Political debate as a filter: defence policy dynamics in EU member states (2004-2024)

Georgi Penchev ✉
University of National and World Economy, Sofia, Bulgaria

Abstract: This article examines the relationship between external threats, domestic political debate, and defence expenditures in EU member states, 2004–2024. Using Dynamic Time Warping (DTW) applied to Manifesto Project data, political debate dynamics are quantitatively measured against a threat index constructed from UCDP conflict fatalities. Robustness is confirmed against per-capita and distance-weighted variants and the Caldara-Iacoviello Geopolitical Risk index. Cluster analysis identifies four threat-response patterns and two debate-spending patterns. Right-wing governments show systematically higher defence stances. GDP-weighted EU averages diverge substantially from simple averages, particularly for opposition stances. The comparative analysis confirms the mediating role of domestic politics in European defence policy heterogeneity.

Keywords: defence policy, political debate, defence expenditures, European Union

Introduction

This study analyses the relationship between changes in the security environment, the dynamics of domestic political debate, and defence policies within the European Union (EU) for the period 2004–2024. The resurgence of geopolitical rivalry on the European continent, particularly following the full-scale war in Ukraine in 2022, has placed security and defence issues at the heart of the Union's agenda. In response, the EU has adopted ambitious documents such as the "Strategic Compass," which outline a clear trajectory towards transforming the Union into a more capable and autonomous security actor (Blockmans et al., 2022). Yet even this shared external shock has produced markedly divergent national responses in defence spending and capability investment (Fiott, 2022), suggesting that the mechanisms translating threat into policy vary substantially across member states.

The political debate within member states remains highly complex and often contradictory, despite supranational goals and ambitions. The debate rarely directly reflects the existing external threat but is instead interpreted through the prism of national political traditions, party competition, and long-established public attitudes

✉ Associate Professor, Department of National and Regional Security, University of National and World Economy, Sofia, Bulgaria; e-mail: gpenchev@unwe.bg.

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(Howorth, 2014). The study argues that discussions of external security and defence are shaped by domestic political dynamics. Party competition, ideological positioning, and coalition constraints shape the political climate, either independently or in an insufficiently clear and traceable relationship with the external environment. This can create a gap in national political systems between the need for a response and the rational formulation and implementation of that response in practice. Domestic political conditions can distort or delay the translation of external threats into defence commitments. In this case, a structural mismatch between collective security needs and national political will can arise — a problem that no supranational framework can solve.

Theoretically, the role of party politics in shaping foreign policy is well established, but there is a lack of systematic, quantitative research on how the dynamics of domestic debate influence defence policies in EU member states. In particular, the degree of consensus or polarisation between ruling and opposition parties has not been established. It can be assumed that countries with higher polarisation between the ruling party and the opposition will exhibit weaker, more delayed transmission of the external threat signal to actual defence spending. In other words, political debate will act as a filter rather than a conduit. This study addresses the following question: how do the dynamics of domestic political debate, as measured by the ideological proximity between ruling and opposition parties on defence issues, mediate the relationship between changes in the security environment and subsequent changes in defence spending levels?

To answer this question, the study proposes a three-step methodological framework. First, two separate time series are constructed for each country, tracking the ideological stance on defence issues of ruling and opposition parties using data from the Manifesto Project. Second, Dynamic Time Warping (DTW) is applied to measure the "strength of debate" — the distance between ruling and opposition — and "threat responsiveness" — the reaction to an objective security threat index. Third, countries are clustered into groups with similar behavioural patterns. The following section reviews the relevant literature before presenting the methodology and empirical results.

1. Literature review

The question of the relationship between party politics and decisions and defence and security policy is a subject of serious scholarly interest. Systematic quantitative approaches, methods, and studies to measure this relationship across multiple countries and over extended periods of time have yet to be developed. For the purposes of this study, we will examine three strands of literature: party politics and foreign policy; the application of time-series analysis methods in political science; and whether, to what extent, and how threat and threat perception serve as determinants of defence spending.

1.1 Party politics and defence policy

The role of domestic party politics in shaping foreign and security policy is one of the main topics in comparative political science. The classical realist tradition views states as unified actors, responding rationally to external threats. In this case, no significant variation in domestic political dynamics is expected. This view is increasingly challenged by research showing that party ideology, coalition relationships, and electoral incentives are significant factors in determining the type and outcomes of foreign policy. Comparing coalition and single-party governments, Kaarbo and Beasley find that junior partners can generate more extreme foreign policy behaviour than single-party governments, deviating substantially from what external conditions alone would predict (Kaarbo & Beasley, 2008). Similarly, Rathbun shows that party ideology and goals — and in particular their left-right positioning — give rise to persistent and predictable differences in how governments of the same party make decisions about military intervention and alliance commitments (Rathbun, 2004).

When examining party politics and defence policy in the European context, the relationship is further complicated by the EU's multilevel governance structure. Oppermann and Brummer find that coalition governments in EU member states systematically use compromise patterns in foreign policy. In these patterns, junior partners often pursue a policy course different from the preferences of the main coalition partner (Oppermann & Brummer, 2014). The role of opposition parties has received relatively less research attention. Although governments are formally responsible for defence budgets, opposition parties influence the political cost of decisions in this area through their program positions and related public rhetoric and actions. A government with a militaristic opposition can more easily justify an increase in defence spending, and if it faces a pacifist opposition, it will incur higher political costs for an identical decision. Contemporary research on strategic parliamentary opposition shows that opposition parties define their positions both on substantive grounds and to maximise political distance from the ruling coalition (Whitaker & Martin, 2022). This logic applies with particular force to the defence sector, where governments are highly vulnerable to public trust. The dynamics — opposition as a political constraint or as an enabling factor — underlie the analytical framework of this study.

1.2. Time series methods in political science

The emergence and maintenance of projects such as the Manifesto Project and the data they provide significantly expand the possibilities for quantitative analyses of political processes viewed as time series. Standard approaches, such as cross-sectional regressions and panel models, treat time as a control variable rather than a primary research variable. This feature limits their ability to analyse the dynamic,

process-dependent features of political debate in which the change and timing of political or ideological change are as significant as their strength. Dynamic Time Warping (DTW), originally developed for speech recognition (Sakoe & Chiba, 1978), offers an alternative by measuring the similarity between two time series based on their shape and trajectory, rather than just their individual point-by-point values. Reviewing methods for clustering time series, Liao concludes that DTW is particularly well suited to the political and social sciences, where processes evolve at different rates across units of analysis (Liao, 2005). Giorgino's implementation in R provides a flexible and computationally efficient platform for applying DTW to political data (Giorgino, 2009).

The application of DTW in comparative political science remains limited. Most existing studies focus on economic time series or election cycles rather than on the dynamics of party programs. The present study contributes to this new methodological literature by applying DTW to measure three substantively relevant political distances: polarisation between the government and the opposition on defence issues, and each party's responsiveness to an external threat index. In doing so, it captures the nonlinear, time-varying nature of political adaptation to threats that standard correlation measures would fail to identify.

1.3. Threat perception and defence spending

The factors influencing decisions on the volume of defence spending have been the subject of much research in defence economics. Hartley and Sandler point to external threats, burden-sharing within alliances, and domestic fiscal constraints as the main drivers (Hartley & Sandler, 1995). A literature review by Dunne and Tian confirms that external threat remains the dominant predictor of defence spending levels, but also identifies significant differences between countries that threat alone cannot explain (Dunne & Tian, 2013). Kuokštytė, Kuokštis, and Miklaševskaja's panel analysis of EU member states confirms that both external threat and the party composition of government are significant variables influencing the defence burden. Their fixed-effects model treats political mediation as a coefficient and does not examine its temporal structure (Kuokštytė et al., 2021). The study seeks to identify the reasons for the heterogeneity in defence spending across countries facing similar threats. The search is focused on the domestic political debate and its mediating role in the threat perception — decisions — defence spending process.

