

Department of Politics & Public Administration

An issue of capacity:

Explaining differences in the protection of maritime infrastructure in Sweden, Ireland and Germany

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Abstract

Reliance on maritime infrastructure for the transmission of energy, data and goods has increased significantly. Following the Russian invasion of Ukraine in February 2022, various European governments conceded their susceptibility to security breaches. Thus, this thesis enquires what accounts for distinctions in the protection of maritime infrastructure. Prior research mostly focused on international commitments while disregarding domestic features. This issue relates to the ability to deliver a public service which is commonly investigated by the theory of state capacity. Previous quantitative studies connected capacity with aspects of defence; however, this subject of public and civilian deterrence has not been dissected. In a novel way, the research presents a comparison of Sweden, Ireland and Germany. Its qualitative approach utilises secondary data, including governmental and academic assessments, reports and strategical analyses. The findings are consistent with prior discussions and substantiated by public administration theory: (1) State capacity is contracted due to economic depression and absent existential pressures. (2) A recalibration occurs when awareness and funding are raised, yet vastly depleted capacity is more difficult to restore. (3) State capacity is enhanced once societal networks are strategically maintained. This study contributes to the literature by scrutinising hybrid threats, maritime safety and cybersecurity through the lenses of state capacity thus providing incentives for further research into states' abilities to manage complex perils.

Declaration

I hereby declare that this project is entirely my own work, in my own words, and that all sources used in researching it are fully acknowledged and all quotations properly identified.

It has not been submitted, in whole or in part, by me or another person, for the purpose of obtaining any other credit / grade.

I understand the ethical implications of my research, and this work meets the requirements of the Faculty of Arts, Humanities and Social Sciences.

Elisabeth Adam
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Table of Contents

Abstract ii
Declaration iii
Acknowledgments iv
List of Tables vii
List of Figures viii
List of Appendices x
List of Abbreviations xi
1. Introduction 1
2. Literature Review 6
2.1 Definition of State Capacity 7
2.2 Elements of State Capacity 9
2.2.1 Fiscal Capacity 9
2.2.2 Coercive Capacity 10
2.2.3 Administrative Capacity 12
2.2.4 Policy Capacity 15
2.3 Research Gap 17
3. Out at sea: contemplating maritime security 19
3.1 Scope of maritime security 20
3.2 Maritime security features of the post-Cold War era 22
3.2.1 United Nations 23
3.2.2 North Atlantic Treaty Organization 25
3.2.3 European Union 26
4. Methodology 28
4.1 Variables 29
4.1.1 Dependent Variable 29
4.1.2 Independent Variables 30
4.2 Case selection 32
4.2.1 Sweden 33
4.2.2 Ireland 34
4.2.3 Germany 35
4.2.4 Confounding Variables 36

4.3 Data Collection 37
4.4 Data Analysis 38
4.5 Limitations 40
5. Findings 40
5.1 Sweden 40
5.1.1 Financial capacity 40
5.1.2 Security capacity 42
5.1.3 Administrative capacity 44
5.2 Ireland 46
5.2.1 Financial capacity 46
5.2.2 Security capacity 48
5.2.3 Administrative capacity 50
5.3 Germany 53
5.3.1 Financial capacity 53
5.3.2 Security capacity 54
5.3.3 Administrative capacity 56
6. Discussion 59
6.1 Financing 'peaceful' crises: contracted state capacity 61
6.2 Emerging security threat: recalibrated state capacity 63
6.3 Maintaining the networks: enhanced state capacity 69
6.4 Deciphering maritime infrastructure protection: an issue of capacity 72
7. Conclusion 73
8. List of References 79

List of Tables

Table 1. Outline of UNCLOS articles related to the jurisdiction of maritime infrastructure. 24
Table 2. Abstract of EU directives related to infrastructure protection. 27
Table 3. Aspects of maritime infrastructure. 29
Table 4. Expected levels of state capacity for Sweden, Ireland and Germany. 36
Table 5. Analytical framework for the examination of state capacity and maritime infrastructure protection. 39

Table C. 1 Summary of PESCO initiatives related to maritime security and infrastructure protection. 4

Table D.2 1. Types of active Swedish submarines 2014-2025. 4
Table D.2 2. Types of active Swedish naval patrol/combat vessels 2014-2025. 6

Table E.2. 1. Types of active Irish naval patrol/combat vessels 2014-2025. 3

Table F.2. 1. Types of active German submarines 2014-2025. 4
Table F.2. 2. Types of active German naval patrol/combat vessels 2014-2025. 5

List of Figures

Figure 1. Conflation of theory and empirical findings. 60

Figure A. 1. Percentages of citizens' perception regarding the extent of national defence and security spending in Sweden, Ireland and Germany 2026 1
Figure A. 2. Percentages of citizens' perceiving a danger to their nation in Sweden, Ireland and Germany 2026.....2
Figure A. 3. Percentages of citizens favouring a common defence and security policy for the EU in Sweden, Ireland and Germany 2005-2025.....3

Figure D.1. 1. Yearly national revenue and expenditure (% of GDP) in Sweden 2014-2025.....1
Figure D.1. 2. National tax revenue (% of GDP) in Sweden and in the EU 2021-2023. 1

Figure D.2. 1. Yearly share of defence spending dedicated to personnel and equipment in Sweden 2014-2023. 2
Figure D.2. 2. Yearly military and naval personnel numbers in Sweden 2014-2025. ...3
Figure D.2. 3. Yearly number of active submarines in Sweden 2014-2025. 4
Figure D.2. 4. Yearly number of active naval patrol/combat vessels in Sweden 2014-2025.....5

Figure E.1. 1. Yearly national revenue and expenditure (% of GDP) in Ireland 2014-2025.....1
Figure E.1. 2. National tax revenue (% of GDP) in Ireland and in the EU 2021-2023. 1

Figure E.2. 1. Yearly military and naval personnel numbers in Ireland 2014-2025. 2
Figure E.2. 2. Yearly number of active naval patrol/combat vessels in Ireland 2014-2025.....3

Figure F.1. 1. Yearly national revenue and expenditure (% of GDP) in Germany 2014-2025.....1
Figure F.1. 2. National tax revenue (% of GDP) in Germany and in the EU 2021-2023. 1

Figure F.2. 1. Yearly share of defence spending dedicated to personnel and equipment in Germany 2014-2023. 2
Figure F.2. 2. Yearly military and naval personnel numbers in Germany 2014-2025. ..3
Figure F.2. 3. Yearly 'Cyber and Information Domain Service' personnel numbers in Germany 2017-2025. 4

Figure F.2. 4. Yearly number of active naval patrol/combat vessels in Germany 2014-2025.....5

Figure G.1. 1. Yearly GDP increase in Sweden, Ireland and Germany 1990-2025.....1
Figure G.1. 2. Yearly national debt (% of GDP) in Sweden, Ireland and Germany 1990-2025.....2
Figure G.1. 3. Yearly national deficit/surplus (% of GDP) in Sweden, Ireland and Germany 2014-2025. 3
Figure G.1. 4. Yearly national revenue (% of GDP) in Sweden, Ireland and Germany 2014-2025. 3
Figure G.1. 5. Yearly national expenditure (% of GDP) in Sweden, Ireland and Germany 2014-2025. 4

Figure G.2. 1. Yearly defence spending (% of GDP) in Sweden, Ireland and Germany 2014-2025. 4
Figure G.2. 2. Yealy share of defence spending dedicated to personnel in Sweden and Germany 2014-2023. 5
Figure G.2. 3. Yearly share of defence spending dedicated to equipment in Sweden and Germany 2014-2023. 5
Figure G.2. 4. Yearly share of naval personnel (% of total military personnel) in Sweden, Ireland and Germany 2014-2025.....6

Figure G.3. 1. Yearly ‘Voice and Accountability’ Score in Sweden, Ireland and Germany 2014-2024. 7
Figure G.3. 2. Yearly ‘Political Stability’ Score in Sweden, Ireland and Germany 2014-2024.....7
Figure G.3. 3. Yearly ‘Government Effectiveness Score’ in Sweden, Ireland and Germany 2014-2024. 8
Figure G.3. 4. Yearly ‘Regulatory Quality Score’ in Sweden, Ireland and Germany 2014-2024. 8
Figure G.3. 5. Yearly ‘Rule of Law Score’ in Sweden, Ireland and Germany 2014-2024. 9
Figure G.3. 6. Yearly ‘Control of Corruption Score’ in Sweden, Ireland and Germany 2014-2024. 9

List of Appendices

Appendix A. Public opinion on defence matters

Appendix B. General overview of the North Atlantic Treaty Organization's approach to maritime and hybrid matters

Appendix C. General overview of the European Union's approach to maritime and hybrid matters

Appendix D. Supplementary data on the elements of state capacity: Sweden

Appendix E. Supplementary data on the elements of state capacity: Ireland

Appendix F. Supplementary data on the elements of state capacity: Germany

Appendix G. Supplementary data and comparison: Sweden, Ireland and Germany

List of Abbreviations

AIP	Air-independent propulsion
ASW	Anti-submarine warfare
BAAINBw	Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support
BALTOPS	Baltic Operations
BMI	Federal Ministry of the Interior, Building and Community
BMVg	Federal Ministry of Defence
BReg	The Federal Government/Die Bundesregierung
BSI	Federal Office for Information Security
BT	German Bundestag (federal parliament)
CARD	Coordinated Annual Review for Defence
CCDCOE	Cooperative Cyber Defence Centre of Excellence
CERT	Computer Emergency Response Team
CSDP	Common Security and Defence Policy
CSIRT	Computer Security Incident Response Team
DCENR	Department of Communications, Energy & Natural Resources
DG ECFIN	Directorate-General for Economic and Financial Affairs
DIANA	Defence Innovation Accelerator for the North Atlantic
DoD	Department of Defence
DoJ	Department of Justice, Home Affairs and Migration
DT	Department of Transport
EC	European Commission
EDA	European Defence Agency
EDF	European Defence Fund
EEZ	Exclusive Economic Zone
ENISA	European Union Agency for Cybersecurity
EU	European Union
EUMSS	European Union Maritime Security Strategy
FM	Swedish Armed Forces
FOI	Swedish Defence Research Agency
GDP	Gross Domestic Product
GFC	Global Financial Crisis
Gov	Government of Ireland
Hybrid CoE	European Centre of Excellence for Countering Hybrid Threats
IDF	Irish Defence Forces
IISS	International Institute for Strategic Studies
IMF	International Monetary Fund
IMO	International Maritime Organization
INS	Irish Naval Service
KBV	Swedish Coast Guard
MARCOM	Allied Maritime Command
MARSUR	Maritime Surveillance project
MoD	Ministry of Defence
MSB	Swedish Civil Contingencies Agency

MSSD	Most Similar Systems Design
NATO	North Atlantic Treaty Organization
NCSC	National Cyber Security Centre
NIS	Network and Information Security
NM	Nautical miles
NORDEFCO	Nordic Defence Cooperation
NPG	New Public Governance
NPM	New Public Management
NRF	NATO Response Force
NWS	Neo-Weberian State
OECD	Organisation for Economic Co-operation and Development
OEP	Office of Emergency Planning
PESCO	Permanent Structured Cooperation
PDD	Public Diplomacy Division
R&D	Research & Development
RK	Government Offices of Sweden
SIPRI	Stockholm International Peace Research Institute
TMB	The Military Balance
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
US	United States of America
UUV	Unmanned underwater vehicle

1. Introduction

> Ireland established as one of its 2013 EU Presidency priorities the necessity to address the potential for innovation, cooperation and collaboration to enhance maritime safety, security and surveillance within the EU.
>
> (Burke 2013, p.36)

> Russia's war of aggression in Ukraine has transformed the security landscape in Europe and revealed vulnerabilities that all EU Member States, including Ireland, must confront. We will support cooperation to address critical capability gaps and to build resilience, including in the face of hybrid threats. We will work to address maritime security challenges and ensure the security of our critical infrastructure. This will remain a priority.
>
> (McEntee 2026)

In the 13 years separating the Irish presidencies of the Council of the European Union (EU), the country's reliance on maritime infrastructure for the provision of energy, goods, and data has greatly intensified, yet its standard of security has not improved concurrently (Burke 2013; Speller 2021; European Commission (EC) 2025b; FitzGerald and Colfer 2025).

The majority of Irish energy demand is compensated by gas and oil arriving through subsea pipelines, while marine traffic accounts for the delivery of virtually all of the nations' goods (Buwalda 2024; Ireland, Department of Defence (DoD) 2026b;

2026c). Furthermore, the high number of underwater cables within Irish jurisdiction allows for the transmission of data to North America – home of the (tech) enterprises that contribute to Ireland's economic expansion (Mulcahy 2019; Buwalda 2024; EC 2025b).

Such dependence creates susceptibility to discontinuities with far-reaching consequences, for instance: Innocuously looking vessels cause detriment with their anchors to pipelines and cables while the ships themselves pose an environmental threat by discharging crude oil (cf. Buwalda 2024; Ireland, DoD 2026b). In the meantime, the capital's harbour is victim to a cyberattack that blocks its logistics chain and thus the supply of the nation (cf. Ireland, Department of the Taoiseach 2024; Senarak 2024). This chain of events prompts one to consider: *how can the state react?*

A scenario like this is not limited to Ireland but rather applicable to other European nations, including Sweden and Germany (Lott 2025; Ringbom 2025). Moreover, these three countries are suitable for comparison because of similar economic impetus and their disposition to cooperate internationally (Ireland, DoD 2015; 2026b; EC 2025a; 2025b; 2025d; Scazzieri 2026).

Amidst the involvement of international organisations as well as the partial removal of states as the sole initiators of attacks, the field of maritime security has engaged scholars for years (Bueger *et al.* 2020). Yet, with more alarming incidences surrounding European maritime infrastructure in the Baltic Sea since the Russian invasion of Ukraine in February 2022, research focusing on the protection of essential amenities amplified considerably (cf. Bueger and Liebetrau 2021; Lott 2025; Ringbom

2025). Prior studies established that abilities diverge owing to the translation of international prescriptions into domestic legislation, technical advances, absent threat recognition and funding (Bueger *et al.* 2022; Bueger and Liebetrau 2023; Ringbom 2025).

However, even these important factors are contingent on national aspects that are overlooked when no robust theoretical framework is applied to assess the complexity of this issue (cf. McCabe and Flynn 2024).

For decades, the theory of state capacity has examined countries' capabilities to achieve their objectives by analysing 'fiscal', 'coercive' and 'administrative capacities' (Savoia and Sen 2015, pp.442-443; Koren and Sarbahi 2018; Pamp *et al.* 2018, pp.430,435). Lately, a deterioration of state capacity can be conjoined with suboptimal public service provision in social and security areas, and ensuing from that, ailing democratic support (Brenton *et al.* 2023; EC 2025a; 2025c; Moynihan 2025; Schleicher and Bagley 2025). Since the protection of maritime infrastructure is a public task, particularly because it involves safeguarding of required, common assets; and the power to deter by demonstrating invulnerability (Gibler and Miller 2014; Flynn 2025), the matter is reasonably subjectable to the aforementioned theory.

This dissertation thus inquires '*What accounts for distinctions in the protection of maritime infrastructure?'* by adopting the theory of state capacity.

On the one hand, it can be argued that security policies have little prominence when there is no visible menace or the government fails to comprehend its existence (Gibler and Miller 2014; Borges *et al.* 2025). In that case, it is rarely justifiable to

prioritise defence spending in place of investments in housing, healthcare or education (McIvor 1994; Flynn 2018; Hynes 2024; Bogers *et al.* 2026). Nevertheless, surveys conducted among the Swedish, Irish, and German populations proved that a majority perceives the existence of a danger to their nation (see Figure A.2; EC 2026a, p.1; 2026b, p.1; 2026c, p.1). In no country did more than 50 per cent of the respondents gauge the corresponding defence spending as ideal, with Ireland's funding recognised as particularly insufficient (see Figure A.1; EC 2026a, p.1; 2026b, p.1; 2026c, p.1).

On the other hand, deliberations on defence are easily associated with state-issued warfare or violence which is not central to the safeguarding of maritime assets against non-public attacks (Besley and Persson 2008; Blankenship 2018; Larsson 2024). Traditional security debates can grasp the function of deterrence, however, the civil link due to the private ownership of the facilities, the technical sophistication of the infrastructure and varying territorial jurisdictions, create a broader issue of safety (Pamp *et al.* 2018; Bueger and Liebetrau 2023; Flynn 2025) which is addressed by this thesis.

The dissertation is organised as follows. The second chapter presents the literature review on state capacity with definitions of its ancillary elements and their association with the research question before explaining how this study complements a gap in the research. Conscious of the fact that the enhancement of state capabilities lies at the core of administrative reforms such as 'New Public Management' (NPM) and 'New Public Governance' (NPG) (Brenton *et al.* 2023, p.303; Krogh and Triantafillou

2024, pp.3040-3041), the chapter entails pertinent cross references to public administration theory.

The third chapter contextualises the subject by addressing maritime security challenges in general and with regard to infrastructure specifically. In addition to that, the chapter acknowledges the vast international framework, notably surrounding the United Nations (UN), the North Atlantic Treaty Organization (NATO) and the EU (Larsson 2024; Tessari 2025). The thesis narrows the area's complexity by centring on UN jurisdiction connected to the location of an incident and infrastructure (cf. Lott 2025). In the case of NATO, the domestic evolutions mirrored by the alliance and nationally engendered constraints are outlined (cf. Jakobsen 2018; Tardy 2021). The EU section considers two recent directives which compel member states and the private sector to strategically cooperate in the field of infrastructure protection (cf. Teichmann 2025; Tessari 2025).

The fourth chapter elucidates the methodological approach. The reasoning behind the selected cases – Sweden, Ireland and Germany – is substantiated by an emphasis on the dependent and independent variables. Subsequently, the steps leading to the collection and analysis of the data are stated.

The fifth chapter is divided into three parts to accommodate the empirical findings of the cases. Next, the sixth chapter analyses and discusses the results.

In the seventh chapter, the work is summarised, shortcomings of the study are conceded and additional avenues for research are offered. These concluding remarks allude to the overall value of the thesis.

2. Literature Review

> To have strong capacity requires several types of organizational and technical competencies firing at once—information, administration, taxation, policing, and legal prowess. […] capacity is hard to build, in part because of the complexity of the endeavor, but also because rulers in the process of building capacity encounter resistance from society—the elites and masses.
>
> (Suryanarayan 2024, p.224)

For a considerable time, the quality of a country's public services has been correlated with the nation's standard of state capacity (Hanson and Sigman 2021; Williams 2021). In fact, scientific analyses of state capacity have proven their significance precisely because they suggested that greater state capacity equals greater effectiveness and better policy results (Robinson 2008; Perales-Fernandez 2025; Lindvall *et al.* 2026).

The concept is regularly divided into several linked subcategories (Blankenship 2018; Koren and Sarbahi 2018; Singh 2023). Researchers have exploited these subcategories with regards to policy responses in the domains of human rights, public infrastructure development, economics, security and environmental affairs (Dincecco and Prado 2012; Singh 2023; Vaccaro 2023; Suryanarayan 2024; Schleicher and Bagley 2025). Notably, a country's capacity critically factors into its ability to prevent and react to destruction or assaults (Pamp *et al.* 2018; Borges *et al.* 2025; Lindvall *et al.* 2026).

It is therefore reasonable to draw on the theory of state capacity in an attempt to explain distinctions in the protection of maritime infrastructure since this area factors into economic, safety and environmental governance (cf. Bueger and Liebetrau 2023).

This literature review proceeds to define state capacity and its four core elements. The correlation between administrative reforms and state capacity is acknowledged, hence concomitant assertations by public administration theory are outlined (cf. Brenton *et al.* 2023). Then, the themes are associated with the research question. The last section stresses the research gap which is addressed through the established framework.

2.1 Definition of State Capacity

The conceptualisation of state capacity has been a prevalent theme for scholars seeking to analyse governmental responsiveness to various political issues (Savoia and Sen 2015; O'Reilly and Murphy 2022; Singh 2023; Vaccaro 2023). By virtue of the vast research in this field, consensus regarding a universal definition of state capacity is comparatively scarce (Hendrix 2010; Koren and Sarbahi 2018; Suryanarayan 2024).

Generally, state capacity entails the assessment of a state's skill to translate governmental policies into tangible achievements (Williams 2021; O'Reilly and Murphy 2022; Robson 2024). Furthermore, specifications of state capacity must include its hypothetical character since it merely describes a state's 'potential' to attain targets or generate public assets (Williams 2021, p.342; Moynihan 2025, p.365).

The extent of state capacity is impacted by the duration of a state's formal existence, its legal and institutional experiences (Savoia and Sen 2015; Singh 2023). Capacity is not static throughout time, its strength can decrease, and thereupon the quality of the administration's work (Brenton *et al.* 2023; Schleicher and Bagley 2025).

Additionally, internal and external menaces such as wars, upheavals or natural catastrophes may affect the state's faculty to construct sound capabilities (Savoia and Sen 2015; Koehnlein and Koren 2022; Singh 2023). Conversely, states that are rarely exposed to adversity develop less capacity to concern themselves with that issue (Gibler and Miller 2014).

Overall, state capacity has been divided into multiple elements that are deemed essential for the fulfilment of public obligations, the most prominent amongst them are the state's 'fiscal capacity' to acquire financial means (Besley and Persson 2009, p.1230; Savoia and Sen 2015, p.443), its 'coercive capacity' to exert unparalleled power over the nation's territory (Pamp *et al.* 2018, p.430; Hanson and Sigman 2021, p.1498), its 'administrative capacity' to coordinate funds and instruments outcome-oriented (Dunlop and Radaelli 2017, p.597; Perales-Fernandez 2025, p.353), and its 'policy capacity' to deploy human and bureaucratic means for the design of policies (Peters 2015, p.225; Wu *et al.* 2015, p.166).

2.2 Elements of State Capacity

2.2.1 Fiscal Capacity

A key element of state capacity is the property of levying taxes from the citizenry, therefore being summarized as ‘fiscal capacity’ (Dincecco and Prado 2012, pp.171-172; Savoia and Sen 2015, p.443). At times it is also referred to as ‘extractive capacity’ (Pamp *et al.* 2018, p.435; Hanson and Sigman 2021, p.1498). Naturally, the state requires income for any kind of public endeavour, ranging from the implementation of policies to the facilitation of basic public services (Besley and Persson 2009; Hendrix 2010; Singh 2023). The size of a state and its tax basis are reasonably linked thus forcing an administration to prioritise investments (Jugl 2022).

Research has disclosed that low levels of ‘fiscal capacity’ due to accruing, unpayable governmental debts, or unsuccessful tax schemes, can also significantly hinder state progression (Besley and Persson 2009; Dincecco and Prado 2012; Fernández-I-Marín *et al.* 2024). To alleviate the onus of fragile economic performances on the state, administrative reforms commonly summarised as policies of ‘New Public Management’ (NPM) were adapted in multiple countries (Boyle 2016; Ongaro *et al.* 2017). NPM seeks to scale down public expenditure and rectify efficiencies in an overtly commercial approach to governance (Hardiman and MacCarthaigh 2011; Krogh and Triantafillou 2024). Reductions in expenses become a predominant issue with regard to scientifical and technological progress which is often subsidised by the public sector (Lundberg and Rova 2022; Singh 2023).

This study's research question aims to provide an explanation for differences in the protection of maritime infrastructure which is an area connected to defence expenditure and (expensive) technological change (Germond 2011; Bueger and Liebetrau 2023; McCabe and Flynn 2024). Hence, it is reasonable to assume that the degree of a country's 'fiscal capacity' has a profound influence (cf. Hendrix 2010; Singh 2023).

Historically, 'fiscal capacity' emerged as a necessity for states to bankroll their armed conflicts (Besley and Persson 2009; O'Reilly and Murphy 2022). For instance, Sweden's personal income levy dates to the 19th century when the country lacked funding for its army (Besley and Persson 2009). A constant peril to a state is conducive to the reshaping of its tax system with the intent of elevating 'fiscal capacity' (Besley and Persson 2008; 2009; Dincecco and Prado 2012). Logically, this demands a statutorily framework and infrastructure initiated by the administration to manage its finances (Besley and Persson 2009; Savoia and Sen 2015; Singh 2023). Finances are also utilised for the procurement of infrastructure and the employment of public officials (Peters 2015; Wu *et al.* 2015). The following sections continue these elaborations.

2.2.2 Coercive Capacity

Traditionally, a state retains control over its jurisdiction and repels interior and exterior offenses through 'coercive capacity' (Pamp *et al.* 2018, p.430; Hanson and Sigman 2021, p.1498). A state's competence to be the uncontested authority essentially

guarantees people's adherence to laws and shields them and it from hostile actions (Hanson and Sigman 2021; Singh 2023). In case of a belligerent conflict, this usually implicates the composition and deployment of an army, on these grounds scholars similarly coin it as 'military capacity' (Hendrix 2010, p.274; Savoia and Sen 2015, p.443). Robust levels of 'coercive capacity', determined by a grand security force operating eminent equipment, are consequently of greater benefit than more fragile ones (Hendrix 2010; Gibler and Miller 2014). Studies have demonstrated that high levels of state capacity are not intrinsically linked to elevated personnel numbers or expenses, in contrast, this may be distorting since corruption and inefficiencies can occur through diseconomies of scale, yet, it is insinuated that the proficient use of technology, in addition to the equipment's standard, are crucial (Besley and Persson 2008; Hendrix 2010; Hendrix and Young 2014; Rubinson and Feldman 2025).

Regardless of a country's will to actively engage in war, 'coercive capacity' remains a meaningful feature since it suggests or demonstrates capabilities that discourage an adversary from actual combat, thereby preferably preventing the latter altogether (Gibler and Miller 2014; Andrews *et al.* 2017; Pamp *et al.* 2018). To build credibility for the deterrence and safeguarding of assets, resources are demanded and must thus be contemplated thoroughly (Gibler and Miller 2014; Pamp *et al.* 2018).

In relation to this study's research question, the military/navy and other state-operated agencies are involved with the protection of maritime infrastructure, their mission mainly consisting of deterrence (Speller 2021; Bueger and Liebetrau 2023;

Council of the European Union 2023). This implies that ‘coercive capacity’ is relevant when analysing national differences (cf. Gibler and Miller 2014).

As noted, ‘coercive capacity’ is contingent on public funding and with that on ‘fiscal capacity’ (Besley and Persson 2008; O’Reilly and Murphy 2022). Furthermore, ‘coercive capacity’ is considered more efficient when it can precisely identify its targets through valid administration (Hendrix 2010; Blankenship 2018). Subsequently, ‘administrative capacity’ is discussed.

2.2.3 Administrative Capacity

The state necessitates an institutional and legal structure, an ‘administrative capacity’, that manages its affairs to permit the functioning of public utilities and to deliver on policy targets (Savoia and Sen 2015, p.442; Singh 2023, p.2). The idealized Weberian version of a premium, uncorrupted bureaucracy is commonly regarded as the standard (Charron 2016; Blankenship 2018; Hanson and Sigman 2021; Rich 2023). Therefore, the term ‘bureaucratic capacity’ is used concurrently (Hendrix 2010, p.274; Blankenship 2018, p.385). In that sense, the ‘bureaucratic quality’ of an administration is emphasised which estimates if realised programs correspond with the governmental vision, and how diligently and quickly the process occurred (Andersen 2018, p.248). An administration’s precise response is frequently achieved by obtaining sufficient details on people, firms or institutions, for example to tax them adequately or to issue citations (Dunlop and Radaelli 2017; Suryanarayan 2024).

So, public institutions exhibit higher levels of ‘administrative capacity’ once they operate an efficient and streamlined system that is logging transactions and interactions (Blankenship 2018; Hanson and Sigman 2021). Technological advances allowing for digitisation have manifestly enhanced the public sector in that regard (Robson 2024). Administrations are shaped by laws and regulations which enable them to act in the first place and ensure accountability (Besley and Persson 2009; Savoia and Sen 2015; Singh 2023), however, they may also constrain the bureaucracy, thereby alienating it from public exigencies (Fernández-I-Marín *et al.* 2024; Moynihan 2025).

Administrative expectations expressed by laws, policies or politicians that do not match the actual conditions, possibly due to a lack of financial, personnel, or physical capacities, result in diminished ‘administrative capacity’ (Andrews *et al.* 2017; Fernández-I-Marín *et al.* 2024; Robson 2024; Perales-Fernandez 2025). Moynihan (2025) further stresses the complexity of current public assignments in contrast to previous years. Insofar, NPM is not unilaterally recognised as the solution to intricate issues, rather a resurgence of the need for the public sector, a ‘Neo-Weberian State’ (NWS), is contemplated (Kuhlmann 2024). Basically, the NWS intends to solve the inefficiency crisis by bureaucratic means while pondering societal involvement (Ayhan and Lahdili 2022; Kuhlmann 2024; Ongaro 2024).

In addition to that, deficient collaboration and communication amongst different departments can lead to similarly compromised ‘administrative capacity’ (Hendrix and Young 2014; Williams 2021; Robson 2024). Even though large countries and administrations have the potential to specialise further than their smaller counterparts,

this is a prominent issue for them because of bureaucratic inertia and miscommunication that provoke higher operational costs (Jugl 2022; Lindvall *et al.* 2026). In general, the involvement of multiple entities often increases the likelihood of differing goals and disagreement, potentially at the expense of capacity (Williams 2021). In accordance with the definition of state capacity, grand standards of 'administrative capacity' do not automatically account for unflawed results, however, a certain potential is the underlying premise (Rich 2023).

