. *American Economic Review, 103(3),* 121–24. https://doi.org/10.1257/aer.103.3.121.

167 Siebold, S. (2025). *Ukraine offers its front line as test bed for foreign weapons*. Reuters. https://www.reuters.com/business/aerospace-defense/ukraine-offers-its-front-line-test-bed-foreign-weapons-2025-07-17/

168 Singer, P. W. (2001). Corporate Warriors: The Rise of the Privatized Military Industry and Its Ramifications for International Security. *International Security*, *26(3)*, 186–220. http://www.jstor.org/stable/3092094

169 Sislin, J. (1994). Arms as influence: The determinants of successful influence. *Journal of Conflict Resolution*, *38(4),* 665-689. https://www.jstor.org/stable/174334

170 Smith, R.P. (1989) Models of military expenditure. *Journal of Applied Econometrics, 4(4),* 345–359. https://doi. org/10.1002/jae.39500 40404

171 Snider, L. W. (1979). Arms transfer and recipient cooperation with supplier policy references: The case of the Middle East. *International Interactions*, *5(2–3)*, 241–266. https://doi.org/10.1080/03050627808434512

172 Sosvilla-Rivero, S., Ramos-Herrera, M. d. C., & Rubio-Guerrero, J. J. (2025). Public Expenditure and Economic Growth: Further Evidence for the European Union. *Economies*, *13(3)*, 60. https://doi.org/10.3390/economies13030060

173 Stockholm International Peace Research Institute. (2025). *SIPRI Military Expenditure Database.* https://doi.org/10.55163/CQGC9685

174 Sweeney, S., & N. Winn. (2020) EU Security and Defence Cooperation in Times of Dissent: Analysing PESCO, the European Defence Fund and the European Intervention Initiative (EI2) in the Shadow of Brexit. *Defence Studies 20 (1)*, 224–249. https://doi.org/10.1080/14702436.2020.1778472.

175 Thai, K. V. (2017). *Global Public Procurement Theories and Practices: An Introduction.* https://doi.org/10.1007/978-3-319-49280-3_1.

176 Tollison, R. D. (2012). The economic theory of rent seeking. *Public Choice*, *152(1/2)*, 73–82. http://www.jstor.org/stable/41483753

177 Tran, M.P. & Vo, D.H. (2024). Can local and global geopolitical risk predict governments' military spending behaviour? International evidence. *Scottish Journal of Political Economy*, *71(4)*, 588–603. https://doi.org/10.1111/sjpe.12382.

178 Transparency International. (2017). *Single sourcing: A multi-country analysis of non-competitive defence procurement.* https://ti-defence.org/publications/single-sourcing-a-multi-country-analysis-of-non-competitive-defence-procurement/

179 Troster, V., Bouri, E., & Roubaud, D. A. (2019). A quantile regression analysis of flights-to-safety with implied volatilities. *Resources Policy, 62, 482–495.* https://doi.org/10.1016/j.resourpol.2018.10.004

180 Tullock, G. (1967). The welfare costs of tariffs, monopolies, and theft. *Western Economic Journal, 224-232.* https://doi.org/10.1111/j.1465-7295.1967.tb01923.x

181 U.S. Department of Defense Office of Inspector General. (2019). Review of parts purchased from TransDigm Group, Inc. (Report No. DODIG-2019-060). https://media.defense.gov/2019/Feb/27/2002093922/-1/-1/1/DODIG-2019-060.PDF

182 U.S. Government Accountability Office. (2024). *The F-35 will now exceed $2 trillion as the military plans to fly it less*. https://www.gao.gov/blog/f-35-will-now-exceed-2-trillion-military-plans-fly-it-less Defense Acquisition University+11U.S. Government Accountability Office+11

183 United States Government Accountability Office. (2021). *Contingency contracting: DOD has taken steps to address Commission recommendations, but should better document progress and improve contract data*. https://www.gao.gov/assets/gao-21-344.pdf

184 Uttley, M. R., & Wilkinson, B. (2016). A Spin of the Wheel? Defence Procurement and Defence Industries in the Brexit Debates. *International Affairs 92(3).* 569–586. https://doi.org/10.1111/1468-2346.12605.