Measuring external threats is difficult and can be controversial. A widely used objective measure — conflict casualties — can be a proxy for levels of violence, but it can lag behind or diverge from political perceptions, which are highly influenced by dominant sentiments or ideologies. Caldara and Iacoviello's Geopolitical Risk Index (GPR), which summarises media coverage of geopolitical conflicts, offers an additional measure that captures perceived rather than actual threats (Caldara &

Iacoviello, 2022). Ringsmose and Rynning analyse how NATO member states responded differently to the same external environment after Russia's annexation of Crimea in 2014. NATO's eastern flank countries rapidly increased their spending, while other member states largely maintained the status quo (Ringsmose & Rynning, 2017). These differences highlight the importance of domestic political dynamics in translating external threats into policy responses. This study replicates and extends prior work on country-level responses over the period 2004–2024. Fidelis argues that the differences are not only due to threat perception but also serve as strategic signals to allies — a mechanism distinct from, but interacting with, domestic political filters (Fidelis, 2025). The present study seeks to add new insight to this literature by proposing a systematic, quantitative framework for measuring these filters simultaneously across all EU member states.

2. Measuring changes in the security environment

A key element of this study's analytical framework is the development of an objective, quantitative measure of the external security environment, named the "Regional Threat Index." The purpose of this index is to provide a comparable basis for analysing political reactions over time in EU member states. It is compiled using data from the Georeferenced Event Dataset (GED) of the Uppsala Conflict Data Program (UCDP), one of the leading academic sources for the systematic collection of data on organised violence worldwide (Sundberg & Melander, 2013). UCDP records each violent event with a certain accuracy for geolocation, date, participants and number of fatalities. A special variable controls accuracy for each record, ensuring a high level of reliability and methodological rigour.

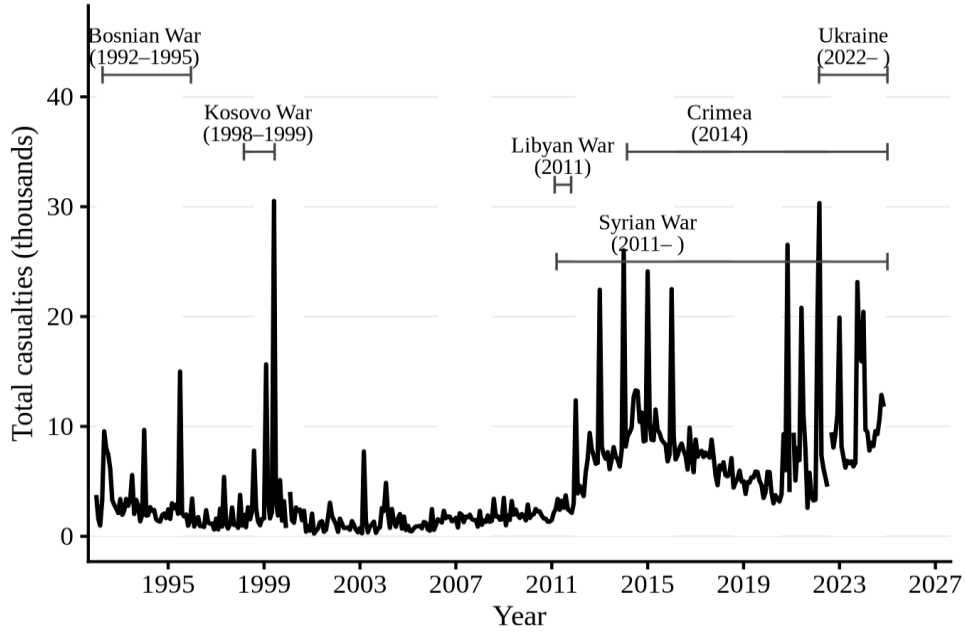
The index is compiled monthly by aggregating fatalities from all violent events in a defined neighbourhood of the European Union from 1992 to 2024. This geographical area includes the Western Balkans, Eastern Partnership countries, North Africa, the Levant, Russia, and Turkey — 37 countries in total were found in the GED data. The definition of the geographical scope is broader than the countries near the EU's borders, including conflict zones in the Sahel, the Horn of Africa, and South Asia. These zones have a documented impact on EU security through refugee flows, the spread of terrorism, and disruptions to resources and energy. The indicator of registered violence fatalities was chosen as the main indicator because it represents the most direct and objective measure of the intensity of the conflict.

It is important to recognise the analytical limits of this index. It functions as a barometer for the overall level of instability in the EU's neighbourhood, clearly signalling the presence of potential threats and periods of increased risk of escalation. High index values correspond to severe conflicts — the wars in the former Yugoslavia, Syria, and Ukraine — that pose risks for the Union through refugee flows, energy crises, or direct military threats. In order not to influence the analysis

of the domestic political debate for each individual country, the index does not include variables on the direction, actors or nature of the threat.

The intensity of the threat varies significantly, as shown in Figure 1, with sharp peaks followed by prolonged periods of lower activity. August 2022 recorded the highest monthly total—164,710 fatalities. The value reflects all deaths for the corresponding month for all UCDP-registered events in the EU neighbourhood. The war in Ukraine accounts for almost all registered casualties. The darker bars on the graph show the 11 security regimes identified through the analysis of the turning points described below.

Figure 1. Regional threat index, 1992–2024



Source: author's calculations based on UCDP GED (v25.1)

The data follow a lognormal distribution, which complicates direct analysis of structural changes. To address this, the time series was logarithmically transformed ($log(fatalities + 1)$), stabilising the variation and enabling more precise detection of consistent changes in the average intensity level. Changepoints were identified in the transformed series using the PELT (Pruned Exact Linear Time) method, as implemented in the changepoint package (Killick & Eckley, 2014). A minimum segment length of 24 months was imposed to ensure that identified regimes are substantively interpretable rather than artefacts of short-term fluctuations.

The purpose of changepoint analysis is to objectively identify the moments in time when the statistical properties of a time series — specifically its mean and

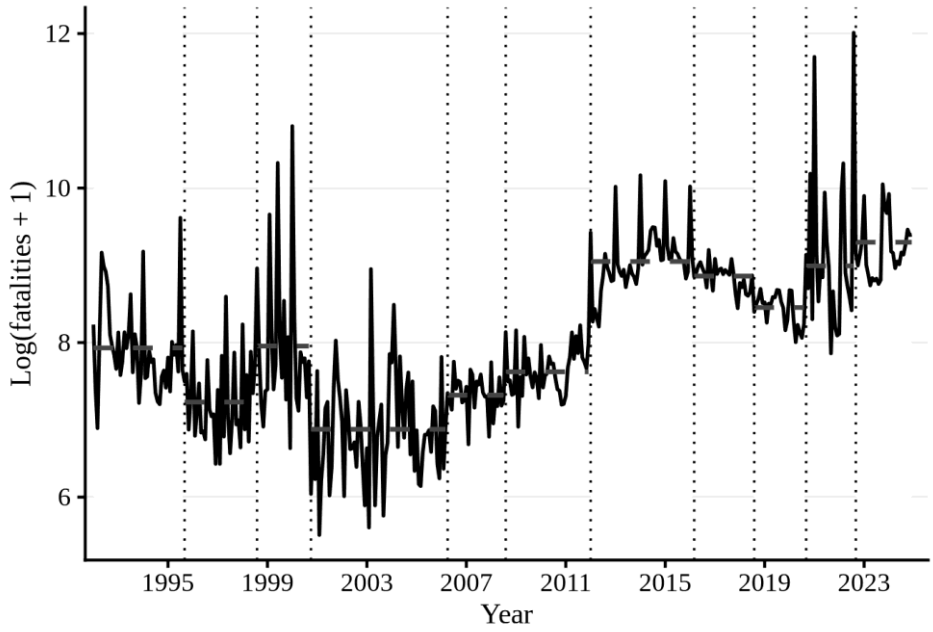
variance — change permanently. This method allows for the segmentation of the time series into a sequence of "regimes," each characterised by relatively stable behaviour. Instead of subjectively pinpointing important events, this approach enables the data itself to reveal when statistically significant structural changes have occurred. The process works as follows: first, a cost function is defined to measure how effectively a given data segment is described by a particular model. Then, the goal is to find the optimal division of the time series into segments that minimises the total cost across all segments:

$$\sum_{i=1}^{m+1} \left[\mathcal{C}(y_{(\tau_{i-1}+1):\tau_i})\right] + \beta f(m)$$

where $\mathcal{C}$ is the cost function for a given segment, $\tau_1, \ldots, \tau_m$ are the positions of m changepoints, and $\beta f(m)$ is a penalty function that prevents overfitting.