Regarding this study's research question, the protection of maritime infrastructure relies on legally prescribed jurisdictions which inevitably insinuates cooperation because of the plethora of actors in the area (Afenyo and Caesar 2023; Liebetrau and Bueger 2024). Looking at the EU's 'Maritime Security Strategy' (EUMSS) from 2014, it was calculated that 383 bodies were engaged with maritime affairs (Bueger and Edmunds 2017, p.1302), understandably this affects a nation's capacity. In essence, rigorous protection is only feasible when ample information exists on the subject and when these details reach the administration in a timely manner (Burke 2013; Bueger *et al.* 2022).

Overall, 'administrative capacity' is a presupposition for 'fiscal capacity' while it is also dependent on it to initiate its work (Besley and Persson 2009; Savoia and Sen 2015). Conversely, 'coercive capacity' is refined when 'administrative capacity' is elevated (Hendrix and Young 2014; Blankenship 2018). The issues surrounding monetary funding, electronic infrastructure and inter-organisational collaboration are

equally substantial for benchmarking ‘policy capacity’ (Peters 2015; Wu *et al.* 2015). The next section is taking this into account.

2.2.4 Policy Capacity

For a state to fulfil its function of effective policy creation and governance, it is contingent on having sound ‘policy capacity’ (Peters 2015, p.225; Wu *et al.* 2015, p.166). There has been academic disaccord in terms of codifying the concrete facets of ‘policy capacity’ which in parts amounts to an overlap with ‘administrative capacity’ (Peters 2015; Wu *et al.* 2020).

A first factor relates to the availability of personnel, predominately in senior leadership positions, that are involved with the conception, guidance and analysis of policy; and whose capacity is facilitated by their qualification, abilities and experience (Wu *et al.* 2020; Brenton *et al.* 2023). These associates monitor operations, calculate for possible effectiveness, and assign instruments and agents to processes (Wu *et al.* 2015; 2020). Generally, the quality and quantity of staff is conditioned by government expenses, political programs and the (economic) value attributed to the department in question as well as to other, rivalling departments (Peters 2015; Paasch 2022). This showcases how a state’s ‘fiscal’ and ‘administrative capacities’ are necessary for its ‘policy capacity’ (Peters 2015; Savoia and Sen 2015; Wu *et al.* 2015; Robson 2024).

A second factor regards the institutional and bureaucratic framework which unequivocally prejudices ‘policy capacity’ (Robinson 2008; Peters 2015; Wu *et al.* 2020). For administrations to operate based on coherent data for their policies, it is

essential to rely on competent electronical systems that allow for prompt data breakdowns and exchanges with other agencies (Robinson 2008; Wu *et al.* 2020). Consequently, this bolsters the process of consultancy between public officials of governmental and non-public entities, for example private companies or civic organisations, that are connected to modern-day policy-making, thereby adding to the complexness of 'policy capacity' (Robinson 2008; Peters 2015). The administrative reform paradigm of 'New Public Governance' (NPG) avidly strives to integrate society in public procedures in order to augment the merit of policies as perceived by the public (Krogh and Triantafillou 2024). Besides, Krogh and Triantafillou (2024) underscore how NPG research also comprehends the often-neglected cooperation between actors within governments.

A third factor allotted to the review of 'policy capacity' continues the aforementioned thread since it cites the public perception of an administration and the degree of approval (Peters 2015; Wu *et al.* 2015; 2020). It is argued that continued coherence between democratic opinion, administrative actions and transparent governance serves officials' 'policy capacity' because of lower levels of public resistance (Peters 2015; Wu *et al.* 2015; 2020). Shen (2026) remarks how democracy abets states with more elevated capacity to create publicly appreciated amenities.

In view of this paper's research question, 'policy capacity' is recognised because it logically expands 'fiscal' and 'administrative capacity', however, certain facets such as the abilities of personnel are ambivalent and challenging to identify through available datasets thus accounting for the discordance in measuring it (Peters 2015; Wu *et al.*

2020). The junction of lower 'political accountability' and deteriorated capacity (Schleicher and Bagley 2025, p.2346) is difficult to address relating to this dissertation's specific topic, yet it can serve as a broad indicator for a state and is thus counted in. Lastly, a stringent evaluation of 'policy capacity' should entail the European sphere because policy design and national transformation are separated, as is the case with the EU's directive on infrastructure protection (*Directive (EU) 2022/2557*; Paasch 2022), yet this would exceed the scope of this primarily national research.

2.3 Research Gap

In sum, state capacity defines the ability to provide public services which is affected by the characteristics of its specific elements, herewith labelled as 'fiscal', 'coercive', 'administrative' and 'policy capacities' (Wu *et al.* 2015, p.165; Hanson and Sigman 2021, pp.1497-1498; O'Reilly and Murphy 2022, p.716). Owing to the interdependency of all factors, individual changes may mutually improve or degrade these elements (Besley and Persson 2008; Hendrix 2010; Blankenship 2018). The literature highlights how low levels of state capacity have a negative effect on a state's productivity and efficiency (Wu *et al.* 2015; Andrews *et al.* 2017; Singh 2023). The adverse consequences are even more pronounced in the field of defence and security (Hendrix and Young 2014; Blankenship 2018).

The literature offers diverse studies that explain higher probabilities for terrorist attacks, wars and armed conflicts with low degrees of state capacity (Gibler and Miller 2014; Hendrix and Young 2014; Blankenship 2018). Even though this unavoidably

includes the state's faculties to observe and deter which is of equal relevance for the protection of infrastructure, fewer consideration has been given to this non-violent aspect (cf. O'Reilly and Murphy 2022; Singh 2023).

A prevalent method for the evaluation of state capacity is quantitative research (cf. Besley and Persson 2008; Gibler and Miller 2014; Blankenship 2018) which has attributed, for example, exalted levels of state capacity to Sweden and Germany (Charron 2016, p.362; O'Reilly and Murphy 2022, p.732). Contrary to that, Fernández-I-Marín *et al.* (2024) point to excessive German administrative burdens while Bunde (2021) remarks its malfunctioning military. This suggests that cursory studies may not provide sufficient conclusiveness, thus favouring a qualitative approach to state capacity (cf. Williams 2021; Brenton *et al.* 2023; Singh 2023).

This literature review detailed how maritime infrastructure protection is moulded through a country's capacities. In essence, higher levels of 'fiscal capacity' would signify fewer governmental constraints on investments in agencies, staff and technology (Besley and Persson 2009; Hendrix 2010; Singh 2023). Elevated levels of 'coercive capacity' abet deterring attacks and decreasing the extent of mischief (Gibler and Miller 2014; Bueger and Liebetrau 2023). Similarly, higher levels of 'administrative capacity' favour data structuring and (cross-organisational) cooperation (Krogh and Triantafillou 2024; Perales-Fernandez 2025). The elements of state capacity distinguished in this framework can therefore reasonably contribute to answering the research question.

Hence, this study proposes a novel angle to the academic field of state capacity by comparing three countries' maritime infrastructure protection in an unprecedented, comprehensive manner. The chosen countries – Sweden, Ireland and Germany – are underrepresented concerning in-depth studies on state capacity (cf. Berndtsson *et al.* (2026) for Sweden and Germany) and in terms of precise examinations of their current standard of maritime infrastructure protection (cf. McCabe and Flynn (2024) for Ireland) which again adds to the literature.

3. Out at sea: contemplating maritime security

> Full or partial sea blindness also appears evident in the way such organizations as the International Maritime Organization (IMO), the European Union, and NATO attempt to cope with the already deteriorating global security situation, the emerging grey zone, hybrid threats in general, and hybrid threats in the maritime environment.
>
> (Larsson 2024, p.401)

Any comprehensive analysis of maritime infrastructure protection must frame the place it occupies within international maritime security (Bueger and Edmunds 2017; Bueger and Liebetrau 2023). Therefore, this context chapter elaborates on the scope of maritime safety, summarises the distinguished features of infrastructure security and highlights continuous challenges. To expound on the current relevance, the following sections mention cases of harmful incidences involving European maritime

infrastructure (cf. Lott 2025, Ringbom 2025). Next, the chapter presents institutional and legal properties developed by the UN, NATO and the EU after the Cold War.

3.1 Scope of maritime security

Maritime security remains a complex part of modern safety discourses (Bueger and Edmunds 2017; Bueger *et al.* 2020). Generally, globalisation rendered countries' waters and adjacent seas more accessible for economic purposes, however, this increased their vulnerabilities from a security point of view (Bueger *et al.* 2020). So, maritime security relates to territorial, economic, criminal, humanitarian, environmental, communicative and energetic concerns (Bueger *et al.* 2020; Bueger and Liebetrau 2023).

Historically, maritime security comprises belligerent, militaristic attacks on a nation's territory as part of warfare (Bueger and Edmunds 2017). Intrinsically connected to territorial preoccupations is a country's objective to ensure safe passage along maritime routes for the export and import of goods (Bueger and Edmunds 2017).

In this area, damageable maritime infrastructure includes all kinds of ships that are connectable to a country, its harbours, the harbour equipment and technology (Bueger and Liebetrau 2023). In 2025, German navy vessels stationed in Hamburg, the country's major port, were impaired, among other things due to the introduction of 20 kilograms of grit into one of the motors (Aikman 2026).

Over the last decade, ports' information technology has primarily been targeted for economic reasons thereby seriously impacting or disabling their networks (Afenyo

and Caesar 2023; Senarak 2024). This alludes to the need for adjusted regulatory frameworks, international and cross-sectoral exchanges due to ports' mostly private ownership (Amazouz 2020; Barmpaliou and Pawlak 2024; Senarak 2024).

Apart from that, environmental responsibilities for the sea inside and beyond national borders were put to the forefront because of devastating oil patches, overfishing and the degradation of maritime biodiversity (Bueger and Liebetrau 2023). Since February 2022, the 'Russian shadow fleet' is suspected to transport sanctioned fossil fuels thus posing environmental risks to biodiversity and physically installed infrastructure (Lott 2025; Ringbom 2025; Ireland, DoD 2026e).

Furthermore, seismic (sea) events and other natural catastrophes are prone to destroy human-made installations such as undersea cables that allow intercontinental communication and data exchange (Bueger and Liebetrau 2021; 2023; Govella 2025). Due to their importance and the potential for daunting disarray, the demolition of subsea cables has been an appealing method of warfare since before World War I (Bueger and Liebetrau 2021; Larsson 2024; Govella 2025). These days the sector is dominated by multinational enterprises for the provision of (social media) services meaning that the infrastructure is usually not installed, served, nor monitored by a state (Burnett and Carter 2017; Liebetrau and Bueger 2024; Govella 2025). Irrespective of strategic actions, inadvertent damages caused by individuals, for example on fishing boats, equally transpire (Burnett and Carter 2017; Bueger and Liebetrau 2021; Govella 2025). For instance, in January 2025, a ship flying Malta's flag caused detriment to a subsea data cable in Sweden's 'Exclusive Economic Zone' (EEZ) (Ringbom 2025).

A similar non-national dependence is observable in the energy sector whereupon maritime infrastructure ranges from fossil fuels' extraction sites, wind power plants to the installations carrying the energy onshore (Schaub *et al.* 2017; Bueger and Liebetrau 2023). In September 2022, the Nord Stream pipelines which supplied Germany with Russian gas were destructed at spots in the Danish and Swedish EEZ's through explosives (Bueger and Liebetrau 2023; Hallam 2025; Lott 2025).

3.2 Maritime security features of the post-Cold War era

The end of the Cold War adjourned Western nations' classical preoccupations with maritime security regarding state-issued territorial and underwater attacks (Jakobsen 2018; Bueger and Liebetrau 2021). In the 21st century, it has become apparent that modern dangers arise from non-public or anonymous actors, not limited to the cyberspace (Bueger *et al.* 2020; Bueger and Liebetrau 2023).

Maritime infrastructure may run through the legal territory of multiple countries, for instance pipelines or subsea data cables, or be situated in the high seas altogether (Lott 2025). Furthermore, information or surveillance material concerning a risk factor may exist in another state- or organisational-owned data base (Bueger *et al.* 2020; Bueger and Liebetrau 2021; Loik 2024). Hence, a range of international frameworks established by the UN, NATO, the EU, as well as their subordinated departments, offer versatile tools and prescriptions[1] (Germond 2011; Bueger and

[1] On a regular basis, scholars remind that internationally issued directions remain inconsequential if governments decline to implement them or transform them insufficiently into domestic legislation (Burnett and Carter 2017; Bueger and Liebetrau 2021; Becker 2025; Govella 2025).

Liebetrau 2023). Therefore, the subsequent sections map pertinent features of the aforementioned international entities.

3.2.1 United Nations

As the leading international conglomerate, the UN is integral to managing the maritime landscape, particularly economic, security and environmental matters that are united in its agency, the IMO, founded in 1948 (Larsson 2024). Additionally, the UN charted the *International Seabed Authority* through the *United Nations Convention on the Law of the Sea* (UNCLOS) in 1982 to safeguard natural resources from the deleterious ramifications of humans' extractive efforts (Zacharias and Ardron 2020; Larsson 2024).

UNCLOS is the world's most robust legal codification for maritime affaires and is perceived as a triumph for international cooperation due to its high number of signatories and compulsory requirements (Burnett and Carter 2017; Zacharias and Ardron 2020; Ringbom 2025). The content of the current UNCLOS was concluded by partially adapting articles from preceding regulations, including the '1884 International Convention for the Protection of Submarine Cables' (Burnett and Carter 2017; Nemeth *et al.* 2014). UNCLOS came into effect in 1994, with Germany being a member state ever since, while Sweden and Ireland acceded in 1996 (Nemeth *et al.* 2014).

Generally, UNCLOS aspires to guide member states to peaceful conduct and dispute resolution in areas such as fishing, piracy, scientific research and environmental

issues, most of which are dependent on the location of the incident (Nemeth *et al.* 2014; Zacharias and Ardron 2020; Lott 2025).

Table 1 provides an outline of relevant UNCLOS articles related to maritime infrastructure.

Table 1. *Outline of UNCLOS articles related to the jurisdiction of maritime infrastructure.*

Area	Basis in UNCLOS	Territorial element	Synopsis
Territorial demarcation	Part II (Articles 2-3)	'Territorial sea' consists of the 12 nautical miles (nm)[2] off a country's coast	All actions / development of resources subject to coastal state's sovereignty/domestic legislation
	Part V (Articles 56-60)	EEZ does not exceed 200 nm[3]	National sovereignty (resources); Jurisdiction (construction of infrastructure, environmental protection)
	Part VI (Articles 76-79)	'Continental shelf' may prolong to 350 nm[4]	National sovereignty (resources); Universal right to install cables and pipelines, however, national caveats for environmental reasons
	Part VII (Articles 87-92)	Subsequent 'high seas' are devoid of borders	No sovereign claims; Peaceful conduct; Ships connected to states by respective flag
Ships' liberties	Articles 17-25	'Right to innocent passage' including in 'territorial sea'	Subject to endeavours in good faith; Detrimental actions involve use of violence against the state, conscious pollution, investigations or disturbance of (data exchange) sites;

[2] Approximately 22 kilometres (Eleftherakis and Vicen-Bueno 2020, p.4).
[3] Approximately 370 kilometres (Eleftherakis and Vicen-Bueno 2020, p.5).
[4] Approximately 648 kilometres (Eleftherakis and Vicen-Bueno 2020, p.5).

			May result in pre-emptive responses by coastal nation; Domestic legislation (maritime infrastructure protection (environmental, cables, pipelines))
Individual accountability	Articles 21,79(2)	Including 'continental shelf'	Domestic legislation may target individuals suspected of unsafe steering, environmental threats; Suspicion of violation grants right to pursue in 'territorial sea'
	Article 111		
	Article 113	'High seas'	Member state should have legislation to punish detriment caused to subsea cables/pipelines by its nationals/ships

Author's own compilation. Sources: *UNCLOS* 1982; Nemeth *et al.* 2014; Zacharias and Ardron 2020; Lott 2025; Ringbom 2025.

The IMO's 'International Ship and Port Facility Security Code' is focused on the integrity of ports, yet it does not mention cyber risks (Afenyo and Caesar 2023; Schinas and Metzger 2023). By 2022, the IMO had also perceived cybersecurity as a central element for marine safety (Larsson 2024).

3.2.2 North Atlantic Treaty Organization

Since its foundation in 1949, NATO has grown into a versatile security agency with 32 member states owing to Sweden's latest accession in 2024 (Usewicz 2021; NATO, Public Diplomacy Division (PDD) 2025, p.9).

The decade-long threat of the Soviet Union had NATO cater to traditional defensive action, however, since the end of the Cold War, the security setting

incorporates land- and sea-based emergency management, support of member states regarding the control of trade passages, terrorist deeds and menaces to (energetic, communicative) infrastructure which emanate more frequently from the cyberspace (Alderwick and Giegerich 2010; Jakobsen 2018; Tardy 2021; Usewicz 2021).

A significant shift regarding the vital capabilities of NATO occurred when Russia invaded Crimea in 2014 which commenced an era of hybrid tactics and warfare[5] (Tardy 2021; Larsson 2024). Appendix B explains instruments and entities established by NATO to address maritime and cyber issues.

The organisation's finances depend on the individual states and even though their defence spending should match two per cent of national Gross Domestic Product (GDP) amidst emerging hazards, multiple (Western) European countries have not adhered to this custom (Jakobsen 2018; NATO, PDD 2025, p.9).[6] Merely six European states invested this amount in 2022, to the dismay of the United States of America (US) (Jakobsen 2018; NATO, PDD 2025, p.9). NATO's standard of equipment similarly relies on its members' outfits (Tardy 2021; Usewicz 2021).

3.2.3 European Union

The EU pursues an ample approach to the governance of maritime matters, thereby traditionally entailing fishery, immigration, safety concerns related to terrorist

[5] Characterised as 'a broad set of diffuse threats and attacks involving both military and non-military means, such as cyberattacks, (dis-)information campaigns, propaganda, energy diplomacy, or subversive 'little green men' appearing in undescriptive uniforms' (Ljungkvist 2024, p.534).
[6] In 2025, NATO stipulated new spending goals for 2035, including 3.5 per cent of GDP for defence matters and 1.5 per cent of GDP for the safeguarding of critical infrastructure, digital systems, resilience and research (Sweden, The Defence Commission's Secretariat 2026, p.13).

actions or acts of piracy, and environmental protection (Gunnarsdottir and Riddervold 2025). While advances for deeper integration to address security menaces were instigated before 2014, the EU accelerated cooperation and research more dominantly in the early 2020s (Fiott and Parkes 2019; Andersson and Britz 2025).

As part of the multilateral structure, several EU agencies support the national states in matters of maritime and hybrid defence (Bueger *et al.* 2022). To this effect, Appendix C divulges a summary.

The EU intends to compel member states to accomplish universal standards regarding the safeguarding of essential infrastructure and information technology systems by issuing corresponding directives (Becker 2025; Teichmann 2025). Table 2 distinguishes the features of two directives from 2022 that substituted prior legislation (Tessari 2025).

Table 2. *Abstract of EU directives related to infrastructure protection.*

	***Directive (EU) 2022/2555* (Network and Information Security (NIS)2 Directive)**	***Directive (EU) 2022/2557* (Critical Entities Resilience Directive (CER))**
Core tasks for member states	Enhanced compilation of areas concerned (including communication, data) thus demanding inclusion of more companies	(Renewed) compilation of essential installations (including areas of energy supply, transportation, data)
	Denomination of one agent that manages national issues related to directive	
	Emergency cyber plan including faculties needed	Strategic threat evaluations
	Creation of *Computer security incident response team* (CSIRT)	Safeguarding measures with explicit naming of the parties involved

	Cooperation with entities involved in CER implementation	Recommendations to infrastructure providers
Responsibilities for the private sector	Briefing of governmental entities within one day regarding potential violations of systems' integrity	
	Implementation of procedures to safeguard entities, pre-empt interferences	
	Initial 'risk assessment', followed by repetitions	
Monitoring and execution	Hands-on monitoring chances for governments	Governments execute physical checks of facilities
	Issuance of governmental fines possible	
	Compliance review by EC in October 2027	Compliance review by EC in July 2027

Author's own compilation. Sources: *Directive (EU) 2022/2555; Directive (EU) 2022/2557*; Vandezande 2024; Teichmann 2025; Tessari 2025.

4. Methodology

This chapter elucidates the methodological approach applied to examine whether differences in the protection of maritime infrastructure can be explained through the theory of state capacity.

The thesis' research question is empirical and being gauged through a qualitative analysis (cf. Levy 2008; Halperin and Heath 2017). Primarily, a descriptive part systematically presents the data while the explanatory section attempts to test the variables' causal relationship (cf. King *et al.* 1994). The dissertation employs the 'most similar systems design' (MSSD) for comparative case studies because the independent variables, the metrics of state capacity, are akin (Levy 2008, p.10).

The chapter is structured as follows. First, the dependent and independent variables are defined. Second, details are provided on the cases selected concerning their elements of state capacity. Additionally, confounding explanatory variables are

excluded. In the third and fourth steps, the processes of data collection and the framework for the thematic analysis are revealed. The fifth section discusses the research's limitations.

4.1 Variables

4.1.1 Dependent Variable

This dissertation attempts to explicate differences in the protection of maritime infrastructure, hereby constituting the dependent variable. Amended from the EU's definition, 'infrastructure' is illustrated as:

> an asset, a facility, equipment, a network or a system, or a part of an asset, a facility, equipment, a network or a system, which is necessary for the provision of a[…] service.
>
> (*Directive (EU) 2022/2557*, p.L333/176)

The properties of infrastructure in the maritime sector are listed in Table 3.

Table 3. *Aspects of maritime infrastructure.*

Shipping sector	variety of ships connectable to a country (navy, fishing, commerce); the state's harbours; the harbours' equipment and technology
Environmental sector	maritime/coastal biodiversity and resources
Data sector	submarine cables; maintenance/surveillance properties such as ships and (land-based) technological instruments, electronic monitoring systems
Energy sector	fossil fuels' extraction sites; wind power plants; installations that carry the energy onshore (interconnectors, pipelines); maintenance/surveillance faculties

Author's own compilation. Sources: Council of the European Union 2014; Bueger and Liebetrau 2023; Liebetrau and Bueger 2024.

The value of ‘protection’ is derived from the EU’s definition of ‘resilience’, which is an ‘entity’s ability to prevent, protect against, respond to, resist, mitigate, absorb, accommodate and recover from an incident’ (*Directive (EU) 2022/2557*, p.L333/176). The degree of infrastructure conservation is thus measured through faculties that can anticipate and minimise detriment (Ireland, DoD 2021). Generally, it is certainly unachievable for a country to safeguard all of its infrastructure, for that reason the onus is also on its ability to speedily recover from an attack (Sweden, The Defence Commission’s Secretariat 2026).

4.1.2 Independent Variables

The independent variables ought to chart the aspects of state capacity that could account for distinctions in maritime infrastructure protection. Drawing on the literature, the metrics ‘financial’, ‘security’ and ‘administrative capacity’ were specifically modified for this analysis.

First, ‘fiscal capacity’ accounts for a government’s financial potential and is commonly clarified by economic metrics, for example GDP and taxation (Dincecco and Prado 2012, pp.171-172; Savoia and Sen 2015, p.443). Logically, national investments in institutions, personnel and policy implementation are contingent on the country’s expenditure power (Besley and Persson 2009; Peters 2015; Savoia and Sen 2015; Wu *et al.* 2015). This dissertation rephrases the value to ‘financial capacity’ thereby aiming to encompass measures like indebtedness (Fernández-I-Marín *et al.* 2024) which unavoidably allude to (defence) spending (cf. Flynn 2018; Hynes 2024).

Second, with defence issues, state capacity regularly measures 'coercive capacity' by quantitatively valuing 'military personnel' and 'military expenditures' (Hanson and Sigman, p.1500). Compelling deterrence also demands investment (Gibler and Miller 2014; Pamp *et al.* 2018). This extends to the protection of maritime infrastructure since vessels and personnel are compulsory to patrol the sea, and for the operation of (surveillance) technology (Germond 2011; Bueger and Liebetrau 2023). Maritime security is not a singularly militaristic task, more broadly, it concentrates on surveillance, projecting invulnerability and addressing environmental hazards (Buwalda 2024; Flynn 2025), therefore the term 'security capacity' is coined. Instead of a quantitative analysis, this study expands beyond mere numbers of personnel and naval vessels to further investigate, among other things the deployed machinery, the surveillance or radar systems and related instruments (cf. Crumplin 2020; Speller 2021; McCabe and Flynn 2024).[7]

Third, 'administrative capacity' estimates the national ability to observe, log and store data systematically (Blankenship 2018; Hanson and Sigman 2021; Robson 2024). Past studies derived data from quantitative indices (cf. World Bank Group 2025) that globally focused on features like bureaucratic productivity, administrative adherence to legality and political independence (Savoia and Sen 2015, p.446; Hanson and Sigman 2021). This framework does not solely consult quantitative indices, but rather engages

[7] Cross-country comparisons regarding personnel and equipment numbers are not possible because of institutional differences for the following: a) Maritime aviation: That is part of the navy's tasks in Germany while in Sweden and Ireland the air forces are responsible (cf. The Military Balance 2026). b) Coast guards: In Sweden and Ireland there are centralised while there are multiple in the German federal system (Masala and Tsetsos 2013; McCabe and Flynn 2024; Sweden, Swedish Coast Guard 2026b).

in exhaustive analyses of the administrations since there are numerous agencies that handle data and cooperate respectively (Germond 2011; Liebetrau and Bueger 2024). Here, 'administrative capacity' is assessed by combining data about the institutions' tasks, cooperation processes and their abilities to delegate work to more efficient actors that perform at lower operational costs (cf. Germond 2011; Flynn 2018).

4.2 Case selection

The application of the MSSD entails that the cases share enough explanatory variables but contrast through different outcomes (Levy 2008; Halperin and Heath 2017). This subchapter presents these similarities before controlling for other variables.

To ensure general research relevance, all of the countries must preside over a distinguishable set of maritime infrastructure (cf. Bueger and Liebetrau 2023).

Moreover, similarities for comparison exist between countries that do not rule overseas (for example states that own islands on other continents) since this insinuates a constant political agenda concerned with naval capacities (Germond 2011).

As noted in the third chapter, the EU is a versatile maritime actor which may influence maritime infrastructure protection (Becker 2025) thereby prompting the selection of EU countries.

Owing to their geography, history within the former Soviet Union and Russia's propensity to violate international law, Eastern European countries' perception of

danger is elevated and shapes their defence (Piotrowski 2018; Valentinavičius 2025) which excludes them from this research.

4.2.1 Sweden

In terms of 'financial capacity', Sweden has recorded a steady rise in GDP over the past decade thereby symbolising a robust economic trajectory (International Monetary Fund (IMF), European Dept. 2019; EC 2025d). Through stringent policies, Swedish debt declined considerably from the mid-1990s onwards (Sweden, Swedish Institute 2025). Sweden's taxation rates continue to be comparatively high across the continent (EC 2025d).

Considering 'security capacity', investments in the defence sector increased substantially since 2021 (NATO, PDD 2025, p.9). The share of defence investment dedicated to 'equipment' decreased significantly since 2014, even below 'personnel' expenses, however, funding ascended in 2022 (NATO, PDD 2025, p.14). Nevertheless, Sweden's technological standard concerning surveillance systems and its vessel capacity are praised for a qualitatively high standard (Alberque and Schreer 2022; McCabe and Flynn 2024; Stevenson 2025).

Swedish 'administrative capacity' is an insightful metric since there has been a shift towards the dismantlement of the state through the installation of cost-reducing agencies and the outsourcing of tasks, including in matters of defence (Peters 2015; Berndtsson 2019; Haikola and Anshelm 2022; Alvinius and Hedlund 2024). Even prior to its NATO membership, Sweden participated in knowledge and capability exchanges

with the alliance, bilaterally and with companies which requires a sound administration (Alvinius and Hedlund 2024; Brommesson *et al.* 2024; Migliorati 2024).

4.2.2 Ireland

Ireland's 'financial capacity' has developed remarkably through an export-driven GDP (EC 2025b). In 2024, this led to a substantial surplus (EC 2025b, p.33). Owing to its comparatively low corporate tax but counterbalanced by the ample number of US-American multinational enterprises, Ireland's tax income is continuously augmented (Mulcahy 2019; EC 2025b).

In assessing Irish 'security capacity', it has to be stated that its defence spending is the lowest in the EU (European Defence Agency (EDA) 2025, p.5). From 2014 to 2025, the number of active patrol vessels declined from eight to four (The Military Balance (TMB) 2015, p.106; 2026, p.108). Furthermore, the boats' outfits fail to provide the technology required for subsea observations (Mulcahy 2022).

The Irish 'administrative capacity' in maritime affairs is multi-branched and dependent on efficient communication and cooperation, meaning that although different agencies operate in territorial waters, there is reliance on the Irish Naval Service (INS) due to its capabilities (McCabe and Flynn 2024). Ireland aims to compensate deficits through international cooperation, notably with the United Kingdom (UK) by improving defence measures and fostering data sharing (Tonra 2021a; 2021b; Ewers-Peters and Baciu 2022; Ireland, DoD 2026a).

4.2.3 Germany

Prior to the Covid-19 pandemic, Germany's 'financial capacity' was positively impacted by its export-oriented economy that realised annual rises in GDP (Organisation for Economic Co-operation and Development (OECD) 2025a). Equally, Germany had a persistently declining debt rate (IMF 2025). Taxation rates in Germany are among the most elevated in the EU (EC 2025a).

