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Analysing the European Defence Fund's financing distribution across EU countries: what drives national participation in defence-industrial integration projects?

The establishment of the European Defence Fund (EDF) marks a significant shift in how EU Member States approach the integration of the defence industry as it aims to systematically promote inter-European defence-industrial cooperation across national defence sectors. However, there is a lack of empirical evidence of the actual dynamics regarding EDF implementation. While there are accounts of EU countries' varying political positions on defence integration, including its industrial aspect, it remains unclear whether Member States' *actual* participation in integration projects aligns with these positions. Are national motives consistent once effective defence-industrial integration is underway? The findings, based on Masson's (2024) data on by-country distribution of EDF project financing (2021–2022), present a more nuanced picture of EU countries' effective engagement with defence-industrial integration than anticipated by the political perspective. While there is a positive relationship between participation in the EDF and defence market size, strategic culture does not influence EU members' involvement in the Fund. Furthermore, while liberal economic-industrial governance is negatively associated with national participation in EDF projects, a country's institutional quality has a significant positive relationship with it. This article reveals more complex dynamics of EDF implementation than suggested by the political perspective on defence-industrial integration pre-EDF.

Keywords
defence-industrial integration, the European Defence Fund, strategic culture, market size, institutional quality, economic freedom

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Introduction

The establishment of the European Defence Fund (EDF) marked a significant change in EU Member States' approach to defence-industrial integration. With the EDF, so far, the most 'promising […] step on the long and winding road to European defence market integration' (Calcara & Simón, 2021, p. 873), it was decided to allocate common funds, on a systematic basis, to defence-related activities – specifically, to multinational research and capability development projects. This is not to say that prior efforts to promote inter-European collaboration in the defence-industrial field had been absent. Cooperative projects between European countries have a history dating back to the Cold War. Additionally, two important legal measures – EU directives – were adopted in 2009 to facilitate defence integration (see, e.g., Blauberger & Weiss, 2013; Terpan & Saurugger, 2019). Among other things, these directives sought to stimulate the dynamics of integration of EU Member States' defence industries.

However, both these lines of action are associated with significant limitations. The directives, one on defence procurement and the other on arms transfers, have resulted in limited dedicated efforts on behalf of national governments, primarily due to the availability of exemption clauses. As for bilateral and multilateral cooperative projects, they remain ad hoc and concern specific players of the defence sector. These projects therefore fail in systematically enhancing inter-European cooperation as they do not yield structural (whole-of-sector) outcomes. In other words, the dynamics of cooperative projects are unlikely to lead to defence-industrial integration, which implies meaningful distributional political and economic consequences. Calcara and Simón (2021), for instance, argue that, on the one hand, defence-industrial consolidation at the supranational level is likely to lead to efficiency gains, potentially lowering defence production costs; on the other hand, EU Member States with smaller defence markets face the risk of losing their autonomy, including their national preference to purchase from the United States or even to define their capability development policy. While the authors reveal noticeable tensions between selected countries representing both large and small defence markets during the negotiations on the EDF, market size alone does not predispose EU members to specific positions on issues of defence-industrial integration. Strategic culture and economic-industrial governance have also been highlighted in the literature as influences

on national political preferences towards and, therefore, positions on the concerned integration.

However, there is a lack of systematic empirical evidence of the *actual* dynamics that characterise the integration of European defence industries. Such an analysis has the potential to offer a crucial additional perspective to the existing scholarship of defence integration more generally, shifting the focus away from EU countries' initial (pre-EDF) political preferences to their actual engagement with defence-industrial integration. This article raises the question whether national motives remain consistent once effective integration is underway. Specifically, what are the drivers behind national participation in the EDF?

Consistency between motives, including their political nature, identified pre-EDF, and those characterising EU countries' actual engagement in defence-industrial integration through participation in the Fund will provide further insight into EU countries' ongoing concerns about balancing autonomy and efficiency (Calcara & Simón, 2021; see also Moravcsik, 1990). Available novel data on by-country distribution of the EDF project financing (Masson, 2024), following two calls for proposals (2021–2022),[2] allow for an analysis of systematic patterns of effective defence-industrial integration dynamics across EU Member States. Here, I use quantitative data to re-examine the primary motives that have been identified in the literature as underlying EU countries' diverse approaches to defence integration, including its industrial dimension. These revolve around strategic culture, market size and economic-industrial governance (the relationship between the state and defence-industrial players). Although the latter two factors are rooted in political economy, their empirical political-economic potential has yet to be fully explored. This is because they are used to explain national political positions on issues related to defence-industrial integration, without thoroughly examining the actual economic repercussions that defence integration produces. Furthermore, I investigate an additional factor – a country's institutional quality –, which remains overlooked in relevant research.

The findings present a more nuanced picture of EU countries' engagement with defence-industrial integration than previously anticipated by the political perspective. While there is a positive relationship between participation and market size, strategic culture does not influence EU members' involvement in EDF projects.

[2] Available as of April 2024.

Furthermore, while a country's institutional quality has a significant positive relationship with participation in the EDF, economic freedom is negatively associated with it. The article reveals more complex dynamics of EDF implementation than suggested by the political perspective on defence integration pre-EDF.

The remainder of this article proceeds as follows. The first section reviews theoretical accounts on defence-industrial integration, with the focus on what we already know about national preferences. The second section provides an overview of the EDF, including its status as a flagship initiative in defence-industrial integration. The third section describes the data and how variables are operationalised, followed by the empirical analysis. Conclusions, including avenues for further research, follow.