The PELT method guarantees the detection of exact changepoints based on the specified criterion with linear computational effort (Killick et al., 2012), making it especially suitable for objectively identifying structural changes in dynamic processes such as the security environment (Truong et al., 2020). The resulting security regimes are shown in Figure 2.

Figure 2: Security Regimes in the Log-Normalised Threat Index



Source: author's calculations based on UCDP GED (v25.1)

The analysis identifies 10 changepoints, producing 11 security regimes. The corresponding dates — September 1995, August 1998, October 2000, April 2006, August 2008, January 2012, March 2016, August 2018, September 2020, September 2022 — map closely onto well-documented geopolitical events: the end of the Bosnian War (1995), the Kosovo crisis (1998), the post-Balkan stabilisation (2000), the Iraq War peak (2006), the Georgia War (2008), the Arab Spring (2011), the post-ISIS consolidation (2016), and the full-scale invasion of Ukraine (2022). The list of countries included in the analysis, along with descriptions of each identified regime, is provided in Table A2 of the Annex.

The robustness of the threat index was assessed by computing two alternative specifications: a per-capita variant (fatalities per million neighbourhood population) and a distance-weighted variant (fatalities weighted by inverse distance from EU capitals, following a Bartik-style shift-share approach). All three variants are highly correlated: the log fatalities index correlates with the per-capita variant at $r = 0.974$ and with the distance-weighted variant at $r = 0.96$, confirming that the main results are robust to the choice of threat index specification.

As a further robustness check, the threat index was compared with the Geopolitical Risk (GPR) index of Caldara and Iacoviello (2022), which measures geopolitical risk based on newspaper coverage rather than actual conflict fatalities. The GPR index is available for 7 of the 41 neighbourhood countries considered in this study, covering major economies such as Russia, Turkey, Ukraine, Israel, and Saudi Arabia. The distance-weighted GPR index correlates with the UCDP-based index at $r = 0.455$. This moderate correlation reflects a substantively meaningful divergence: the GPR index captures media-perceived geopolitical risk, while the UCDP index measures actual conflict fatalities. The two series diverge most notably during the Arab Spring period (2011–2013), when actual fatalities were high but media-perceived risk in major economies remained comparatively subdued. This divergence suggests that the UCDP-based index provides a more direct measure of the objective security environment, while the GPR index captures the political salience of geopolitical events — a distinction that is itself analytically relevant for understanding how political debate responds to external threats.

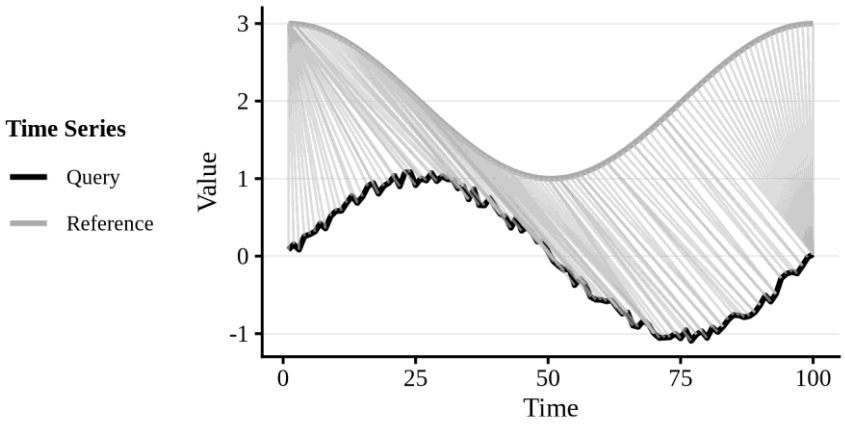
3. Study framework

The present study is exploratory in nature only. Its aim is to propose and evaluate a methodological framework for quantitatively measuring the relationship between external threats, domestic political debate and defence policies. The use of such a framework can provide a basis for further studies of causality. Regression models, such as OLS, for example, assume that the time lag between cause and effect is a fixed quantity. According to these models, a given government reacts to a threat exactly one or two years later. This theoretical assumption is not always true in the context of defence policy, since political systems in individual countries react at

different rates depending on electoral cycles, coalition dynamics and institutional constraints. The study applies two methods for time-series analysis: dynamic time warping (DTW) to measure shape similarity and k-means clustering to group countries based on their similar behaviour, as measured by the variables under study.

The Dynamic Time Warping algorithm analyses and measures the similarity of two time series that may evolve at different rates or be phase-shifted (Sakoe & Chiba, 1978). DTW stretches or contracts time series to find their optimal alignment, which makes it particularly suitable for applications in political science, where processes evolve at different rates across different units of analysis (Liao, 2005). The Giorgino implementation in R provides a flexible and computationally efficient platform for applying DTW to political data (Giorgino, 2009). The alignment concept is illustrated in Figure 3.

Figure 3. DTW alignment example



Source: author's own elaboration

The DTW distance D_{DTW} is defined as the minimum average-accumulated distortion between two time series Q (query) and R (reference) over all possible warping paths π:

$$D_{DTW}(Q,R) = \min_{\pi} \frac{1}{|\pi|} \sum_{(i,j)\in\pi} d\,(q_i, r_j)$$

where $d(q_i, r_j) = |q_i - r_j|$ is the local dissimilarity function. In practice, DTW is computed using dynamic programming via the recursion:

$$\gamma(i,j) = d(q_i, r_j) + \min \begin{cases} \gamma(i-1, j-1) + 2 \cdot d(q_i, r_j) \\ \gamma(i-1, j) + d(q_i, r_j) \\ \gamma(i, j-1) + d(q_i, r_j) \end{cases}$$

The final normalised distance D_{DTW} is extracted from the cumulative cost matrix (Giorgino, 2009). Political processes rarely happen instantly — a party may

alter its rhetoric months after an event, and a change in the official party programme may not occur until the next election cycle. DTW captures these nonlinear, temporally flexible relationships that standard correlation measures would miss. In this study, a low DTW distance between a party's ideology and the threat index indicates high "responsiveness"; a high value indicates that other, possibly domestic political factors dominate.

The second method, k-means, partitions a dataset into a predetermined number k of clusters by minimising the within-cluster sum of squares (MacQueen, 1967):

$$\underset{C}{\operatorname{argmin}} \sum_{k=1}^{K} \sum_{x_i \in C_k} \| x_i - \mu_k \|^2$$

where C_k is the k-th cluster, x_i is a data point, and μ_k is the cluster centroid. To determine k objectively, the NbClust package is used, which computes up to 30 statistical indices and recommends the optimal number of clusters by majority vote (Charrad et al., 2014).

The analytical process follows three main steps: (1) construction of annual time series for each country tracking government and opposition defence stances and the threat index; (2) computation of DTW distance metrics — debate intensity, government threat responsiveness, and opposition threat responsiveness; and (3) cluster analysis grouping countries by similar behavioural patterns.

4. Description of the dataset

Data on defence expenditure are based on Eurostat statistics on government expenditure by function (COFOG) (Eurostat, 2025). Specifically, the gov_10a_exp database is used and filtered by the function GF02 (Defence) according to the COFOG 99 classification.

Instead of the more common metric of defence spending as a percentage of GDP, which is sensitive to fluctuations in economic growth, the primary dependent variable is defined as the share of defence expenditure out of total government expenditure. This choice is not random. The choice of this variable provides a direct measure of policy priorities. Defence competes for resources with other public sectors such as health, education, and social security. An increase in the share of defence in total spending means that a deliberate political decision has been made to increase it at the expense of other sectors. This, in turn, is a clearer signal of policy changes than a GDP-based indicator, which may be affected by the business cycle.