Against the background of its history, Germany's 'security capacity' witnessed a humble quota of investment in the military sector for the last two decades (Weiss 2019). This did not match NATO's anticipated financial obligations (Jakobsen 2018, p.499). Gauging the standard of its equipment, the German navy has recorded maintenance deficiencies and supply failures for more than a decade (Germany, German Bundestag (BT) 2015; 2016; Mohr 2022; TMB 2025).

Regarding 'administrative capacity', Germany reinforces its capabilities by partaking in cooperation agreements with other states and NATO, such as the 'Northern Coasts' naval exercise which was instigated by Germany in 2007 and occurs yearly to foster the exchange of knowledge and the amelioration of faculties, including but not limited to maritime infrastructure (Bunde 2021; Ewers-Peters and Baciu 2022; Germany, Bundeswehr 2025a).

As a result, the expected levels of state capacity are depicted in Table 4.

Table 4. *Expected levels of state capacity for Sweden, Ireland and Germany.*

	Financial capacity	Security capacity	Administrative capacity
Sweden	high	medium	medium
Ireland	high	low	medium
Germany	high	medium	medium

Author's own elaboration.

4.2.4 Confounding Variables

Other variables that could account for distinctions in the protection of maritime infrastructure have to be accounted for. The three factors identified are NATO membership, a standard of neutrality and public opinion (cf. Gibler and Miller 2014; Blankenship 2018; Wu *et al.* 2020; Hynes 2024; Migliorati 2024).

In theory, a state benefits from NATO membership due to the alliance's sea-based portfolio, powerful allies, recurring training manoeuvres, partnerships and centralised data management (Schaub *et al.* 2017; Blount and Bergeron 2019; Usewicz 2021; Larsson 2024). However, finances are nationally dependent and not all members invest proportionally (Jakobsen 2018). This research cannot suppose that NATO membership is the initial incentive for decent maritime security capacities because Sweden only joined in 2024, yet it already possessed substantial surveillance mechanisms (Alberque and Schreer 2022; NATO, PDD 2025, p.9; Stevenson 2025).

A state's neutrality may represent a relevant explanation as the military is a factor when shielding public assets from hostile entities (FitzGerald and Colfer 2025; Zayats and Marusynets 2025). Sweden drew on the concept of neutrality for a considerable period of time but ensured security standards regardless of that (Nordlund

2022). It is inferred that Ireland's definition of neutrality entails the repudiation of belligerent acts and immersions while it does not negate the necessity for safety (Baciu 2018; Tonra 2021a). Also, the Irish reliance on non-neutral states, generally the UK, or occasionally on NATO, insinuates that defence mechanisms are valued, just not a strong individual stance (Tonra 2021a; 2021b).

Naturally, issues of governance and defence investment remain open to scrutiny by the public and low levels of democratic approval will not translate into tangible results thereby diminishing state capacity (Gibler and Miller 2014; Blankenship 2018; Wu *et al.* 2020). The survey data in Figures A.1, A.2 and A.3 shows a lack of unfavourable public opinion towards defence investment and international cooperation, hence not providing a satisfactory explanation (EC 2025c; 2026a; 2026b; 2026c).

Subsequently, NATO membership, standard of neutrality and public opinion are discarded as alternative explanatory variables.

4.3 Data Collection

The dissertation collects secondary data as this is a widely recognised method in studies of state capacity (cf. Hendrix and Young 2014; Hanson and Sigman 2021).

Governmental internet sites, in particular the ones of departments of defence and parliamentary data systems, provide relevant reports, strategical analyses, White Papers and reviews. International organisations like the EU and NATO regularly publish similar formats. Data is also collected from agencies such as the *Swedish*

Defence Research Agency (FOI) and the *German Institute for Defence and Strategic Studies*. Detailed accounts of defence equipment are made available by the *International Institute for Strategic Studies* (IISS). Broad indices like the *Stockholm International Peace Research Institute* (SIPRI) or the *Worldwide Governance Indicators* (World Bank Group) are equally considered. In addition to that, academic studies, assessments, peer-reviewed journals (for example *Defence Studies*, *Defense & Security Analysis, International Journal of Critical Infrastructure Protection, European Security*) and books are used. Guided by the thesis' variables, extensive search practices on academic data bases, including Google Scholar, Wiley Online Library and ProQuest, designed the data collection process.

4.4 Data Analysis

Traditionally, case studies that evaluate state capacity are conducted through the analysis of quantitative data (Hendrix and Young 2014; Blankenship 2018; Hanson and Sigman 2021). At its core, capacity is merely a state's 'potential' and intrinsically complex to measure thus also favouring a qualitative approach (Brenton *et al.* 2023; Moynihan 2025, p.365). Therefore, the dissertation partly synthesises quantitative measurements; however, it has a stronger focus on qualitative analysis (cf. King *et al.* 1994), owing to the complexities of the subject (cf. McCabe and Flynn 2024).

The qualitative approach of a thematic analysis is picked in order to comprehensively assemble and characterise motives in the data that are of significance

to the research question (cf. Braun and Clarke 2006). The analysis applies a theory-driven framework (see Table 5) which utilises inductively generated codes (cf. Braun and Clarke 2006) since there is no comparable study about state capacity and maritime infrastructure protection.

Table 5. *Analytical framework for the examination of state capacity and maritime infrastructure protection.*

Element of state capacity	**Description of the values**
Financial capacity	• GDP • National debt • National deficit/surplus • Government revenue, including taxation • Government expenditure
Security capacity	• Defence spending • Shares of defence spending dedicated to 'personnel' and 'equipment' • Personnel numbers • Quantity and types of vessels/aircrafts • Standard of equipment technology/surveillance systems • Research & Development (R&D) • Procurement initiatives

Administrative capacity	• Quality of administration index
	• Types and involvement of departments/agencies
	• Data collection
	• Knowledge accumulation
	• Level of cooperation (framework, procedures) with:
	  ○ Governmental entities
	  ○ Other countries
	  ○ International bodies (EU, NATO)
	  ○ The private sector
	• Degree of outsourcing

Author's own compilation. Derived from: Germond 2011; Dincecco and Prado 2012; Gibler and Miller 2014; Savoia and Sen 2015; Blankenship 2018; Crumplin 2020; Hanson and Sigman 2021; Speller 2021; Bueger and Liebetrau 2023; Fernández-I-Marín *et al.* 2024; Robson 2024.

4.5 Limitations

This research is not without potential problems due to its dependence on available, unclassified data (cf. Germany, Bundeswehr 2026a). Even though the framework may lead to a reasonable explanation, it is possible that other factors and variables persist outside of this study's observable scope. For example, the dissertation's framework does not incorporate the ruling parties' political agendas nor an evaluation of leadership (cf. Wu *et al.* 2020; Bunde 2021; Stengel 2025).

The quantity of coherent reasons for the issue of maritime infrastructure protection can certainly be condensed through this research; however, the qualitative nature of the analysis is limited to the extent of the material reviewed and may therefore not generate a conclusive causal explanation.

5. Findings

This section contains the dissertation's main empirical findings. The chapter is structured in three parts. The countries are presented separately by adhering to the framework established in the methodology chapter, thus alluding to elements of 'financial', then 'security' and lastly 'administrative capacity'.

5.1 Sweden

5.1.1 Financial capacity

At the start of the 1990s, Sweden's GDP declined continuously due to a financial crisis, however, after employing corrective measures, the economy recorded a sustainable expansion until the Global Financial Crisis (GFC) in 2007 (see Figure

G.1.1; Sweden, Swedish Institute 2025; World Bank Group 2026). A further negative growth rate occurred through the Covid-19 pandemic in 2020, yet commencing in 2024, the Swedish GDP has risen again (see Figure G.1.1; EC 2025d, p.2; OECD 2025c, p.18; World Bank Group 2026).

Swedish national debt, calculated as a percentage of GDP, mirrors this development, meaning that there was a significant rise in debt to alleviate the burden of said crises (Staszewska-Bystrova and Bystrov 2022). Swedish debt was then reduced by 30 per cent of GDP until the early 2010s (see Figure G.1.2; IMF, European Dept. 2019, p.44; IMF 2025). In order to maintain this achievement, the government implemented the 'debt anchor' policy in 2019 to preserve the debt at 35 per cent of GDP (Sweden, Swedish Institute 2025).

Focusing on the last ten years, Sweden's revenue and expenditure had been fairly balanced, until 2020 from which point onwards deficits were registered recurringly (see Figures D.1.1; G.1.3; Eurostat 2026b).

While the Swedish taxation revenues equalled 50 per cent of GDP in 2000, it demounted to 43.1 per cent over the next decade and scantly thereafter (EC 2025d, pp.27-28; OECD 2025d, p.143). Swedish tax revenues remain elevated in comparison to the EU-average (see Figure D.1.2; EC 2025d, pp.27-28).

Since 2023, the upward trend in expenditure is due to funding of defence and infrastructure (see Figure D.1.1; EC 2025d, pp.2,35; Eurostat 2026b). Generally, Sweden's superior investments in R&D abetted scientific projects, yet the economic profitability recedes (EC 2025d, p.30; IMF, European Dept. 2025, p.23).

5.1.2 Security capacity

In keeping with Sweden's aggravated financial capacities in the early 2000s, hence instigating a need for a reduction of state costs, defence expenditure was significantly diminished (TMB 2005b, p.139; 2010, p.116; Lundberg and Rova 2022). This development subsisted and from 2016 to 2018 the yearly defence spending barely amounted to one per cent of GDP (see Figure G.2.1; NATO, PDD 2025, p.9). Continual rises are discernible in as early as 2021 and constituted 2.5 per cent of GDP in 2025 (see Figure G.2.1; Liang *et al.* 2025, p.2; 2026, p.2; NATO, PDD 2025, p.9).[8]

From 2014 to 2016, a higher portion of defence spending was invested in equipment than in personnel (see Figure D.2.1; NATO, PDD 2025, p.14). Until 2022, the tendency was reversed, then, in 2023, the number for equipage and gear was ten per cent superior to that of personnel (see Figure D.2.1; NATO, PDD 2025, p.14).

In line with the descent of funding, Sweden decreased its military in the early 2000s, including a 70 per cent cut of the naval force (Wither 2020, p.70; Angstrom and Ljungkvist 2024, p.513). Since 2014, there has been no meaningful change in the total number of active personnel, yet a decline is perceivable in the naval force (see Figure D.2.2; TMB 2015, p.139; 2016, p.143; 2022, p.151). In 2022, naval personnel numbers reached a recent peak while still falling short of the quantity of 2014 (see Figure D.2.2; TMB 2015, p.139; 2023, p.137; 2026, p.144).[9]

[8] The governmental aspiration is to reach a ratio of 3.1 per cent of GDP by 2028 (Sweden, Ministry of Defence (MoD) 2025).
[9] The government conceded that employment numbers, especially regarding the naval force, should be elevated (Sweden, MoD 2024a; Sweden, Secretariat of the Swedish Defence Commission 2024).

Over the last decade, the Swedish submarine fleet was downsized, however, as outlined by the governmental 'Defence Policy' for 2016-2020, two had received advancements by 2019 (see Figure D.2.3; Table D.2.1; Sweden, Government Offices of Sweden (RK) 2015, p.9; TMB 2015, p.140; 2020, p.150; 2026, p.145). Moreover, previously announced upgrades were conducted on patrol vessels and the use of the main corvette type continues into the 2020s beyond its initial service life (see Figure D.2.4; Table D.2.2; Sweden, RK 2015, pp.9-12; TMB 2023, p.138; 2026, p.145). By 2016, Sweden had one helicopter equipped for anti-submarine warfare (ASW), raised the number to five in 2017 and to nine in 2019 (TMB 2017, p.163; 2018, p.153; 2020, p.150).

The retention of modern surveillance systems and technology has been emphasised by the state and pertains to the equipment on board, for instance the fitting of vessels with sonars (Sweden, RK 2015, p.9). Submarines are equipped with air-independent propulsion (AIP) so that they profit from a prolonged time undersea (TMB 2015, p.140; Nordlund 2022, p.393). Sweden operates several 'unmanned underwater vehicles' (UUV) (TMB 2024, p.144). An improved sensor system is scheduled for 2026-2028 (Sweden, Secretariat of the Swedish Defence Commission 2024, p.26).

Nowadays, R&D is perceived as vital for the force and worthy of funding with yearly expenses between 8 million and 22 million euros from 2024 to 2026 designated to foster projects with the private sector (TMB 2005b, pp.139-140; Coetzee and Berndtsson 2023; Sweden, Ministry of Defence (MoD) 2024a; 2024b, p.10). The

alleviation of financial commitments and the avoidance of duplicated efforts propel Sweden to initiatives managed by the EU and NATO (Sweden, MoD 2024b).

The local defence economy is internationally dominant but adjusted its manufacturing of vessels to national conditions, including the topography of the Baltic Sea (TMB 2020; Nordlund 2022; Coetzee and Berndtsson 2023; Sweden, MoD 2024b). Additionally, in May 2026, the state finalised an order for four, state-of-the-art frigates produced by a French Naval Group for the 2030s (Hallam 2026).

5.1.3 Administrative capacity

Globally, the quality of administration is measurable through the *Worldwide Governance* index by the World Bank Group (2025). Despite sporadic improvements, the barometers of all six elements, including 'government effectiveness', 'regulatory quality' and 'rule of law', diminished from 2014 to 2024 (see Figures G.3.1; G.3.2; G.3.3; G.3.4; G.3.5; G.3.6; World Bank Group 2025).

Overall, the Swedish state is profoundly decentralised thus resulting in compact ministerial departments and approximately 300 governmental agencies, with the police force and the Swedish Armed Forces (FM) representing the most populous agencies (Nordlund 2022, p.394). Under the auspices of the MoD and the FM, the navy and air force continually observe the Swedish maritime area to react to possible dangers (Sweden, Secretariat of the Swedish Defence Commission 2024; Sweden, FM 2026). The FOI is the scientific branch for the FM which condenses data for the creation of mechanisms and procedures to track subsea objects (Sweden, FOI 2025). Principally in

charge of procurement tasks, the Swedish Defence Materiel Administration maintains a key function to implement scientific novelties in conjunction with the FOI (Nordlund 2022; Sweden, MoD 2024b). The Swedish Civil Contingencies Agency (MSB) and the FM map the structural composition of civilian and non-civilian defence (Bohlin 2025; Obling *et al.* 2026). The MSB incorporates the CERT-SE (Swedish equivalent to CSIRT) for civilian cyber issues and international interchanges (Andreasson *et al.* 2024, p.711). In addition to rescue missions, the Swedish Coast Guard (KBV) is obligated to ensure the maritime rule of law related to safety and environmental concerns (Sweden, RK 2026a).

To enhance public and private actors' abilities related to crisis management and hybrid attacks aimed at (digital) infrastructure, the FM and MSB conducted a crisis training in 2019/20 (Ljungkvist 2024). In light of NIS2, the MSB's analysis from 2023 concluded that 69 per cent of audited public bodies did not possess the minimal security exigencies therefore suggesting suboptimal staff training and insufficient departmental oversight (Rehnstam *et al.* 2025, pp.178-179).

The governmental entities of the MoD, chiefly the FM and MSB, work together for the exchange of data (Obling *et al.* 2026). The parallel tasks of the FM and KBV coincide and prompt collaboration in the realm of marine supervision (Sweden, KBV 2024). Bound by the objective of criminal prosecution, the KBV regularly conducts ship boardings with the police force (Sweden, RK 2026a; KBV 2026c; 2026d; 2026e).

Sweden has increasingly aimed for international exchange and training programmes thereby fortifying arrangements with countries such as Finland, Germany,

the UK and the US (Sweden, Ministry for Foreign Affairs 2022; Sweden, RK 2024; Sweden, The Defence Commission's Secretariat 2026).

Sweden's commitment to NATO became apparent in 2025 with the deployment of its navy for the 'Baltic Sentry' to observe the Baltic Sea and dissuade adversaries from hostile actions directed at maritime infrastructure (Sweden, The Defence Commission's Secretariat 2026, pp.15,19).

The government recognises technological advances of the private sector regarding cyber and infrastructure resilience thus alluding to obligatory collaboration (Sweden, MoD 2024b; Sweden, Prime Minister's Office 2024). As part of its 'total defence' scheme, the input of civilians is not limited to economics and research but sought to shape the country's reaction to (hybrid) attacks as a societal responsibility (Angstrom and Ljungkvist 2024). The legally prescribed notion shall constantly dissuade enemies and avoid war through a certain standard of security (Obling *et al.* 2026; Sweden, The Defence Commission's Secretariat 2026). This civil component was to be reinforced and readjusted after 2014, however, it only received funding in 2020 and six years later the capacities are still perceived as inadequate (Sweden, The Defence Commission's Secretariat 2026).

5.2 Ireland

5.2.1 Financial capacity

The Irish economy recorded growth levels from the mid-1990s until 2007 when its GDP substantially decreased due to the crash of the real estate market and the ensuing GFC (see Figure G.1.1; Kostarakos *et al*. 2024; World Bank Group 2026).

Starting in 2013, the GDP began to rise exponentially abetted by international monetary support and a low corporate tax which incentivised further US enterprises in the pharmaceutical and technology sectors to locate to Ireland (EC, Directorate-General for Economic and Financial Affairs (DG ECFIN) 2016; 2024; Kostarakos *et al*. 2024; Ní Chasaide and Ó Riain 2025). Apart from minor depressions, GDP has developed positively since (see Figure G.1.1; EC, DG ECFIN 2026b; World Bank Group 2026).

Ireland's debt declined from the early 1990s until the GFC which provoked a slope (see Figure G.1.2; IMF 2025). The amount of debt has shrunk consistently since 2013 which grants the means for repaying the balance due to the EU (see Figure G.1.2; EC, DG ECFIN 2016; 2024; 2026b; IMF 2025).

The national deficit diminished yearly until 2018, and from 2022 onwards surpluses have recurred yearly (see Figure G.1.3; Eurostat 2026b). In that sense, revenue regularly surmounts expenditure since 2022 (see Figure E.1.1; Eurostat 2026b).

The overall revenue from taxation, measured as a share of GDP, contracted from 1990 until 2023 by 11 per cent (OECD 2025d, p.109). An EU-wide comparison finds that the Irish tax rate is far lower than the mean ratio (see Figure E.1.2; EC 2025b, p.42). Nevertheless, the taxation of a few momentous US firms presupposes the meaningful revenue (EC 2025b; Ní Chasaide and Ó Riain 2025).

Expenditure primarily focused on social expenses while underspending on infrastructure including residential buildings, power grids and water supply (EC, DG

ECFIN 2016; EC 2025b; OECD 2025b). Also, Ireland ranks below most EU countries regarding public funding for R&D (EC 2025b, p.44).

5.2.2 Security capacity

Owing to the dire situation in 2013/2014, budgetary cuts earnestly impacted defence spending (Ireland, DoD 2015, p.6; TMB 2015, p.105). In 2024, Irish defence expenses approximated to a quarter of the amount of 2014 (see Figure G.2.1; Eurostat 2026a). The government advertised elevated spending, with a raise of 11 per cent from 2025 to 2026 (Ireland, DoD 2025).

Similarly, from 2014 to 2025, the shortage of funding decreased military personnel numbers; the abatement being most evident in the INS (see Figure E.2.1; TMB 2015, p.105; 2026, p.107; Speller 2021). Over the period of 2019 to 2021, two patrol vessels were not operational because of lacking personnel (TMB 2020, p.117; 2021, p.115; 2022, p.118). Apparently, the issue of underpay is aggravated by an unalluring employment environment and missing development possibilities (O'Regan 2021; TMB 2021, p.115; 2025). The DoD has assured to address these deficits since 2019, and recently in 2026 (Ireland, Government of Ireland (Gov) 2019b; 2024; Ireland, DoD and Irish Defence Forces (IDF) 2025; Ireland, DoD 2026b).

> In […] 1977 the Irish defence minister, […] stated that in order for the 200-mile Exclusive Economic Zone to be effectively policed, a force of 15 offshore and ten coastal patrol vessels would be required.
>
> (McIvor 1994, p.147)

At the time, the fleet fell short of these expectations by 24 ships (McIvor 1994, p.148). Compared to then, the quantity of vessels augmented, yet the last decade denoted a bisection (see Figure E.2.2; TMB 2015, p.106; 2025, p.103). Since the liquidation of the local shipyard where its former flagship was built, the DoD receded to the purchase of vessels that were constructed or used abroad (McIvor 1994; TMB 2015). The procurement of the latest offshore patrol vessel class dates to 2010, with the ships successively put into service from 2014 to 2019 (see Table E.2.1; TMB 2015, pp.106,155; 2016, p.109; 2017, p.126; 2020, p.117; Ireland, IDF 2026d). The state acquired two inshore patrol ships from New Zealand in 2022 to compensate for discontinuations and after refitting, the vessels have been mission capable since 2024 (see Table E.2.1; Ireland, DoD 2023; TMB 2025, p.103).[10]

The 'White Paper on Defence 2015' emphasised ship ameliorations as a result of technological transformations (Ireland, DoD 2015). Contrary to that, today's vessels do not integrate relevant monitoring techniques for subsea actions (Speller 2021; Mulcahy 2022; Ireland, DoD 2026b). For the surveillance of its seafloor and maritime infrastructure, the Naval Service Diving Section must physically descend to the sea bottom, abetted by a UUV allowing for surveillance 100 metres below the surface (TMB 2025, p.103; Ireland, IDF 2026c). After underscoring their essentiality in 2024, the acquisition and distribution of sonars is anticipated for 2027 (Ireland, Gov 2024; Ireland, DoD 2026b, p.40), as well as onboard technology to respond to drone encounters (Gallagher 2026).

[10] A proposal to elevate the vessel quantity to 12 by 2040 was adjourned in 2022 (Ireland, DoD and IDF 2022, p.30).

5.2.3 Administrative capacity

According to the *Worldwide Governance* index, there occurred a refinement of the administration's quality from 2014 to 2024 regarding 'government effectiveness', 'regulatory quality' and 'rule of law' (see Figures G.3.3; G.3.4; G.3.5; World Bank Group 2025).

In broad terms, the continuance of maritime security in Ireland's EEZ is the central task of the INS which is a part of the IDF under the DoD[11] (Ireland, DoD 2015). The INS conducts ship observations in one of its fishing-related functions (Ireland, IDF 2026b). As prescribed by the *Maritime Security Act 2004*, the IDF or An Garda Síochána may precede with investigations, boardings or arrests on vessels where a breach of maritime navigation regulations is apprehended. The national regulatory framework is considered intermittent because the INS does not have the mandate to physically examine or stop a vessel in its jurisdiction when a risk to infrastructure or the marine ambience is suspected (Ireland, DoD 2026b; 2026e).

Serving as another IDF branch, the Air Corps also takes on marine observation tasks (Ireland, DoD 2015; Ireland, IDF 2026a). In the aftermath of the 2001 terror attacks, the Office of Emergency Planning (OEP) was appointed within the DoD to structure governmental distress responses and develop cross-sector 'risk assessments', specifically regarding critical infrastructure (Ireland, DoD 2015; 2026c).

[11] Owing to the prescriptions of the Irish constitution, the number of ministers is limited to 15, and so, as is the case right now, the Minister for Defence is also the Minister for Foreign Affairs and Trade (Boyle 2016, p.141; McEntee 2026).

The Department of Transport (DT) directs the coast guard which is, inter alia, occupied with salvage operations and marine observations to avert environmental contamination (Ireland, DT 2025; Ireland, DoD 2026b). Also, the DT manages ship and security standards of ports, the latter affected by the NIS2 legislation (Ireland, DoD 2026b). Initially, the Department of Communications, Energy & Natural Resources (DCENR) acted as the oversight body for the National Cyber Security Centre (NCSC) which incorporates the CSIRT since 2011 and is accountable for the inviolacy of national systems (Ireland, DoD 2015; 2026b; Ireland, DCENR 2015; Ireland, Gov 2024). Nowadays, the NCSC operates under the Department of Justice (DoJ) which is the central interlocutor for the NIS2 implementation (Ireland, DoD 2026d). In its 2026 review, the government admitted that the 'NCSC's ability to actively detect and defeat cyber threats' has not matured sufficiently (Ireland, Gov 2026, p.6).

Assessing the availability of data, Byrne and Bannister (2013, p.81) note that more than 60 per cent of the IDF perceive that the information at their disposal is insufficient for their tasks. The government acknowledged that from 2015 to 2019 no efforts were made to increase efficiency (Ireland, Gov 2019b, p.102). Owing to the fragmentation of the maritime sector, information is stored separately without a connected platform (Buwalda 2024). The 'National Maritime Security Strategy 2026-2030' concedes these cognisance deficits (Ireland, DoD 2026b).

Aspiring to locate malfunctions in their responsiveness, the OEP conducted a scenario training in February 2025 to expose the ministries to repercussions of hybrid threats targeting maritime infrastructure and cybersecurity (Ireland, DoD 2026b, p.23).

In the future, more practices are envisaged in liaison with the NCSC (Ireland, DoD 2026b, p.41).

The formal basis for Ireland's official cooperation with the UK was laid in 2015 when the countries intended to lower mutual expenses by combining capabilities and data (UK, MoD and Ireland, DoD 2015). The 2026 bilateral declaration with the UK emphasised cyber and maritime issues whose severity ought to be tackled by formalised data exchanges and exercises (Ireland, DoD 2026a). Accordingly, a British vessel engaged with the INS in June 2026 to concentrate on maritime infrastructure protection on sea, in the air and cyberspace, owing to the UK's advanced faculties (Libreri 2026).

Prompted by the presidency of the Council of the EU which began in July 2026, the British and French navies provide security support (Gallagher 2026). The intention to elevate collaboration with France was announced shortly before (Ireland, DoD 2026b).

Since 2023, Ireland is a member of the *European Centre of Excellence for Countering Hybrid Threats* (Hybrid CoE) which was the only accentuated measure for handling hybrid attacks in its 2024 'Defence Policy Review' (Ireland, Gov 2024, p.60).

In 2015, the DoD recognised the economic advantages and value of cooperating with local firms on R&D (Ireland, DoD 2015). Four years later, no progress was registered in that regard (Ireland, Gov 2019b, p.103). Discontent persists among companies that the public sector is placing the burden of countering hybrid attacks on them without developing proper knowledge (FitzGerald and Colfer 2025).

5.3 Germany

5.3.1 Financial capacity

Expect for the corollaries of the GFC, the German GDP largely chronicled increments by zeroing in on companies' specialities, such as manufacturing of cars or engines, which were favoured by international markets (see Figure G.1.1; Germann 2023; Knudsen 2023; OECD 2025a; World Bank Group 2026). Since the onset of the Covid-19 pandemic, GDP progression cannot be benchmarked against the former development (see Figure G.1.1; EC 2025a; OECD 2025a; EC, DG ECFIN 2026a; World Bank Group 2026).

In order to curb excessive debts that occurred into the early 2010s after the GFC, Germany implemented a 'debt brake' through constitutional modification which lowered the stock of debt in subsequent years (see Figure G.1.2; IMF 2004; 2025; Knudsen 2023, p.96). The pandemic, energy and production crises necessitated superior state expenses, ultimately followed by a constitutional change to admit higher borrowing on grounds of security investments (see Figure G.1.2; IMF 2025; EC, DG ECFIN 2026a; IMF, European Dept. 2026).

Surpluses indicated that revenue outweighed expenditure until 2020 (see Figures F.1.1; G.1.3; Eurostat 2026b). Since then, deficits persist (see Figure G.1.3; Eurostat 2026b).

The share of income generated by German taxation was almost unvaried from 1990 to 2023 (OECD 2025d, p.101). In fact, the stringent tax ratio is surpassing that of other, mean EU countries (see Figure F.1.2; EC 2025a, pp.37,39).

The previously existent resources were not disposed of to upgrade infrastructure, defence, or economically and environmentally needed research thus accumulating various present needs (Knudsen 2023; EC 2025a; OECD 2025a; IMF, European Dept. 2026).

5.3.2 Security capacity

Germany's defence spending significantly declined over the last forty years; with the investment amounting to three per cent in the late 1980s, it was below two per cent a decade later and marginally above one percent going into the 2000s and 2010s (see Figure G.2.1; NATO 2007, p.7; NATO, PDD 2025, p.9). While the NATO parameter of two per cent was accepted in 2016, the threshold was only crossed in 2025 through unprecedented funds (see Figure G.2.1; Germany, The Federal Government (BReg) 2016, p.69; EC 2025a; Liang *et al.* 2026, p.2).[12]

Traditionally, the share of defence spending dedicated to personnel outnumbered the investment in equipment; in 2014, the latter virtually represented a fourth of the employment expenses (see Figure F.2.1; NATO 2007, p.9; NATO, PDD 2025, p.14). The government aspired to a twenty per cent mark for the equipment share in 2016, yet still fell short of it in 2023 (see Figure F.2.1; Germany, BReg 2016, p.69; NATO, PDD 2025, p.14).

In conjunction with lower funding and the waiver of obligatory military service in 2011, personnel numbers did not augment as needed (see Figure F.2.2; Germany, BT

[12] Prospectively, the ratio ought to attain 3.5 per cent (TMB 2026, p.98).

2016; TMB 2017; 2020). The deficiencies have been impacting the navy's service abilities; for instance, in 2015, just three out of seven submarine corps had enough employees, and in 2024, the unfilled position rate of the frigates was 27 per cent (Germany, BT 2016, pp.14,21; 2025, p.51). The poor enrolment ratio is abetted by factors such as unyielding time schedules, exuberant task loads and housing costs (Germany, BT 2016; 2020; 2024).