1. What explains EU countries' support for defence-industrial integration?

What does previous research reveal about the factors that predispose EU countries to support, rather than resist, the integration of defence in general and of the defence industry in particular? Three main explanations have emerged: strategic culture (Atlanticism vs Europeanism), market size and economic-industrial governance. These explanations primarily offer a political perspective on EU-level cooperation in defence, focusing on how they shape national preferences and influence Member States' positions on defence integration, including its industrial dimension.

Actual participation in the EDF, however, involves more than political considerations; it represents EU countries' effective engagement in defence-industrial integration, a multi-stakeholder experience that is not limited to the political perspective alone, especially considering that EU-level instruments are expected to influence actors' incentives and, ultimately, preferences. Moreover, in line with the possibility of more complex dynamics of defence integration, I argue that participation in the EDF is correlated with a country's institutional quality. Analysing actual defence-industrial integration reveals its diverse aspects beyond political preferences and provides a valuable additional perspective for better understanding defence integration.

Defence-industrial integration has recently gained renewed

momentum, driven by the increased focus on defence in the EU agenda throughout the 2010s, particularly thanks to initiatives such as Permanent Structured Cooperation (PESCO) and the EDF itself (Calcara, 2019). This revival ignited a widespread debate among scholars, experts and policy community members about defence policy integration more generally. Central to this debate became the concept of strategic autonomy, which was articulated, at the EU level, in the defence context in 2013 (European Commission, 2013). The defence-industrial angle became an integral part of the debate, particularly due to its close connection to civilian security (Martins & Mawdsley, 2021; see also Kuokštytė, 2023), an area in which the European Commission had already seen its competencies increase. In other words, this connection made defence industry, traditionally an intergovernmental domain, face the immediate potential pressure of supranationalisation.

In the context of strategic autonomy, Europe's long-lasting dependence on US armaments was regarded as challenging by the European Commission and especially France, wishing to strengthen the EU as a security actor (see, e.g., Mauer, 2010; Rieker, 2022). Variation in national preferences towards defence-industrial integration has primarily come to be associated with differing strategic cultures – specifically, with governments' Europeanist orientation, as opposed the Atlanticist one (see Becker & Malesky, 2017). EU countries that rely heavily on the United States, particularly for NATO security guarantees, are likely to resist defence-industrial integration and claim their own autonomy to strategic choices (Anicetti, 2024; Kofroň & Stauber, 2023). On the other hand, EU members that are committed to enhancing the EU's Common Security and Defence Policy and enabling Europe to play an autonomous role in defence and security, especially France, are expected to be strong advocates for defence-industrial integration (see Moravcsik, 1990). France is not alone, however. Non-NATO European countries are also relatively more predisposed towards the Europeanist orientation. Germany, for instance, can be considered as occupying an in-between position, with its support for European integration as a matter of principle (see Béraud-Sudreau & Pannier, 2021; Calcara & Simón, 2021). Italy has also been described as 'traditionally pro-EU' (Anicetti, 2024, p. 448). This perspective, which underscores the distinction between the Europeanist orientation and the Atlanticist one, is referred to as a 'grand strategy' thesis in scholarly literature (see Becker & Malesky, 2017; Calcara & Simón, 2021). It extends beyond security and defence issues to encompass broader

foreign policy preferences.

Another explanation of variation in EU countries' differing predispositions to support defence-industrial integration is rooted in political economy. Moravcsik (1990, p. 65), for example, analysed the causes and consequences of 'internationalising the West European defence-industrial base' in the immediate aftermath of the Cold War. For the author, at that time such internationalisation was becoming a trend within the broader context of globalisation. Issues, such as the 'European preference' to be attributed to defence products at the expense of those from abroad, were at the centre stage of Moravcsik's analysis. More specifically, the author approached the possibility of the European or 'community preference' as a consequence of 'actively protectionist' US procurement policy (Moravcsik, 1990, p. 78).

Although, over time, the anticipated outcomes of this internationalisation did not materialise as expected, recently the political-economic logic underlying much of Moravcsik's arguments has been elaborated in terms of market size. Calcara and Simón (2021) argue that EU countries with larger defence markets, or the so-called 'first tiers,' are likely to favour defence-industrial integration. This is because they may expect to strengthen their relative position in the European market and, because of that, globally. More specifically, defence firms from larger countries are more likely to act as regional system integrators – this implies participation in defence procurement from the inception of acquisition programmes through the definition of standards to client support (Calcara & Simón, 2021, p. 868). Furthermore, system integrators, often representing large firms, typically possess advanced technological know-how, further reinforcing their dominant position. Conversely, 'second and third tiers' (see Calcara, 2019) tend to resist integration, representing their companies' concerns – these companies fear losing their market position, even if niche, to system integrators that are able to pick and choose their suppliers.[3] That is, they prioritise autonomy vs efficiency.

Calcara and Simón (2021) produced a comparative analysis of EU countries' political positions concerning governance of the EDF, its eligibility criteria and access to its project financing. It reveals that France and Germany, as expected, were in favour of integrationist (supranational) governance and rather liberal eligibility criteria (as opposed to, e.g., national or geographical quotas), yet they were

[3] These can be expected to be national subcontractors (Calcara & Simón, 2021, p. 869).

against access to third parties. On all these points, Sweden and Poland – 'second tiers' – held a position opposing that of France and Germany. Third-party access to EDF project financing, in particular, was regarded during the negotiations as leverage at the disposal of smaller countries to hedge against 'first-tier dominance' (Calcara & Simón, 2021, p. 871), rather than revealing their Atlanticism.