The political debate time series are created by combining two established sources in comparative political science. The ParlGov database (Döring & Manow, 2024) is a data source for identifying the composition of governments and opposition for each country and year. ParlGov contains detailed information on parties, elections, and cabinets. In this way, it is possible to determine which political parties held executive power and when. Information from ParlGov on the number of

parliamentary seats was used as a weight in constructing the ideological position of each party or coalition.

The ideological positions of these parties are derived from the Manifesto Project Dataset (Lehmann et al., 2025). This dataset is the most comprehensive resource for the quantitative content analysis of party manifestos, coding quasi-sentences into a detailed schema of policy categories. Instead of relying on the general left-right ideology index, this study concentrates on the variable per104 (Military: Positive), which is party-specific and captures positive mentions of the armed forces and the need to sustain or increase military expenditure, modernise capabilities, and uphold military treaty obligations. A higher score on per104 indicates that a party places greater emphasis in its programme on strengthening the state's own military capacity. The analysis uses the variable per104 (Military: Positive), rather than a net indicator combining per104 and per105, because the two variables reflect different political phenomena — positive references to defence and the military (per104), on the one hand, and active opposition to them (per105), on the other. Using both variables simultaneously would conflate different dimensions of party positioning on defence issues.

The construction of the final dataset involves a multi-step process. First, the two databases are linked by matching parties based on country and cleaned party name. Second, for each year between 2004 and 2024, parties are grouped as "government" (parties with a minister in the cabinet) or "opposition" (parties with seats in parliament but not in the cabinet). For each group, the weighted average of per104 scores is calculated using parliamentary seats as weights. Finally, since the Manifesto Project data is only available for election years, values for intervening years are estimated using the last observation carried forward (LOCF) method, implemented via the zoo R package (Zeileis & Grothendieck, 2005).

As a robustness check on the COFOG defence expenditure series, the analysis was also conducted using SIPRI military expenditure data downloaded via the World Bank API (indicators MS.MIL.XPND.GD.ZS and MS.MIL.XPND.ZS) for all 28 EU member states, including the United Kingdom. The correlation between the SIPRI share of government expenditure series and the COFOG GF02 series is $r = 0.881$, confirming that the two sources capture the same underlying phenomenon despite differences in accounting methodology. The EU average SIPRI military expenditure as a share of GDP rose from 1.55% in 2004 to 1.99% in 2024, consistent with the COFOG-based trend of 1.38% (2004), 1.11% (2014), and 1.59% (2024). Defence expenditure as a percentage of GDP is also available from Eurostat and is used as an additional indicator in the EU trend analysis presented in the following section.

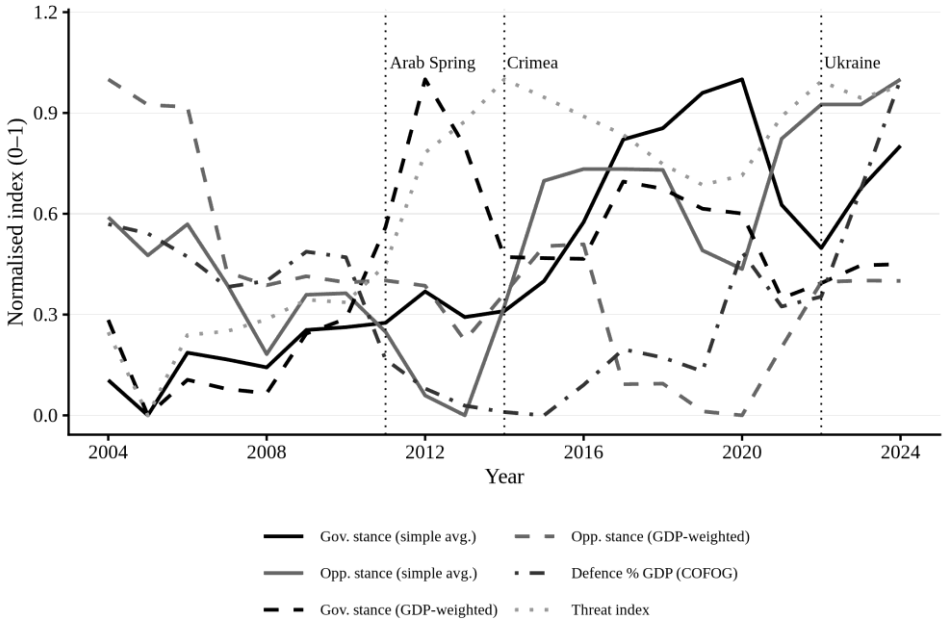
5. Political parties, programmes and defence debate in the EU

In this section, the outlined methodological framework is applied to answer the main research question. The analysis unfolds in two primary phases. First, using

Dynamic Time Warping (DTW), the three key metrics that describe the dynamics of the political debate in each country are calculated: Debate Intensity (distance between ruling party programmes and the opposition), Government Threat Responsiveness (distance between the ruling party and the external threat), and Opposition Threat Responsiveness (distance between the opposition and the threat index).

Before analysing the detailed metrics for each country, it is helpful to consider the overall picture at the European Union level. Figure 4 shows the EU-wide average ideological positions of the ruling and opposition parties, overlaid on the regional threat curve and the EU average defence expenditure as a share of GDP. For easier comparison, all series have been normalised to a scale from 0 to 1. The vertical lines indicate the key shocks to the security environment identified through changepoint analysis.

Figure 4. EU-Average Political Debate, Defence Spending, and Regional Threat



Source: author's calculations based on Manifesto Project, Eurostat COFOG, and UCDP GED (v25.1)

The analysis of EU-averaged trends uncovers several key features in the dynamics of the political debate on defence. An unusual inverse relationship is observed: during periods of increasing regional threat, such as between 2010 and 2020, the prominence of defence topics in both the ruling and opposition parties'

programmes tends to diminish. This confirms the study's main thesis that political debate does not directly reflect the security environment.

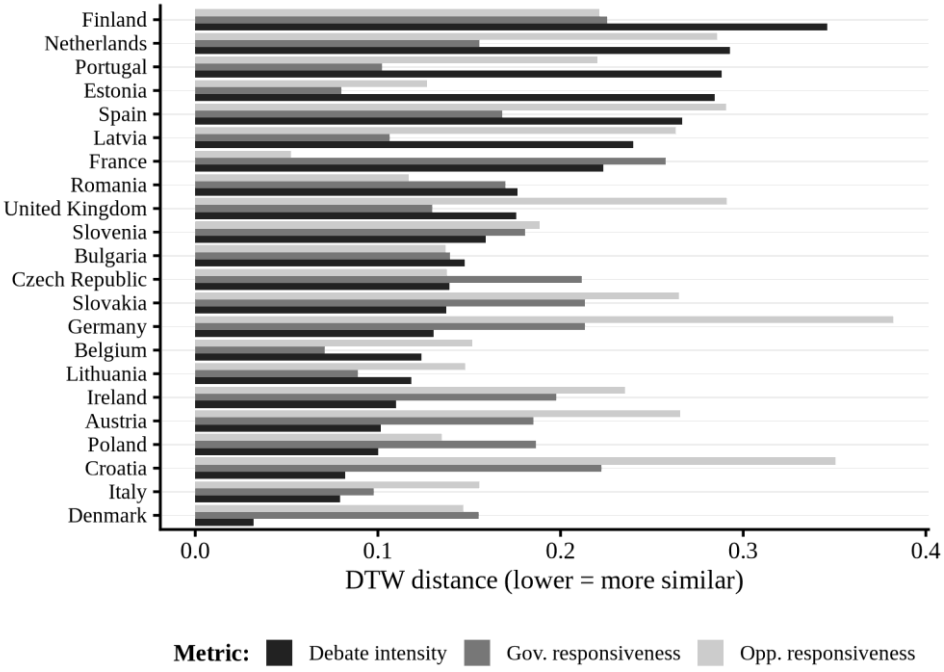
Figure 4 also presents GDP-weighted EU averages for government and opposition stances, which weight each country's position by its share of total EU GDP. The correlation between the simple and GDP-weighted government stance series is $r = 0.555$, while for the opposition stance it is $r = 0.029$. The near-zero correlation in the opposition series reflects a structural difference: large economies (Germany, France, Italy) have systematically different opposition stances from those of smaller member states. The divergence is important in itself and shows that the EU averages of opposition positions are strongly influenced by sample composition and should be viewed with caution.

