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The Continent or the "*Grand Large*"? Strategic Culture and Operational Burden-Sharing in NATO

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We argue that NATO allies exhibiting more "Atlanticist" strategic cultures allocate a greater share of their defense resources to Alliance priorities than those exhibiting "Europeanist" strategic cultures. Our analysis builds on policy discussions regarding imbalances in burden-sharing in transatlantic security. Scholarship in the fields of international security and political economy offers plausible explanations for these imbalances, but does not address how allies allocate resources within defense budgets and does not statistically test effects of cultural variables on such decisions. Using evidence from 89 national security strategy documents of 24 NATO allies, we argue that the more states' strategic cultures tend toward Atlanticism, the more resources they allocated to military operations during a period in which such operations were the Alliance's top priority. During the height of NATO's "out of area" period from 2000 to 2012, there was a strong, positive correlation between, on the one hand, Atlanticist language in such documents and, on the other, allies' allocation of financial resources to military operations—as opposed to personnel, infrastructure, or equipment.

As NATO addressed "new security challenges" at its 2014 Wales Summit, allies made their first explicit public commitment to redress unequal transatlantic burden-sharing by pledging to invest 2 percent of GDP in defense—and 20 percent of that defense investment in equipment and related research and development by 2024. The fact that heads of state and government made the Wales pledge was unusual. In the past, only defense ministers—who generally support increases in defense budgets—endorsed similar NATO guidelines, and only in private. Some criticized the pledge for weak "consensus" language (Dempsey 2015), but when NATO revisited the topic at the 2016 Warsaw Summit, 22 Allies had halted or reversed declines in defense spending, while a fifth state had joined four others in meeting NATO's 2 percent guideline (NATO 2016). The outcome of the Wales pledge over the next decade matters for scholarship on alliance burden-sharing. The promulgation of such a pledge itself implies that allies bear some social allegiance to one another, and that this allegiance should drive policy independent of the economic and military considerations that generally guide how states allocate defense resources. If such material considerations were all that mattered, then the pledge would be superfluous. Instead, officials describe it as central to the "transatlantic bond" (NATO 2014), and an "important gauge" of allies' political commitment to Europe's security (Techau 2015).

The puzzle posed by the necessity of the high-profile Wales pledge deepens when we study the allocation of resources *within* the defense budgets of individual countries. NATO allies operate in the same geostrategic environment and face similar systemic constraints. If military and economic factors provided the only explanation for spending behavior, NATO allies should allocate resources much more similarly within their defense budgets. As we demonstrate below, however, the resources allocated to operations and maintenance (O&M), equipment, personnel, and infrastructure expenditures vary widely even among the most similarly situated allies.

Consider NATO's newest Eastern European members, who analysts often cite as facing similar geopolitical conditions. In 2015, Bulgaria devoted less than 2 percent of its defense budget to equipment. Slovenia devoted less than 1 percent. However, Poland allocated over 30 percent and Latvia, which is *at least* as vulnerable as Poland, devoted just 10 percent of its 2015 defense budget to equipment (NATO 2015a). We also see significant variation among countries in the share of defense resources allocated to each of NATO's other three categories of defense expenditures. It ranges from 6.2 percent to 39.5 percent in O&M expenditures, from 36.4 percent to 80.7 percent in personnel expenditures, and from less than 0.1 percent to 10.1 percent in infrastructure expenditures. Existing theories on alliance burden-sharing face difficulty in accounting for this tremendous variation.

In this article, we provide evidence that strategic culture accounts for much of this variation. We argue that "Atlanticism" shapes decisions about resource allocation through three mechanisms: a shared normative understanding of a Western-led international order; a belief in the importance of the United States in European security; and a preference for NATO as a platform for coordinating force planning and operational deployment.

To test our theory, we disaggregate military expenditures into the four categories that NATO uses:

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equipment,[1] operating and maintenance,[2] personnel,[3] and infrastructure.[4] Doing so provides more precise metrics of alliance solidarity and real-world burden-sharing, namely the extent to which allies allocated resources to NATO's operational priorities during a period in which the Alliance was heavily engaged outside its members' territory. Standard explanations of the distribution of the defense burden among allies focus on top-line military expenditures. They fail to offer a detailed explanation of allies' critical choices to allocate resources *within* their defense budgets. Examples of such decisions include the type of equipment spending agreed upon in the Wales pledge, or spending on operations such as NATO's recently concluded International Security Assistance Force (ISAF) mission in Afghanistan.

We identify a strong relationship between the extent to which an ally's strategic culture—as articulated in key national security documents—is Atlanticist, and its allocation of defense resources to O&M expenditures. We use an error correction model (ECM) to demonstrate that shifts in strategic culture—manifested in national strategic documents—chronologically precede choices in the allocation of military budgets. Moreover, the effects accumulate over time, leading to divergence in burden-sharing among allies. Since observers often criticize such strategic documents as "cheap talk"—that is, unrelated to hard resource allocation decisions (Menon 2012)—our identification of a connection between strategic discourse and the allocation of hard resources matters a great deal. Finally, our analysis reveals what appears to be a substitution effect between personnel expenditures and the other three categories of expenditures. Senior officials on both sides of the Atlantic have expressed concerns that rising personnel costs are "unsustainable" (Miles 2011) or "eating us alive" (Gates 2011), and that an inability to invest in capabilities risks turning organizations like NATO into "spectators" (Rasmussen 2013). Even more worrisome, Becker (2016) finds that allies tend to use personnel expenditures for particularistic purposes relating to national economies.

In the first section below, we draw on alliance, burden-sharing, and strategic culture literature to explain our theory that more Atlanticist allies invest more in operational burden-sharing than do Europeanist allies. The second section explains our key variables and our techniques for operationalizing them. Section 3 explains our model specification, and Section 4 discusses our key finding: that Atlanticism in strategic culture is strongly associated with positive operational burden-sharing behavior. The final section explains the theoretical and policy implications of this finding.

Theory: Atlanticism and Operational Burden-Sharing

We define burden-sharing as "the distribution of costs and risks among members of a group in the process of accomplishing a common goal" (Cimbala and Forster 2010, 150). Some scholars have broadened the definition of burden-sharing to include measures such as refugee assistance (Betts 2003, 274) and foreign aid (Zyla 2015, 217). While these arguments have merit, such broadening of the concept of burden-sharing complicates precise operationalization and statistical analysis. To increase precision, we narrow our focus to the metrics that both NATO (2015a) and the European Defence Agency (2015a) favor as indicators of both transatlantic and intra-European burden-sharing.