However, the explanation based on the market size argument suffers from an inherent deterministic element. There is a lack of nuance among EU members *within* each tier, which is particularly problematic in smaller countries due to their share number (Chovančík & Krpec, 2023). What are other plausible influences potentially contributing to EU countries' preference for autonomy? To distinguish between small countries' responses to defence-industrial globalisation more generally, DeVore (2015) suggests an institutional – economic-industrial – approach (see also DeVore & Weiss, 2014). Drawing on the varieties of capitalism theory (Hall and Soskice, 2001), DeVore (2015) finds that Israel, which represents a liberal market economy, adapted to international pressures to liberalise its defence industry differently compared to Sweden, a coordinated market economy. Israel introduced even greater liberalisation while Sweden, for example, chose the elements of its national military industry to be opened for foreign investment selectively, and this was on the basis of close cooperation with defence interests (DeVore, 2015, p. 570).

The argument over countries' liberalisation strategies in defence industry is also meaningful in the context of EU countries' political preferences towards and positions on this issue. According to Calcara and Simón (2021), liberal market economies are inclined to pursue efficiency through integration, which levels the playing field for fair and equal competition beyond the domestic arena. In contrast, countries that closely cooperate with defence interests and prioritise their protection are more likely to resist integration. While the authors don't find support for this explanation in the context of intergovernmental negotiations on the EDF, it is worth noting that this approach remains problematic in descriptive comparative studies. Notably, there are inconsistencies in treating the variable of a defence-industrial regime,[4] hence the need for a systematic analysis.

So are national motives, which inform EU countries' political

[4] For instance, Sweden has been analysed as a coordinated market economy (DeVore, 2015), a liberal defence-industrial regime (Calcara & Simón, 2021) and an in-between case (Castellacci et al., 2014).

preferences and influence their positions, consistent once effective integration is underway? Specifically, what drives actual national participation in the EDF? Given that the Fund is primarily a supranational instrument (see the following section), and therefore can be approached as a political issue, the behaviour of EU countries towards it after its establishment is still likely to continue reflecting their capitals' previously established political positions, as identified in the literature. These positions are expected to correlate with their level of engagement in EDF activities. Specifically, a strong Atlanticist orientation is likely to be negatively associated with participation in the EDF, while the factors of a larger defence market and a liberal industrial-economic regime are expected to be correlated with higher participation. Furthermore, an analysis of actual EDF implementation can be expected to better reveal the economic aspect of the explanatory power of market size and economic-industrial governance, as the Fund operates primarily as an economic-industrial instrument through its activities. As a consequence, they may better explain EU countries' varying participation than strategic culture.

Finally, the institutional perspective suggests another explanation, which is institutional quality. It may be thought of as being closely connected to liberal-model economies, where the application of level-playing-field rules and transparency is crucial for ensuring effective market functioning (see DeVore, 2015). Yet institutional quality is equally important for other economic models. Cooperative arrangements, which underpin consensus-building in coordinated market economies, rely heavily on institutional transparency and impartiality (see, e.g., Kassen, 2022).

The quality of institutions reveals a distinct dimension, which bears relevance for participation in EDF projects. Strong institutional governance has several key implications, including more effective policy implementation strategies, and enhanced administrative and technical capabilities, as well as higher standards of transparency and accountability. These factors help attract partners and foster collaboration. Participation in the EDF largely depends on multi-country consortia and domestic cooperation between national institutions and defence-industrial stakeholders, necessitating a complex administrative and technical structure. Therefore, institutional quality is expected to positively correlate with EU countries' participation in the EDF.

2. The European Defence Fund

The EDF, which (co-)finances research and capability development in the defence field, represents a culmination of renewed EU deliberations on the need to strengthen cooperation in security and defence policies, as well as in foreign policy more broadly. This trend could be observed throughout the 2010s when, for instance, the concept of strategic autonomy made its way to an EU document – the European Commission's communication on defence issues (European Commission, 2013). In 2013, a thematic debate on defence was held for the first time at the European Council since the Lisbon Treaty (European Council, 2013). However, it was not until 2016 that more concrete efforts finally emerged (see, e.g., Blockmans & Crosson, 2021). It was the year when the EU's Global strategy for foreign and security policy replaced the previous European Security Strategy (2003). In 2017 PESCO was set up, along with the Coordinated Annual Review of Defence and Military Planning and Conduct Capability. While it took more time for the EDF to be launched (2021), it featured the EU Council's conclusions already in 2016, whereby Member States recognised 'the Commission's intent to submit a proposal to create a European Defence Fund to finance capabilities agreed by Member States' (Council of the EU, 2016, p. 11).

The EDF, which has a budget of almost EUR 8 bn for the period 2021–2027, marks a significant step in strengthening EU-level defence efforts, primarily due to the fact that never before was financing provided from the EU budget to defence activities on a systematic basis. The already mentioned bilateral or multilateral intergovernmental collaboration on defence projects follows a separate logic, insofar as their distributional implications differ from those of defence-industrial integration projects (Calcara, 2019). Specifically, contrary to the latter, they do not aim to systematically promote inter-European defence-industrial cooperation across entire national defence sectors and remain ad hoc. Their distributional effects are thus limited, whereas those of integration projects are expected to be structural and extend across defence sectors in the long term (Ianakiev, 2019).