The defence expenditure series (COFOG GF02 as a share of GDP) reveals a clear 'peace dividend' pattern: EU average defence spending declined from 1.38% of GDP in 2004 to a trough of 1.11% in 2014, before recovering to 1.59% by 2024. This trajectory — a decade of declining investment followed by a sharp reversal after Russia's annexation of Crimea and the full-scale invasion of Ukraine — provides important context for interpreting the political debate dynamics. The established weak reaction of party programs to the growing threats in 2010–2020 coincides exactly with the period of the deepest cuts in defence budgets. The narrative of the so-called 'peace dividend' is clearly dominant in the political discourse regardless of ideological affiliation.

A further dimension of the political debate concerns the ideological orientation of governments. Right-leaning governments show a mean defence stance of 1.96 compared to 1.22 for left-leaning governments — a difference of approximately 60%. At the country level, Spain ($r = 0.927$) and Slovakia show the strongest positive correlations between cabinet left-right position and defence stance, while France ($r = -0.786$) shows a strong negative correlation — an anomaly that reflects the particular dynamics of French defence policy, where Gaullist traditions of strategic autonomy cut across the conventional left-right divide.

Figure 5 presents the calculated DTW distances for each country. Several key findings emerge from the figure. The response to threats is clearly asymmetric: in many countries, the ideological position of the opposition coincides less with the threat curve than that of the ruling party. This is confirmed by the consistently higher values of the opposition responsiveness indicator. The data also show significant differences in the intensity of the debate between the ruling and opposition parties.

Figure 5. DTW Distance Metrics by Country for Political Debate



Source: author's calculations based on Manifesto Project and UCDP GED (v25.1)

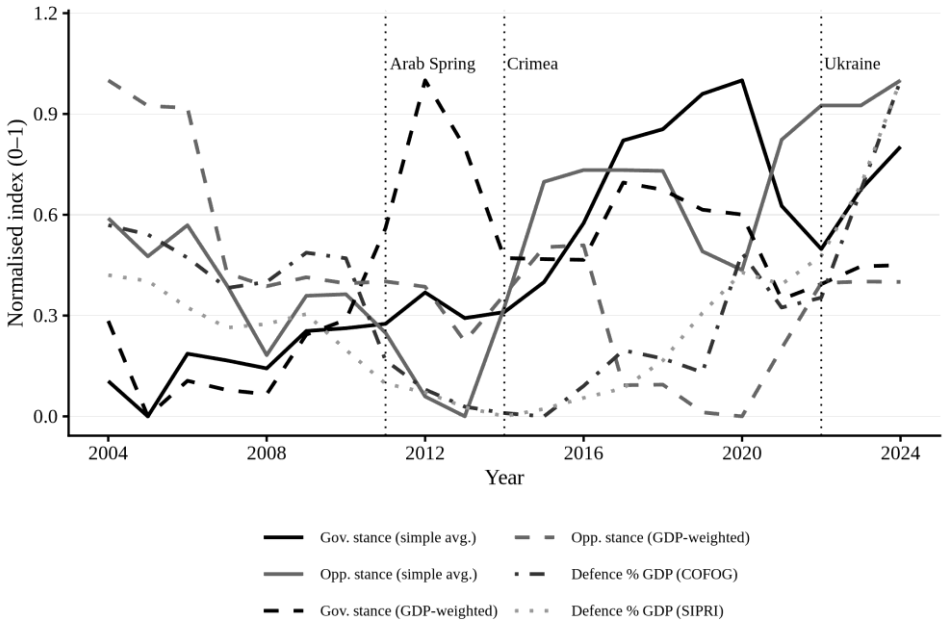
The main point of this visualisation is that states do not respond in the same way. A visual examination of the distribution of the three metrics suggests that there are likely groups of states with similar behavioural patterns — for example, a group showing low polarisation and close tracking of threats, and another displaying high internal debate and a weaker link to the security environment. Recognising and studying these groups is the primary aim of the next stage of the research.

6. Political parties, programmes and defence expenditures in the EU

Having examined the relationship between external threats and the dynamics of political debate in the previous section, the analysis now shifts to the output of the decision-making system. The aim is to assess the extent to which the ideological positions of the ruling and opposition parties, as reflected in their programmes, correspond to actual changes in defence spending. In other words, it is checked whether the "words" of the political elite are translated into real "actions" regarding budgetary priorities.

The same analytical approach is used for this purpose. First, the overall picture at the EU level is shown by comparing the average time series of the positions of the ruling party and the opposition, and the share of defence spending. Then, through Dynamic Time Warping (DTW), metrics of similarity between the debate and spending are calculated for each country separately, enabling an assessment of reaction diversity and laying the groundwork for subsequent cluster analysis.

Figure 6. EU-Average Political Debate vs. Defence Expenditures Budget Share



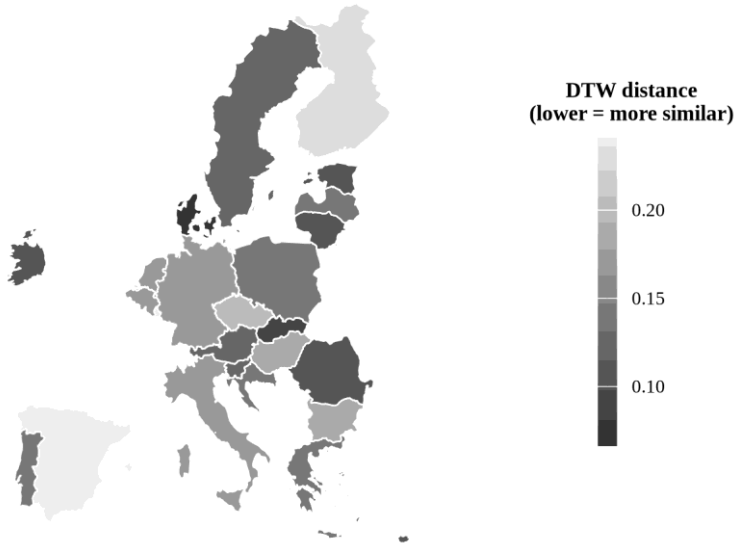
Source: author's calculations based on Manifesto Project, Eurostat COFOG, and SIPRI/World Bank

An initial analysis of the time-series similarity metrics uncovers several interesting patterns in Figure 6. The common pattern of policy programme differences observed in the previous Figure 4 is now quantified here. It is clear that in several countries, the similarity between debate and spending values is quite high, especially after 2010, as if there is an effect of the "accumulated value" of political debate, which begins to exert a more direct influence on budgetary decisions. Visual inspection of the graph also clearly shows the significant variation between countries, suggesting the presence of distinct groups. For some countries, a high degree of similarity between debate and spending has been established, while for others, this relationship is weaker. In this case, a cluster analysis can be performed to identify groups of countries showing similar behaviour.

The defence expenditure series in Figure 6 presents both the COFOG-based measure (GF02 as a share of GDP) and the SIPRI military expenditure series from the World Bank API. The two series are highly correlated (r = 0.881), confirming that the COFOG measure used throughout this study captures the same underlying phenomenon as the internationally recognised SIPRI data. The EU average COFOG defence share declined from 1.38% of GDP in 2004 to a trough of 1.11% in 2014, before recovering to 1.59% by 2024. The SIPRI series shows a consistent pattern, rising from 1.55% in 2004 to 1.99% in 2024, with the post-2014 recovery driven primarily by eastern-flank member states responding to a deteriorating security environment.