Regardless of the metrics used, persistently unequal burden-sharing among allies has puzzled scholars (Schelling 1955; Gordon 1956; Mason 1963) and policymakers (Mansfield 1971; Biddle 1984; Daalder 2013; Barnes and Lee 2016[5]) since the Alliance's creation. Yet the expansive burden-sharing literature focuses on how much allies spend, as opposed to what they spend it on. The emphasis on aggregate expenditures as a share of GDP (military burden) can be misleading, because it conflates resources used to support shared allied interests with a host of expenses aimed at domestic political or pecuniary goals. Theoretically, such conflation undervalues the risks of participating in overseas military ventures, placing O&M expenses on the same level as increased pension funding or prestige-focused acquisitions. Empirically, the measurement error is likely to correlate systematically with domestic political variables that influence spending, biasing analyses. For instance, focusing on aggregate military spending will overestimate the effects of domestic factors that promote pork or patronage spending, and it is less likely to capture the significance of psychological or cultural factors associated with putting citizens in harm's way.

Some scholars argue that, in order to disaggregate the "form of contributions" to collective defense, we need to rely on case studies of distinct events involving small states (Oma 2012, 563). Instead, we seek to identify general patterns of behavior among allies. Disaggregating military expenditures using the same methodology formally agreed to by all 28 NATO allies allows us to conduct such analysis systematically across the Alliance. It also facilitates efforts to address the role of confounders, such as geography and population. NATO's disaggregated defense spending data offers "a consistent basis of comparison of the defence effort of Alliance members based on a common definition of defence expenditure" (NATO 2015a). Such a basis does not exist for alternative measures of burden-sharing. Below, we demonstrate statistically that operations and maintenance expenditures provide a valid measure of operational burden-sharing. This should come as no surprise—O&M expenditures fund readiness, deployment, and utilization of forces.

A rich body of literature also addresses Alliance burden-sharing as it relates to persistence and solidarity (Weitsman 2014). International security scholars variously explain NATO's post–Cold War persistence as an institutional artifact of the distribution of power and the proximity of threats during the Cold War (Mearsheimer 1990, 6), as resulting from the adaptability of the Alliance's institutional assets (Wallander 2000, 706), or as arising from the domestic institutions of member states (Risse-Kappen 1996, 358).

Theorizing about the economics of alliance burden-sharing has evolved from a pure public good approach to a joint product approach. Relevant literature motivates our use of controls for national wealth, spillover effects, and the presence of exclusion mechanisms in Alliance strategies. Defining burden-sharing as a collective-action

[1]"Equipment expenditures include major equipment expenditures and R&D devoted to major equipment" (NATO 2015a, 9).

[2]"Other expenditures include operations and maintenance expenditures, other R&D expenditures, and expenditures not allocated among above-mentioned categories" (NATO 2015a, 10).

[3]"Personnel expenditures include military and civilian expenditures and pensions" (NATO 2015a, 9).

[4]"Infrastructure expenditures include NATO common infrastructure and national military construction" (NATO 2015a, 10).

[5]Quoting Ambassador Douglas Edward Lute, the US Permanent Representative to NATO.

problem, Olson and Zeckhauser (1966, 274) hypothesize that an ally's military burden would correlate positively with the size of that member's national income, particularly as it related to that of other allies. This pure public good hypothesis held until the mid-1960s.

Sandler and Forbes (1980, 427) theorize that changes in strategy and technology that took place in the late 1960s caused Alliance security to cease being a public good and become a joint product, because "rivalry in consumption, multiple outputs, benefit exclusion, *and* private benefits increasingly characterize[ed] modern alliances." The transformation, they argue, was rooted in strategy: the doctrinal shift from Massive Retaliation to Flexible Response. As Alliance strategy moved from deterrence to protection, the benefits of membership became increasingly excludable. Burden-sharing therefore became more equal.[6]

Prominent theories of alliance formation in the international security literature inform our use of various measures of threat in our analysis. While Walt's work on this topic focused on states' choices to *form* alliances, balance-of-threat logic also applies to questions of alliance persistence and solidarity (Walt 1997, 158). Work discussing the extent to which Europeans bandwagon *with* the United States (Cladi and Locatelli 2012, 264), or engage in "soft" (Pape 2005) and "hard" (Posen 2006, 149) balancing *against* the United States, builds on this framework. Walt predicts that an alliance without a threat will begin fraying (Walt 1998, 3), in which case we would observe reductions in alliance solidarity, exacerbating imbalances in operational burden-sharing.

Institutionalist analyses focus in particular on NATO's "stickiness," its utility in facilitating policy coordination, and its adaptability as a multipurpose platform whose norms, rules, and procedures can respond to new circumstances (Wallander 2000, 706). The comparative politics literature highlights the importance of allies' domestic institutions and political developments (Risse-Kappen 1991, 479; Leeds 1999, 979). It also suggests that highly institutionalized alliances are no more reliable than those that are less so (Leeds, Mattes, and Vogel 2009, 462), and domestic institutional features of democracies actually make them less likely to demonstrate solidarity in some situations (Gartzke and Gleditsch 2004, 775). This literature also highlights the importance of intent and signaling in alliances, as well as commitment and dependence, making the case for a measurable proxy for "an arrangement of values that disposes one to act in a certain way" (Snyder 2007, 169).

Unfortunately, the rich existing literature does not offer a detailed explanation of why allies make the resource allocation decisions that they do *within* their defense budgets. Why, for example, do some allies privilege high-tech equipment purchases over personnel expenditures? Why do some allies direct significant resources to training, readiness, and overseas operations, while others focus on territorial defense or other potentially particularistic interests? We disaggregate defense expenditures in order to address such questions. Moreover, the current literature does not address the possible effects of values and culture on resource allocation. We turn to the concept of strategic culture as an independent variable in order to fill this second critical gap.

Strategic Culture

A key insight of constructivist thinking on international security is that internalized ideas like culture predate and thus shape and parametrize interests (Wendt 1999, 259). NATO, then "represents an institutionalization of the transatlantic security community based on common values and a collective identity of liberal democracies" (Risse-Kappen 1996, 395). Strategic culture, central to many constructivist analyses, is a compelling but fuzzy concept that has thus far remained outside mainstream explanations for burden-sharing. Scholars coalesce around defining it as a "set of shared beliefs, assumptions, and modes of behavior, derived from common experiences and accepted narratives (both oral and written), that shape collective identity and relationships to other groups, and which determine appropriate ends and means for achieving security objectives" (Larsen and Johnson 2006, 3).