An important aspect underscoring the significance of the EDF as a flagship initiative is its supranational character. The fact that its funding originates from the EU budget signifies an enhanced role for EU institutions, particularly the European Commission and the European Parliament, which, along with the EU Council, determines

the annual budget. The European Commission's role has expanded not only procedurally but also substantively, as it has added the stewardship of defence-industrial integration projects to its list of competencies (Håkansson, 2021).

Most scholars tend to analyse this development in terms of political power over decision-making, that is, in those of intergovernmentalism vs supranationalism (see, e.g., Fiott, 2023; Håkansson, 2021). Yet once the establishment phase was completed, the EDF largely revealed itself as an economic-industrial instrument (Martins & Mawdsley, 2021; Kuokštytė, 2023). The Fund has a specific focus on seeking efficiency in the European defence-industrial sector and is predominantly concerned with enhancing the competitiveness of the European defence-industrial base. It is tempting to compare the EDF to the civilian European Security Research Programme. The latter was started in 2007 (see Oikonomou, 2009) and was primarily concerned with civilian security issues. However, the EDF is characterised by a reverse order of priorities, in that it 'is formally presented as industrial policy' and promises contributions to the EU's economic and innovation policies (Martins & Mawdsley, 2021, p. 1467). Notably there was great concern, within the Commission, that decreases in EU countries' defence budgets, including those regarding research and development, would lead to the decreased competitiveness of European defence contractors (Martins & Mawdsley, 2021; European Parliament & Council of the EU, 2021). These concerns align with the role of the European Commission, particularly the Directorate-General for Internal Market, Industry, Entrepreneurship and Small and Medium Enterprises (SMEs), which is primarily responsible for enhancing competitiveness of European industries. As also supported by Calcara and Simón (2021, p. 866), 'more supranational approaches, centred around EU institutions, would arguably be the best way to inject efficiency into the European defence market and clear the path from national vetoes and divergent industrial preferences'.

The emphasis on enhancing European defence-industrial efficiency and competitiveness within the context of the EDF has significantly helped the EU to underscore the non-political aspect of this instrument's governance and, thus, minimise the risk of formal blockages caused by national vetoes. In terms of governance of the Fund, the European Commission has the primary role to establish annual work programmes whereas Member States, acting within the framework of a committee, are entitled to assist the Commission

(European Parliament & Council of the EU, 2021). During the development phase of work programmes, the Commission has the right to assess possible cases that would duplicate already existing capabilities, whereas the role of the Member States' committee is formally only consultative (European Parliament & Council of the EU, 2021).

Furthermore, the EDF operates through competitive calls for proposals, with a focus on SMEs. The oversight of these calls is managed by the EU's executive. Only in 'exceptional circumstances' can a competitive call be bypassed and, even then, the Commission plays the primary role in assessing these cases, particularly in ensuring their alignment with the Fund's objectives (European Parliament & Council of the EU, 2021). Such governance contrasts with the recent institutional setting, where it was the European Defence Agency (EDA) that had 'the exclusive task of supporting joint development and defence research' (Håkansson, 2021).

Finally, another important aspect of the EDF, which contributes to unprecedented EU-level efforts to strive for more competitiveness in the defence-industrial field, is its focus on fostering cross-national collaboration. This involves heterogeneous actors, starting from governments to defence contractors driven by their search for profit to research organisations to higher and secondary education establishments (Martins & Mawdsley, 2021, p. 1467; Masson, 2024; see also Martins & Küsters, 2019). Governments' role, however, is indispensable as they must support an entity's participation in a consortium that is submitting a proposal and decide whether a topic proposed by an interested stakeholder for inclusion in the work programme is worth considering; Member State endorsement is regarded as crucial for ensuring alignment with national defence strategies and facilitating the necessary coordination and resource allocation, hence the reference to national participation in EDF projects (see, e.g., Deblauwe, 2023).

These insights support the notion that the EDF is a good empirical case to try to address a gap in research on defence integration that has predominantly concentrated on national political positions. So far, it has not challenged them in the context of ongoing defence-industrial integration. Do national motives, which inform EU countries' preferences and influence their positions, remain unchanged once effective integration is underway? This gap is noteworthy given that EU-level instruments are expected to influence actors' incentives and

may offer an alternative or at least a more comprehensive perspective to predominantly political views on defence-related issues. A relevant analysis has the potential to provide a crucial additional perspective on the issue of defence-industrial integration, shifting the focus from EU countries' initial political positions to their actual engagement in defence-industrial integration, which can be defined as non-political. Specifically, we need to investigate whether EU Member States' motivations identified pre-EDF are consistent with those characterising their actual participation in EDF projects.

3. Variable operationalisation, data description and empirical analysis

My dependent variable is EDF project financing (in Euros) at the country-year level, which I define as national participation in the Fund, during the period 2021–2022. The data, which encompass funding for both research and development collaborative projects, come directly from Masson's (2024) report 'European Defence Fund. Beneficiary profile after two calls for proposals (2021–2022)'. The report contains information on 60 EDF projects that were selected during the 2021 call (results announced in June 2022), and 41 projects selected during the 2022 call (selected in June 2023, updated in January 2024) (Masson, 2024, p. 2).