185 Vallejo-Rosero, P., García-Centeno, M. C., Delgado- Antequera, L., Fosado, O., & Caballero, R. (2021). A multiobjective model for analysis of the relationships between military expenditures, security, and human development in NATO countries. *Mathematics, 9(1)*, 1–15. https://doi.org/10.3390/math9010023

186 Vedder, R., & Gallaway, L. (1998). *Government size and economic growth.* Joint Economic Committee, U.S. Congress. https://www.jec.senate.gov/public/_cache/files/014ee573-5f0d-45e5-8cc0-869a465c7b36/government-size-and-economic-growth---dec-1998.pdf

187 Walsh, D., & Downe, S. (2005), Meta-synthesis method for qualitative research: a literature review. *Journal of Advanced Nursing, 50(2)*, 204-211. https://doi.org/10.1111/j.1365-2648.2005.03380.x

188 Wang, C. (2014). Political connections of the boards of directors and department of defense contractors' excessive profits. *Journal of Public Procurement, 14(1), 96-122.* https://doi.org/10.1108/JOPP-14-01-2014-B004

189 Wheelock, T. R. (1978). Arms for Israel: the limit of leverage. *International Security*, *3(2),* 123-137. https://muse.jhu.edu/article/446243.

190 Whittaker, B. (2023). *Weapons contractors hitting Department of Defense with inflated prices for planes, submarines, missiles*. CBS News. https://www.cbsnews.com/news/weapons-contractors-price-gouging-pentagon-60-minutes-transcript-2023-05-21/

191 Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing, 52(5),* 546–553. https://doi.org/10.1111/j.1365-2648.2005.03621.x

192 Williamson O., & Masten, S. (1999). *The economics of transaction costs*. Edward Elgar Publishing.

193 Williamson, O. (1975) *Markets and Hierarchies: Analysis and Antitrust Implication: A Study of the Economics of Internal Organization.* New York: Free Press.

194 Williamson, O. (1979). 'Transaction-Cost Economics: The Governance of Contractual Relations. *Journal of Law and Economics, 22(2),* 233–61. http://www.jstor.org/stable/725118?origin=JSTOR-pdf

195 Williamson, O. (1999). Public and private bureaucracies: A transaction cost economics perspective. *Journal of Law Economics and Organization, 15(1),* 306-42. https://doi.org/10.1093/jleo/15.1.306

196 Williamson, O. (2000). New institutional economics: Taking Stock, Looking Ahead. *Journal of Economic Literature, 38(8).* 595-613. http://www.jstor.org/stable/2565421

197 Wilson, D. J. (2012). Fiscal Spending Jobs Multipliers: Evidence from the 2009 American Recovery and Reinvestment Act. *American Economic Journal: Economic Policy 4(3)*, 251–82. https://doi.org10.1257/pol.4.3.251.

198 Wilson, M. R (2006). *The business of Civil War: Military mobilization and the state, 1861–1865.* John Hopkins University Press.

199 Woods, W. T. (2017). *Contracting Data Analysis: Assessment of Government-Wide Trends.* U.S. Government Accountability Office. https://www.gao.gov/products/gao-17-664

200 World Bank. (n.d. - a). *Military expenditure (% of GDP) – United States.* World Development Indicators. https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=US

201 World Bank. (n.d. - b). *Military expenditure (% of GDP) – European Union.* World Development Indicators. https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=EU

202 Yesilyurt, M. E., & Elhorst, J. P. (2017). Impacts of neighboring countries on military expenditures: A dynamic spatial panel approach. *Journal of Peace Research, 54(6),* 777–790. https://doi.org/10.1177/0022343317707569?urlappend=%3Futm_source%3Dresearchgate

203 Young, T. D. (2023). *The Economics of Defense Industry*. Routledge.

204 Yu, M., & Wang, N. (2023). The influence of geopolitical risk on international direct investment and its countermeasures. *Sustainability, 15(3),* 2522. https://doi.org/10.3390/su15032522

205 Zhang, Z., Bouri, E., Klein, T., & Jalkh, N. (2022). Geopolitical risk and the returns and volatility of global defense companies: A new race to arms? *International Review of Financial Analysis*, *83*. https://doi.org/10.1016/j.irfa.2022.102327.