From a quantity of 13 in 2004 to a nowadays stable number of six type-identical submarines, the aforementioned cutbacks are equally perceivable (see Table F.2.1; TMB 2005a, p.68; 2022, p.110; 2025, p.94). In alignment with the discontinuation of the patrol vessel-type and the introduction of the new frigate, the number of vessels shrunk by eight from 2014 to 2025 (see Figure F.2.4; Table F.2.2; TMB 2016, p.101; 2020, p.109; 2026, p.99).

> As far as the upkeep of buildings and maintenance of hardware are concerned, the backlogs to be dealt with have reached a scale that is no longer acceptable.
>
> (Germany, BT 2015, p.7)

Notwithstanding public scrutiny over the last decade, the armed forces' standard of equipment has been afflicted with maintenance failures and supply constraints (Germany, BT 2015; 2016; 2023; TMB 2025). This applies to the upkeep of buildings, for instance, after lengthy administrative processes and unsatisfactory work by the enterprise in charge, the restoration process of the navy's diving pool in Eckernförde which had commenced in 2010 was completed 13 years later (Germany, BT 2020, p.52;

2025, p.11). In 2022, almost every second vessel demanded time-consuming touch ups (Mohr 2022). Advancements are expected since the 2022 governmental acquisition of a shipyard dedicated to the navy (Mohr 2022).

Concerning the technical capabilities of the corvettes, the personnel remains unable to manage drone aviation on board (Kapstein *et al.* 2026). Generally, the submarines are fitted with AIP and can conduct far-reaching subsea observations (see Table F.2.1; TMB 2021, p.107; Germany, Federal Ministry of Defence (BMVg) 2025). Moreover, the navy deploys UUVs and respective 'platforms' (TMB 2023, p.96; 2025, p.95; Germany, BMVg 2025, p.86).

The submarines are expected to be surpassed by a more sophisticated class at the end of the decade in a joint scheme with Norway (Schneider 2024; EDA 2025; TMB 2025, p.58; 2026, p.59). In June 2026, disregarding the € 2.3 billion previously spent, plans for six new frigates were abandoned against the background of rising expenses, issues with suppliers and a presumed delivery belatedness (Ripper 2026; Urbancik 2026). In contrast, eight versatile frigates are to be provided through another German company (Ripper 2026; Urbancik 2026).

5.3.3 Administrative capacity

For Germany, the *Worldwide Governance* index indicates that the quality of administration disimproved between 2014 and 2024[13] (see Figures G.3.2; G.3.3; G.3.4;

[13] The barometers of 'Voice and Accountability' and 'Control of Corruption' gained only slightly (see Figures G.3.1; G.3.6; World Bank Group 2025).

G.3.5; World Bank Group 2025). The deterioration is particularly important concerning 'governmental effectiveness', 'regulatory quality' and 'rule of law' (see Figures G.3.3; G.3.4; G.3.5; World Bank Group 2025).

As a federal state, security-related tasks are distributed based on geographical considerations and the nature of the threat, hence authorising the Federation to broadly engage with the safeguarding of infrastructure and the cyber space, yet preventative measures must be taken by the individual states (Leinhos 2020; Germany, Federal Ministry of the Interior, Building and Community (BMI) 2021). The BMI executes the federal policy function while comprising the *Federal Office for Information Security* (BSI) which is assigned to federal cyber security issues, control of the CSIRT (*CERT-Bund*) and the 'protection of critical infrastructures' since 2009 (Germany, BMI 2021, pp.20,49; Santaniello and Barbieri 2025, p.9). Its legal framework includes the implementation of the NIS directives (Santaniello and Barbieri 2025).

Generally, the appearance of criminal behaviour elicits the participation of local and/or federal police forces (Germany, BMI 2021). Concurrently, the law enforcing coast guards[14] practice civilian tasks related to fishing, border control and environmental degradation (Masala and Tsetsos 2013).

In matters of sovereign or armed forces' defence, the BMVg and the army undertake tasks pertaining to the protection of maritime infrastructure through the fleet's deterrent presence, associated surveillance operations and its *Cyber and Information Domain Service* concerning cyber and hybrid threats (Germany, BMVg

[14] That is to say the federal coast guard and the coast guards of the German coastal states.

2013; Masala and Tsetsos 2013; Leinhos 2020; Germany, Bundeswehr 2025a; Germany, BMVg 2026). In respect of (naval) procurement, the demands are imparted to the *Federal Office of Bundeswehr Equipment, Information Technology and In-Service Support* (BAAINBw) which deliberates on the standards of material, the costs associated with acquisitions, refurbishments, research and the supplier (Germany, BT 2021; Germany, Bundeswehr 2025b). Additionally, the *Bundeswehr Office for Defence Planning* is involved in scheduling and the allocation of funding (Germany, BT 2021; Germany, Bundeswehr 2026b). This architecture is criticised for its bureaucracy, adamant recording mechanisms and number of prescriptions which prolong provision and hinder modifications in light of new technologies (Germany, BReg 2024; IISS 2025; Germany, BT 2026; Kapstein *et al.* 2026).

Owing to the intricacy of modern dangers, the government declared the relevance of a 'whole-of-government' approach (Germany, BMVg 2026, p.13). Cooperation takes place between the coast guards and the navy, the latter being allowed to perform duties through 'administrative assistance' (Masala and Tsetsos 2013, p.15). On the other hand, the 2026 draft cyber act is reprimanded for its plethora of accountable actors and poor harmonisation attempts (Herpig 2026).

The German defence structure is historically shaped by the multilateral concept of NATO (Germany, BReg 2016). To rehabilitate data deficits, NATO-guided operations in the Baltic Sea have increased since 2022 (Mohr 2022; Schneider 2024). Under German contribution, the Baltic Sea is the regular centre of international manoeuvres to broadcast capacities and to adapt to menaces for infrastructure

(Germany, Bundeswehr 2025a). In 2024, Germany became the central facilitator for trainings in the Baltic Sea through the inauguration of NATO's 'Commander Task Force Baltic headquarters' (Germany, BT 2025, p.19). This contributes to determent and facilitates the accumulation of knowledge (Schneider 2024).

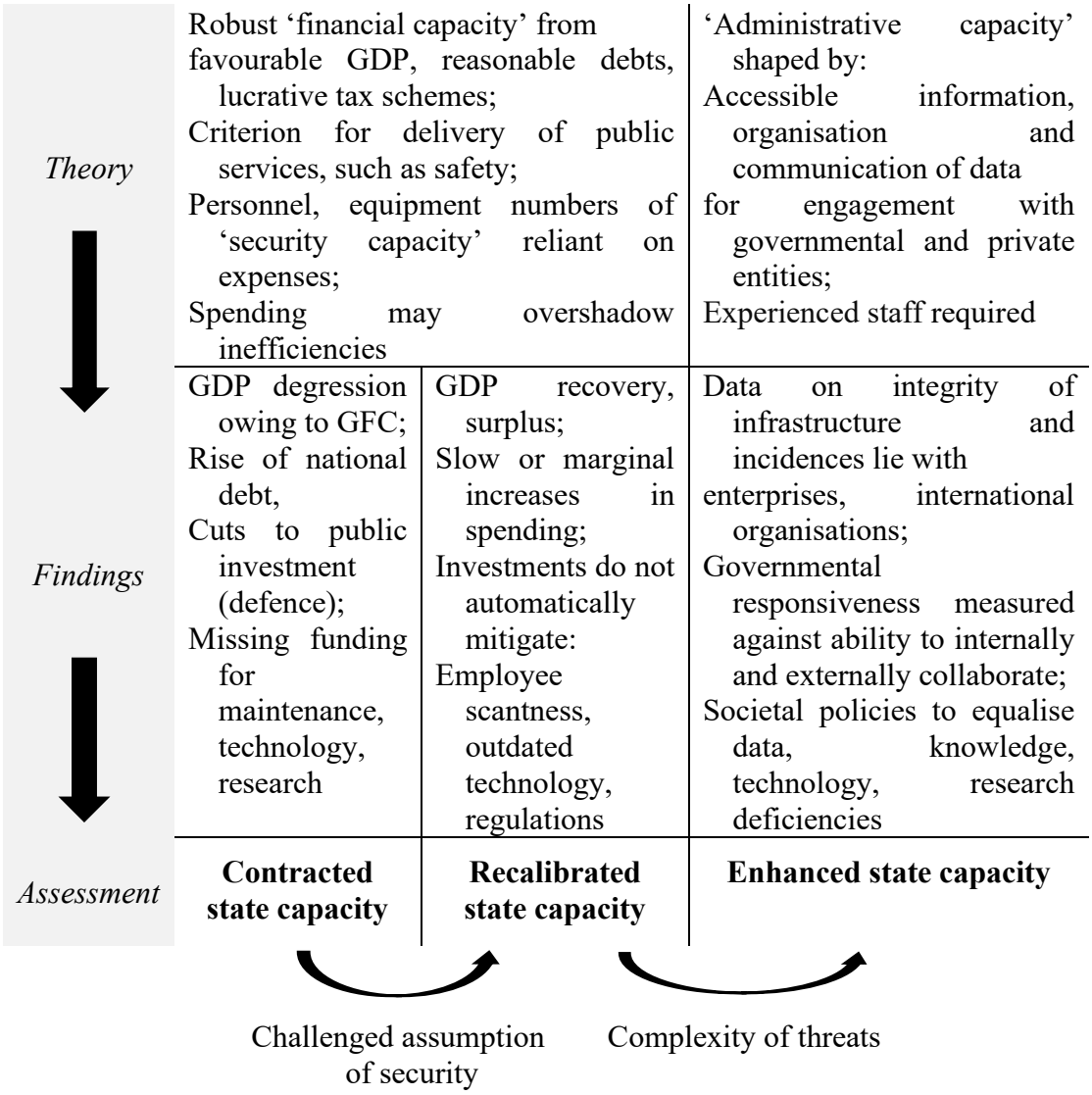
Private companies and research facilities are acknowledged to tackle facets of security and infrastructure protection (Germany, BReg 2016; 2024; Germany, BMVg 2025; Germany, Bundeswehr 2026a; Institute for the Protection of Maritime Infrastructures 2026). German defence enterprises furnish the majority of the required material, for example vessels, platforms and sensors (Germany, BReg 2024; Wolff *et al.* 2025; Kapstein *et al.* 2026). Since 2026, the armed forces operate an innovation hub to combine military personnel, developers, procurement administrators and companies (Kapstein *et al.* 2026).

6. Discussion

This dissertation aims to deliver an explanation for distinctions in the protection of maritime infrastructure. To this end, the countries' facets of state capacity were presented.

Figure 1 delineates how the results were analysed through the theoretical framework and arranged into three themes to exhibit the starting point for this chapter's comparative discussion.

Figure 1. *Conflation of theory and empirical findings.*



Author's own compilation. Derived from: Robinson 2008; Hendrix and Young 2014; Ireland, DoD 2015; Peters 2015; Blankenship 2018; TMB 2020; Hanson and Sigman 2021; Speller 2021; Lundberg and Rova 2022; Bueger and Liebetrau 2023; Brenton *et al.* 2023; Fernández-I-Marín *et al.* 2024; Senarak 2024; Borges *et al.* 2025; Fitzsimons 2025; IMF 2025; NATO, PDD 2025; Eurostat 2026b.

As each country is affected by its particular administrative tradition (Ongaro *et al.* 2017), the breakdown is substantiated by public administration theory. The final section joins the discussed elements.

6.1 Financing 'peaceful' crises: contracted state capacity

The three countries experienced GDP increases and degressions in the 1990s and 2000s, with Ireland broadcasting higher growth rates (see Figure G.1.1; World Bank Group 2026). Comparable drops in the mid-2000s were slowly mitigated, however, by the mid-2010s, Ireland outgrew Sweden and Germany exponentially (see Figure G.1.1; World Bank Group 2026). Equally, the downfall and rise of debt is depicted in Figure G.1.2, thereby illustrating the Irish contrasts from the early 2000s until the debt peak in 2012, Germany's gradual debt augmentation and Sweden's generally low rate (IMF 2025).

In light of economic demise in the 1990s, Sweden effectively embraced 'New Public Management' (NPM) reforms to scale down its public sector and work overtly market-oriented by outsourcing services (Dahlström and Lapuente 2011; Wockelberg and Ahlbäck Öberg 2016; Ongaro *et al.* 2017). Equal redemption through NPM was pursued by Ireland in the aftermath of the GFC (MacCarthaigh 2014; Boyle 2016; Ongaro *et al.* 2017).

The findings reasonably support the assumption that economic crises and associated accrued debts compel states to decrease investment and exacerbate the quality of public tasks (cf. Flynn 2018; Lundberg and Rova 2022; Schleicher and

Bagley 2025). Contracted ‘financial capacity’ thus offers less possibilities to disburse funds for defence and related research which would establish ‘security capacity’ (Besley and Persson 2008; Lundberg and Rova 2022; Nordlund 2022; O’Reilly and Murphy 2022).

The diminishment of defence spending occurred in all three countries and weighed profoundly on (navy) personnel numbers (TMB 2015; Germany, BT 2020; Wither 2020; Angstrom and Ljungkvist 2024; Stengel 2025).

The literature suggests that a grand security corps positively impacts state capacity, yet may also prompt inefficiencies or be of lesser quality when operating outdated equipment (Gibler and Miller 2014; Hendrix and Young 2014; Rubinson and Feldman 2025). Across the three, cost reductions did not spare the standard and maintenance of equipment (Germany, BT 2015; Ireland, DoD 2015; Coetzee and Berndtsson 2023). These far-reaching cuts align with arguments presented by NPM reformers (Lundberg and Rova 2022; Nordlund 2022).

This degree of state capacity bears consequences for the protection of maritime infrastructure because a decent marine presence is compulsory to competently observe the sea and collect data for an informative overview of dangers, otherwise the zone is essentially anarchical and susceptible to depletion and destruction (Burke 2013; Speller 2021; Flynn 2025).

Notwithstanding that, the detraction of budget from the defence sector and with that the reduction of a credible capacity to deter, was justifiable because of an absconding adversary (Gibler and Miller 2014; Angstrom and Ljungkvist 2024).

6.2 Emerging security threat: recalibrated state capacity

On the one hand, the Russian incursion into Crimea reinvigorated the possibility of a threat on European soil (Wither 2020; Angstrom and Ljungkvist 2024). On the other hand, the events in 2014 demonstrated that the characteristics of 'hybrid' dangers significantly varied from previous conflicts, thereby insinuating that existing capabilities were inadequate (Germany, BReg 2016; Lundberg and Rova 2022; Berndtsson 2024; Ljungkvist 2024).

The governmental discourses issued by the three states in 2015/2016 acknowledged the renewed need for defending European interests, particularly mentioning the maritime and cyber components, while admitting that urgent investments and material enhancements ought to follow (Ireland, DoD 2015; Sweden, RK 2015; Germany, BReg 2016).

However, assessing the three cases, national debt did not mount concurrently (see Figure G.1.2; IMF 2025). Sweden's and Ireland's deficits slumped from 2014 onwards, with Sweden then achieving surpluses, though not to the continuous extent that Germany had (see Figure G.1.3; Eurostat 2026b). Also, national revenue and expenditure kept at constant levels, even though Ireland underscored the other two and disclosed lower expenditure from 2014 to 2022 (see Figures G.1.4; G.1.5; Eurostat 2026b).

Using 2014 as a point of reference, defence spending did not accurately rise over the following years, Ireland's even receded, and the Swedish and German slopes in 2020/2021 were marginal (see Figure G.2.1; NATO, PDD 2025, p.9; Eurostat 2026a).

Similarly, military equipment expenses remained low in Germany and only slightly augmented starting in 2019, whereas in Sweden they eased until slow ascents in 2018, yet stood below previous rates (see Figure G.2.3; NATO, PDD 2025, p.14). Concerning the upkeep of gear and vessels, Sweden's pledges were widely honoured (cf. Sweden, RK 2015, pp.9-12; TMB 2015; 2019; 2020; 2021). Contrary to that, the German army had to consecutively engage with deprecated equipment and the INS lacked modern observation devices notwithstanding that its procurement ratio was highest across the IDF from 2014 to 2016 (Germany, BT 2015; 2016; Flynn 2018; Speller 2021).

Personnel expenses amount to a substantial portion of spending, nevertheless, Sweden and Germany both recorded declines since 2014 (see Figure G.2.2; Flynn 2018; NATO, PDD 2025, p.14). From 2014 to 2021, naval personnel numbers as a share of total military personnel were not elevated across the three countries; Sweden's share dropped the most, from 25 to 18 per cent, while Germany's and Ireland's shares persisted around 15 and 11 per cent, respectively (see Figure G.2.4; TMB 2015, p.139; 2021, pp.115,148; 2022, pp.109,117,151). The findings alluded to severe employee shortages in Ireland and Germany which provoked that multiple vessels were not deployable (Germany, BT 2016, pp.14,21; TMB 2020, p.117; 2021, p.115).

Considering the theory, a state may only be compelled to transform capacities when there is a cataclysmic event that suddenly menaces its territory, society or assets (Gibler and Miller 2014; Pamp *et al.* 2018; Borges *et al.* 2025; Lindvall *et al.* 2026). The proclamations made by the governments shortly after 2014 could have substantiated this hypothesis, yet the findings solely expounded on materialistic

improvements in Sweden which coincided with it having the highest national expenditure out of the three while stipulating lower spending levels on defence than Germany (see Figures G.1.5; G.2.1; TMB 2019; 2020; NATO, PDD 2025, p.9; Eurostat 2026b). Even though Germany possessed 'financial capacity' after 2014, it failed to enhance its 'security capacity' thereby letting maintenance deficiencies mount exuberantly (Germany, BT 2015; 2020; 2021; NATO, PDD 2025).

It can thus be argued that the catalyst was not potent enough to induce capacity enhancements, hence instigating an analysis of the post-2022 situation (Loik 2024; Gunnarsdottir and Riddervold 2025).

In the face of the Russian invasion of Ukraine in February 2022 and subsequent menaces to European maritime infrastructure, the three countries initiated anew assessments of their defence capabilities which concluded that the scope of their duties was still wide (Möckel 2022; Sweden, Ministry for Foreign Affairs 2022; Germany, BReg 2024; Ireland, Gov 2024; Loik 2024).

In economic terms, Ireland's GDP notably exceeds Sweden's and Germany's since the later part of the 2010s (see Figure G.1.1; EC, DG ECFIN 2026a; 2026b; 2026c; World Bank Group 2026). The Irish debt level undercut Sweden's as recently as 2025, the latter being as steady as the German ratio which slightly increased thus now constituting the highest of the three (see Figure G.1.2; EC, DG ECFIN 2026a; 2026b; 2026c). Parallelly, since 2020, there are persistent German deficits, akin to the

development in Sweden, therefore momentously diverging from the Irish surpluses (see Figure G.1.3; Eurostat 2026b).

Building on the theory, the disbursement of funding for personnel and equipment expenses abets a state's 'security capacity', yet there has to be a conscious engagement with the upkeep of conditions and an avoidance of inefficiencies caused by the size of the institutions (Hendrix and Young 2014; Jugl 2022; Rubinson and Feldman 2025).

There had been a surge in defence spending in Sweden and Germany after 2022, but not in Ireland (see Figure G.2.1; Liang *et al.* 2025, p.2; 2026, p.2; NATO, PDD 2025, p.9; Eurostat 2026a). Furthermore, Sweden provided more funds for its equipment and technology, including UUVs, and has several ongoing procurement initiatives for vessels and submarines (see Figure G.2.3; NATO, PDD 2025, p.14; TMB 2017; 2024; Hallam 2026). Generally, Sweden's share of naval personnel is unchanged at 20 per cent, thereby still being more elevated than Germany's at 15 per cent and Ireland's at 10 per cent in 2025 (see Figure G.2.4; TMB 2026, pp.98,107,144). The imperfect preservation of naval employees incessantly affects Ireland and Germany (Germany, BT 2024; 2025; TMB 2025; Ireland, DoD 2026b). The INS chronically necessitates sonars and further UUVs to match the extent of its sea jurisdiction against the slender number of vessels (Speller 2021; Mulcahy 2022; TMB 2025; Ireland, DoD 2026b). In Germany, there is equal margin for technological improvements as well as to reduce repair times (Mohr 2022; Germany, BMVg 2025; Kapstein *et al.* 2026).

Despite this, funding for new vessels and submarines is announced frequently these days (Schneider 2024; Ripper 2026; Urbancik 2026).

The findings provide evidence for the validity of the theory: enhanced 'financial capacity' could translate into corresponding public investments; as was the case with Sweden and Germany in 2022 (Möckel 2022; Sweden, Ministry for Foreign Affairs 2022; Singh 2023). Nonetheless, for Germany, it is projected that even the current sizeable funding is insufficient but the finances have to be balanced against probable tax raises, rising debts and other spending limitations (Stengel 2025).

In view of Ireland's precarious financial situation following the GFC, its NPM-driven recovery and its stark dependence on the taxation of US companies to maintain revenue, the hesitancy to invest in 'security capacity' is somewhat explainable (Hardiman and MacCarthaigh 2011; 2017; Flynn 2018; EC 2025b; Hennessy 2025). On the other hand, threat recognition took place after 2014 and basic technological capabilities to observe, not even to proactively defend, its maritime jurisdiction are still amiss (Ireland, DoD 2015; 2026b; 2026e; Speller 2021; Ireland, Gov 2024).

'Financial' and 'security capacity' are heightened when the country possesses diligent and streamlined 'administrative capacity' through regulations that do not restrain it from public exigencies (Savoia and Sen 2015; Fernández-I-Marín *et al.* 2024; Moynihan 2025).

Concerning the broad evolution of administrative quality, Ireland ameliorated most out of the three regarding ‘effectiveness’, ‘regulatory quality’ and ‘rule of law’ (see Figures G.3.3; G.3.4; G.3.5; World Bank Group 2025). At the same time, the INS still lacks a cohesive regulatory framework for maritime infrastructure protection (Ireland, DoD 2026e). Although fragmented by numerous agencies, all of the relevant governmental actors in Sweden are under the auspices of the MoD, contrary to Ireland and Germany (cf. Germany, BMI 2021; Nordlund 2022; Schneider 2024; Sweden, MoD 2024a; 2024b; Ireland, DoD 2026b; 2026d).

The aforementioned thread of downsizing extensive public sectors in Sweden and Ireland, and with that the inducement to perform more efficiently, was not perceived as a promising strategy by the overtly prescriptive Germany which followed an alteration of NPM, as a ‘Neo-Weberian State’ (NWS), to overhaul – not to reduce – its bureaucratic structures (Ongaro *et al.* 2017; Proeller and Siegel 2021; Ayhan and Lahdili 2022; Kuhlmann 2024). Against the excess of bureaucracy in the last years and ensuing economic losses, the NWS has to become more agile, however, Germany continues to augment regulations (Kuhlmann 2024; OECD 2025a). The bureaucratic burdens and intricacies slow down procurement, regardless of the recent legislative act to expedite the process because it is not obvious how these provisions differ from existing ones thus abetting the administrative structure to disproportionately extend itself (Reichling and Vollert 2023; IISS 2025; Germany, BT 2026). On a comparative note, the German office for procurement initiatives, the BAAINBw, employs almost 13,000 people which is fairly equal to the military cyber force and just marginally less

than the marine personnel at around 15,000 (see Figures F.2.2; F.2.3; Germany, Bundeswehr 2025b; TMB 2026, pp.98,101). Figures G.3.3 and G.3.4 demonstrate the stark contrast to Sweden and Ireland since the German 'effectiveness' and 'regulatory quality scores' deteriorated most and to the lowest point out of the three countries (World Bank Group 2025).

Overall, maritime infrastructure is exposed to modern electronical threats that can but to a certain degree be countered with the physical presence of humanely operated vessels which therefore makes them rely heavily on systems like UUVs which can restore operability faster thus enhancing resilience and adding to a deterring strategy (Flynn 2025; Rossiter 2025). As a result, 'security capacity' which is impacted on the grounds of staff shortages or general issues of size could be remedied (Ryan 2019; Ireland, DoD 2026b). In reality, UUVs are still of limited use in the countries investigated (TMB 2026).

6.3 Maintaining the networks: enhanced state capacity

In discussing requirements for the management of hybrid or cyber threats, researchers correspondingly highlight aspects such as updated legal frameworks, educated employees, adapted electronical platforms for data collection and exchange with (non-public) actors (Amazouz 2020; Bolbot *et al.* 2022; Afenyo and Caesar 2023; Schinas and Metzger 2023). Due to the interlacement of privately owned infrastructure and the governmental duty for protection, maritime cybersecurity is primarily

achievable through collaborative interchanges (Barmpaliou and Pawlak 2024; Senarak 2024).

Today's hybrid menaces have led the three governments to propose 'whole-of-society' policies (Germany, BReg 2016, p.59; Sweden, Prime Minister's Office 2024, pp.20,23; Ireland, DoD 2026d, p.7).

In that sense, Sweden was able to consult its conception of 'total defence', last applied in the Cold War, which emphasises the relevance of linear civilian and military cooperation in the areas of production, supply and research for common defence and resilience (Wither 2020; Ljungkvist 2024; Bohlin 2025; Obling *et al.* 2026). Also, Sweden is strategically looking towards international cooperation to expand its dataset on maritime threats and alleviate financial commitments regarding research (Sweden, MoD 2024b; Sweden, RK 2024).

In Ireland, cybersecurity responsibilities are divided between the DoD and DoJ (Ireland, DoD 2026b; 2026d). The NCSC's faculties to recognise hazards are still seen as deficient (Ireland, Gov 2026). As is the case with the missing regulations for the INS, there remains debate about the IDF's handling of hybrid threats and cybersecurity since they are primarily tasked with safeguarding the IDF's facilities (Heinl 2019; Tubridy 2021; Gilbey 2022; Ireland, DoD and IDF 2022; 2025; Ireland, DoD 2026e). In general, a societally inclusive method towards resilience building capacity remains aloof (FitzGerald and Colfer 2025; Fitzsimons 2025). For a significant time, there was reticence on the international stage which recently began to change and accelerated

more in 2026 leading up to the presidency of the Council of the EU (Flynn 2018; Gallagher 2026; Ireland, DoD 2026a; 2026b; 2026e).

Comparable to Ireland, the German responsibilities for infrastructure protection and cybersecurity are split but between federal ministries and states (Germany, BMI 2021; McCabe and Flynn 2024; Germany, BMVg 2026). Like Sweden, domestic companies provide the majority of equipment and vessels while scientific research emanates from civilian institutions (Nordlund 2022; Germany, BMVg 2025; Wolff *et al.* 2025). Contrary to Sweden and similar to Ireland, the all-encompassing societal policies have not permeated the country, there is a hesitancy regarding the private sector, also owing to bureaucratic obstacles (cf. Alvinius and Hedlund 2024; Germany, BReg 2024, p.4; Fitzsimons 2025; IISS 2025; Berndtsson *et al.* 2026). On the other hand, Germany has positioned itself centrally for multilateral trainings and the accumulation of data and knowledge in the spheres of maritime safety and cybersecurity (Leinhos 2020; Bond 2024; Germany, Bundeswehr 2025a).

Sweden's NPM measures in conjunction with its long-standing societal defence approach – subsumable as a 'New Public Governance' (NPG) paradigm – predisposes it for expeditious cooperation schemes between governmental agencies and domestic manufacturers (Lundberg and Rova 2022; Coetzee and Berndtsson 2023; Krogh and Triantafillou 2024; Sweden, MoD 2024b). NATO and the EU acknowledge Sweden's productive relationship with the civilian sector as an instructive example for countering hybrid threats (Ljungkvist 2024). Nonetheless, the country considers there to be scope for improvement (Sweden, The Defence Commission's Secretariat 2026).

In theory, Ireland's 'administrative capacity' should benefit from its smaller size thereby allowing straightforward arbitrations and reorganisations to an extent that is impossible to achieve by bigger states while depending on them for their knowledge and capabilities (Hennessy 2025). The advantages of shared and collective action are similarly recognised by post-NPM trends (MacCarthaigh and Hardiman 2020). Nevertheless, the findings do not suggest that Ireland can rely on institutions with the necessary regulations, personnel and technology to efficiently govern maritime infrastructure therefore the heightened focus on international, governmental partners (cf. Ireland, DoD 2026a; 2026b; 2026e).

As with 'security capacity', Germany's prescription-ridden administration is restricted from procedural alterations for swift endeavours to respond to challenging domains (cf. Reichling and Vollert 2023; IISS 2025; Schleicher and Bagley 2025; Germany, BT 2026). While this is partly due to its federal system and the dimension of its administration, the aforementioned plethora of committees and international commitments logically requires more staff than needed in smaller and more centralised states (Masala and Tsetsos 2013; Jugl 2022; Germany, Bundeswehr 2025b; Berndtsson *et al.* 2026).

6.4 Deciphering maritime infrastructure protection: an issue of capacity

This discussion outlined that differences in maritime infrastructure protection can be explained by analysing state capacity.

A country's potential to pre-empt, shield and alleviate harm directed at maritime infrastructure requires robust 'financial capacity' through which 'security capacity' in the form of personnel, vessels and technology can be build (cf. Hendrix 2010; Speller 2021). The strains of the GFC lowered all countries' capacities in that regard and while 2014 did not serve as a decisive impetus, since 2022, Sweden and Germany used their 'financial capacity' to reform their 'security capacity', however, the Swedish one was not as depleted as the German counterpart (cf. Germany, BT 2015; Ireland, DoD 2015; Sweden, Ministry for Foreign Affairs 2022; Coetzee and Berndtsson 2023; Germany, BReg 2024).