The data in the report were originally sourced from official platforms, including the official website of the Directorate-General for Defence Industry and Space, which features project factsheets, the EDA and the EU Funding and Tenders Portal (Masson, 2024, p. 2), among other sources. The data exhaustively cover EU countries, with each having two observations in the sample[5] As of January 2024, Masson's report was unable to include several 2022 EDF projects due to a lack of available data.[6] Figure 1 shows the distribution of EDF project financing per EU Member State during both years (2021 and 2022).

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[5] The exception is Slovakia in 2022 – see Note to Table 1. Additionally, the sample includes Norway, a participating country, providing two extra observations. Norway is also excluded from the analysis to test the robustness of the results.

[6] These projects were ARMETISS (smARt Multifunction tExtiles for integrated Soldier Systems), EC2 (European Command and Control System), TIRESYAS (Technology Innovation for Radar European SYstem ApplicationS), and E-NACSOS (EU NAval Collaborative Surveillance Operational Standard) (EU, 2023a, 2023b, 2023c, 2023d), and they represent around 15 per cent of the EDF funding in 2022 (Masson, 2024, p. 25).

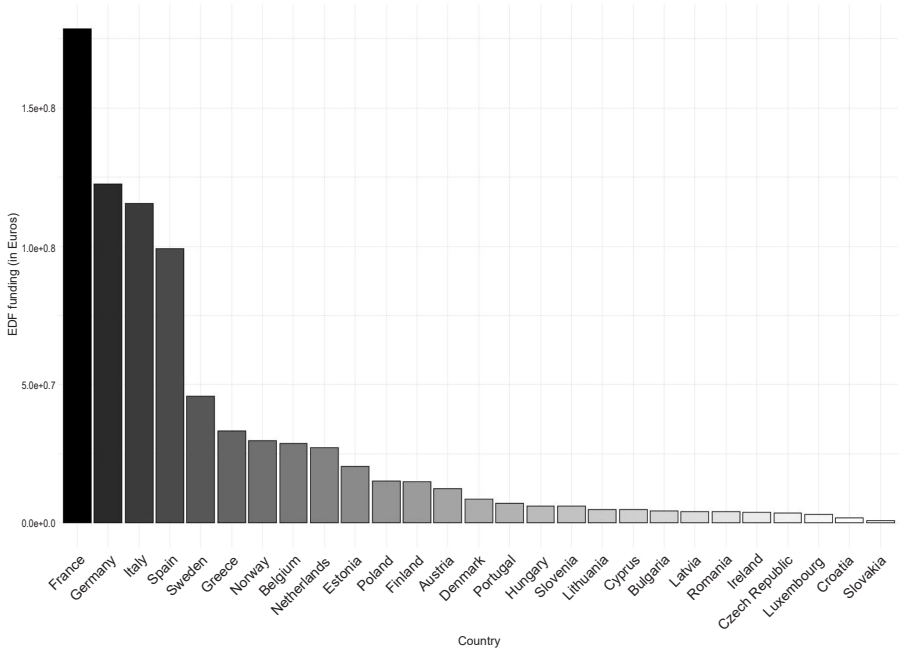

Figure 1. **EDF funding (total, in Euros) per EU Member State (2021–2022)**

Note: based on Masson's (2024, p. 26–27) data, which also include Norway.

The data on Atlanticism come from Becker and Malesky (2017, p. 163), who define it as strategic culture, which stresses the role of the United States in European security and prioritises NATO as 'a platform for coordinating force planning and operational deployment'. For the authors, European countries can move along a continuous line between Europeanism and Atlanticism, which allows them to operationalise Atlanticism as a continuous measure (Becker & Malesky, 2017). Becker and Malesky (2017) analyse strategic documents using automated content analysis to gauge the extent of Atlanticism among European countries. They use the British and French strategy documents as reference texts to represent the respective poles of Atlanticism (France being the least Atlanticist). Higher values of this variable indicate stronger alignment with Atlanticism. Given the availability of the data, which span until 2020, I use the variable with a lag of two years. Considering that the variable changes slowly and is, therefore, characterised by time-serial persistence within each country, I do not expect the specific temporal lag to be an issue. In other words, altering the variable operationalisation to use temporally proximate lags (e.g., a one-year lag instead of a two-year lag) is unlikely to yield noticeably

different results.

Generally, I adopted the market size operationalisation strategy proposed by Calcara and Simón (2021) – specifically, I utilised disaggregated data on defence equipment spending. Research employing disaggregated data on military expenditure has recently gained prominence and yielded both nuanced and novel findings (see, e.g., Becker & Dunne, 2023; Becker et al., 2024). I used the data on equipment expenditure (in percentages) as they were collected by Becker et al. (2024)[7] and calculated absolute spending on defence equipment (in millions, constant USD 2022) using SIPRI data on total military expenditure (SIPRI, 2023). Subsequently, I performed a logarithmic transformation because of the right-skewed distribution of the data. Given the availability of disaggregated data, equipment data are included in the sample, again, with a two-year lag. To ensure robustness, I reassessed the results using the log-transformed population size (World Bank, 2024) contemporaneously.