Figure 7 presents the DTW distance between the government's defence position and actual defence spending for the EU member states. Lower values of the indicator (darker colours) indicate that a country's government position more closely follows its defence spending, while higher values (lighter colours) indicate a weaker relationship between political discourse and budget outcomes.

Figure 7. Government Stance–Spending Similarity by EU Member State



Source: author's calculations based on Manifesto Project and Eurostat COFOG

The analysis of the similarity metrics between political debate and defence spending reveals considerable heterogeneity in the behaviour of individual states (see Figure 7). A clear geographic pattern emerges: eastern flank member states — Estonia, Latvia, Lithuania, and Poland — show relatively lower DTW distances, indicating that their government stances track defence spending more closely. This is consistent with the heightened threat perception in these countries following

Russia's actions in Ukraine. In contrast, several Western and Southern European states show higher DTW distances, suggesting that their political discourse on defence is more decoupled from actual budgetary decisions. This diversity of "debate-policy" behaviour underscores the need to formally group countries into distinct types.

In the next section, countries are grouped into clusters based on these calculated metrics using the k-means algorithm. The aim is to identify groups of countries with similar behaviour patterns. Each cluster is analysed and described, followed by an examination of the relationship between membership in a particular cluster and actual changes in defence spending.

7. Typology of EU member states: a cluster analysis

The presence of clearly distinct groups of countries with similar behaviour indicates significant differences in the calculated DTW values. This applies both to the reaction to threats and to its relationship with defence spending. To empirically identify the similarity, a cluster analysis using the K-means method was conducted. Choosing the optimal number is not obvious, which is why the NbClust package in R was used. With its help, multiple (over 30) statistical indices are calculated, and on this basis, by observing a majority rule, the best cluster structure is recommended (Charrad et al., 2014).

NbClust recommends $k = 4$ clusters for threat response, and $k = 2$ clusters for the debate-spending clustering. The two-cluster solution is a statistically parsimonious recommendation; in practice, there are significant nuances within each macro-group, which the qualitative discussion below seeks to illuminate.

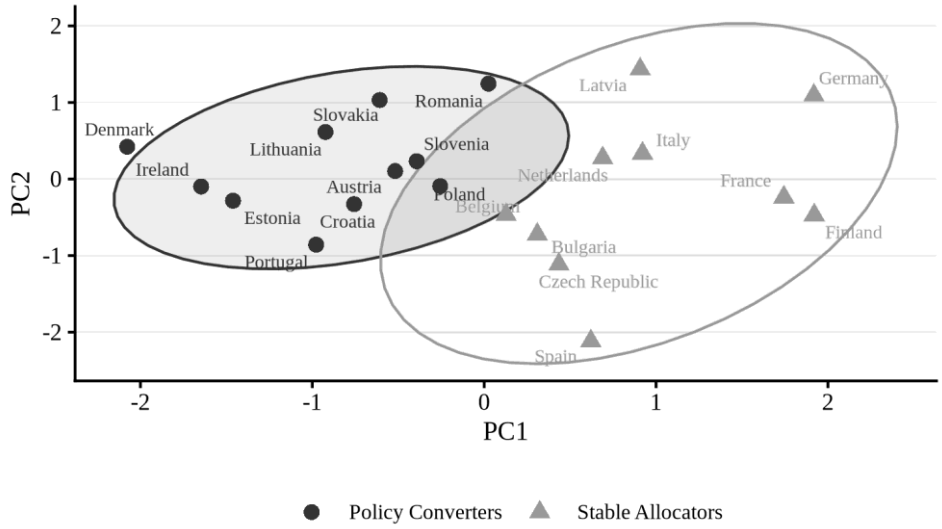
Figure 8 presents the cluster plot for the debate-spending similarity analysis. Countries are positioned according to their government and opposition spending similarity metrics, with cluster membership indicated by shading.

The two spending clusters reflect fundamentally different relationships between political discourse and budgetary outcomes. The 'Stable Allocators' (Belgium, Bulgaria, Czech Republic, Finland, France, Germany, Italy, Latvia, Netherlands, Spain) are countries where defence spending follows a relatively stable trajectory that is less directly coupled to shifts in government or opposition stance. The 'Policy Converters' (Austria, Croatia, Denmark, Estonia, Ireland, Lithuania, Poland, Portugal, Romania, Slovakia, Slovenia) are countries where the DTW distance between stance and spending is lower, indicating that changes in political discourse are more directly reflected in budgetary decisions. Notably, several eastern flank states (Estonia, Lithuania, Poland) appear in the Policy Converters cluster, consistent with the heightened threat responsiveness observed in the previous section.

The second clustering exercise, shown in Figure 9, groups member states based on their threat-response dynamics. The results of the analysis offer an empirical typology that accounts for how national political systems interpret changes

in the security environment and respond to them in political discourse. The partitioning of countries is based on three distinct DTW metrics: debate intensity, government threat responsiveness, and opposition threat responsiveness.

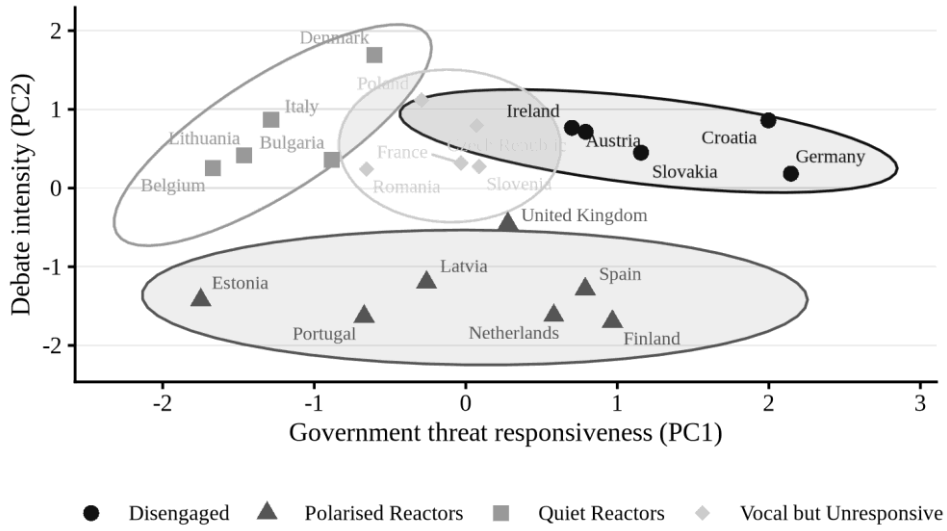
Figure 8. Cluster Plot of EU Countries — Debate–Expenditure Similarity



Source: author's calculations based on Manifesto Project and Eurostat COFOG

The four clusters based on the reaction to threats show clearly distinct political behavioural patterns among countries within the European Union. The 'Polarised Reactors' (Estonia, Finland, Latvia, Netherlands, Portugal, Spain, United Kingdom) have both high debate intensity and a relatively low DTW distance between the government and the threat index. Despite the internal polarisation, the government's positions closely reflect the security environment and the threats it faces. The 'Disengaged' cluster (Austria, Croatia, Germany, Ireland, Slovakia) shows low debate intensity and simultaneously a high DTW distance from the government, suggesting that defence issues generate fewer internal disputes, but also a weak reaction to external threats. The 'Quiet Reactors' (Belgium, Bulgaria, Denmark, Italy, Lithuania) combine low debate intensity and a low DTW distance from the government. This pattern can be defined as consensual and responsive. The last cluster, 'Vocal but Unresponsive' (Czech Republic, France, Poland, Romania, Slovenia), demonstrates a moderate intensity of debate and a high DTW distance from the government, suggesting that political discourse on defence issues is active but distant from the security environment and threats.

Figure 9. Cluster plot of EU countries — Threat–Debate Similarity



Source: author's calculations based on Manifesto Project and UCDP GED (v25.1)

This result logically follows from the high levels of variation in country behaviour observed in the initial review of DTW distances. The presence of clusters confirms that there is no single "European" response pattern. Rather, there are several different types of behaviour, reflecting the diversity of national political traditions, threat perceptions, and institutional features across EU member states.