In keeping with NPG, the extenuation of deficiencies through private and international collaboration was recognized by all countries, yet, Sweden appears to have the firmest 'administrative capacity' to do so (cf. Krogh and Triantafillou 2024; Ljungkvist 2024; Germany, Bundeswehr 2026a; Ireland, DoD 2026b; 2026d). Ireland and Germany both seem to be victims of their size incapable of recalibrating their 'administrative capacity' in a way that would generate the most benefits (cf. Ryan 2019; Jugl 2022; Hennessy 2025; Berndtsson *et al.* 2026; Lindvall *et al.* 2026).

7. Conclusion

In today's interconnected world, a coastal nation relies on maritime infrastructure for the delivery of goods, energy and data (Bueger and Liebetrau 2023). Against a surge of interferences since 2022, state deficiencies regarding secureness were conceded, even though this is predominately a matter of surveillance and

deterrence rather than one of active defence (cf. Mulcahy 2022; Lott 2025). Therefore, this thesis asked the research question '*What accounts for distinctions in the protection of maritime infrastructure?'*.

As argued by the literature, the theory of state capacity scrutinises a public service delivery issue and proposes the factors that discern one country's response from another (Suryanarayan 2024). Previous state capacity studies, particularly concerning defence, capitalised on quantitative analyses, however, this thesis' attempted to provide an in-depth assessment of capacity that correlated with the complexities of the subject (cf. Gibler and Miller 2014; McCabe and Flynn 2024). This implied a specific emphasis on entities with maritime bearings and the administrations' abilities to effectively engage with society (Bueger and Liebetrau 2021; Senarak 2024).

Using Sweden, Ireland and Germany as case studies, the dissertation inquired how the facets of state capacity can expound maritime infrastructure protection by employing a thematic analysis (cf. Braun and Clarke 2006; Blankenship 2018; Borges *et al.* 2025). As a result, the elements of state capacity were adopted to a customised framework that guided the data's systematic examination (see Table 5).

The findings suggest that state capacity accounts for distinctions in the protection of maritime infrastructure. Broadly speaking, the evidence corroborates the expected levels of state capacity (see Table 4) and previous coverage of the theory, in the sense that the relatedness of the three elements must favour an all-encompassing analysis of state capacity (Hanson and Sigman 2021). Concurrently, state capacity is not a universal label which provides a straightforward explanation for the quality of a

public service, rather capacity can alter dependent on time (Brenton *et al.* 2023; Schleicher and Bagley 2025).

Although ‘financial capacity’ was a decisive feature of the pre-2014 evolutions in all countries, even improved GDP rates or more elevated levels of national debt did not automatically induce emended ‘security’ or ‘administrative capacity’ as was demonstrated by Ireland and Germany (cf. Ireland, DoD 2015; 2026b; EC 2025a; 2025b; Germany, BT 2026). Equally, the literature alluded to a state’s complacency to reform capacities in case of absent external pressures (Robson 2024; Borges *et al.* 2025). In line with the theory’s surmises, this thesis found such developments in all countries from 2014 to 2022, even though the danger of hybrid threats was highlighted since 2014, maritime infrastructure as a policy issue was not prone to receive attention before 2022 (cf. Ireland, DoD 2015; Germany, BReg 2016; 2024; Bueger *et al.* 2022; Berndtsson 2024).

Sweden notably differs from Ireland and Germany because it used its budget to maintain a certain standard of ‘security capacity’ without degrading it further (cf. Sweden, RK 2015; TMB 2015; 2019; 2020). The Irish and German findings substantiate the deliberations by Kofroň and Stauber (2024) on how low defence spending almost exclusively centres on personnel expenses to the detriment of investments in modernised gear (cf. Flynn 2018; Speller 2021; NATO, PDD 2025; TMB 2025). In light of surmounting costs in Germany, the literature rightfully alleges that charges associated with the renewal or upkeep of infrastructure are higher in a state with depleted capacity (Schleicher and Bagley 2025; Stengel 2025). Furthermore, it

was inferred that ‘security capacity’ suffers from compromised ‘administrative capacity’, namely when corresponding regulations are inexistent, impede surveillance or prolong procurement procedures, as in Ireland and Germany (cf. Hendrix and Young 2014; Singh 2023; Ireland, DoD 2026b; Germany, BT 2026).

In spite of limitations in the financial or defensive areas of capacity, Sweden documented that through a sound administration, data and knowledge can successfully be interchanged with governmental agencies, international and private partners for research and security purposes (cf. Nordlund 2022; Bohlin 2025). On a cross-national level, Ireland and Germany adapted, yet while the two equally aspire to include their societies, they struggle with the adequate ‘administrative capacity’ to deliver (cf. Fitzsimons 2025, p.194; IISS 2025; Germany, Bundeswehr 2026a; Ireland, DoD 2026a).

In applying the theory of state capacity to a challenging domain, the thesis adds to literature focusing on the ongoing deterioration of developed countries’ capabilities to fulfil expected public duties (Schleicher and Bagley 2025). Moreover, this research has implications for the mainly quantitative study of capacity (cf. Dincecco and Prado 2012; Vaccaro 2023). The results disclosed the value of a comprehensive qualitative approach to state capacity since a mere examination of investment or equipment figures would have disregarded maintenance backlogs, the standard of technology or the (in)existence of pertinent regulations (cf. Hendrix and Young 2014; Germany, BT 2015; Rubinson and Feldman 2025; Ireland, DoD 2026b). Overall, these particular intricacies

determine a country's ability to protect maritime infrastructure (cf. Speller 2021; Afenyo and Caesar 2023; Rossiter 2025).

In a novel attempt, the dissertation furnished in-depth domestic case studies on state capacity and linked the latter with maritime infrastructure protection which merges the insufficiently investigated fields of hybrid warfare, maritime and cybersecurity (cf. Skingsley 2023; Larsson 2024; Rossiter 2025). The thesis was also conscious of administrative settings (Ongaro *et al.* 2017) thereby enriching the literature review with public administration theory (cf. Brenton *et al.* 2023).

This study is not unsusceptible to shortcomings. Research on security issues is constrained by aspects of confidentiality, eminently with regards to advances in electronic supervision or the degree of communication between governments and the private sector (cf. Amazouz 2020; Vandezande 2024; Germany, Bundeswehr 2026a). Likewise, having the state as the sole focal point neglects that companies in a market economy must possess the actual capacity to modernise and produce, for instance vessels or UUVs, thus hinging on funding, the labour market and subsidies which do not materialise instantly (cf. IISS 2025; Rossiter 2025; TMB 2026). Similarly, this dissertation circumvented the fact that internationally operated and backed infrastructure may in itself pose a security risk (Fiott and Parkes 2019; Neilsen and Pontbriand 2025) which could not be covered by an analysis directed at external threat containment.

Individual case studies lack generalisability, yet the methodological set-up deliberately delivered a framework that can be applied to further research. Regarding

additional avenues for academic endeavours, scholars have lamented the scarcity of contemporary research on the marine cyberspace and capabilities to prevent hybrid attacks which could make use of this thesis' approach (cf. Bolbot *et al.* 2022; Afenyo and Caesar 2023; Larsson 2024).

In the same vein, it has to be noted that this is a current, evolving subject, dependent on the effects of recent domestic transformations and investments, as well as on international developments and prescriptions emanating from the UN, NATO or the EU (cf. Tessari 2025; Ringbom 2025; Ireland, DoD 2026b). Therefore, this research should be perceived as a starting point for upcoming security studies that emphasise states' technological capabilities and their societal incorporation against the background of strained financial resources and progressively complex perils (cf. Ljungkvist 2024; Teichmann 2025; Berndtsson *et al.* 2026).

In hosting the presidency of the Council of the EU, Ireland is again reminded of its capacity deficiencies in this area (cf. FitzGerald and Colfer 2025; Gallagher 2026), however, now may be the starting point of desperately required, enduring change.

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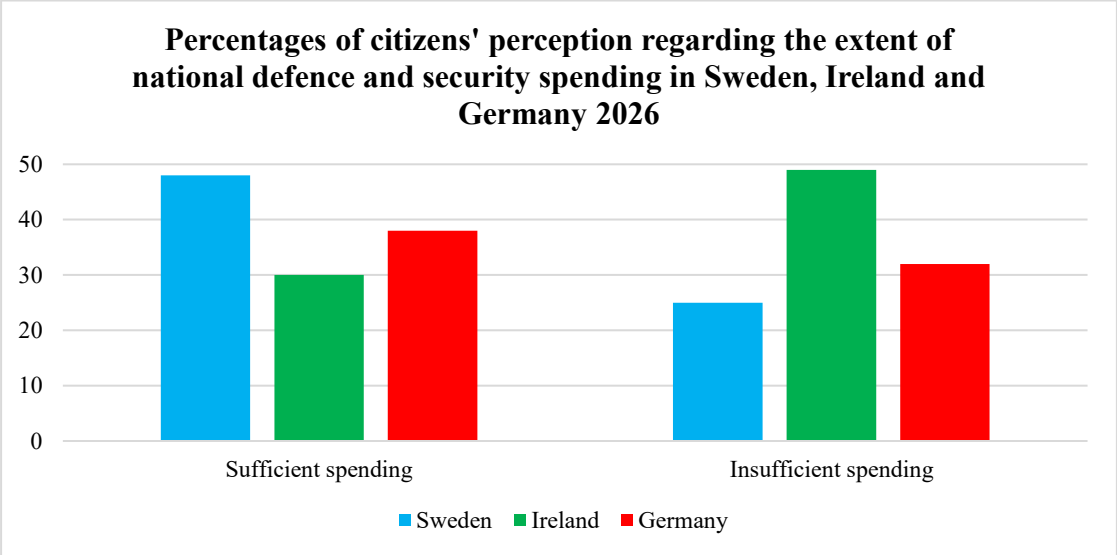
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Appendix A. Public opinion on defence matters

It can be argued that public opinion influences and possibly restrains a state's spending portfolio related to matters of security (Gibler and Miller 2014; Blankenship 2018; Bunde 2021; Meyer 2025; Bogers *et al.* 2026). There is a majoritarian perception in Sweden and Germany that the investment is sufficient while almost half of Irish respondents do not perceive it as adequate (see Figure A.1; EC 2026a; 2026b; 2026c).

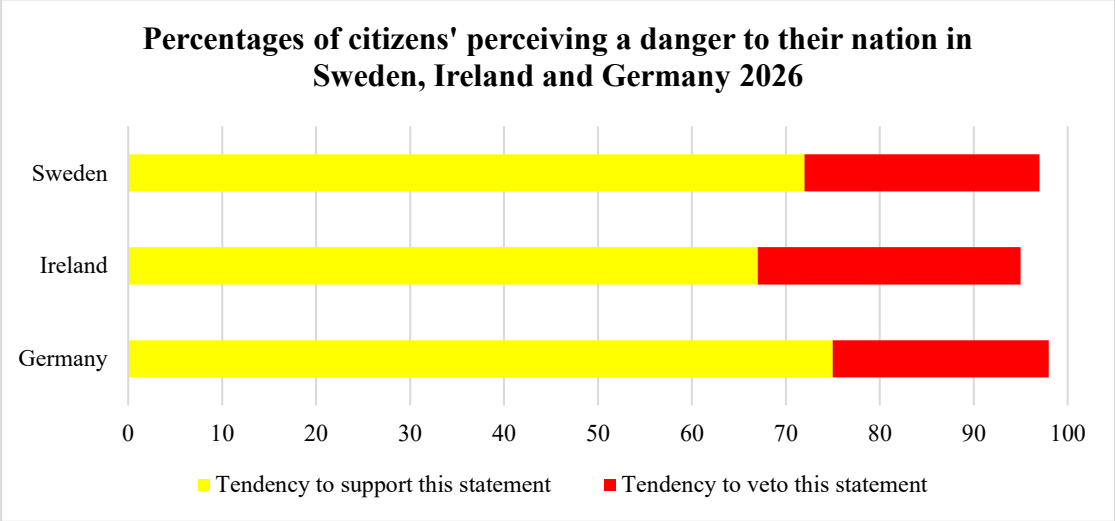
Figure A. 1. *Percentages of citizens' perception regarding the extent of national defence and security spending in Sweden, Ireland and Germany 2026*



Author's own compilation. Data: European Commission 2026a, p.1; 2026b, p.1; 2026c, p.1.

In all three countries, approximately 70 per cent of the respondents perceive a current danger to their nation (see Figure A.2; EC 2026a, p.1; 2026b, p.1; 2026c, p.1).

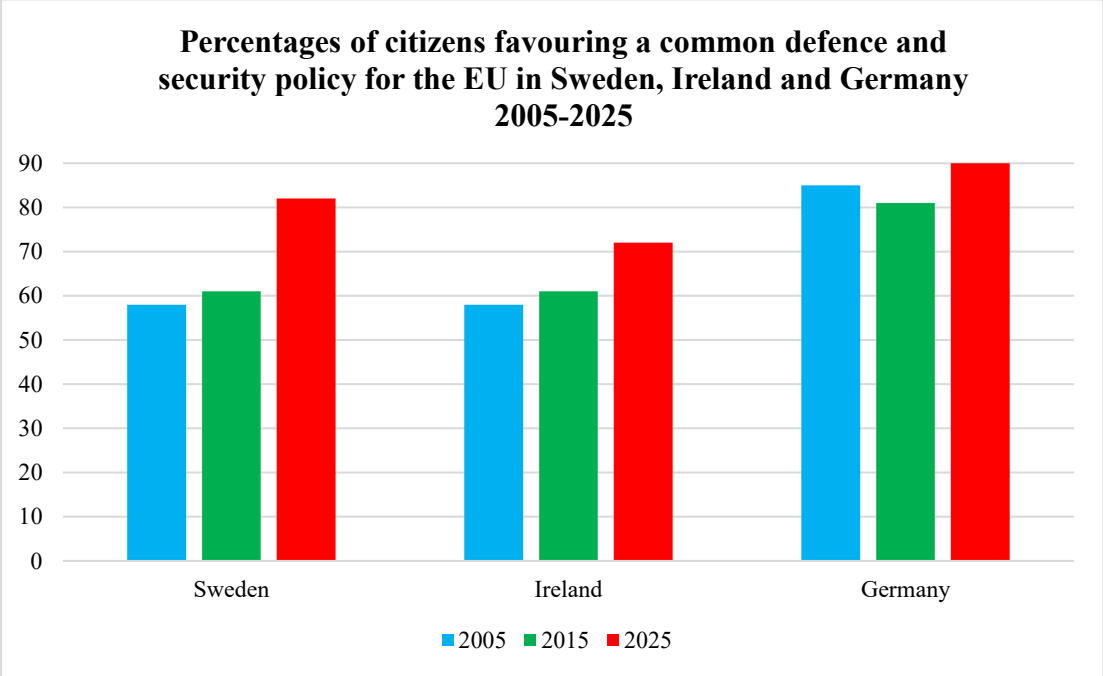
Figure A. 2. *Percentages of citizens' perceiving a danger to their nation in Sweden, Ireland and Germany 2026.*



Author's own compilation. Data: European Commission 2026a, p.1; 2026b, p.1; 2026c, p.1.

The degree of international cooperation may also be subject to public approval (cf. Peters 2015; Migliorati 2024; Meyer 2025). From 2005 to 2025, the number of people favouring a common defence and security policy for members of the EU rose in all three countries, thus suggesting that conjoint standards and cooperation are approved (see Figure A.3; EC 2005; 2015; 2025c).

Figure A. 3. *Percentages of citizens favouring a common defence and security policy for the EU in Sweden, Ireland and Germany 2005-2025.*



Author's own compilation. Data: European Commission 2005, p.65; 2015, p.T73; 2025c, p.T157.

Appendix B. General overview of the North Atlantic Treaty Organization's approach to maritime and hybrid matters

B.1 Maritime security

The pivotal organ for NATO's maritime response is the *Allied Maritime Command* (MARCOM) which supremely leads the marines and performs its functions since 2012, the head office being in the UK (Blount and Bergeron 2019; Usewicz 2021). MARCOM expresses NATO's objectives to maintain peace and to dissuade its adversaries by demonstrating its potent faculties (Alderwick and Giegerich 2010; Blount and Bergeron 2019; Usewicz 2021).

Following the events in 2014, the alliance proactively deployed vessels to the Baltic Sea thereby making MARCOM's role more vital than ever (Blount and Bergeron 2019; Barquet *et al.* 2026). MARCOM exerts control over the alliance's 'Standing Naval Force' which is a centrepiece of the 'NATO Response Force' (NRF), initially established in 2002 (Blount and Bergeron 2019, pp.91,101; Usewicz 2021, p.80). Moreover, the NRF was reinforced by the 'NATO Readiness Initiative' to provide a total fleet of 60-65 ships, in addition to corresponding aircraft and submarines in case of need within a period of one month (Blount and Bergeron 2019, p.101; TMB 2019, p.70; Tardy 2021, p.29). In 2024, the NRF ceased to exist with its format being substituted by the 'Allied Reaction Force' that also entails swift force deployments to deter but extends to dealing with hybrid as well as land and sea threats (NATO 2026a).

Cross-national management of naval forces demands continuous practice, therefore prompting allies to train and efficiently learn from each other and current

advancements in the field, for example about the technical evolution of submarines through NATO's yearly US-driven 'Baltic Operations' (BALTOPS) manoeuvre in the Baltic Sea (Schaub *et al.* 2017; Blount and Bergeron 2019; Germany, Bundeswehr 2025a). NATO's 'Sentry operations' in the Baltic and Arctic Sea further abet maritime observation and discourage hostile tampering with respective infrastructure (Sweden, The Defence Commission's Secretariat 2026, p.15).

Even though NATO's 'Alliance Maritime Strategy' of 2011 highlighted the importance of the naval forces' deterrent character, there was a particular focus on guaranteeing safe commercial shipping and pre-empting illicit activities (Usewicz 2021, pp.78-79; Larsson 2024, p.414). However, the overhauled strategic naval paper of 2025 emphasises maritime infrastructure pointedly:

> Credible maritime power is integral to the Alliance's commitment to ensure our collective defence against all threats, from all directions, across all domains. By increasing maritime readiness, situational awareness, posture and mass, while enhancing existing capabilities with emerging technologies, NATO will have the maritime power required to assure maritime access, uphold freedom of navigation, safeguard vital sea lines of communications, protect critical infrastructure and prevail in conflict.
>
> (NATO 2025)

Additionally, NATO is reaching out to non-member states through the *Individually Tailored Partnership Programme* to achieve productive liaisons and offer its services, for instance in the maritime and cyber space (Zayats and Marusynets 2025, p.191).

B.2 Infrastructure protection

The safeguarding of critical infrastructure was added to the catalogue of maritime tasks in 2016 (Usewicz 2021, p.81).

Since 2023, the alliance realised the high dependence on strategic cooperation between state actors and civilian enterprises to sufficiently protect maritime infrastructure, so NATO consequently convened the 'Critical Undersea Infrastructure Coordination Cell' for its first meeting in May 2024 to foster these partnerships and centralise the flow of data (Larsson 2024, p.414; Liebetrau and Bueger 2024, p.5; Loik 2024, p.15). Under MARCOM's leadership, NATO created the 'Maritime Centre for the Security of Critical Undersea Infrastructure' aimed at enhancing the Cell's interactions with non-public entities (Bond 2024, p.6; Liebetrau and Bueger 2024, p.5). The strengthening of research that focuses on enhanced surveillance techniques is also of central value to NATO (Liebetrau and Bueger 2024).

In the same vein, NATO strengthened its collaboration with the EU in the 'NATO-EU Task Force on Resilience of Critical Infrastructure' to exchange experiences and enhance 'resilience' of entities in the energy, communication and transportation sectors (Larsson 2024, p.414; Loik 2024, p.15).

Since 2023, NATO manages a new agency called *Defence Innovation Accelerator for the North Atlantic* (DIANA) (Germany, BMVg 2025, pp.16-17). DIANA is intended to boost new producers, for instance in the non-public area of infrastructure protection, connect them with the militaries, and allocate funding as well as training capacities (Germany, BMVg 2025, pp.16-17). Overall, DIANA houses facilities in several places in Europe and in the US (Germany, BMVg 2025, p.16).

B.3 Hybrid matters / Cybersecurity

Generally, Article 5 of NATO's legal accord supposes that solely forceful assaults on a member equate an assault on the entire alliance, yet NATO has also accepted the changed setting of security threats thus implementing relevant tools and schemes to circumvent hybrid actions accordingly (Tardy 2021; Larsson 2024; Neilsen and Pontbriand 2025). The alliance's initial paper on cybersecurity dates back to 2002 (Shea 2025, p.691).

The 'Wales Summit 2014' proclaimed the need to engage with dangers emanating from hybrid menaces in addition to cyberattacks (TMB 2019, p.70). In 2015, NATO published its 'Alliance Strategy on Countering Hybrid Warfare' thereby further recognising the prominence of the changed threat landscape (Tardy 2021; Larsson 2024, p.413). Subsequently, NATO increasingly analysed its member nations' degree of 'resilience' to overcome potential energy, data or nourishment shortages (Larsson 2024, p.414). NATO has set up various units and departments for cyber matters and capability assessments, for instance the *Cyber Defence Committee* or the *Cooperative*

Cyber Defence Centre of Excellence (CCDCOE) (Shea 2025, pp.691-692). The CCDCOE comprises allied and non-allied states to take advantage of joint cyber exercises for the common progress of their capacities (Ireland, Gov 2026). The CCDCOE is also concentrated on the legal framework surrounding cyberattacks (Shea 2025).

This further outlined NATO's move from traditional militaristic warfare to the civilian sphere where areas such as the cyberspace had largely been managed by the allied states and non-public enterprises (Tardy 2021; Neilsen and Pontbriand 2025). While there has been disaccord concerning the legalistic degree of involving militaries in the safeguarding of civilian infrastructure from cyberattacks, Neilsen and Pontbriand (2025) ascertained that their corresponding units do not have the relevant proficiency, knowledge or personnel strength to provide a successful defence.

In line with its network-approach to address hybrid threats, members of NATO and the EU are permitted to operate in the *European Centre of Excellence for Countering Hybrid Threats* (Hybrid CoE) since 2017 (Anagnostakis 2025; NATO 2026b). The research-based *Hybrid CoE* is intended to ameliorate faculties necessary to pre-empt and retort various hybrid attacks therewith enhancing member states' 'resilience' (NATO 2026b). The specific 'hybrid' divisions of EU and NATO assemble regularly, thereby including the *Hybrid CoE*, to enrich the states' overview of menaces and elaborate training scenarios based on that (Anagnostakis 2025).

Appendix C. General overview of the European Union's approach to maritime and hybrid matters

C.1 Overall security and defence policies / funding schemes

In broad terms, the EU's international political conduct is shaped by its 'Common Foreign and Security Policy' for diplomatic actions and entails the more specific 'Common Security and Defence Policy' (CSDP) for militaristic and civilian procedures (Andersson and Britz 2025, p.323; Gunnarsdottir and Riddervold 2025, p.403). Since defence is a predominately national issue, the CSDP relies on national, varying capabilities and their willingness to engage more deeply (Fiott *et al.* 2017; Andersson and Britz 2025).

Under the CSDP, the *European Defence Agency* (EDA) has existed since 2004 and focuses on evolving joint defence endeavours, coordinated procurement of defence-related resources and advancing research (Germond 2011, p.572; Andersson and Britz 2025). The EDA is also essential to assess member states' faculties in light of the 'Capability Development Plan' and the 'Coordinated Annual Review of Defence' (CARD) for the observation of national defence investment targets (Andersson and Britz 2025; Gunnarsdottir and Riddervold 2025). CARD emerged as a decisive tool from the EU's 'Global Strategy' in 2016, as well as the actual use of the *Permanent Structured Cooperation* (PESCO) (see section C.4), and the *European Defence Fund* (EDF) (Andersson and Britz 2025, p.325; Gunnarsdottir and Riddervold 2025, p.406; Ünaldilar *et al.* 2026, p.5). The EDF's resources are designated for scientific

developments and engagement with the non-public defence sector (Andersson and Britz 2025).

Following adjustments in 2022, the EU put significant funds into the enhancement of security and defence capabilities of the member states, for instance through strengthening the EDF and its 'ReArm Europe Plan/Readiness 2030' which intends to promote procurement, especially in technological areas such as artificial intelligence (Andersson and Britz 2025, pp.331-333; FitzGerald and Colfer 2025, p.13; IISS 2025, p.84). Designated expenses for defence research to sustain (recently) established enterprises were also made available (Ünaldilar *et al.* 2026).

C.2 Maritime security

As alluded to, maritime security relies on the member states and not solely on their militaries but rather civilian agencies such as coast guards (Council of the European Union 2023).

The *European Maritime Security Agency* is a core entity that has been operating since 2002 with its principal task of observing ships' movements, and contingent legal violations regarding norms of maritime transportation (Germond 2011, p.570; Bueger *et al.* 2022, p.41). In 2006, the EDA launched its *Maritime Surveillance project* (MARSUR) to accommodate the need for improved trading of security data amongst governmental departments (Schaub *et al.* 2017; Bueger *et al.* 2022, p.47).

In 2014, the EU's 'Maritime Security Strategy' (EUMSS) singularised the paramountcy of secured communication channels, harbour and energetic facilities by

stressing national sovereignty in the area of defence (Council of the European Union 2014). The EUMSS was overhauled in 2023, thereby emphasising the demand for training sessions with the national coast guards and naval forces, in addition to collaboration schemes with NATO (Council of the European Union 2023).

Furthermore, the EDF is available for funding directed at endeavours in the marine security area (Gunnarsdottir and Riddervold 2025).

C.3 Hybrid matters / Cybersecurity

In place since 2004 and solidified through the EU 'Cybersecurity Act', the *European Union Agency for Cybersecurity* (ENISA) promotes the enhancement of member states' systems, technological abilities and policymaking (Bueger *et al.* 2022, p.44). ENISA is the central EU entity regarding the NIS2 directive (*Directive (EU) 2022/2555*).

Similarly to NATO, the EU pursues a network-approach concerning hybrid menaces, highlighted through their members' joint coordination in the *Hybrid CoE* (see Appendix B.3; Bueger *et al.* 2022, p.48; Larsson 2024, p.412). Since 2023, the EU and NATO officially work together to expand faculties and improve resilience concerning hybrid/cyber menaces to infrastructure (Ünaldilar *et al.* 2026).

C.4 Permanent Structured Cooperation

Usable since the Lisbon Treaty (2009), PESCO started accumulating relevance after 2016 (Fiott *et al.* 2017; Andersson and Britz 2025). It allows member states to voluntarily engage in small groups to expedite the enhancement of particular defence faculties (Fiott *et al.* 2017; Scazzieri 2026). Table C.1 summarises PESCO initiatives related to maritime security and infrastructure protection involving this dissertation's country cases.

Table C. 1 *Summary of PESCO initiatives related to maritime security and infrastructure protection.*

Title	**Leading state**	**Participating states (SE, IE, GER)**	**Objective**	**Timeline**
Upgrade of Maritime Surveillance	Greece	Ireland	Enhance monitoring capacities; Use of MARSUR; Understanding concerning initiatives for scientific evolution in the field	Start 2018; End 2025
Critical Seabed Infrastructure Protection	Italy	Sweden, Ireland, Germany	Safeguarding of infrastructure particularly in light of new technologies; Subsea monitoring, watch; Augmented caution and actions to respond	Start 2023; Implementation 2035; End (not determined yet)
Harbour & Maritime	Italy	Ireland (Observer)	Faculties to safeguard ports,	Start 2018; End 2025

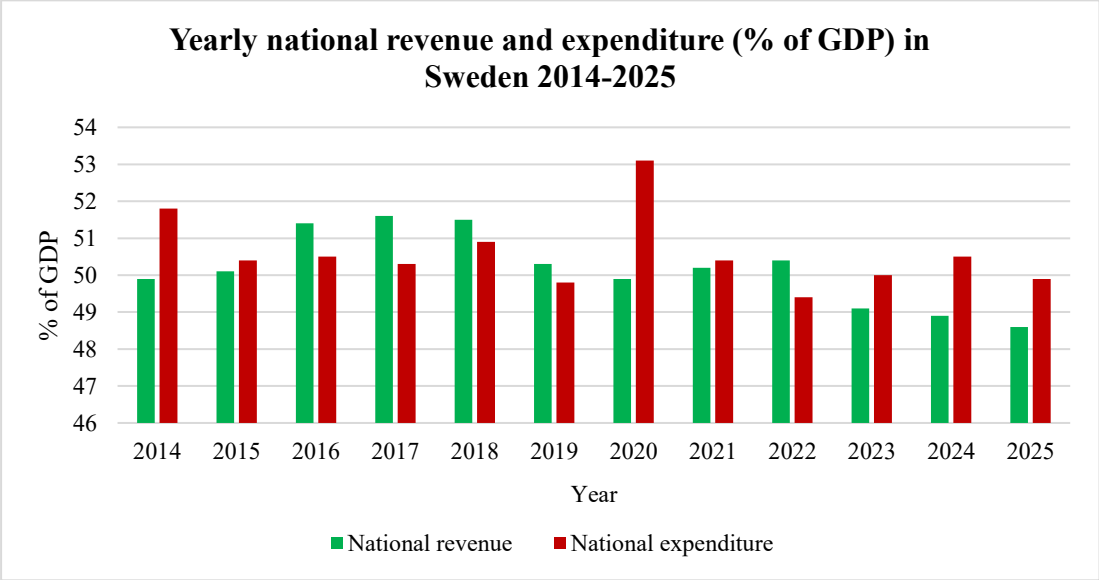
Surveillance and Protection			ships, coastal and marine infrastructure; Exchange of nations' experiences; Use of autonomous technology (drones)	
Maritime Unmanned Anti-Submarine System	Portugal	Sweden; Germany (the latter one only as an observer)	Use of artificial intelligence, unmanned technology; Connection of sensors, safety net and instruments of force	Start 2019; End 2026
Robust Communication Infrastructure and Networks	Sweden	Germany	Digitalizing communication channels of the militaries for swift and modern exchanges Ensuring stability amidst cyberattacks, environmental pressures	Start 2023; End 2027

Author's own compilation. Sources: Permanent Structured Cooperation 2025a; 2025b; 2025c; 2025d; 2025e.