To proxy for economic-industrial governance, I employed the index of economic freedom, where higher levels of economic freedom align with more liberal economies. Widely utilised in political-economic research, this index offers comprehensive and consistent cross-sectional and longitudinal data on the state of economic freedom (The Heritage Foundation, 2023). While the economic freedom measure provides disaggregated data on different categories of freedoms, I use the average score, which equally weights each of the freedoms (The Heritage Foundation, 2023). The different components (rule of law, government size, regulatory efficiency and open markets) are considered relevant for assessing the overall economic freedom. A liberal economic policy approach to managing the national defence-industrial base speaks of defence contractors' increased competitiveness, particularly in bidding for contracts. DeVore (2015, p. 572; see also Hartley & Sandler, 2003) argues that under globalisation pressures Israel, for instance, 'encourage[ed] defence firms to compete both domestically and abroad', which helped defence firms to 'integrat[e] themselves into multinational supply chains'. Assuming that competitive bidding is an inherent and significant aspect of how the EDF operates, which is consistent with the Fund's underlying logic (European Parliament & Council of the EU, 2021), it is reasonable to anticipate that a country's economic freedom is positively associated with its participation in EDF

[7] Originally, the data were sourced from NATO and expressed as a percentage share of allies' defence budgets. For non-NATO EU countries, the data came from the EDA.

projects, on average.

There are limits to employing economic freedom, though. The index informs about economic freedom at large and not specifically on interrelations between the state, firms and labour – that is, the type of economic-industrial governance as previously defined. Consequently, the index may not fully capture certain aspects crucial to the political-economic perspective of capitalist models. However, the academic debate on the relationship between defence-industrial integration and liberal economic policy generally revolves around governments' 'arm's length approach to defence-industry relations' (Calcara & Simón, 2021, p. 887), which aligns with the key goal of achieving efficiency through increased competition and therefore enhancing competitiveness.

The institutional quality variable is operationalised using the control of corruption indicator, with data sourced from the World Bank's Worldwide Governance Indicators (Kaufmann & Kraay, 2023). It is a widely used measure, including and in particular as a proxy for institutional quality. The control of corruption indicator offers a broader and more comprehensive perspective on the institutional environment compared to measures such as the rule of law or government effectiveness. It extends beyond conventional public services, such as schooling or road infrastructure (associated with government effectiveness), and formal public authority (e.g., legal basis) to provide insights into the extent to which users may be expected to be trustworthy of national institutions. This trust is crucial in novel situations that require hand-in-glove cooperation between diverse stakeholders, such as collaboration with defence contractors in the context of bidding for EDF contracts and participating in the Fund's projects.

To reiterate, economic freedom is a composite index that includes the rule of law pillar, comprising property rights, government integrity and judicial efficiency (The Heritage Foundation, 2023). As a result, it is expected to be highly correlated with control of corruption (see below). When the empirical analysis accounts for these two variables, the relationship between economic freedom and the dependent variable is likely influenced by variations in the remaining components of the index, such as regulatory efficiency and market openness.

I performed a simple linear regression with pooled data to investigate the relationship between the selected independent variables and the outcome variable – national participation in the EDF. Table 1 shows the descriptive statistics. Figure 2 provides a

visualisation of bivariate correlations between the dependent variable and the covariates. There are a few interesting observations to make. For instance, in plot (a) of Figure 2, several data points appear to be outliers. These observations, specifically pertaining to Greece, show a lack of Atlanticism alongside high participation in EDF projects. While this result aligns with the expectation regarding strategic culture, the fact that these observations stand out as outliers warrants careful consideration. They could significantly influence the relationship of interest.

Furthermore, while plot (c) in Figure 2 might suggest no association between participation in EDF projects and economic freedom, Figure 3 displays a partial correlation between these variables after adjusting for the other covariates. Specifically, the correlation coefficient between participation in the EDF and economic freedom, after accounting for variations in equipment spending, Atlanticism and control of corruption, is negative (−0.4) and statistically significant at the 0.01 level. Overall, while regression is a relatively straightforward model, it mitigates the risk of confounding. This risk frequently remains in studies that rely on only a few case studies, typical of research on defence integration, including studies on the EDF.

Table 1. **Descriptive statistics**

	N	Mean	SD	Min	Max
EDF funding (ln)	53	16.28	1.41	13.36	19.24
Atlanticism_{t-2}	51	9.10	7.27	−17.80	18.01
$\text{Equipment spending}_{t-2}$ (ln)	53	6.58	1.53	3.50	9.53
Economic freedom	53	72.14	5.23	60.90	82.00
Control of corruption	53	1.011	0.08	−0.300	2.400
Pop (ln)	53	15.92	1.25	13.37	18.24

Note: The sample does not include one observation on Slovakia (2022). It is dropped from the sample as, based on Masson (2024), it did not participate in the EDF in 2022 and therefore cannot be log-transformed.