Scholarship on strategic culture experienced three "waves" (Stone 2006, 1). The first wave, in the early 1980s, focused on how differences in thinking about nuclear strategy between the USSR and the United States were driven by history, geography, and political culture (Gray 1999). The second wave focused on the notion that decision-makers' actual motives vary from what they claim to be doing (Stone 2006, 1). The third wave sought falsifiability and engaged explicitly with the structuralist paradigm in security studies (Johnston 1995, 33).

Scholars of both strategic culture (Zyla 2011) and of strategy more broadly (Freedman 2013) have emphasized the importance of strategic narratives, identifying a nexus between strategic documents and strategic culture. Strategic documents play three key roles at this nexus: first, they express elite consensus on security strategy. Second, they serve as a basis for planning, including resource planning. Third, they serve as an instrument of public policy, communicating with and shaping domestic and external audiences (Zyla 2011).

Scholars in this field, however, traditionally use a qualitative "discourse analysis" approach, analyzing a small number of NATO and EU documents. An excellent example of this is Kier's (1995) work on culture and military doctrine in France between the wars. We seek to test quantitatively the generalizability of this intuitively and theoretically powerful approach by using an Automated Content Analysis of strategic documents produced by multiple individual allies over time, the robustness of which we confirm with quantified canonical dimensions of national culture, expert analysis, and UNGA alignment data, along with our own qualitative analysis.

Atlanticism: A Key Dimension of Strategic Culture

The definition of strategic culture above allows for a wide spectrum of possibilities in identifying such a culture among European allies. While many of these are important, they can be quite hard to pin down empirically. We therefore narrow our analysis to focus on Atlanticism, as the Atlanticism/Europeanism dialectic represents a widely recognized dimension on which to place allies, identified early in the debate on an emerging European security identity (Webber et al. 2004, 22), and used in most relevant studies today (Biehl, Giegerich, and Jonas 2013; Witney and de France 2012). We define Atlanticism and Europeanism rather simply: as, respectively, preferences for a transatlantic approach to European security, in which the United States' role is central, and preferences for support of European integration in security affairs, in which the United States' role is secondary. The relationship between the two is not mutually exclusive, but Europeanism tends to cast NATO as a "brake" on European security integration (de Vulpillières

[6]See Supplementary File B for mathematical elaboration of the model.

2015). Italy is representative of many mid-sized and small allies: "Italian governments would regard support for the Atlantic Alliance and the process of European integration as the two lodestars of the country's foreign policy. Whenever they began to diverge, often because of some French initiative, Italian governments would try to bring them back onto the same course" (Croci 2008, 142). We leverage the fact that not only do Atlanticism and Europeanism coexist on a continuum, but that allies can and do move along that continuum, to quantify Atlanticism as a continuous variable.

Two points are critical to understand our operationalization of Atlanticism. First, we do not view Atlanticism as simply being "pro-NATO." Second, we use Automated Content Analysis to capture Atlanticism as a continuous, rather than a dichotomous variable, because all NATO allies express both Atlanticist and Europeanist tendencies and those tendencies evolve over time. In fact, all allies are pro-NATO, and not just because they have chosen to be members of the Alliance. In 2012, 58 percent of Europeans agreed that "NATO is still essential"—three percentage points higher than in the United States. Of those Europeans who believed that NATO was still essential, 56 percent believed that to be the case because "NATO is an alliance of democratic countries," as opposed to only 15 percent that believed it to be so because "there are still major threats that endanger our country" (German Marshall Fund of the United States 2013). This suggests a strong cultural component of the value Allied publics vest in the Alliance. In 2011, a greater proportion of French (58 percent), Germans (60 percent), Poles (72 percent), Spaniards (62 percent), and British (63 percent) viewed NATO favorably than did Americans (54 percent) (Pew Research Center 2015). What differentiates Atlanticist from Europeanist countries is their prioritization of strategies and orientation within NATO and their views about NATO's relationship with other organizations. Countries that tend toward Europeanism tend be more supportive of developing Europe's "own defense organization" alongside the NATO architecture—46 percent of the French public said so in 2012—whereas countries tending toward Atlanticism tend not to favor such an organization—only 17 percent favored it in Romania (German Marshall Fund of the United States 2013).

The historical literature on Atlanticism makes a strong case for its centrality in the strategic cultures of European states, defining the concept as a cultural or even civilizational notion that privileges an "Atlantic Community" as central to "the West" (Weisbrode 2014, 41). Some of the earliest analyses of a nascent European strategic culture highlight the centrality of the Atlanticist/Europeanist dichotomy (Cornish and Edwards 2001, 588), identifying the United Kingdom as indicative of an archetypical Atlanticist cultural inclination, and France of an opposing Europeanist inclination (Webber et al. 2004).[7] Atlanticism varies not only among allies, but within particular allies, over time, regardless of size (Mouritzen 2007, 156; Dunne 2004, 894) or geography (Graeger and Haugevik 2010).

The French Europeanist tendency, in particular, has been identified with what Hubert Védrine calls "modernized gaullo-mitterandism" (Védrine 2011), invoking persistence from the immediate postwar period (de Gaulle) into the 1990s (Mitterrand) and the present (Védrine), but also across political divides between right (de Gaulle) and left (Mitterrand and Védrine). This continuity across parties and over time (Debray 1989; Aron 2004; Vaïsse 2009) helps affirm that the tendency is, in fact, cultural. Behavioral differences in areas in which the material dispositions of France and the United Kingdom are similar (Murdoch and Sandler 1984; Sandler and Hartley 1995) suggest that ideational or cultural differences related to Atlanticism may offer important insights. We also recognize that France and the UK may be exceptional in some ways vis-à-vis other European allies, and therefore ensure that our empirical analysis is robust to their exclusion.

Theory: Atlanticism and Burden-Sharing

We hypothesize that three mechanisms lead states with Atlanticist foreign policy orientations to spend a greater proportion of their defense budgets on operations than those with Europeanist orientations. First, states articulating Atlanticist foreign policy orientations tend to share the United States' vision of the importance of a stable, sustainable, US-led international order (White House 2010). Maintenance of this order has meant relatively frequent and significant operational deployment of military assets, often within the institutional framework of NATO.[8] Allies more inclined to Atlanticist approaches will engage in such operational deployments more intensively.

Second, states with Atlanticist foreign policy orientations tend to share a conviction that the United States plays an important role in deterrence and defense, and therefore seek to keep the United States engaged in Europe. Using NATO's institutional architecture in support of operational deployment of assets, these states can signal support for US global priorities, anticipating future reciprocity in maintaining their territorial integrity against potential aggression.