Appendix D. Supplementary data on the elements of state capacity: Sweden

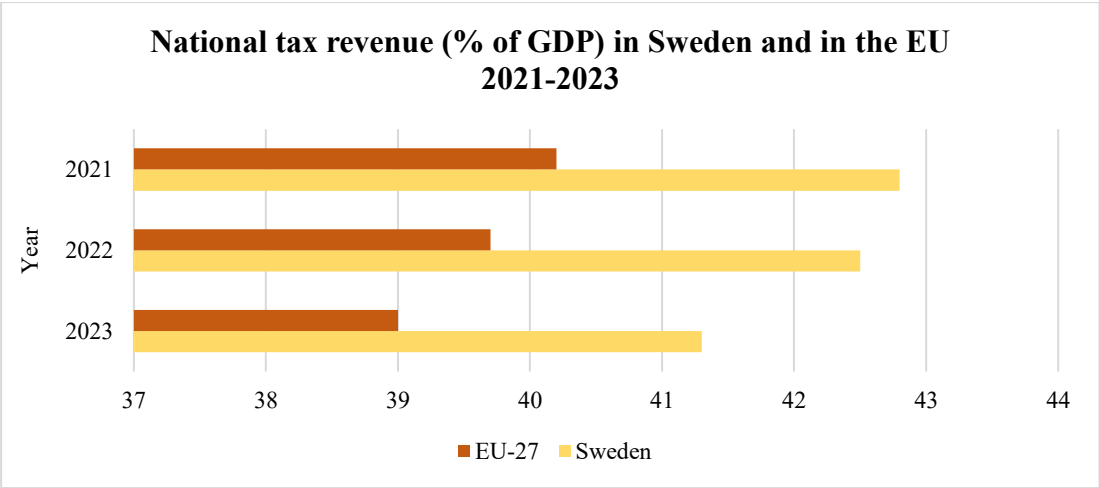
D.1 Financial capacity

Figure D.1. 1. *Yearly national revenue and expenditure (% of GDP) in Sweden 2014-2025.*



Author's own compilation. Data: Eurostat 2026b.

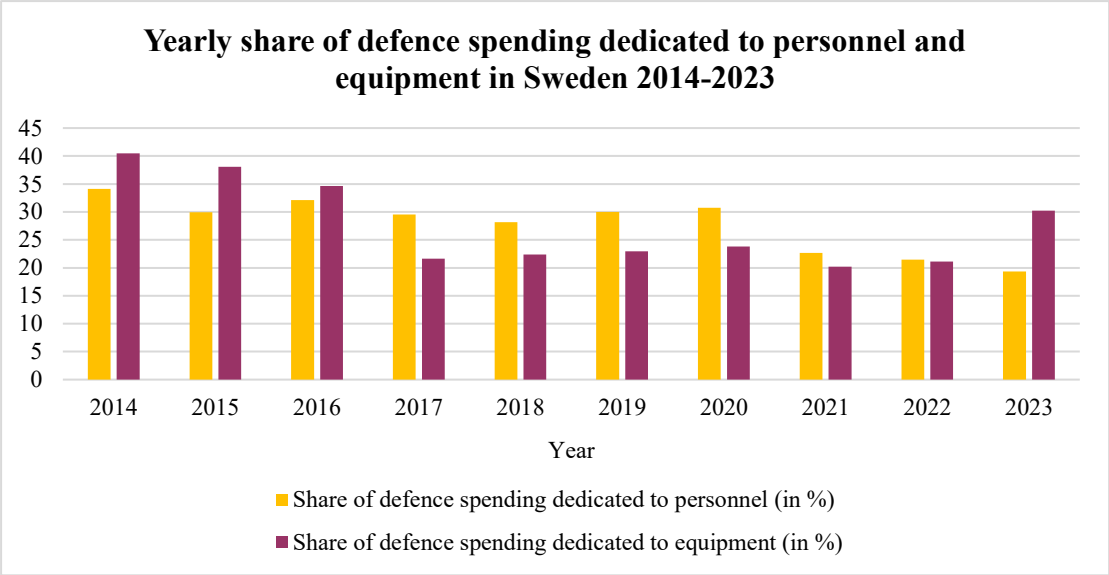
Figure D.1. 2. *National tax revenue (% of GDP) in Sweden and in the EU 2021-2023.*



Author's own compilation. Data: European Commission 2025d, p.28.

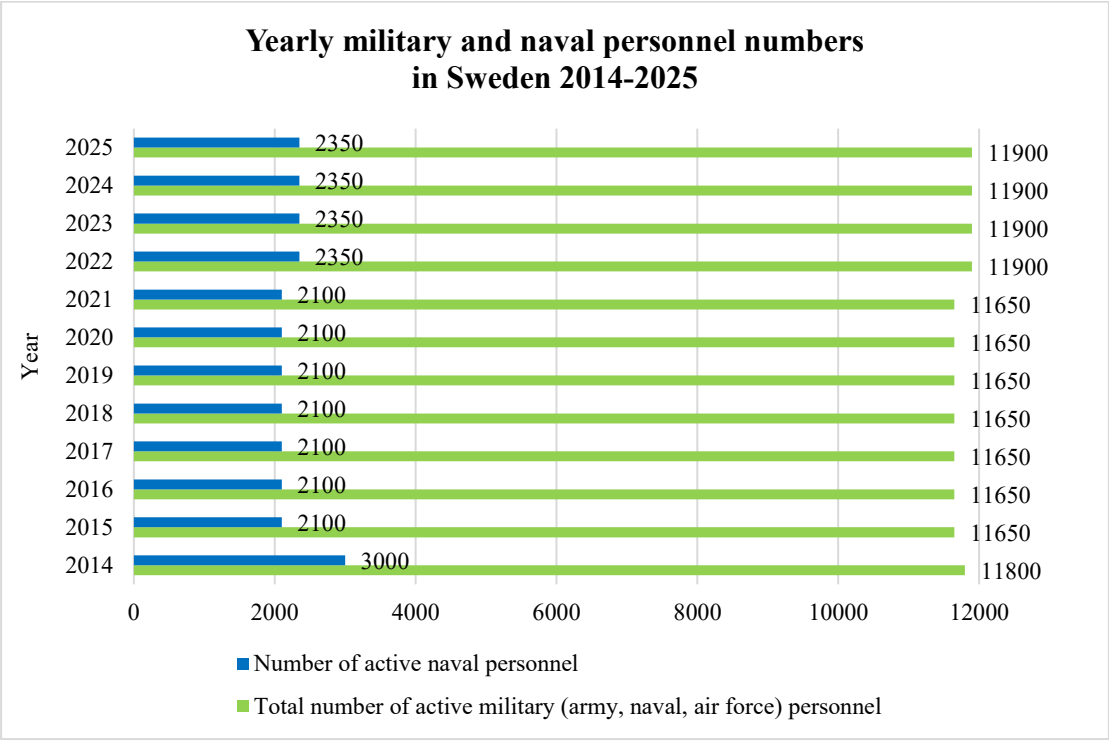
D.2 Security capacity

Figure D.2. 1. *Yearly share of defence spending dedicated to personnel and equipment in Sweden 2014-2023.*



Author's own compilation. Data: North Atlantic Treaty Organization, Public Diplomacy Division 2025, p.14.

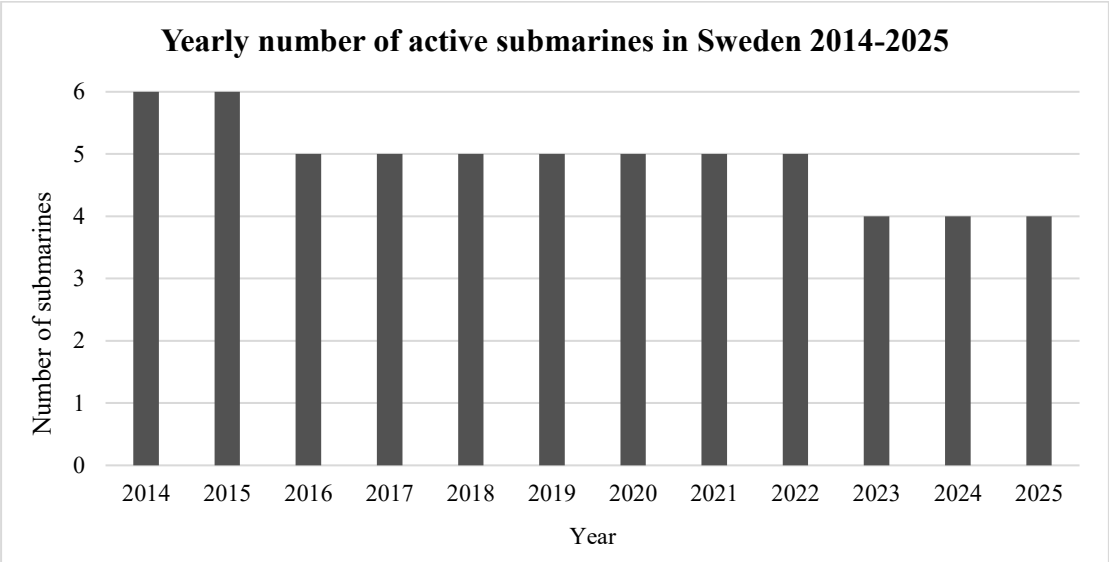
Figure D.2. 2. *Yearly military and naval personnel numbers in Sweden 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.139; 2016, p.143; 2017, p.162; 2018, p.152; 2019, p.150; 2020, p.149; 2021, p.148; 2022, p.151; 2023, p.137; 2024, p.142; 2025, p.138; 2026, p.144.

From 2010 to 2017, compulsory military service was intermitted, however, the voluntariness did not achieve the minimum number of recruits necessary to manage the international defence challenges thus restoring the obligation for military service (Wither 2020, p.70). Figure D.2.2 shows that the overall number of active military personnel only increased slightly ever since (TMB 2018, p.152; 2019, p.150; 2020, p.149; 2021, p.148; 2022, p.151; 2023, p.137; 2024, p.142; 2025, p.138; 2026, p.144).

Figure D.2. 3. *Yearly number of active submarines in Sweden 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.140; 2016, p.143; 2017, p.162; 2018, p.153; 2019, p.151; 2020, p.150; 2021, p.148; 2022, p.152; 2023, p.138; 2024, p.143; 2025, p.139; 2026, p.145.

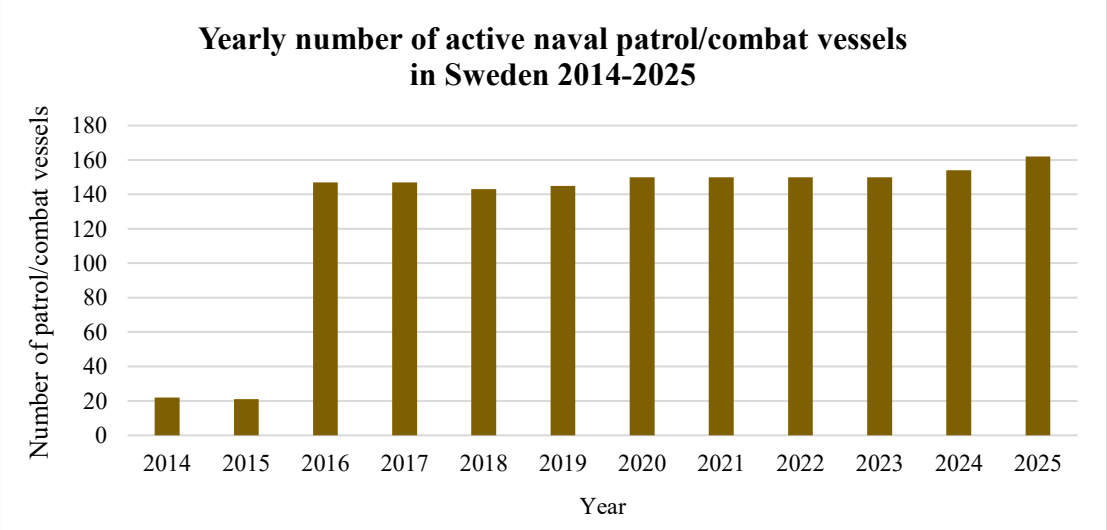
Table D.2 1. *Types of active Swedish submarines 2014-2025.*

Year	Quantity	Type	Source
2014	3	*Gotland* (AIP fitted)	The Military Balance 2015, p.140
	2	*Sodermanland* (AIP fitted)	
	1	*Spiggen* II	
2015	3	*Gotland* (AIP fitted)	The Military Balance 2016, p.144
	2	*Sodermanland* (AIP fitted)	
	1	*Spiggen II*	
2016	3	*Gotland* (AIP fitted)	The Military Balance 2017, p.162
	2	*Sodermanland* (AIP fitted)	
2017	3	*Gotland* (AIP fitted)	The Military Balance 2018, p.153
	2	*Sodermanland* (AIP fitted)	
2018	3	*Gotland* (AIP fitted)	The Military Balance 2019, p.151
	2	*Sodermanland* (AIP fitted)	
2019	1	*Gotland* (AIP fitted)	The Military Balance 2020, p.150
	2	*Gotland mod* (AIP fitted)	
	2	*Sodermanland* (AIP fitted)	
2020	1	*Gotland* (fitted with AIP)	The Military Balance 2021, p.148
	2	*Gotland mod* (fitted with AIP)	

	2	*Sodermanland* (fitted with AIP)	
2021	1	*Gotland* (fitted with AIP)	The Military Balance 2022, p.152
	2	*Gotland* mod (fitted with AIP)	
	2	*Södermanland* (fitted with AIP)	
2022	1	*Gotland* (fitted with AIP)	The Military Balance 2023, p.138
	2	*Gotland* mod (fitted with AIP)	
	2	*Södermanland* (fitted with AIP)	
2023	1	*Gotland* (fitted with AIP)	The Military Balance 2024, p.143
	2	*Gotland* mod (fitted with AIP)	
	1	*Södermanland* (fitted with AIP)	
2024	1	*Gotland* (fitted with AIP)	The Military Balance 2025, p.139
	2	*Gotland* mod (fitted with AIP)	
	1	*Södermanland* (fitted with AIP)	
2025	3	*Gotland* mod (fitted with AIP	The Military Balance 2026, p.145
	1	*Södermanland* (fitted with AIP)	

Author's own compilation.

Figure D.2. 4. *Yearly number of active naval patrol/combat vessels in Sweden 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.140; 2016, p.144; 2017, p.162; 2018, p.153; 2019, p.151; 2020, p.150; 2021, p.148; 2022, p.152; 2023, p.138; 2024, p.143; 2025, p.139; 2026, p.145.

In 2016, the general number of vessels was multiplied by seven due to an exalted figure of small combat boats (see Figure D.2.4; Table D.2.2; TMB 2016, p.144; 2017, p.162).

Table D.2 2. *Types of active Swedish naval patrol/combat vessels 2014-2025.*

Year	Quantity	Type		Source
2014	5	*Visby*	Corvette	The Military Balance 2015, p.140
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	2	PB	Patrol vessel	
	11	*Tapper*	Patrol boat	
2015	5	*Visby*	Corvette	The Military Balance 2016, p.144
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	1	*Jägaren*	Patrol vessel	
	11	*Tapper*	Patrol boat	
2016	5	*Visby*	Corvette	The Military Balance 2017, p.162
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	129	90E/H/HS	Combat boat	
	9	*Tapper*	Patrol boat	
2017	5	*Visby*	Corvette	The Military Balance 2018, p.153
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	129	90E/H/HS	Combat boat	
	9	*Tapper*	Patrol boat	
2018	5	*Visby*	Corvette	The Military Balance 2019, p.151
	2	*Gälve*	Corvette	
	2	*Stockholm*	Patrol vessel	
	129	90E/H/HS	Combat boat	
	5	*Tapper*	Patrol boat	
2019	5	*Visby*	Corvette	The Military Balance 2020, p.150
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	128	90H; HS; 90HSM	Combat boat	
	8	*Tapper*	Patrol boat	
2020	5	*Visby*	Corvette	The Military Balance 2021, pp.148-149
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	133	90H; HS; 90HSM	Combat boat	
	8	*Tapper*	Patrol boat	

2021	5	*Visby*	Corvette	The Military Balance 2022, p.152
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	133	90H; HS; 90HSM	Combat boat	
	8	*Tapper*	Patrol boat	
2022	5	*Visby*	Corvette	The Military Balance 2023, p.138
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	133	90H; HS; 90HSM	Combat boat	
	8	*Tapper*	Patrol boat	
2023	5	*Visby*	Corvette	The Military Balance 2024, p.143
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	133	90H; HS; 90HSM	Combat boat	
	3	*Tapper*	Patrol boat	
	5	*Tapper* mod	Patrol boat	
2024	5	*Visby*	Corvette	The Military Balance 2025, p.139
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	145	90H; HS; 90HSM	Combat boat	
	3	*Tapper*	Patrol boat	
	5	*Tapper* mod	Patrol boat	
2025	5	*Visby*	Corvette	The Military Balance 2026, p.145
	2	*Göteborg*	Corvette	
	2	*Stockholm*	Patrol vessel	
	145	90H; HS; 90HSM	Combat boat	
	3	*Tapper*	Patrol boat	
	5	*Tapper* mod	Patrol boat	

Author's own compilation.

Apart from a slight decline in 2014, the personnel numbers of the KBV remained stable (TMB 2015, p.141; 2018, p.154). The quantity and types of the coast guard's modes of transportation were fairly unaltered (TMB 2015, p.141; 2018, p.154). In 2025, the government pledged approximately 4.5 million euros to the enhancement of the coast guard's functional abilities (Sweden, Prime Minister's Office *et al.* 2025).

D.3 Administrative capacity

This section provides additional information on the Swedish ‘administrative capacity’.

Since 2022, the Ministry of Defence (MoD) is part of the ‘National Security Council’, a forum headed by the Prime Minister for strategical deliberation which also includes the Ministers for Justice, Civil Defence, Finance and Foreign Affairs (Sweden, Prime Minister’s Office 2024; Sweden, RK 2026b). The latter appointed an ambassador for the ‘countering of hybrid threats’ in 2018 (Angstrom and Ljungkvist 2024, p.516).

Due to its civilian functions, the KBV interacts with its international counterparts and the EU’s *Maritime Security Agency* (Sweden, KBV 2026a; 2026b).

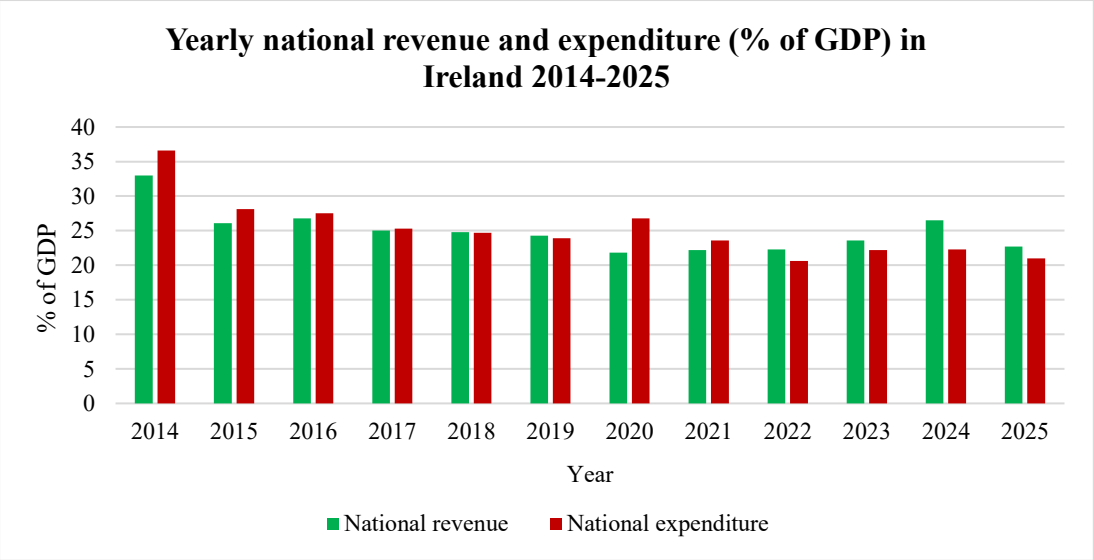
Unified by their historic approaches to defence, Sweden and Finland have sought to substantially benefit from each other, for example through the introduction of secure channels for the exchange of classified data and trainings involving naval vessels and submarines (Finland, Finnish Defence Forces and Sweden, FM 2014; Lundqvist and Widen 2015). In 2024, the value of their collaboration was reiterated through a specific focus on hybrid warfare and maritime infrastructure (Sweden, RK 2024).

Regional inter-country defence collaboration is also marked by the Nordic Defence Cooperation (NORDEFCO) with the associates Denmark, Finland, Iceland and Norway (Wither 2020; NORDEFCO 2026; Sweden, The Defence Commission’s Secretariat 2026). NORDEFCO’s goals include joint efficiency practices, logistical support and the sound handling of hybrid threats (Wither 2020). That being said, the group was criticised for a lack of actual results since 2014 (Wither 2020).

Appendix E. Supplementary data on the elements of state capacity: Ireland

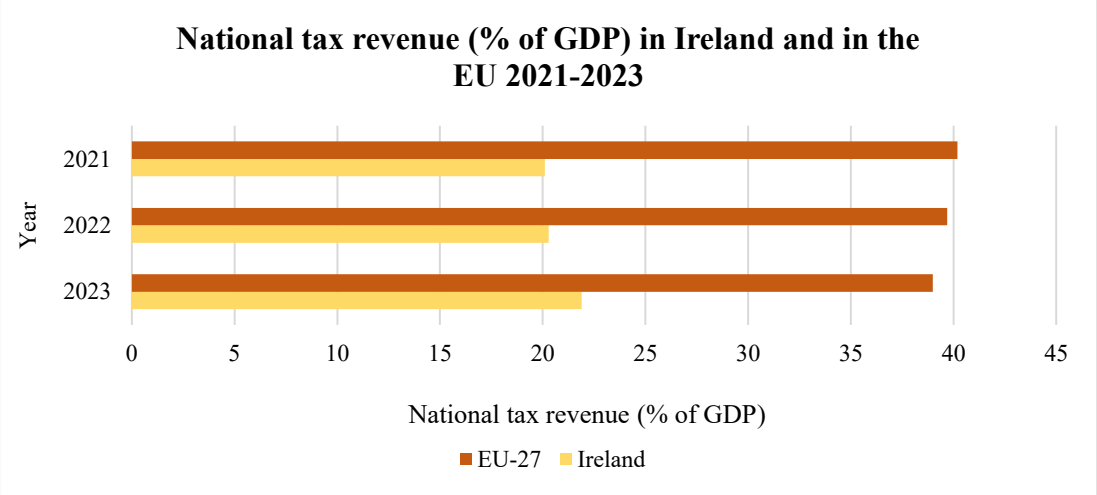
E.1 Financial capacity

Figure E.1. 1. *Yearly national revenue and expenditure (% of GDP) in Ireland 2014-2025.*



Author's own compilation. Data: Eurostat 2026b.

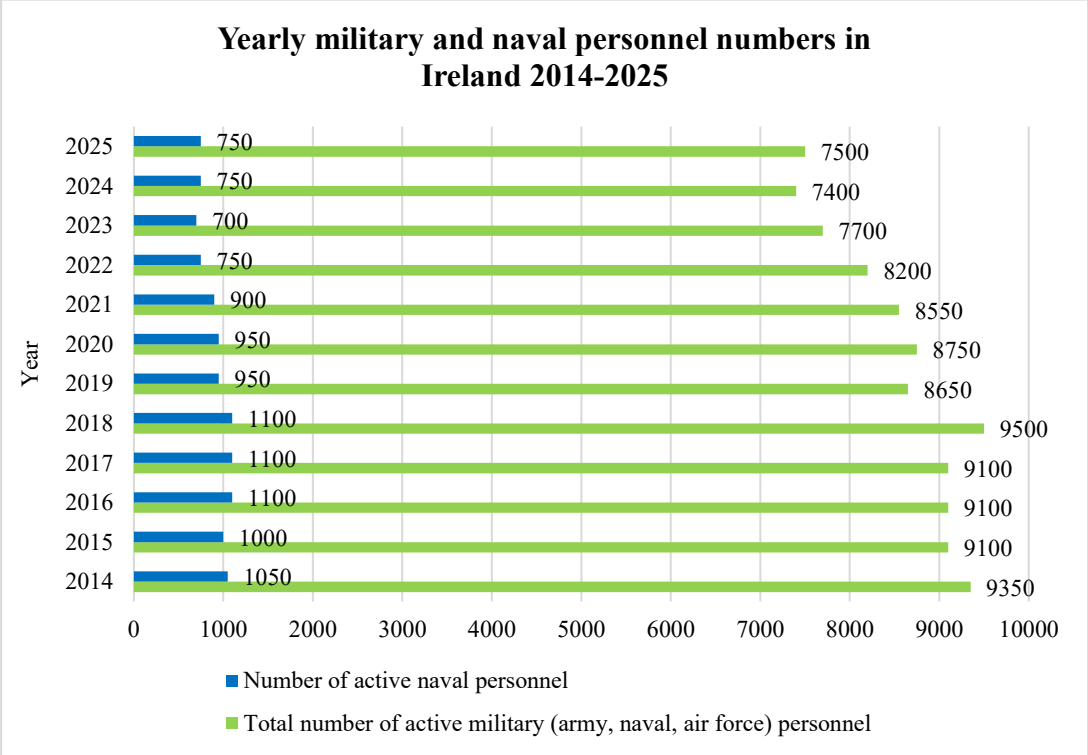
Figure E.1. 2. *National tax revenue (% of GDP) in Ireland and in the EU 2021-2023.*



Author's own compilation. Data: European Commission 2025b, p.42.

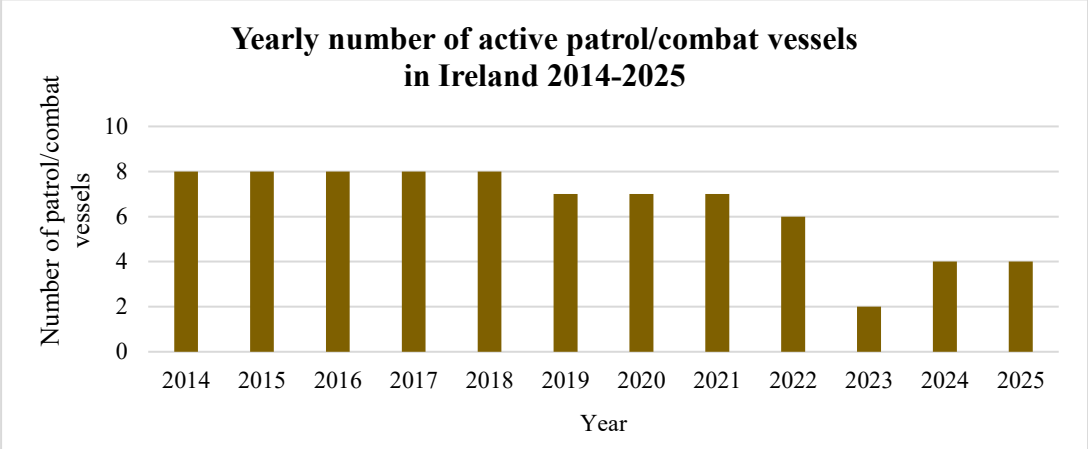
E.2 Security capacity

Figure E.2. 1. *Yearly military and naval personnel numbers in Ireland 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.105; 2016, p.109; 2017, p.126; 2018, p.117; 2019, p.118; 2020, p.117; 2021, p.115; 2022, p.117; 2023, p.103; 2024, p.105; 2025, p.102; 2026, p.107.

Figure E.2. 2. *Yearly number of active naval patrol/combat vessels in Ireland 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.106; 2016, p.109; 2017, p.126; 2018, p.117; 2019, p.119; 2020, p.117; 2021, p.115; 2022, p.118; 2023, p.103; 2024, p.106; 2025, p.103; 2026, p.108.