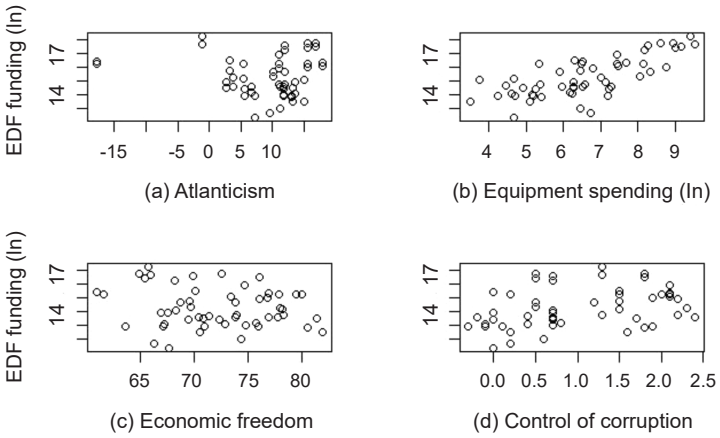

Figure 2. **Bivariate relationships between variables**

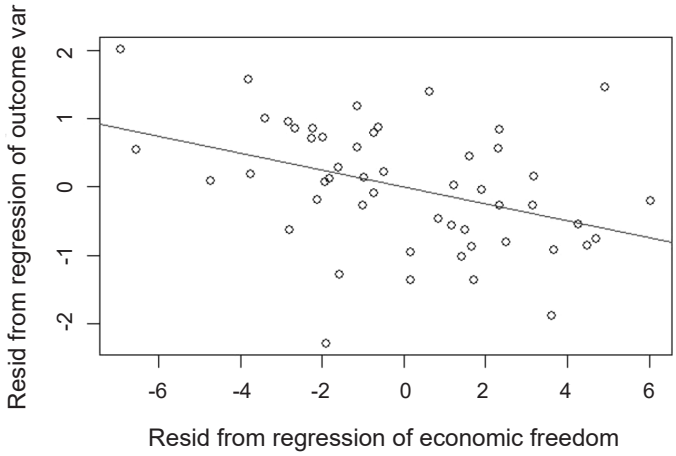

Figure 3. **Partial relationship between participation in EDF projects and economic freedom**

The regression table (Table 2) presents results from five different models. Model 1 can be considered a conventional model in that it includes the predictors of Atlanticism, equipment spending and economic freedom, as specified in Table 2. In other words, the explanations represented by these variables have already been highlighted in qualitative studies. Model 2 substitutes population for equipment expenditure as a proxy for defence market size. As previously mentioned, spending on equipment is introduced in the sample with a two-year lag due to data availability constraints. Using population as a substitute variable enables us to determine whether the results may be

influenced by the temporal lag specification. Model 3 builds on Model 1 by adding control of corruption. Model 4 excludes Greece, and Model 5 excludes Greece and Norway. As previously noted, Greece appears to be an outlier in considering the relationship between Atlanticism and participation in the EDF (plot (c) in Figure 2), while Norway is not an EU country and can be considered a special case in the sample.

The results are largely consistent across the models. The null hypothesis of no linear association between strategic culture, operationalised as Atlanticist orientation, and participation in the EDF cannot be rejected. Excluding Greece (Model 4) changes the estimated coefficient to positive, but it remains statistically insignificant. The defence market size hypothesis (market size measured in terms of equipment spending) is confirmed, with the estimated coefficient being positive and statistically significant at the 0.01 level. This indicates that, all else being equal, higher military equipment spending is associated with increased national participation in the EDF. The alternative market size measure, using population, also supports the hypothesis (Model 2), thus mitigating the concern that the findings may depend on the lag specification of equipment expenditure in Model 1.

Interestingly, while economic freedom is insignificant under the conventional perspective (Models 1 and 2), it becomes significant in the models that include control of corruption, which turns out significant as well and, as expected, positively related to the outcome. Moreover, contrary to the relevant hypothesis, economic freedom is negatively associated with EU members' participation in the EDF (Models 3–5). The sign reversal and increased magnitude of the covariate of economic freedom can be interpreted in the following manner. As economic freedom and control of corruption are significantly correlated (Pearson's correlation coefficient stands at around 0.7 and is statistically significant at the level of 0.01), when the second variable is omitted, the first acts as a proxy for it. Notably, as mentioned earlier, economic freedom is a composite index that includes the rule of law pillar, which is further operationalised through the assessment of property rights, government integrity and judicial efficiency (The Heritage Foundation, 2023). This pillar likely contributes significantly to the observed correlation between economic freedom and control of corruption. However, when the model specifically adjusts for control of corruption, other aspects of economic freedom, such as open markets and regulatory efficiency, become more prominent. It is thus these aspects that help to proxy for a country's policy preference for

increased competition and, arguably, greater competitiveness. Further research may consider identifying which component of economic freedom may be driving the statistical result under consideration.

Substantively, this finding can be interpreted as follows. EU-level liberalisation represents a complex case, as it is also accompanied by 'a regional layer of protection' (Calcara & Simón, 2021, p. 861) against global influences. Integration and search for efficiency through increased competition cannot then be easily equated with liberalisation policy strategies under the pressure of globalisation. For interested stakeholders the global market represents the primary arena for a competitive race and efficiency, taking precedence over the regional European market, which ultimately risks exhibiting significant protectionist tendencies.

Figure 4 also visualises standardised coefficient estimates, enabling a comparison of the coefficients' magnitudes. The coefficient for control of corruption is comparable in size to that of military equipment spending. Overall, these findings and the discussion provide a general guideline for further investigation into the substantive meaning of the negative association between economic freedom and national participation in the EDF (see, e.g., Calcara & Simón, 2021).