Related to this institutional function of NATO, the third reason we expect Atlanticist states to devote a greater proportion of available resources to operations is that NATO has proven to be an effective platform for the operational deployment of security assets, reducing transaction costs in transmitting material resources into operational activities. Allies leaning toward Atlanticism will make more intensive use of NATO as an organizational platform than those leaning toward Europeanism, and will therefore engage in more intensive operational deployments.

We therefore hypothesize that:

H1: *The more Atlanticist a state's strategic culture, the greater proportion of its defense resources it will devote to O&M expenditures.*

Measurement of Key Variables Used in Analysis

We begin by describing our approach to operationalizing the key variables used in the analysis, before describing our econometric specification in Section 3.

[7]This inclination on France's part has evolved toward Atlanticism in recent years, as indicated by the 2008 White Paper on Defense and National Security, and the 2010 Lancaster House Treaty (see Supplementary File C).

[8]Ongoing NATO operations as of June 2016 include Resolute Support Mission (the successor to ISAF in Afghanistan), NATO Mission in Kosovo (KFOR), Operation Active Endeavour (OAE), Operation Ocean Shield, and ongoing Assurance Measures in NATO's East, in which all 28 allies participate. Moreover, every NATO ally is a part of "the global coalition to counter ISIL" (Stoltenberg 2015, 6), and NATO's 2011 Operation Unified Protector aimed at enforcing UNSCR 1973 in Libya has been used as a case study in burden-sharing (Haesebrouck forthcoming).

Independent Variable: Atlanticism as a Dimension of Strategic Culture

The constructivist approach to burden-sharing is a useful theoretical contribution. Scholars struggle, though, to estimate the relationship between strategic culture and state behavior, because the definition does not lend itself easily to measurement, complicating attempts to identify correlations with more concrete measures such as resource allocation (Poore 2003). A related challenge for scholars interested in strategic culture is variation across time and among states, highlighted by Johnston's (1995, 35) observation that "the problem for structuralists is to explain differences in strategic behavior across strategic cultures when structural conditions are constant. . .[and] the problem for culturalists is to explain similarities in strategic behavior across varied strategic cultures." Johnston (1996, 218) acknowledges the capacity of culture to evolve over time, and highlights the importance of falsifiability along with the utility of considering ideational factors as explanatory variables. We seek to address this problem by quantifying a dimension of strategic culture, demonstrating that it varies not only among but also within states over time, and then systematically analyzing the relationship between such variation and variation in resource allocation, controlling for variables identified in the extant literature.

To do so, we start with the assumption that strategic culture is generally the province of policy elites (Biehl, Giegerich, and Jonas 2013), taking key strategic documents as indicators of strategic culture at the time of their publication, as well as guideposts moving forward until updated or replaced.[9] In operationalizing strategic culture, we build upon recent work aiming to identify, describe, analyze, and compare strategic cultures in Europe and NATO, addressing the role of both elite and popular beliefs (Meyer 2006), as well as the effects of culture on behavior (Toje 2008).

It is possible that rather than reflecting elite consensus on strategic culture, strategic documents could reflect the agenda of the party in power. While party politics may influence the formulation of national security strategies, they are unlikely to account for significant shifts along the Atlanticist–Europeanist continuum. In fact, some of the most notable documents used in our study self-consciously sought an apolitical approach, including representatives from across government agencies, academics, independent experts, and business and industry leaders (French Republic 2008). While the documents are by nature political, they were primarily generated by Ministries of Defense with support from professionals and technocrats from across governments, and often reflect consensus on strategic direction across party lines (Dover and Phythian 2012).

Furthermore, Atlanticism itself tends to cross party lines—consider the relatively Europeanist approach of Jacques Chirac as compared to the Atlanticist approaches of Nicolas Sarkozy of the same center-right political family and Sarkozy's center-left successor Francois Hollande. Labour Prime Minister Tony Blair's support for the US-led wars in Iraq and Afghanistan has more in common with Conservative Prime Minister David Cameron's approach than it does with Labour's strong opposition to the Vietnam War. Our observation that the effects of a shift in strategic culture increase as time passes provide further empirical support for this intuition.

To operationalize strategic cultures along the Atlanticist/Europeanist continuum, we employ *Word Scores* Automated Content Analysis software (Lowe et al. 2011). Doing so allows us to score 89 national strategic documents produced between 1994 and 2012, facilitating multiple regression analysis to ascertain the relationship between strategic culture and disaggregated defense spending over the period covered. The full set of documents appears in Supplementary File A.

Machine-learning experts regard *Word Scores* as a supervised Automated Content Analysis in that scoring references are determined by the user (Grimmer and Stewart 2013). The alternative, called unsupervised Automated Content Analysis, can be challenging because computer programs have only the ability to identify similarities among the documents used, but lack the theoretical sophistication to determine whether observed similarities are related to meaningful theoretical concepts. In a supervised Automated Content Analysis, however, the analyst establishes a dictionary of key terms and then virgin texts are scored according to the dimensions and concepts developed by the user. The traditional drawback of supervised Automated Content Analysis, however, has been that dictionary selection decisions can be hard to validate and prone to opportunistic decision-making. In other words, analysts could bake favored results into their initial word selection. Laver, Benoit, and Garry (2003) overcame this strategy in *Word Scores* by allowing the user to select two reference texts (A and B), which objective observers can agree represent textual articulations of extreme positions of the concept that the author wishes to study. *Word Scores* analyzes these texts first, learns which words are associated with each extreme and which ones are neutrally applied by both, and then creates a dictionary that scores each word on a scale of 0 (only found in reference text A) to 100 (only found in reference text B). Neutral words take intermediate values based on their relative frequency in each text.[10] The technique is objective, hands-off, and grounded in the specific terms used by the texts' authors.

Thus, the most critical initial empirical decision that we needed to make was which documents to choose as the reference texts, as they needed to capture ideal representations of Atlanticist and Europeanist positions. For these linguistic poles, we chose French and British strategy documents produced in 2002: the UK is emblematic of Atlanticism and France of Europeanism (Biava, Drent, and Herd 2011, 1232), and 2002 was a year in which intra-European cleavages were especially acute, particularly about the extent to which Europeans should prioritize the transatlantic security relationship, which is at the core of the notion of Atlanticism.[11] Each state had articulated an explicitly different approach to their relationship with the United States and its response to the 9/11 attacks (Howorth 2003/2004). Furthermore, the UK and France are the two NATO allies, other than the United States, who continue to hold global, as opposed to regional, strategic ambitions—using them as poles prevents us from

[9]We demonstrate the relationship between what national experts describe as Atlanticism in their nations' strategic cultures and our measure of Atlanticism in key policy documents in Supplementary File D.