Table E.2. 1. *Types of active Irish naval patrol/combat vessels 2014-2025.*

Year	Quantity	Type		Source
2014	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2015, p.106; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	1	*Samuel Beckett*	Offshore patrol vessel	
	2	*Emer*	Offshore patrol vessel	
	2	*Orla*	Coastal patrol vessel	
2015	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2016, p.109; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	2	*Samuel Beckett*	Offshore patrol vessel	
	1	*Emer*	Offshore patrol vessel	
	2	*Orla*	Coastal patrol vessel	
2016	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2017, p.126; Ireland, Irish
	2	*Róisín*	Large patrol vessel	
	3	*Samuel Beckett*	Offshore patrol vessel	
	2	*Orla*	Coastal patrol vessel	

				Defence Forces 2026d
2017	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2018, p.117; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	3	*Samuel Beckett*	Offshore patrol vessel	
	2	*Orla*	Coastal patrol vessel	
2018	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2019, p.119; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	3	*Samuel Beckett*	Offshore patrol vessel	
	2	*Orla*	Coastal patrol vessel	
2019	2	*Róisín*	Large patrol vessel	McIvor 1994, p.175; The Military Balance 2020, p.117; Ireland, Irish Defence Forces 2026d
	4	*Samuel Beckett*	Offshore patrol vessel	
	1	*Orla*	Coastal patrol vessel	
2020	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2021, p.115; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	4	*Samuel Beckett*	Offshore patrol vessel	
2021	1	*Eithne*	Helicopter patrol vessel	McIvor 1994, p.175; The Military Balance 2022, p.118; Ireland, Irish Defence Forces 2026d
	2	*Róisín*	Large patrol vessel	
	4	*Samuel Beckett*	Offshore patrol vessel	
2022	2	*Róisín*	Large patrol vessel	The Military Balance 2023, p.103; Ireland, Irish Defence Forces 2026d
	4	*Samuel Beckett*	Offshore patrol vessel	
2023	2	*Samuel Beckett*	Offshore patrol vessel	The Military Balance 2024,

				p.106; Ireland, Irish Defence Forces 2026d
2024	2	*Samuel Beckett*	Offshore patrol vessel	The Military Balance 2025, p.103; Ireland, Irish Defence Forces 2026d
	2	*Aoibhinn*	Inshore patrol vessel	
2025	2	*Samuel Beckett*	Offshore patrol vessel	The Military Balance 2026, p.108; Ireland, Irish Defence Forces 2026d
	2	*Aoibhinn*	Inshore patrol vessel	

Author's own compilation.

The Irish flagship, *Eithne*, which was operational from 1984 to 2021, exceeded the standards of other UK or US naval vessels at the time of its launch (see Table E.2.1; McIvor 1994, p.150; TMB 2022, p.118).

The refurbishment of the two *Róisín* patrol vessels was announced for 2020-2024 and in February 2026 the government declared that the work had concluded (TMB 2023, p.103; Ireland, Houses of the Oireachtas 2026).

The air corps' two marine surveillance aircrafts ought to have been substituted in 2019, yet the introduction was only completed in 2023 (Ireland, DoD 2015, p.66; TMB 2024, p.106; Ireland, IDF 2026a).

E.3 Administrative capacity

This section provides additional information on the Irish 'administrative capacity'.

Due to its law enforcement role, An Garda Síochána is also involved to handle cyber offences (Ireland, DoD 2026b).

Concerning the NCSC, the government credits the cyber unit at University College Dublin with the provision of expertise to the NCSC upon its foundation (Ireland, Gov 2019a). NCSC' staff numbers improved from 52 in 2023 to 75 in 2026 while funding was conceded to increase the number to 105 (Ireland, Department of the Environment, Climate and Communications 2023, p.9; Ireland, Gov 2026, p.6).

For DCENR, collaboration with entities outside of its department to interchange data on menaces was perceived as a priority early on (Ireland, DCENR 2015). Emanating from the NCSC, governmental cooperation procedures in the cyber sector are comprised of the DoD which collaborates under the NCSC' guidance but mostly adheres to its mandate regarding cyber incidences that directly target the IDF (Ireland, DoD 2015). The borderless character of cybersecurity and the location of infrastructure require international collaboration, for instance with the UK (Ireland, Gov 2019a). In 2019, the NCSC in conjunction with the OEP were designated as the key collaborators with the UK (Ireland, Gov 2019a, p.30). By 2023, the Department of the Environment, Climate and Communications and the responsible British entity had consulted regarding the evolution of 'Cyber Skills and Capacity' (Ireland, Gov 2026, p.19). The EU assists the NCSC, channels investments in related R&D programmes and

coordinates PESCO ventures where Ireland partakes (see section C.4; Ireland, Gov 2019b, p.65; EC, Representation in Ireland 2025).

Ireland commenced its involvement with NATO's *Cooperative Cyber Defence Centre of Excellence* (CCDCOE) in 2023 by stationing one IDF official at the headquarter (Ireland, Gov 2019a, p.45; 2026, p.21). In 2024, a 'Joint Cyber Defence Command' was announced to strengthen the IDF further, in addition to its domestic and international cooperations (Ireland, Gov 2024, p.31).

Generally, Ireland has relied on the EU's approach to maritime observation, infrastructure threat assessment, and relevant data exchanges since the launch of the EUMSS in 2014 (Ireland, DoD 2015). The facilitation of such communication is predominately possible through EDA's *Maritime Surveillance project* (MARSUR), where Ireland is engaged since 2011; however, it was only in 2025 that the government allowed the IDF to access the secured data exchange programme with other European maritime agencies (Burke 2013, pp.37-38; Ireland, DoD 2026b, pp.16-17,27).

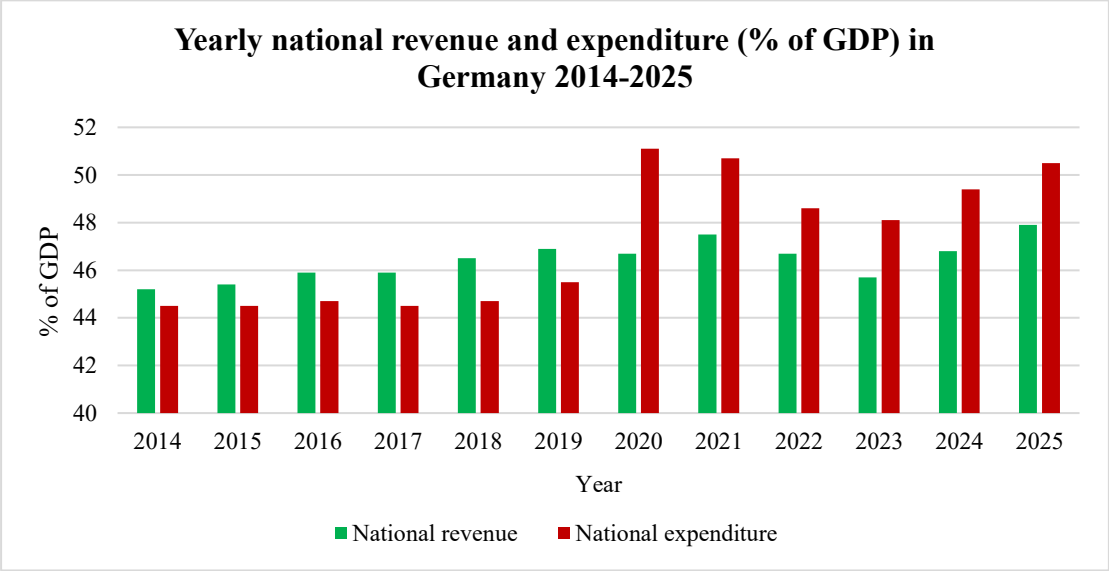
Since 2024, Ireland's limited involvement with NATO's *Individually Tailored Partnership Programme* is shaped by exchange efforts on subsea infrastructure protection (Ireland, DoD 2026b, p.28).

Together with the two aforementioned countries, Ireland supports the 'New York Joint Statement on the Security and Resilience of Undersea Cables' which is equally promoted by Germany, the US and the EU (Ireland, Department of Culture, Communications and Sport 2026).

Appendix F. Supplementary data on the elements of state capacity: Germany

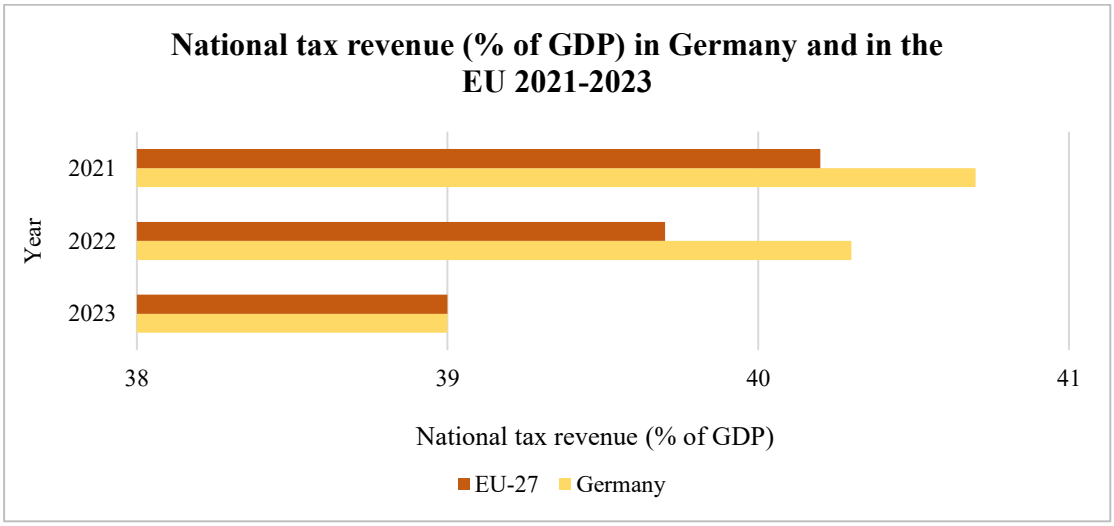
F.1 Financial capacity

Figure F.1. 1. *Yearly national revenue and expenditure (% of GDP) in Germany 2014-2025.*



Author's own compilation. Data: Eurostat 2026b.

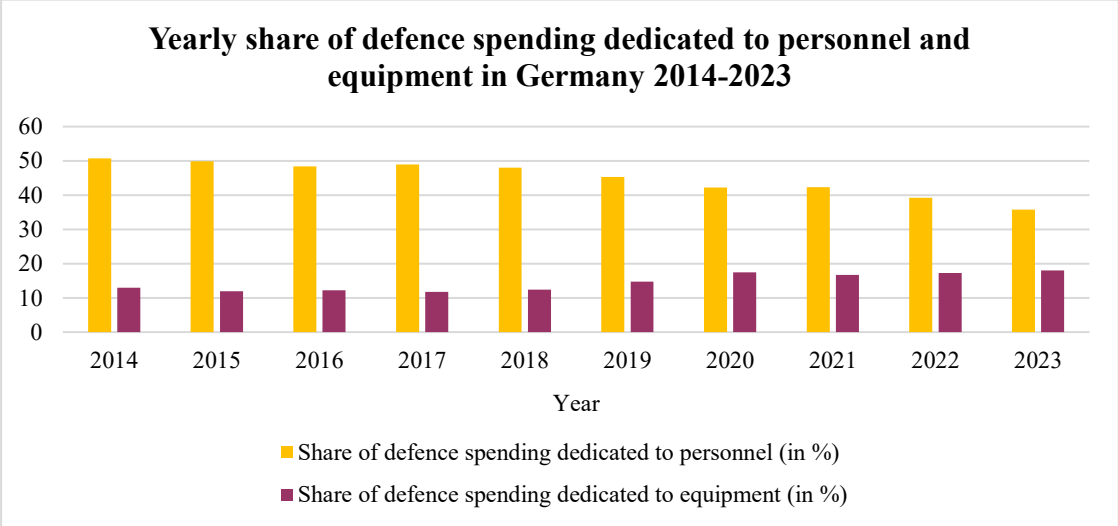
Figure F.1. 2. *National tax revenue (% of GDP) in Germany and in the EU 2021-2023.*



Author's own compilation. Data: European Commission 2025a, p.39.

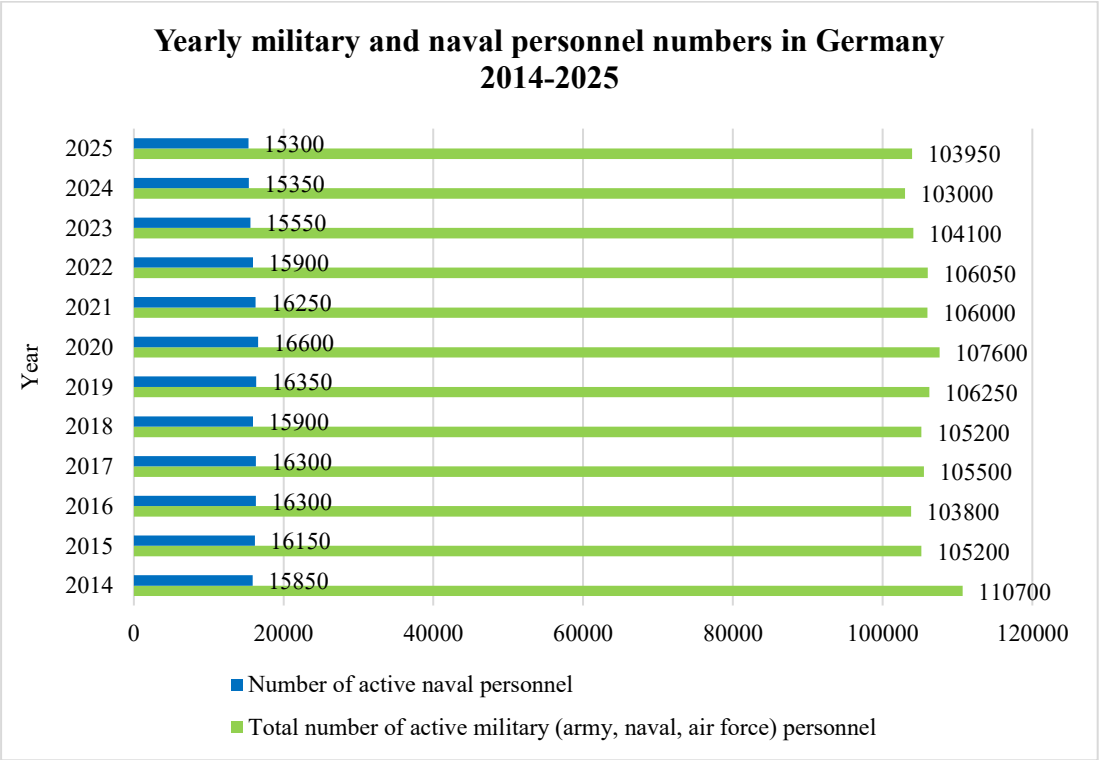
F.2 Security capacity

Figure F.2. 1. *Yearly share of defence spending dedicated to personnel and equipment in Germany 2014-2023.*



Author's own compilation. Data: North Atlantic Treaty Organization, Public Diplomacy Division 2025, p.14.

Figure F.2. 2. *Yearly military and naval personnel numbers in Germany 2014-2025.*

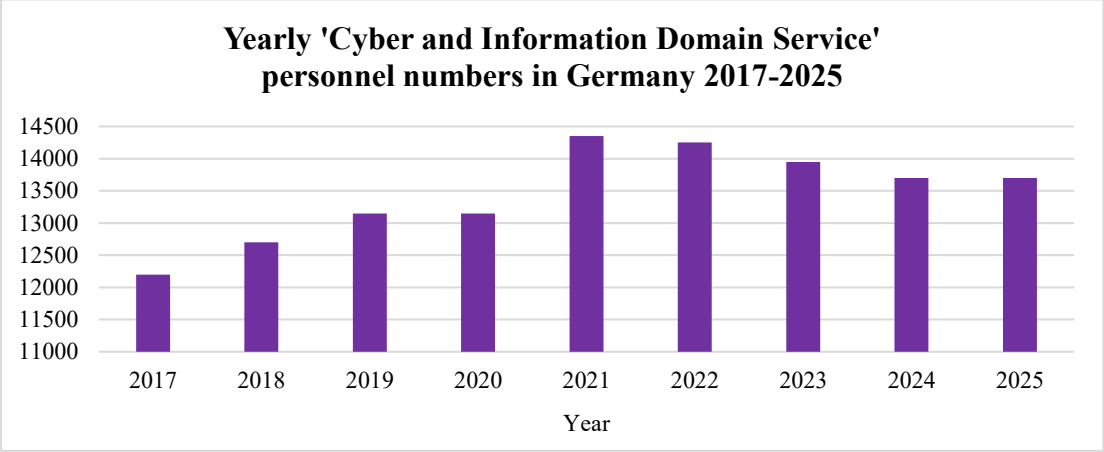


Author's own compilation. Data: The Military Balance 2015, p.97; 2016, p.100; 2017, p.117; 2018, p.108; 2019, p.110; 2020, p.108; 2021, p.107; 2022, p.109; 2023, p.95; 2024, p.96; 2025, p.94; 2026, p.98.

The personnel numbers of the naval aviation unit as part of the general navy staff have been fairly consistent, inter alia accounting to 2,200 staff members in 2014 and 2,100 in 2025 (TMB 2015, pp.97-98; 2026, pp.98,100).

After commencing its service in 2017, the armed forces' *Cyber and Information Domain Service* elevated its personnel numbers until 2021 (see Figure F.2.3; TMB 2018, p.110; 2022, p.111; 2026, p.101). The slight recession is attributed to more competitive, civilian offers (Germany, BT 2020).

Figure F.2. 3. *Yearly 'Cyber and Information Domain Service' personnel numbers in Germany 2017-2025.*



Author's own compilation. Data: The Military Balance 2018, p.110; 2019, p.112; 2020, p.110; 2021, p.109; 2022, p.111; 2023, p.97; 2024, p.99; 2025, p.96; 2026, p.101.

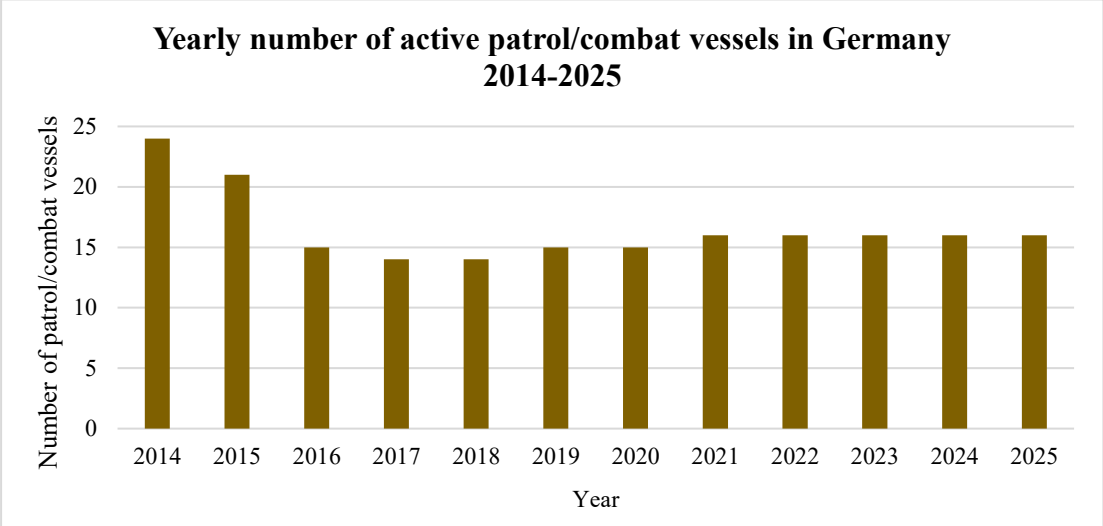
Table F.2. 1. *Types of active German submarines 2014-2025.*

Year	Quantity	Type	Source
2014	5	Type-212A	The Military Balance 2015, p.97
2015	5		The Military Balance 2016, p.101
2016	6		The Military Balance 2017, p.117
2017	6		The Military Balance 2018, p.108
2018	6		The Military Balance 2019, p.111
2019	3		The Military Balance 2020, p.109
2020	6	Type-212A (fitted with AIP)	The Military Balance 2021, p.107
2021	6		The Military Balance 2022, p.110
2022	6		The Military Balance 2023, p.95
2023	6		The Military Balance 2024, p.97
2024	6		The Military Balance 2025, p.94
2025	6		The Military Balance 2026, p.99

Author's own compilation.

The drop by three in 2019 was due to the submarines not being mission capable (TMB 2020, p.109).

Figure F.2. 4. *Yearly number of active naval patrol/combat vessels in Germany 2014-2025.*



Author's own compilation. Data: The Military Balance 2015, p.97; 2016, p.101; 2017, p.117; 2018, p.108; 2019, p.111; 2020, p.109; 2021, p.107; 2022, p.110; 2023, pp.95-96; 2024, p.97; 2025, pp.94-95; 2026, p.99.

Table F.2. 2. *Types of active German naval patrol/combat vessels 2014-2025.*

Year	Quantity	Type		Source
2014	4	*Brandenburg*	Destroyer	The Military Balance 2015, p.97
	3	*Sachsen*	Destroyer	
	4	*Bremen*	Frigate	
	5	*Braunschweig*	Frigate	
	8	*Gepard*	Patrol vessel	
2015	4	*Brandenburg*	Destroyer	The Military Balance 2016, p.101
	3	*Sachsen*	Destroyer	
	3	*Bremen*	Frigate	
	5	*Braunschweig*	Frigate	
	6	*Gepard*	Patrol vessel	
2016	4	*Brandenburg*	Destroyer	The Military Balance 2017, p.117
	3	*Sachsen*	Destroyer	
	3	*Bremen*	Frigate	
	5	*Braunschweig*	Frigate	
2017	4	*Brandenburg*	Destroyer	The Military Balance 2018, p.108
	3	*Sachsen*	Destroyer	
	2	*Bremen*	Frigate	

	5	*Braunschweig*	Frigate	
2018	4	*Brandenburg*	Destroyer	The Military Balance 2019, p.111
	3	*Sachsen*	Destroyer	
	2	*Bremen*	Frigate	
	5	*Braunschweig*	Frigate	
2019	4	*Brandenburg*	Destroyer	The Military Balance 2020, p.109
	3	*Sachsen*	Destroyer	
	1	*Baden-Württemberg*	Destroyer	
	2	*Bremen*	Frigate	
	5	*Braunschweig*	Frigate	
2020	3	*Sachsen*	Destroyer	The Military Balance 2021, p.107
	2	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	1	*Bremen*	Frigate	
	5	*Braunschweig*	Corvette	
2021	3	*Sachsen*	Destroyer	The Military Balance 2022, p.110
	3	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	1	*Bremen*	Frigate	
	5	*Braunschweig*	Corvette	
2022	3	*Sachsen*	Destroyer	The Military Balance 2023, pp.95-96
	4	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	5	*Braunschweig*	Corvette	
2023	3	*Sachsen*	Destroyer	The Military Balance 2024, p.97
	4	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	5	*Braunschweig*	Corvette	
2024	3	*Sachsen*	Destroyer	The Military Balance 2025, pp.94-95
	4	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	5	*Braunschweig*	Corvette	
2025	3	*Sachsen*	Destroyer	The Military Balance 2026, p.99
	4	*Baden-Württemberg*	Frigate	
	4	*Brandenburg*	Frigate	
	5	*Braunschweig*	Corvette	

Author's own compilation.

Also, there was a decline in the quantity of maritime aircrafts from eight in 2014 to three in 2025 (TMB 2015, p.98; 2026, p.100). Replacements of naval helicopters

occurred succinctly, from one new *Sea Lion*-type in 2019 to four a year later and up to 18 by 2023 (TMB 2020, p.110; 2021, p.108; 2024, p.97).

F.3 Administrative capacity

This section provides additional information on the German 'administrative capacity'.

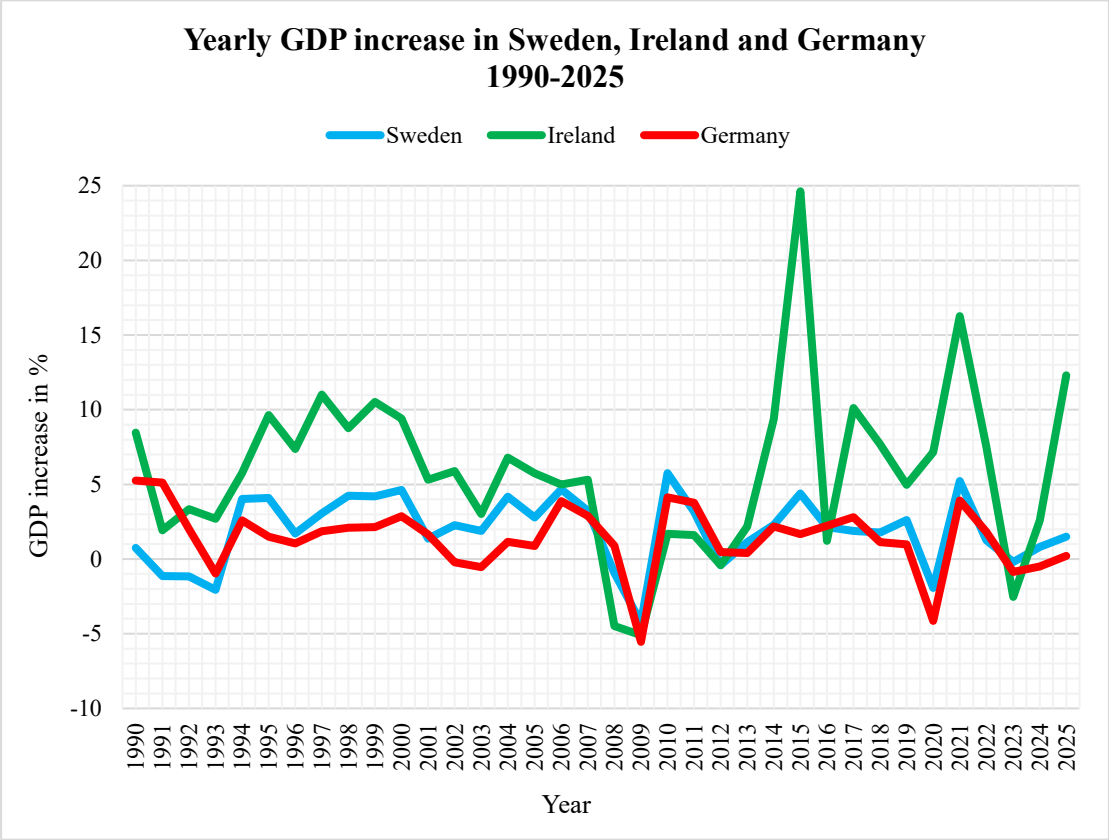
Relevant national maritime entities are represented in the *Maritime Emergency Reporting and Assessment Centre* to accelerate and enhance collaboration (Masala and Tsetsos 2013, p.21). As to the component of cybersecurity, the military cyber force engages with the civilian BSI whose *National Cyber Response Centre* collects actors from the federal states and the private sector (Leinhos 2020; Germany, BMI 2021).

Bilaterally, Germany cooperates with the US and Western European states such as France, the UK and the Netherlands (Germany, BReg 2016). The latter two, Germany, as well as Poland, the NORDEFCO and the Baltic States, also constitute the *Northern Group* for more regional interchanges (Masala 2020; Bond 2024).

Appendix G. Supplementary data and comparison: Sweden, Ireland and Germany

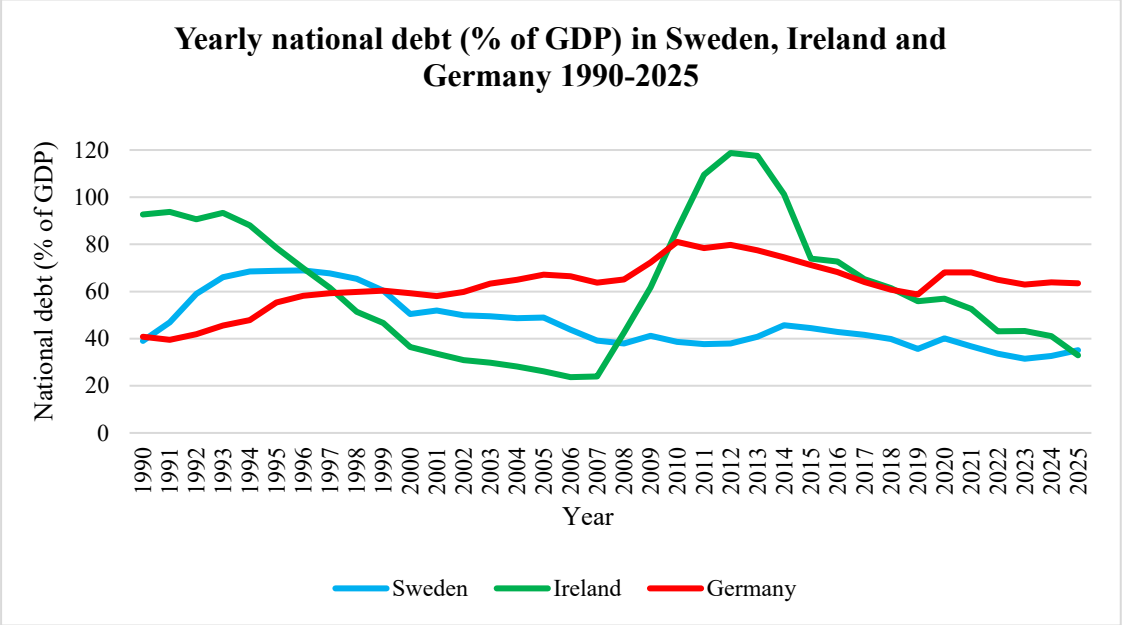
G.1 Financial capacity

Figure G.1. 1. *Yearly GDP increase in Sweden, Ireland and Germany 1990-2025.*



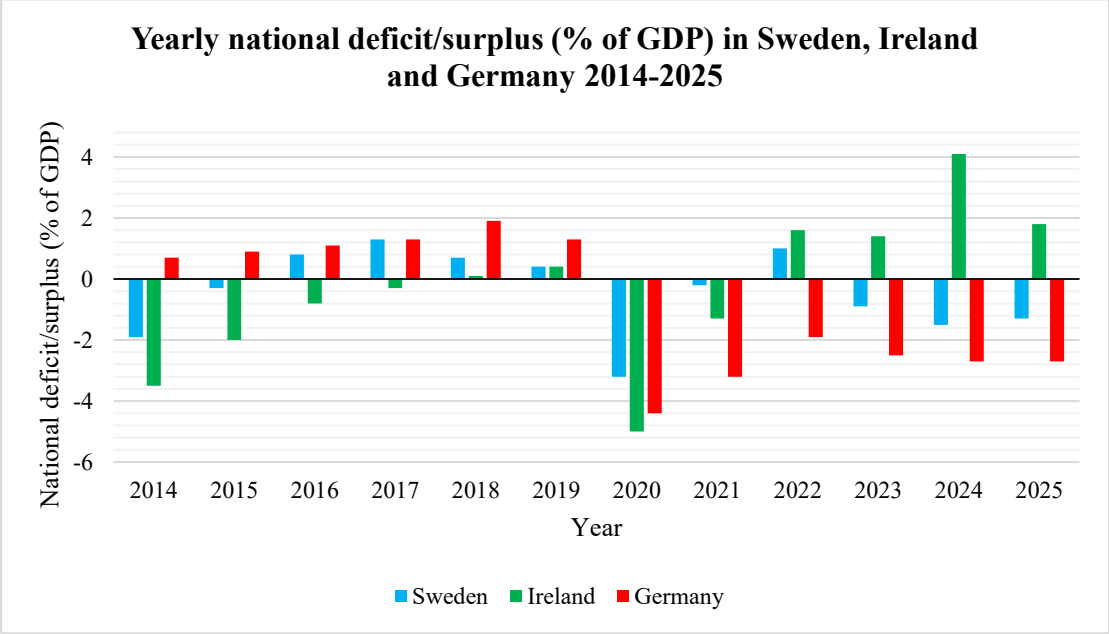
Author's own compilation. Data: European Commission, Directorate-General for Economic and Financial Affairs 2026a; 2026b; 2026c; World Bank Group 2026.