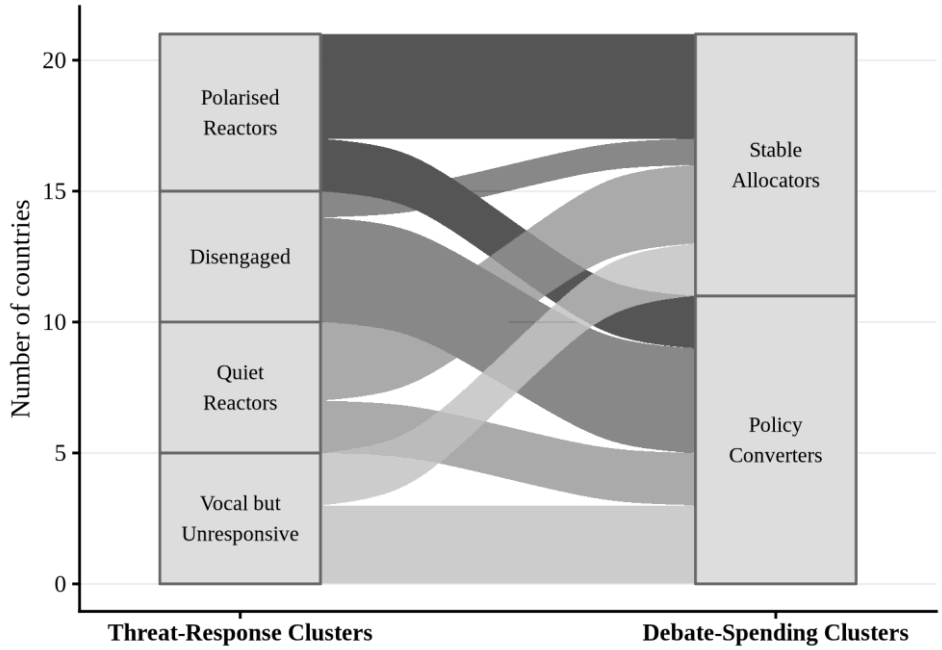
8. Analysis of results and discussion

The final analytical section of the study compares the results obtained for the two clusters. The aim is to identify similar characteristics among groups of countries, but, more importantly, to analyse the stability of cluster composition when applying the two different clustering criteria. In this way, an answer can be obtained to the question: "Do countries that react similarly to the external threat also show a similar relationship between their political debate and their actual spending policy?" This comparative study allows for the construction of a more comprehensive typology of EU member states.

Table 1 (see Annex) presents the results of the two independent cluster analyses. They show a complex and detailed picture of the behaviour of EU member states. The analysis identifies 4 separate threat-response groups and 2 debate-spending groups. This confirms the existence of significant diversity within the EU and rejects the idea of a single, unified response to security challenges.

The alluvial diagram in Figure 10 offers a synthesised visual depiction of the study's main finding: the divergence between two models of member-state behaviour. The chart demonstrates the "movement" or "flow" of countries from the clusters based on their political debate's response to external threats (the left axis) to the clusters based on the relationship between that same debate and actual defence spending (the right axis). It should be noted that the United Kingdom is included in the threat-response clustering, but is absent from the debate-spending clustering due to the lack of COFOG data after Brexit. It is on the left axis of the diagram, but not on the right, and accordingly, its flow is not represented.

Figure 10. Movement of countries between clustering models



Source: author's calculations

The analysis of the flows between the two clusters shows that there are both "stable" and "unstable" groups of countries. Stable groups are characterised by thicker, relatively straight flows that connect clusters with similar characteristics and consistent behaviour across both criteria. Countries in which political debate effectively transforms external shocks into policy decisions serve as a clear transmission mechanism.

The analysis of "unstable" or diverging flows provides the key insight of the study. Unstable flows are those in which a given cluster on the left splits into several narrower flows directed towards different clusters on the right. This bifurcation is visual evidence that political debate functions as a "filter." They show that an identical

pattern of reaction to the threat at the level of political debate can lead to very different policy outcomes.

Several important patterns can be identified from the comparative cluster analysis. Geographically, the member states on the eastern flank (Estonia, Latvia, Lithuania) consistently appear in the threat cluster 'Polarised Reactors' and in the expenditure cluster 'Policy Converters', indicating that the high intensity of the debate is combined with a closer connection between political discourse and budgetary outcomes. The established pattern is consistent with the increased level of threat perception in these countries following Russia's aggression in Ukraine, as well as the serious deterioration of the security environment near the EU's eastern borders. A number of Western European countries (Germany, Austria, Ireland), on the other hand, are found in the 'Disengaged' cluster. Despite their economic weight, their political discourse on defence issues is less sensitive to the external environment and threats. France is a particularly interesting anomaly, as it is classified as 'Vocal but Unresponsive' in the threat cluster. It demonstrates a strong negative correlation between the governments' positioning on the left-right dimension and their position on defence issues ($r = -0.786$). This is a feature of French defence policy, in which Gaullist traditions of strategic autonomy cut across the conventional left-right ideological dimension. The new member states from Central and Eastern Europe generally show greater sensitivity to threats than the older Western members, consistent with their greater exposure to security threats and their geographic proximity to conflict zones.

A structural limitation of the LOCF imputation method deserves explicit attention when interpreting the cluster assignments of specific countries. Because party positions are carried forward from the most recent election manifesto, rapid real-world policy shifts that occur between elections are not captured in the data until the next electoral cycle. Germany provides the clearest illustration: Chancellor Scholz's declaration of a Zeitenwende — a historic reversal of German defence policy — in February 2022 was accompanied by a commitment to increase defence spending to 2% of GDP and a €100 billion special fund for the Bundeswehr. Yet because the most recent Manifesto Project coding available for Germany corresponds to the 2021 Bundestag election, the data for 2022–2024 retain the pre-Zeitenwende programmatic position. This explains, at least in part, why Germany appears in the 'Disengaged' cluster despite its dramatic real-world policy shift. This is not a flaw in the methodology but rather a known property of manifesto-based data that reflects the institutional reality of electoral cycles: formal party programmes change at elections, not in response to individual geopolitical events. Future research using higher-frequency data — such as parliamentary speech records or media-based measures of party positions — could capture these between-election shifts more precisely.

The robustness of the cluster assignments was assessed through three complementary tests. First, seed stability: running k-means with five different random seeds produces identical cluster assignments (ARI = 1), confirming that the solution is

not sensitive to initialisation. Second, variant stability: re-running the clustering with two alternative threat index specifications (per-capita and distance-weighted) yields a mean ARI of 0.752 relative to the main results, indicating substantial but not perfect stability. Third, country-level stability: 13 of 22 countries maintain the same cluster assignment across all three threat index variants (Austria, Croatia, Czech Republic, Estonia, Finland, Germany, Ireland, Latvia, Netherlands, Portugal, Slovakia, Slovenia, Spain). The 9 unstable countries (Belgium, Bulgaria, Denmark, France, Italy, Lithuania, Poland, Romania, United Kingdom) are those whose DTW metrics place them near cluster boundaries, making their assignment sensitive to small changes in the threat index specification. These results should be interpreted with appropriate caution, and the unstable countries' cluster assignments treated as indicative rather than definitive.

The comparison of the compositions of the clusters formed under the two criteria also provides the study's main conclusion. The first clustering is based on reactions to external threats and groups the countries according to the patterns in their political debate. The second clustering examines the relationship between political debate and real defence spending and offers a different view. There is often a "shift" of countries between clusters. Countries falling into the "quick responders" cluster in the debate do not always end up among those where the debate actually leads to a change in spending. It is precisely these divergences that highlight the study's core argument: that, in order to understand defence policies in European countries, it is not enough to examine only the external environment. It is also necessary to analyse the complex, often nonlinear dynamics of the domestic political debate.