[10]The original *Word Scores* was criticized for inconsistencies in its scaling approach (Martin and Vanberg 2008; Lowe 2008) and was rereleased with updated and more robust scaling procedures (Lowe et al. 2011).

[11]Such cleavages were exemplified by French Foreign Minister Dominique de Villepin's impassioned February 14, 2003, speech before the UN Security Council in which he outlined France's opposition to the US position on Iraq; British Prime Minister Tony Blair's speech to the House of Commons on March 18, 2003; and US Secretary of Defense Donald Rumsfeld's identification of drastically opposing views between what he called "old" and "new" Europe in a January 22, 2003, press briefing.

conflating such global reach and influence with Atlanticism.

Contrasting Atlanticist and Europeanist approaches toward the transatlantic relationship, epitomized by British and French views, have been a fundamental point of contention from the beginning of postwar Europe's construction: Charles de Gaulle famously lamented

> that Great Britain, due to its insular position, its commonwealth, and its traditions, is not at all inclined toward incorporation with our continent; quite the contrary. Countless times, during the recent war, Mr. Churchill told me: "If I am obliged to choose between you and Roosevelt, know that I will always choose Roosevelt! When I am obliged to choose between Europe and the open sea, know that I will always choose '*le grand large*.'" (de Gaulle 1951)

The continuity and influence of these opposing orientations supports claims that a state's position on the Atlanticist–Europeanist continuum does indeed comprise an important dimension of its strategic culture.

Figure 1 is a graphic illustration of the *Word Scores* methodology. The *y*-axis depicts a sample of 80 of the 9,500 words identified by the program, illustrating the type of coding that Word Scores applies. To create it, we randomly sampled words and couplets from each quartile of the population of words. The *x*-axis depicts the individual score given by the program to each word, ranging from zero to 100. Words close to 100 appear solely or predominantly in the UK's 2002 Strategic Defense Review and are therefore considered more Atlanticist. Words close to zero appear solely or predominantly in France's 2002 strategy, and are therefore associated with Europeanism. Words in the middle are those employed by both documents at about the same rate. As the graphic indicates, Atlanticist documents focus to a much greater extent on issues like agility, deployability, operations, and capability, whereas Europeanist documents focus on issues like European autonomy, European industry, territorial security, and European cooperation.

While *Word Scores* does not account fully for the context in which words appear, the key phrases we have identified in Figure 1 exemplify how powerful this tool is across such a significant number of documents. For example, Figure 1 depicts the phrases "autonomous capability"[12] and "Petersberg missions"[13] as being among the most Europeanist of phrases. This observation is qualitatively clear as well. France's 2003–2008 Military Programming Law, for example, links the two phrases in a way that not only highlights the Europeanist approach of that document, but also contrasts it to a more Atlanticist approach that would privilege NATO as a security institution:

> Europeans indeed established the objective of having concrete military capabilities to cover all of the so-called Petersberg missions. . .in order to enjoy an autonomous capability to decide, launch and lead military operations under their own direction in response to international crises where NATO. . .is not involved. (French Republic 2003, 3)

While the quintessentially Europeanist 2003-2008 Military Programming Law mentions NATO only twice, the more Atlanticist 2008 White Paper on Defense and National Security mentions the Alliance over one hundred times, and highlights France's contributions to the NATO Response Force (French Republic 2008, 7), one of the most Atlanticist phrases in Figure 1. The variation within French language over time highlighted by these examples is indicative of how *Word Scores* is able to capture important shifts in strategic outlook.

This phenomenon is consistent among a number of allies. For example, Estonia "participates in the NATO Response Force, and supports. . .further development into a force which provides credible deterrence and defence" (Government of Estonia 2010, 15), and the Danish Defence Commission concluded that "deployable capabilities will continue. . .to be assigned to NATO's deployable forces. . .the Army will occasionally be required to contribute to the NATO Response Force" (Danish Defence Commission 2009, 2).

Once *Word Scores* associated words with the poles of Atlanticism/Europeanism and assigned scores to each word in the two documents, each of the 87 remaining security strategy documents from every year and every ally that we could identify received a score ranging from zero to 100 along the Europeanist–Atlanticist axis. To create a panel dataset of countries over time, a country received the score of the preceding document for the years in which that country did not publish a strategic document. A country only received a new score after it published a new document. This is the most conservative and objective strategy, but risks scores lagging elite-driven policy changes not yet formally incorporated into a strategic document. Fortunately, this biases against confirming our hypothesis, as changes in O&M expenditure fluctuate annually, while no ally published a new security strategy each year. Using an Error Correction Model (ECM) also allows us to capture the effects of strategic cultural shifts over time, further mitigating this risk.

While an automated content analysis cannot possibly capture the nuance of a closer, interpretive reading, our technique generates scores that align with the deep readings of defense specialists. Table 1 below demonstrates that our score aligns with each of several important extant measures of foreign policy orientation. There are significant bivariate correlations between our measure of Atlanticism and Hofstede's (1983) canonical measure of national cultural dimensions and Biehl, Giegerich, and Jonas's (2013) qualitative analysis of strategic culture. These correlations demonstrate that the technique is picking up a latent cultural variable that is deeper than mere political justifications for expenditure decisions. The measure also appears correlated with other behaviors that we me might expect to be associated with Atlanticism, such as Bailey, Strezhnev, and Voeten's (2015) ideal point proximity measure, which captures how closely countries' UN voting patterns adhere to those of the United States, and aggregate public opinion scores (German Marshall Fund of the United States 2013) regarding US leadership.[14]

This analysis leaves us confident that our Automated Content Analysis is able to detect important differences in

[12]"Autonomous capability" was a critical condition for the French in agreeing to the Joint Declaration at St-Malo, in which France and the UK agreed to what is "widely considered as the start of the European Defense Project" (Rutten 2001, 8).

[13]"Petersberg Tasks," agreed to in 1992 by Ministers of the Western European Union, outlined three tasks for which military units could be deployed: "humanitarian and rescue tasks, peacekeeping tasks, and tasks of combat forces in crisis management, including peacemaking" (Western European Union 1992, 6). Among European allies, these tasks are associated with the EU's Rapid Reaction Force, as opposed to the NATO Response Force.

[14]Supplementary File D offers additional detail on these relationships.