Table 2. **Regression results with EDF project financing (logged) as the dependent variable**

	Model 1	Model 2	Model 3	Model 4	Model 5
Atlanticism$_{t-2}$	−0.022	−0.029	−0.004	0.023	0.032
	(0.022)	(0.024)	(0.020)	(0.027)	(0.029)
Equip spending$_{t-2}$ (ln)	0.696***		0.505***	0.508***	0.502***
	(0.097)		(0.097)	(0.097)	(0.099)
Economic freedom	0.006	0.058	−0.124***	−0.118***	−0.128***
	(0.030)	(0.035)	(0.042)	(0.042)	(0.044)
Control of corruption			1.014***	1.012***	1.091***
			(0.256)	(0.256)	(0.273)
Pop (ln)		0.875***			
		(0.140)			
Constant	11.458***	−1.595	20.916***	20.165***	20.732 ***
	(2.331)	(4.014)	(3.137)	(3.176)	(3.280)
Observations	51	51	51	49	47
R^2	0.537	0.469	0.655	0.664	0.665
Adjusted R^2	0.508	0.435	0.625	0.634	0.633
Residual std. error	0.999	1.070	0.872	0.870	0.882
F statistic	18.200	13.830	21.840	21.750	20.810

Note: standard errors in parentheses; *p<0.1, **p<0.05, ***p<0.01.

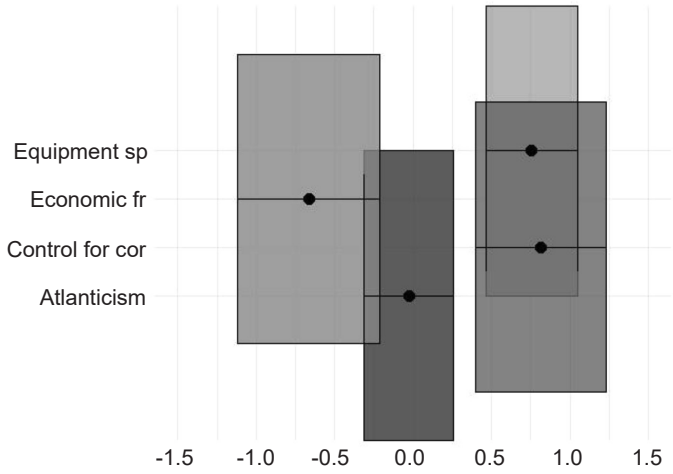

Figure 4. **Standardised coefficient plot (with 95% confidence intervals)**

Note: The shaded boxes are included solely for visualisation purposes and do not have a specific interpretive value.

Conclusion

This article examines short-term systematic patterns in defence-industrial integration dynamics among EU Member States, focusing on by-country distribution of EDF project financing during 2021 and 2022, the first two years of the Fund's implementation. While there are scholarly explanations of EU countries' preferences or positions on defence integration, including its industrial aspect, there is a gap in understanding whether Member States' actual participation in defence-industrial integration projects aligns with these preferences (positions). We lack knowledge about what potential influences are behind national engagement in such projects, which may differ from the political preferences (positions) of EU capitals on the desirability of defence integration, including its industrial aspect. This is because EU instruments are designed to influence actors' incentives and, ultimately, preferences. Furthermore, effective defence-industrial integration involves multiple stakeholders, operating beyond the arena of high politics, and contains significant non-political aspects.

Operationalising national participation in the EDF in terms of the Fund's project financing, this article uses the data from Masson (2024) on the distribution of the EDF project financing across EU Member States

following the first two calls (2021 and 2022). It revisits key explanations regarding EU countries' national positions on defence integration, including its industrial dimension, within a quantitative analysis framework. These explanations encompass strategic culture, market size and economic-industrial governance. Even if rooted in political economy, the latter two factors have revealed themselves as primarily political in relevant research as they have been used to explain EU countries' political positions. For example, the market size explanation has been linked to the debate on autonomy vs efficiency. Defence-industrial supranationalisation is anticipated to yield efficiency gains, potentially reducing defence production costs. However, EU Member States with smaller defence markets risk losing autonomy under supranationalisation, including their ability to freely purchase military equipment from the United States or make independent decisions on capability development (Calcara & Simón, 2021). Analysing the persistence of these explanations within the context of ongoing EDF activities can offer deeper insights into EU countries' concerns about the autonomy vs efficiency dilemma. It can also reveal whether the Fund, as an EU-level instrument, has altered the incentives for the involved actors. Moreover, I suggest an additional explanation, which is institutional quality. Strong institutional governance has several key implications, including more effective policy implementation strategies, enhanced administrative and technical capabilities, and higher standards of transparency and accountability. These factors help attract partners and foster collaboration, which is key to higher levels of participation in EDF projects.

The findings confirm but also nuance the empirical scope of the political perspective, including the autonomy vs efficiency dilemma, which may have been exaggerated. Concretely, the results suggest that strategic culture is not related to EU members' participation in the EDF, while there is a positive relationship between participation and market size. Moreover, economic freedom, representing a liberal economic-industrial regime, is negatively associated with national engagement in the EDF (once the regression model adjusts for control of corruption), while a country's institutional quality shows a significant positive relationship. These findings underscore the importance of the Fund's institutional dimension, which is both reinforced and challenged by national practices. A negative association with economic freedom may suggest that defence-industrial integration is not entirely about gaining efficiency through increased competition in the field, following

pressures of globalisation. For interested stakeholders, including governments in liberal market economies and defence contractors, the global market represents the primary arena for competition, taking precedence over the regional European market, which ultimately risks exhibiting significant protectionist tendencies.

Further research should delve deeper into the concept of economic freedom to better understand its association with national engagement in the EDF. The index of economic freedom, as utilised in this article, comprises several components, any one of which could be significantly influencing the observed relationship. Additionally, institutional quality warrants more extensive examination in the context of defence-industrial integration, given that relevant projects could potentially reinforce sound institutional practices. Lastly, exploring the connection between the institutional quality of EU Member States and their national preference for defence-industrial integration would be a valuable area of study.

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