Conclusions

The present study shows through quantitative comparison that the responses of EU Member States to changes in the security environment are far from uniform. Using cluster analysis based on metrics from Dynamic Time Warping, 4 distinct threat-response patterns and 2 debate-spending patterns emerge, reflecting varying levels of polarisation in the domestic debate and differing links between this debate and the final political decisions on defence expenditure. The main conclusion is that the threat-response relationship is not straightforward but is heavily influenced by the national political context.

Convincing evidence for the role of political debate as a "filter" is the divergence between clusters based on reactions to the threat and those based on political responses. These results have significant implications for the future development of the Common Security and Defence Policy. Pan-European objectives, enshrined in documents such as the "Strategic Compass", will continue to clash with specific and diverse national political realities.

Three additional findings extend this conclusion. First, the robustness of the Regional Threat Index was confirmed using per-capita and distance-weighted variants

(correlations above 0.94). The index was also validated against the Caldara-Iacoviello Geopolitical Risk index. The moderate correlation between the UCDP-based index and the GPR index ($r = 0.455$) is itself a significant finding, indicating that media perceptions of geopolitical risk and actual conflict casualties are systematically diverging. The GPR index is more sensitive to high-profile events in major economies, whereas the UCDP index captures the full range of violence occurring near borders. Second, the ideological orientation of governments matters. Right-leaning governments show a mean defence stance of 1.96 compared to 1.22 for left-leaning governments. The approximately 60% difference confirms that the left-right dimension of party competition is a significant mediator of the threat-to-policy signal transmission mechanism. Third, GDP-weighted EU averages diverge substantially from simple averages, particularly for opposition stances, reflecting the systematically different positions of large economies (Germany, France, Italy) relative to smaller member states. These findings collectively underscore the importance of disaggregating EU-wide trends and attending to the domestic political filters that shape defence policy across the Union's diverse membership.

Two of the limitations of the present analysis can serve as a basis for future research. First, the interpolation of data in the periods between election years, and second, the exclusion of six member states from the cluster analysis due to a lack of data on the opposition's position. Because party positions that carry over between elections take the form of step functions, applying DTW to data imputed via LOCF can introduce artificial stretches when compared to the continuously varying threat index. Higher-frequency data on political positions, combined with the methodological framework developed here, could offer a more detailed picture of how domestic political dynamics mediate the relationship between external threats and defence policies. The cluster stability analysis shows that 13 of 22 countries maintain consistent cluster assignments across the different variants of the threat index (mean ARI = 0.752). This highlights the value of further methodological refinement, especially for countries near the cluster boundaries, whose classification remains sensitive to the choice of specification.

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Open Science Statement: The data processing pipeline, replication scripts, and interactive application accompanying this article are publicly available. The complete R codebase, including all processing stages from raw conflict event data to final cluster assignments, is hosted at https://github.com/gpenchev/art. An interactive Shiny application allowing full exploration of the Regional Threat Index, parliamentary stance series, DTW metrics, and country typologies is accessible at https://pub.e-dnrs.org/article2/.

AI use statement: The R processing scripts and the Shiny interactive application accompanying this study were written with the assistance of Claude Sonnet (Anthropic), accessed via AiderDesk v0.70.0. AI assistance was also used for language editing and bibliography formatting. The author thoroughly reviewed, manually verified, and edited all generated outputs. All research concepts, analytical decisions, the theoretical framework, interpretation of results, and overall supervision of the work are solely the author's.

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Annex

Table A1. comparative table of country clusters by threat-response and debate-policy dynamics

Country	*Threat Cluster Type*	*Spending Cluster Type*	*Debate Intensity*	*Gov. Respons.*	*Opp. Respons.*	*Gov. Spend*	*Opp. Spend*
Estonia	Polarised Reactors	Policy Converters	0.284	0.080	0.127	0.111	0.081
Finland	Polarised Reactors	Stable Allocators	0.346	0.226	0.221	0.229	0.223
Latvia	Polarised Reactors	Stable Allocators	0.240	0.106	0.263	0.132	0.263
Netherlands	Polarised Reactors	Stable Allocators	0.293	0.155	0.286	0.164	0.201
Portugal	Polarised Reactors	Policy Converters	0.288	0.102	0.220	0.146	0.077
Spain	Polarised Reactors	Stable Allocators	0.267	0.168	0.291	0.241	0.092
United Kingdom	Polarised Reactors	No COFOG data	0.176	0.130	0.291		
Austria	Disengaged	Policy Converters	0.102	0.185	0.266	0.129	0.140
Croatia	Disengaged	Policy Converters	0.082	0.223	0.351	0.135	0.110
Germany	Disengaged	Stable Allocators	0.130	0.213	0.382	0.177	0.293
Ireland	Disengaged	Policy Converters	0.110	0.198	0.235	0.098	0.081
Slovakia	Disengaged	Policy Converters	0.137	0.213	0.265	0.095	0.177
Belgium	Quiet Reactors	Stable Allocators	0.124	0.071	0.152	0.170	0.143
Bulgaria	Quiet Reactors	Stable Allocators	0.147	0.140	0.137	0.184	0.140
Denmark	Quiet Reactors	Policy Converters	0.032	0.155	0.147	0.067	0.085
Italy	Quiet Reactors	Stable Allocators	0.079	0.098	0.156	0.169	0.214
Lithuania	Quiet Reactors	Policy Converters	0.118	0.089	0.148	0.099	0.145

Czech Republic	Vocal but Unresponsive	Stable Allocators	0.139	0.212	0.138	0.201	0.128
France	Vocal but Unresponsive	Stable Allocators	0.224	0.258	0.053	0.216	0.226
Poland	Vocal but Unresponsive	Policy Converters	0.100	0.186	0.135	0.144	0.143
Romania	Vocal but Unresponsive	Policy Converters	0.177	0.170	0.117	0.109	0.215
Slovenia	Vocal but Unresponsive	Policy Converters	0.159	0.181	0.189	0.129	0.151

Source: author's calculations. Note: The United Kingdom has no COFOG spending data (post-Brexit). Six countries excluded from clustering due to absence of opposition stance data (Cyprus, Greece, Hungary, Luxembourg, Malta, Sweden): for these countries, the combined use of the ParlGov and Manifesto Project databases does not yield matching records for opposition parties for the entire period under study, making it impossible to construct a continuous time series for the opposition stance. DTW distance: lower values indicate higher similarity between time series.

The list of countries used for search in the Georeferenced Event Dataset (GED) of the Uppsala Conflict Data Program (UCDP) and for creation of the Threat Index: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia, Serbia, Armenia, Azerbaijan, Belarus, Georgia, Moldova, Ukraine, Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia, Russia, Turkey, Afghanistan, Pakistan, Sudan, South Sudan, Somalia, Mali, Nigeria, Cameroon, Chad, Niger, Ethiopia, Eritrea, Djibouti, Saudi Arabia, Iran, Iraq, Yemen

Note: The database was searched for the entire period across all listed countries. Countries not found in GED (Kosovo, Montenegro, Belarus, Palestine) had no recorded conflict events in the dataset. The definition of the geographical scope is broader than the countries near the EU's borders, including conflict zones in the Sahel, the Horn of Africa, and South Asia. These zones have a documented impact on EU security through refugee flows, the spread of terrorism, and resource and energy disruptions.

Table A2. Security environment regimes in the EU's Neighbourhood

Regime	*Period*	*Months*	*Mean log intensity*	*Total fatalities*
1	January 1992 – August 1995	44	7.92	148,349
2	September 1995 – July 1998	35	7.23	56,283
3	August 1998 – September 2000	26	7.96	152,211
4	October 2000 – March 2006	66	6.86	81,149
5	April 2006 – July 2008	28	7.33	44,054
6	August 2008 – December 2011	41	7.64	89,222
7	January 2012 – February 2016	50	9.07	476,986
8	March 2016 – July 2018	29	8.85	205,353
9	August 2018 – August 2020	25	8.43	116,756
10	September 2020 – August 2022	24	9.15	493,015
11	September 2022 – December 2024	28	9.21	299,407

Source: author's calculations based on UCDP GED (v25.1). Changepoints identified using the PELT method with BIC penalty and minimum segment length of 24 months.