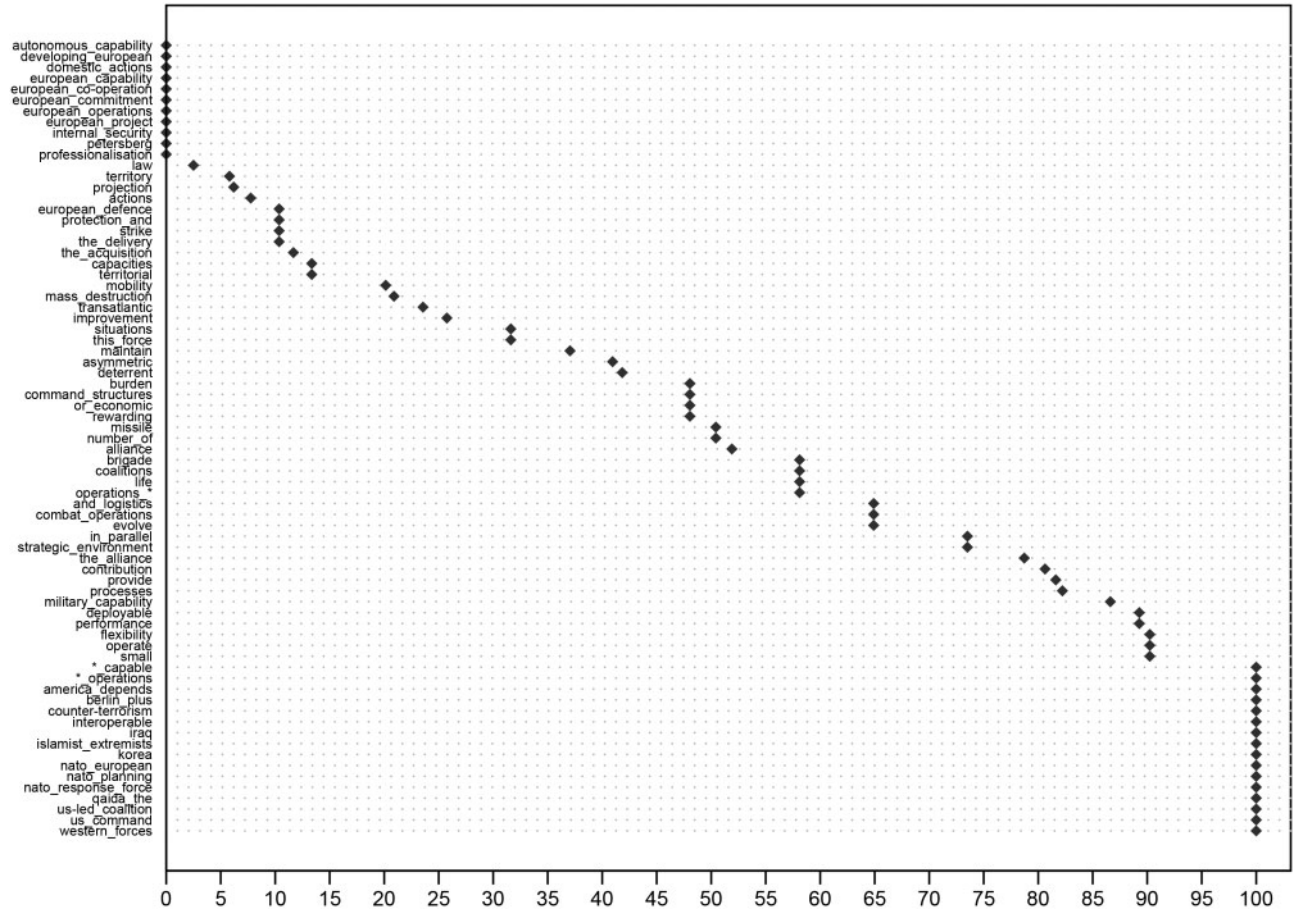

Figure 1. Depiction of *Word Scores* methodology. We chose as poles the United Kingdom's 2002 strategic defense review and France's 2003–2008 military program, also published in 2002. The *y*-axis depicts a randomly sampled selection of 80 of the 9,500 words identified by the program. The *x*-axis lays out the individual score given by the program to each word, ranging from zero to 100. Words (or couplets) close to 100 are solely or predominantly used in the UK's 2002 strategic defense review and are therefore considered to be more Atlanticist. Words close to zero are solely or predominantly used in France's 2002 strategy, and are therefore associated with Europeanism. Words in the middle are those employed by both documents at about the same rate.

strategic cultures both across space and over time. The variation over time is particularly useful, as it allows us to study how evolutions in strategic culture within a country affect its decisions about resource allocation, and how such effects vary for different periods.

Dependent Variable: O&M Expenditures

Both the defense economics literature and the international security literature offer compelling explanations for alliance burden-sharing, usually measured as total military expenditures divided by GDP, known as a state's *military burden*. However, both literatures, along with the comparative politics literature on alliances, NATO, and the EU, suggest that disaggregation of military expenditures is likely to improve analysis (Paul 1996; Hooker and Knetter 1997; Malizard 2015). While both NATO (since 1975) and the EU (since 2006) have disaggregated military expenditures into the four categories mentioned above, no study has yet offered a compelling explanation for variations in the proportion of defense resources allocated to each category.

While analysts focus on transatlantic divergence in topline expenditures, divergence in disaggregated expenditures is even more notable. Figure 2 illustrates that since 1971, the United States has represented an average of approximately 60 percent of total NATO defense expenditures, while it has represented a remarkable 73 percent of total NATO O&M expenditures, while representing roughly 50 percent of total Alliance GDP throughout the period. Moreover, the gap in O&M expenditures has been consistent since 1985, when NATO began cataloging such expenditures annually, whereas a major gap in overall expenditures opened only in the first decade of the twenty-first century.

Figure 3 demonstrates the significant variation in this allocation choice among allies in 2012, the final year covered in our study.[15] For example, Greece meets NATO's 2 percent guideline primarily because of its extensive expenditures on personnel, while Estonia spends disproportionately on operations, indicative of commitment to Alliance priorities in Afghanistan. Denmark spends more

[15]Operating expenditures are defined as all operations and maintenance expenditures, other R&D expenditures, and other expenditures associated with operations and training. Personnel expenditures include all salaries and pensions for active duty and retired military and civilian personnel. Equipment expenditures include all major equipment expenditures and R&D devoted to major equipment. Infrastructure expenditures include NATO common infrastructure and national military constructions (NATO 2015a).