Figure G.1. 2. *Yearly national debt (% of GDP) in Sweden, Ireland and Germany 1990-2025.*



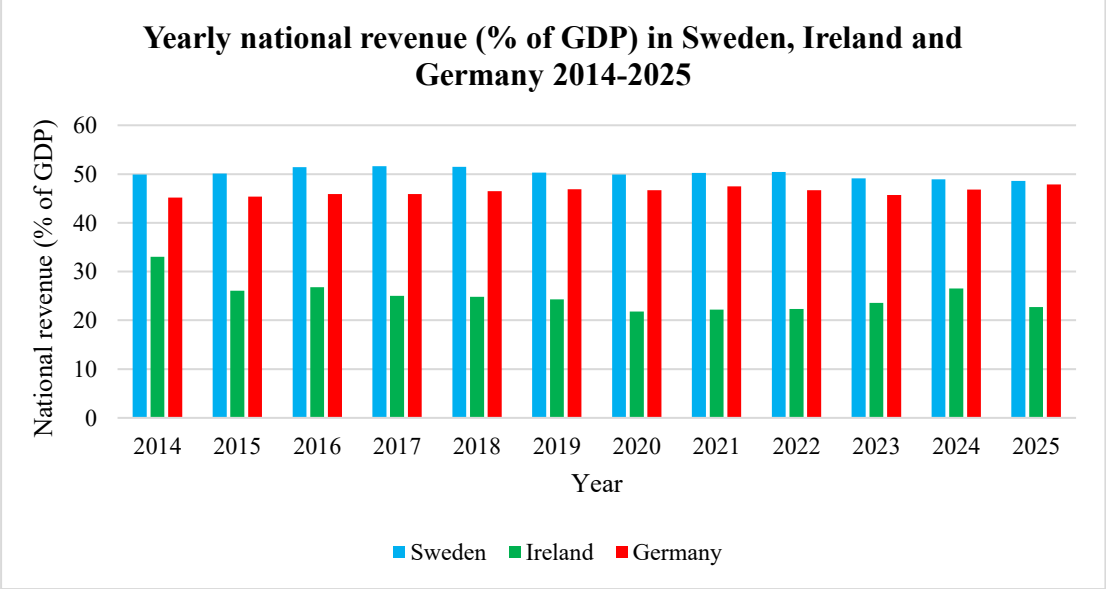
Author's own compilation. Data: IMF 2025; European Commission, Directorate-General for Economic and Financial Affairs 2026a; 2026b; 2026c.

Figure G.1. 3. *Yearly national deficit/surplus (% of GDP) in Sweden, Ireland and Germany 2014-2025.*



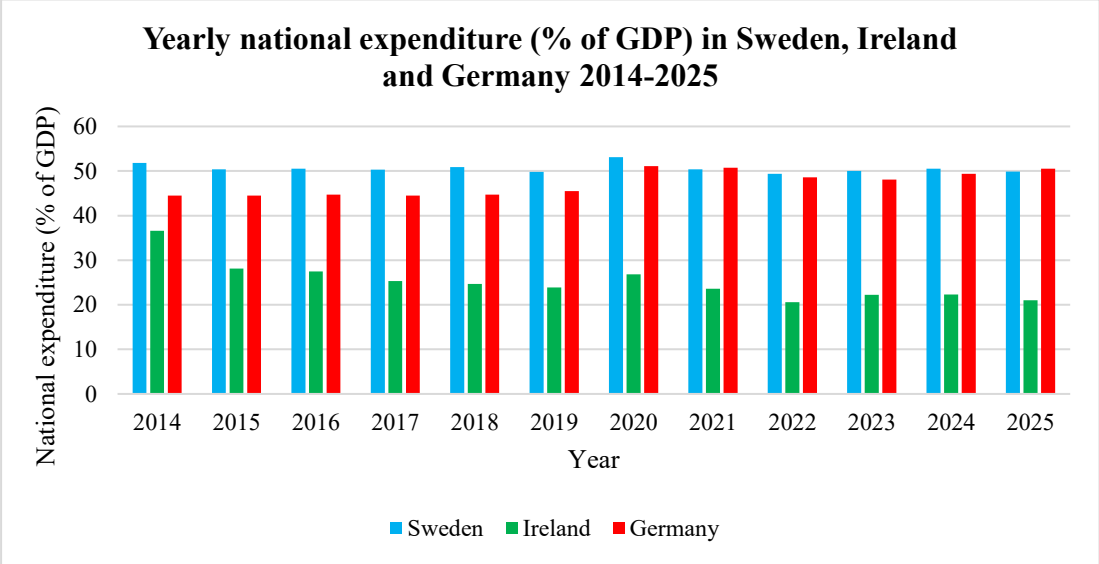
Author's own compilation. Data: Eurostat 2026b.

Figure G.1. 4. *Yearly national revenue (% of GDP) in Sweden, Ireland and Germany 2014-2025.*



Author's own compilation. Data: Eurostat 2026b.

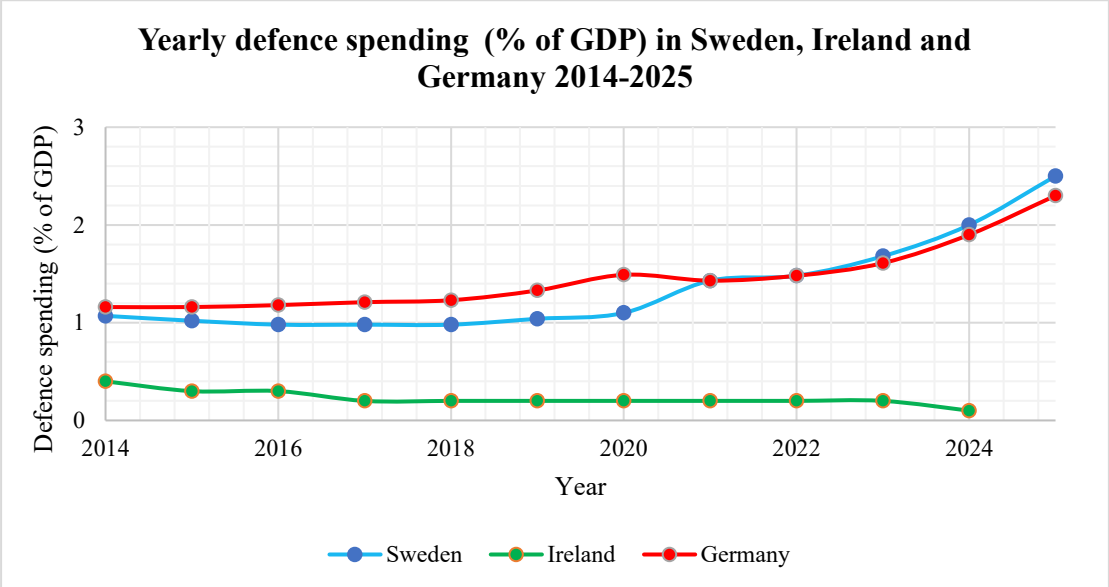
Figure G.1. 5. *Yearly national expenditure (% of GDP) in Sweden, Ireland and Germany 2014-2025.*



Author's own compilation. Data: Eurostat 2026b.

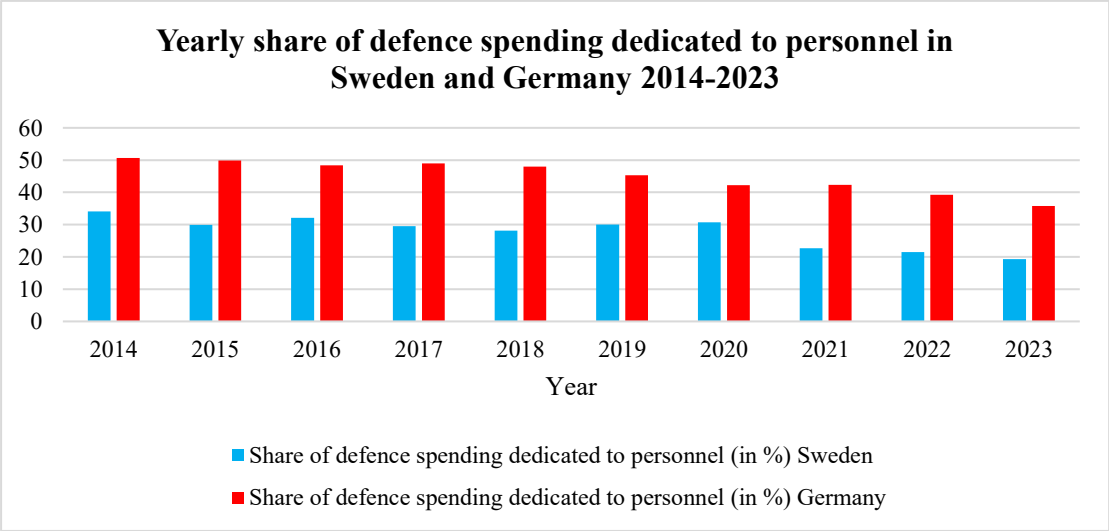
G.2 Security capacity

Figure G.2. 1. *Yearly defence spending (% of GDP) in Sweden, Ireland and Germany 2014-2025.*



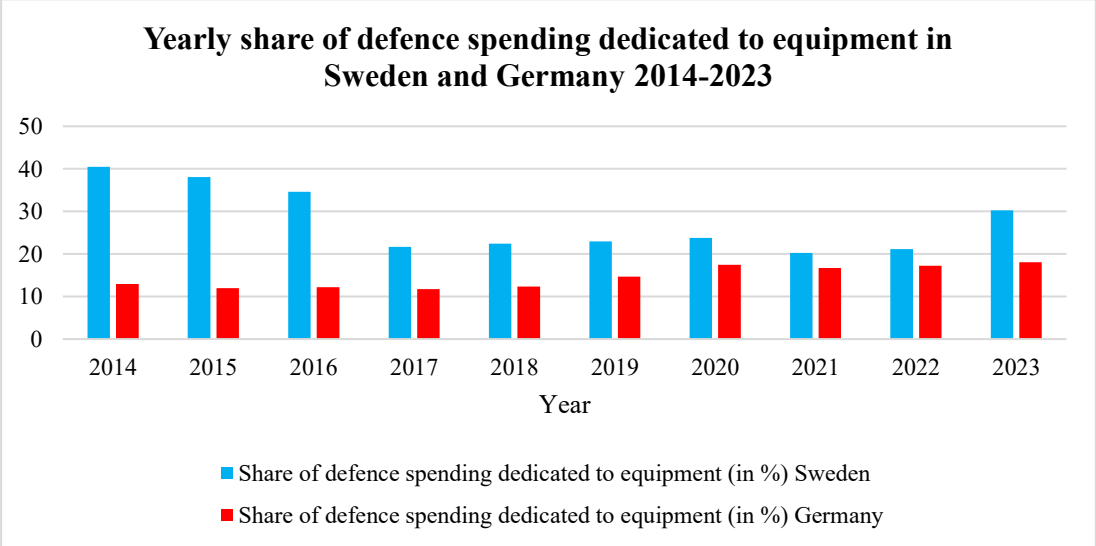
Author's own compilation. Data: Liang *et al.* 2025, p.2; North Atlantic Treaty Organization, Public Diplomacy Division 2025, p.9; Eurostat 2026a; Liang *et al.* 2026, p.2.

Figure G.2. 2. *Yealy share of defence spending dedicated to personnel in Sweden and Germany 2014-2023.*



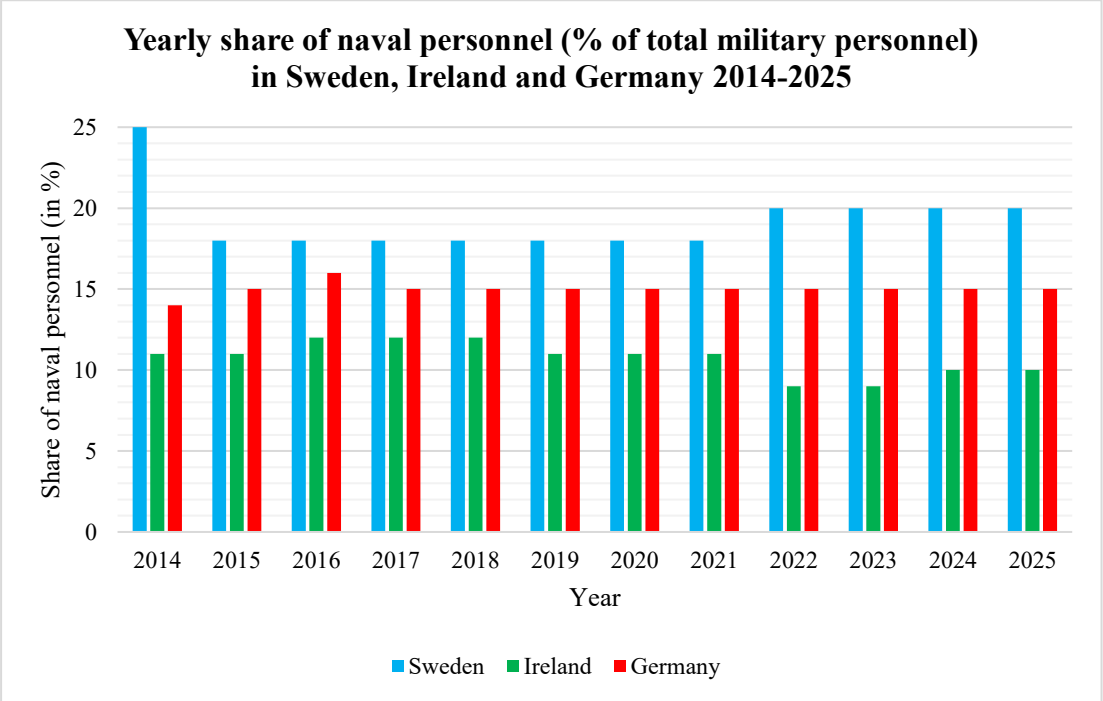
Author's own compilation. Data: North Atlantic Treaty Organization, Public Diplomacy Division 2025, p.14.

Figure G.2. 3. *Yearly share of defence spending dedicated to equipment in Sweden and Germany 2014-2023.*



Author's own compilation. Data: North Atlantic Treaty Organization, Public Diplomacy Division 2025, p.14.

Figure G.2. 4. *Yearly share of naval personnel (% of total military personnel) in Sweden, Ireland and Germany 2014-2025.*



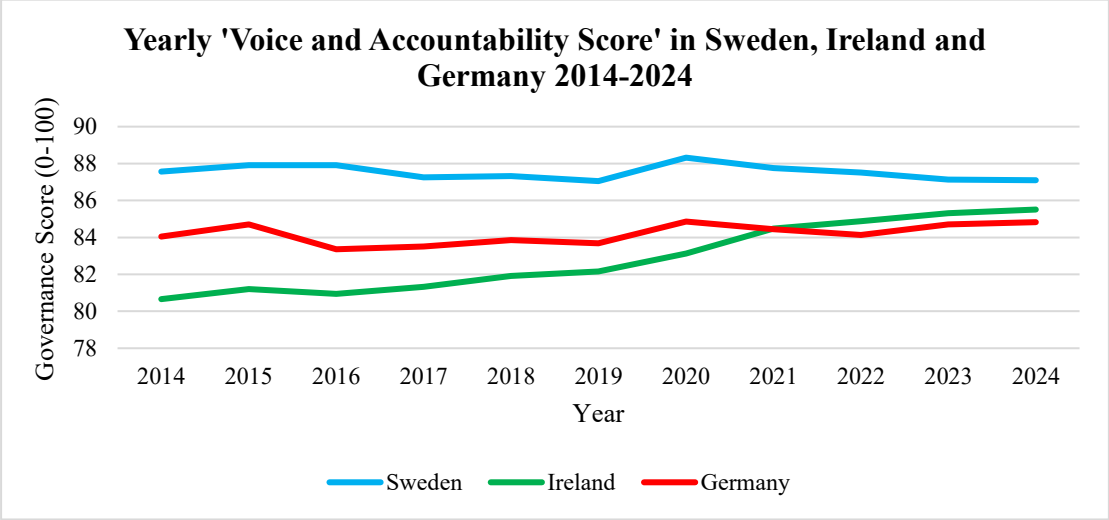
Author's own compilation. Data: The Military Balance 2015, pp.97,105,139; 2016, pp.100,109,143; 2017, pp.117,126,162; 2018, pp.108,117,152; 2019, pp.110,118,150; 2020, pp.108,117,149; 2021, pp.107,115,148; 2022, pp.109,117,151; 2023, pp.95,103,137; 2024, pp.96,105,142; 2025, pp.94,102,138; 2026, pp.98,107,144.

G.3 Administrative capacity

According to Schleicher and Bagley (2025), lower levels of democratic answerability suggest compromised capacity. Looking at the data in Figure G.3.1, this would insinuate an improvement of capacity in all three countries, or in the Swedish case at least no loss of capacity (Schleicher and Bagley 2025; World Bank Group 2025). However, it ought to be stressed that a stringent correlation between this thesis' specific

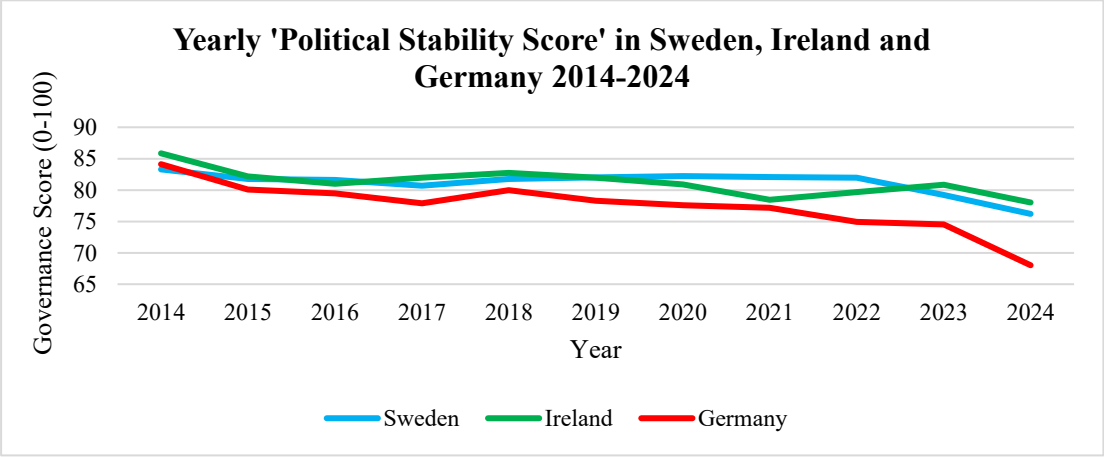
topic, capacity and general voting behaviour is not justifiable since election results are also dependent on other policy areas outside of this study's scope (cf. Moynihan 2025; Schleicher and Bagley 2025; Bogers *et al.* 2026).

Figure G.3. 1. *Yearly 'Voice and Accountability' Score in Sweden, Ireland and Germany 2014-2024.*



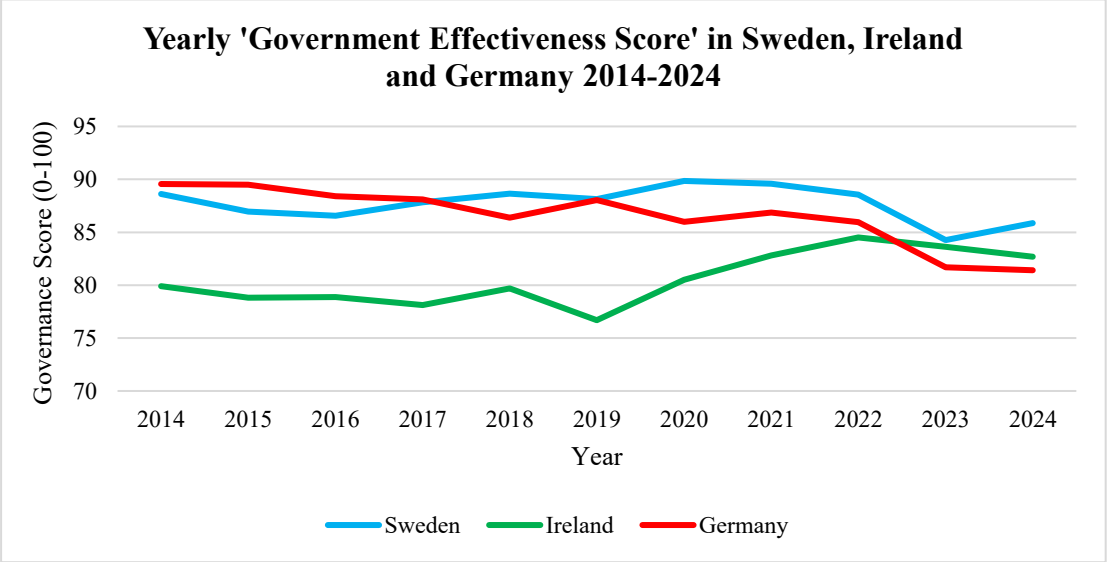
Author's own compilation. Data: World Bank Group 2025.

Figure G.3. 2. *Yearly 'Political Stability' Score in Sweden, Ireland and Germany 2014-2024.*



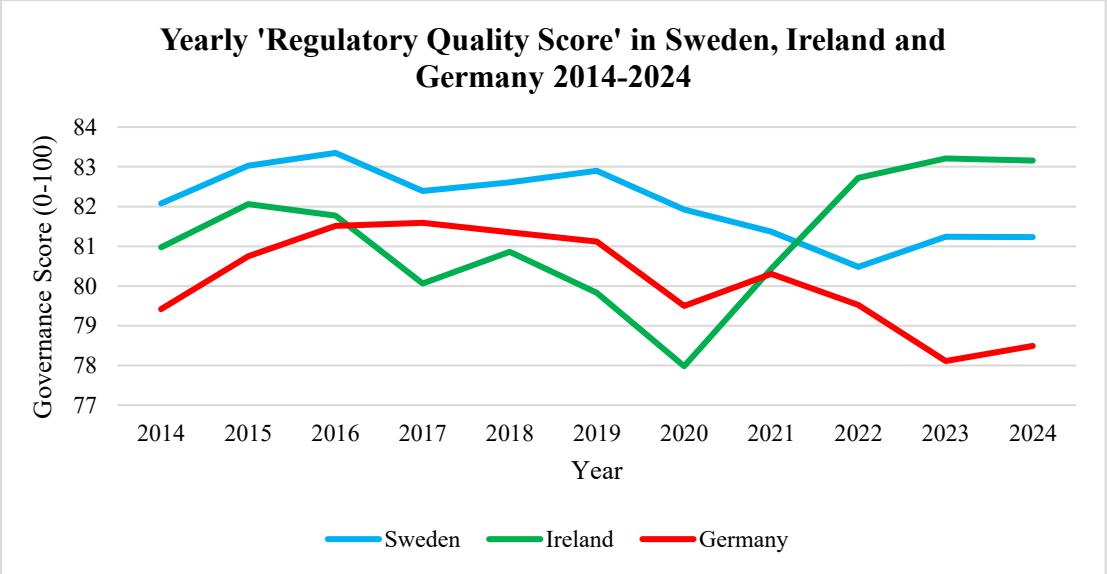
Author's own compilation. Data: World Bank Group 2025.

Figure G.3. 3. *Yearly 'Government Effectiveness Score' in Sweden, Ireland and Germany 2014-2024.*



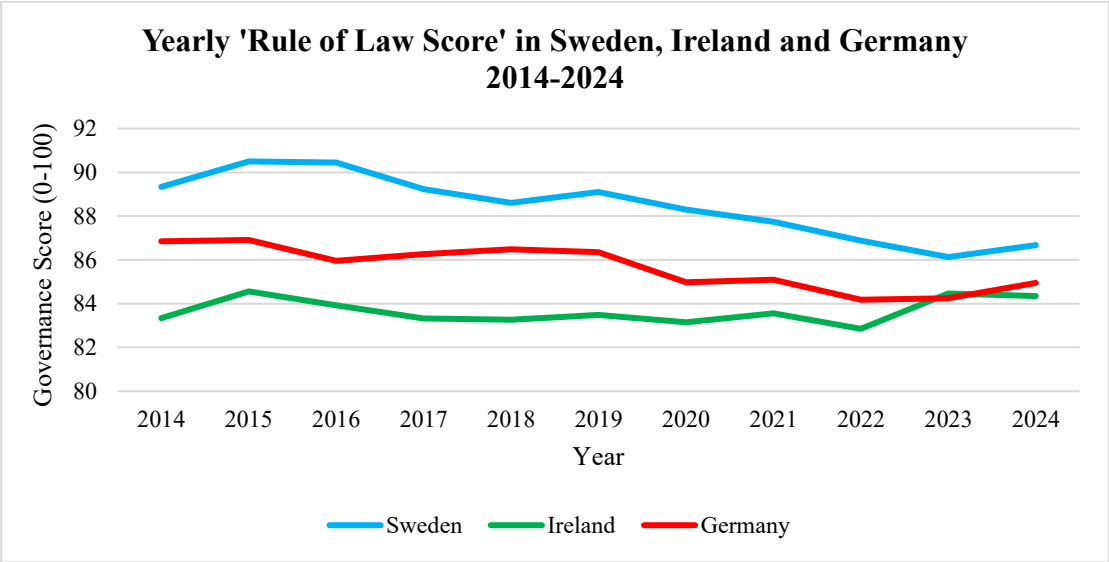
Author's own compilation. Data: World Bank Group 2025.

Figure G.3. 4. *Yearly 'Regulatory Quality Score' in Sweden, Ireland and Germany 2014-2024.*



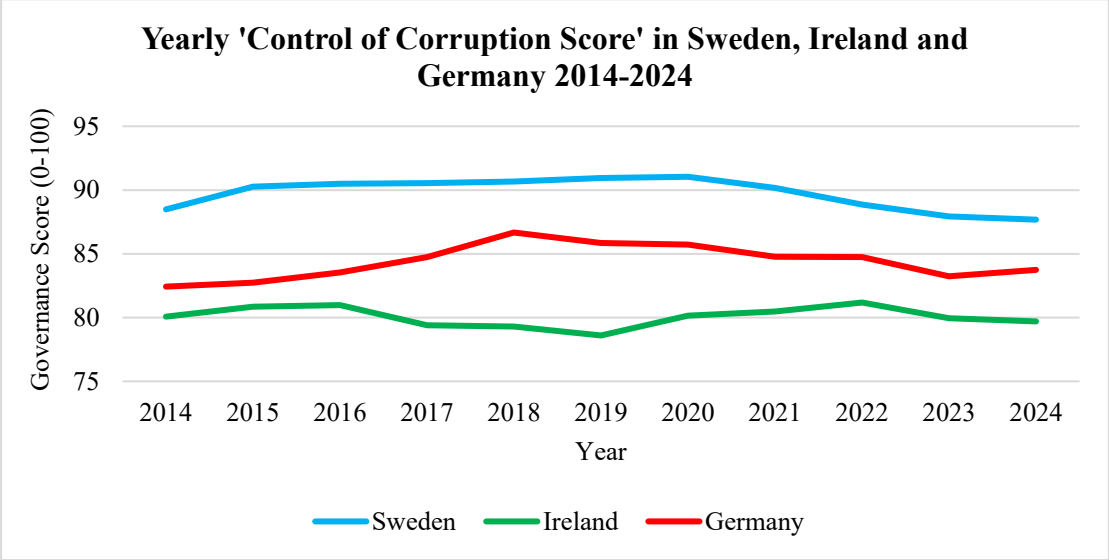
Author's own compilation. Data: World Bank Group 2025.

Figure G.3. 5. *Yearly 'Rule of Law Score' in Sweden, Ireland and Germany 2014-2024.*



Author's own compilation. Data: World Bank Group 2025.

Figure G.3. 6. *Yearly 'Control of Corruption Score' in Sweden, Ireland and Germany 2014-2024.*



Author's own compilation. Data: World Bank Group 2025.