Table 1. Bivariate correlations of variables used in core analysis

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*
Military expenditures/GDP (%)	1																								
Operating expenditures/ Country total (%)	−0.0893	1																							
Personnel expenditures/ Country total (%)	−0.1872*	−0.7933*	1																						
Equipment expenditures/ Country total (%)	0.4420*	0.1309*	−0.5947*	1																					
Infrastructure expenditures/ Country total (%)	−0.0181	0.4717*	−0.5842*	0.0706	1																				
Atlanticism (*Word Scores*: Europeanist = 0 Atlanticist = 100	−0.0964	0.3925*	−0.2656*	0.0334	−0.1149	1																			
Hofstede (1983) individualism	−0.1272	0.5397*	−0.4588*	0.1068	0.1801	0.5057*	1																		
Hofstede (1983) uncertainty avoidance	0.1192	−0.7192*	0.5677*	−0.0499	−0.2831	−0.4868*	−0.5996*	1																	
Biehl et al. (2013) FP orientation (Atl. = 1, Bal. = 2, Eur. = 3)	−0.1591*	−0.4184*	0.4642*	−0.2869*	−0.1927*	−0.1995*	0.0746	0.5137*	1																
Voeten et al. ideal point proximity (UNGA alignment)	−0.0191	−0.1733*	0.0932	0.0321	0.06	−0.2852*	−0.5235*	0.4951*	−0.1825*	1															
GDP + Spillins (ln)	0.1113	−0.1168	−0.0371	0.3067*	−0.2161*	0.1996*	0.3762	−0.0431	0.1778*	−0.2603*	1														
Population (ln)	0.4052*	−0.1819*	−0.0138	0.3335*	−0.3169*	0.0627	0.1705	0.1584	0.1183	−0.1497*	0.8040*	1													
NATO strategy (1 = Excludable, 0 = Non-excludable)	0.0055	−0.0251	−0.0989	0.1403*	0.0974	0.0278	.	.	−0.1412*	0.2996*	0.0344	−0.0356	1												
Russian military expenditures (ln)	−0.3481*	0.0484	0.0269	−0.0622	−0.0638	−0.0117	.	.	−0.0646	0.2184*	0.1436*	−0.1262*	0.001	1											
Proximity of capital city to Moscow (ln)	0.113	−0.3780*	0.3963*	0.0181	−0.5538*	0.2296*	−0.1221	0.2853	0.3995*	−0.1317*	0.3204*	0.3166*	−0.0581	−0.1473*	1										
Terror: Citizens hurt (ln)	0.2909*	−0.1520*	−0.0595	0.3227*	−0.0372	−0.0594	−0.0808	0.2918	−0.0594	0.1608*	0.1442*	0.2567*	−0.0833	−0.1297*	0.1597*	1									
Years in NATO	0.1560*	−0.2079*	0.1354*	0.2006*	−0.3015*	0.1135	0.3569	−0.1144	0.2288*	−0.1048	0.4112*	0.2618*	−0.0377	−0.0682	0.5705*	0.0826	1								
Years in NATO squared	0.1356*	−0.1812*	0.1201*	0.1935*	−0.2859*	0.0995	0.3542	−0.137	0.2150*	−0.0945	0.3780*	0.2166*	−0.0288	−0.0136	0.5308*	0.0386	0.9884*	1							
Change in national security strategy (1 = Change, 0 = No change)	−0.0654	0.0655	−0.0681	0.0877	−0.0811	0.1927*	0.163	−0.6404*	−0.1047	−0.0165	0.0762	0.0112	0.1097	0.1599*	−0.0003	−0.0427	−0.0264	−0.0294	1						
Change in NATO strategic concept (1 = Change, 0 = No change)	0.0249	−0.0794	0.0619	−0.0034	−0.0245	0.0119	.	.	0.0023	−0.2124*	0.0098	0.0053	−0.0849	−0.1583*	0.0228	−0.0334	0.0083	0.0007	0.0058	1					
US troops stationed in country (ln)	0.2612*	−0.1698*	0.0746	0.1660*	−0.2422*	0.1963*	0.3375	−0.0847	0.107	−0.1566*	0.7104*	0.7119*	0.1497*	−0.3504*	0.5000*	0.1804*	0.5005*	0.4404*	−0.0016	0.0833	1				
Trade with United States (% GDP)	−0.2620*	0.1694*	−0.0482	−0.1	−0.0463	0.0871	.	.	0.1967*	−0.2152*	0.1802*	0.0071	−0.0089	−0.0148	0.1743*	−0.1436*	0.5354*	0.5572*	−0.0212	−0.0014	0.3370*	1			
Right-leaning party	−0.0863	−0.1135	0.1431*	−0.1052	−0.0941	−0.1196	0.2375	−0.1549	0.2479*	0.0049	0.1306*	0.0849	0.1013	0.0703	0.1342*	0.0173	0.3088*	0.3177*	0.0073	0.0339	0.1577*	0.3819*	1		
Veto points (DPI)	0.0857	0.0654	−0.1793*	0.1214*	0.2029*	0.0239	0.1641	−0.2308	−0.1089	0.0404	−0.1179	−0.053	0.5611*	−0.4638*	−0.1129	−0.1315*	−0.0469	−0.0612	0.045	0.1451*	0.1516*	0.2124*	0.0012	1	
Popular view of US global leadership role (1 = Positive, 6 = Negative)	0.133	−0.1521	−0.0877	0.3256*	0.1473	−0.3933*	−0.5127	0.2954	−0.0776	0.6639*	−0.2765*	−0.104	0.1823	−0.0431	−0.0819	0.2373*	−0.2596*	−0.2716*	−0.1238	−0.2065*	−0.2953*	−0.4716*	−0.2495*	−0.0752	1

than 0.5 percent of GDP on operations, lagging behind only Estonia, the UK, and the United States in that area, but fails to meet the Alliance's 2 percent guideline. These observations, and the NATO data and requirements that underlie them, highlight the importance of disaggregation.

While we analyze change in all four of these categories, we focus on O&M expenditures, a "primary way of funding readiness" (Department of Defense 2014), as an important indicator of functional alliance solidarity during a period in which the United States encouraged allies to participate in joint training along with combat operations outside of allied territory.

No single metric can fully capture allies' burden-sharing behavior. We contend, however, that during the period our study covers, O&M expenditures are a good proxy for individual allies' aligning their resource allocation decisions with Alliance-wide priorities. While NATO does not make the details of allies' performance on each of its 11 "Output Metrics" public, the EU publishes some metrics, such as the number of land forces deployed. The percentage of defense budgets allocated to O&M expenditures correlates significantly and positively with several key indicators of allies' willingness to conduct operations outside their own territory, such as the ratio of land forces deployed to national wealth, the ratio of soldiers deployed in Afghanistan to total population, and the ratio of deployed personnel to total personnel.[16]

Figure 4 illustrates the utility of this approach through a bivariate correlation between O&M expenditures and ISAF troops per capita,[17] a favored NATO measure of burden-sharing in Afghanistan during our period of study: the association is striking. This relationship is much stronger than that between overall *military burden* and the same ISAF burden-sharing measures. We chose to analyze O&M expenditures not only because they help capture allies' commitments to ISAF as well as other NATO measures; they also offer a better gauge for readiness and engagement more generally.

Transatlantic burden-sharing goes far beyond participation in an operation like ISAF, and includes investing in missions elsewhere that address NATO's core tasks of collective defense, cooperative security, and crisis management; or training and exercises aimed at enhancing readiness, responsiveness, and interoperability, all of which manifest as O&M expenditures.

States in the bottom-right quadrant of Figure 4, such as the Czech Republic, Hungary, and Slovakia, may have devoted a significant amount of funds to O&M, but did so in ways that did not necessarily support NATO operations overseas. Why might this be the case? It is first worth noting that all three of these states are not only small, land-locked states on NATO's eastern frontier (Hungary and Slovakia share a border with Ukraine). As former Warsaw Pact members, all three are in the midst of the very long process of reducing dependence on Russian equipment: the cost of maintaining aging or substandard equipment may inflate O&M costs. The Czech Republic, in accordance with NATO's Smart Defence initiative, specializes in Chemical, Biological, Radiological, and Nuclear (CBRN) defense, and hosts NATO's CBRN Centre of Excellence (COE). This is a significant contribution to collective defense not directly related to overseas deployments during NATO's ISAF period. Similarly, Slovakia has specialized in explosive ordnance disposal (EOD) and constructed NATO's EOD COE. While EOD was certainly a relevant skill set for Afghanistan, Slovakia may have focused more attention on training other allies at its COE as opposed to deploying. Hungary remains an outlier: its forces primarily operated in Northern Afghanistan under tight rules of engagement and heavy caveats, meaning that operations were more development focused than personnel intensive.

Most importantly, using O&M expenditures is the most theoretically appropriate way to capture our variable of interest with available data. While there are concerns about allies accruing private benefits through O&M costs, in practice this is not common. Even more significantly, the Alliance adheres to an approach known as "costs lie where they fall" when it comes to operations (NATO 2010). When allies conduct NATO operations, they do so with their own, nationally funded resources. NATO "Common Funding" represents, in fact, a tiny fraction of the defense resources available to the Alliance, and costs are distributed in a formal cost-sharing arrangement that relies primarily on national wealth (NATO 2015b). That such a straightforward solution to a collective action problem can only be agreed upon for such a tiny portion of collective defense resources is characteristic of the challenges of transatlantic burden-sharing. When allies discuss burden-sharing (NATO 2014), they do so in reference to national defense spending, as reported to and calculated by the Alliance (NATO 2015a). Article 3 of the North Atlantic Treaty clearly presages that this would be the case by insisting that all countries maintain appropriate national defense capabilities, so that free-riding did not engender weak links in the alliance: "In order more effectively to achieve the objectives of this Treaty, the Parties, separately and jointly, by means of continuous and effective self-help and mutual aid, will maintain and develop their individual and collective capacity to resist armed attack" (NATO 1949).

The dependent variable in this study is therefore the share of its defense budget that an ally devotes to operations, maintenance, and associated R&D expenditures (NATO 2015a). Most analyses of NATO burden-sharing focus on total *military burden*, but this approach conflates very different types of behaviors and risks, confusing the use of military expenditures for patronage and actual participation in the defense of allies' interests. We therefore disaggregate expenditures to assess the degree to which our independent variable (Atlanticism in strategic culture) affects resource allocation *within* defense budgets, and not simply *to* defense within broader national budgets.

This analysis accounts for issues with unequal top-line burden-sharing stemming, for example, from the fact that larger allies can devote more resources to force projection (Hartley and Solomon 2009, 5). If, for instance, a small ally devotes significant resources to operational activities while leveraging force projection assets of larger members, or pooling or sharing those resources with other small allies, aggregate data would not help even identify such behavior, let alone explain it. Our data demonstrate that several small allies, like Denmark and Estonia, exemplify this type of behavior—a strong financial commitment to operations—while relying on shared resources for other defense activities in which they cannot hope to achieve economies of scale at the national level. This behavior is reflective of an efficient

[16]See Supplementary File E for bivariate correlations.

[17]From NATO's ISAF "placemat." While there is often debate about the quality of this data, it was confirmed by all 28 allies. We consider it a useful measure of how allies perceived one another to be sharing the burden in Afghanistan.

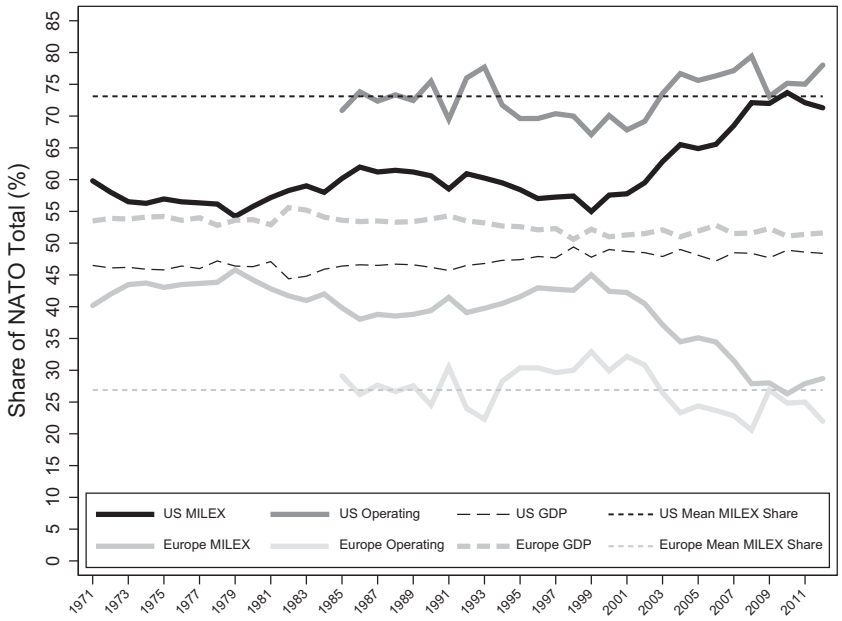

Figure 2. Share of NATO military expenditures accounted for by United States and other NATO members, total and O&M. This set of line graphs plots annual United States and European shares of NATO's total military expenditures over GDP, O&M expenditures, and GDP. Mean MILEX share is the mean from 1949 to 2012.

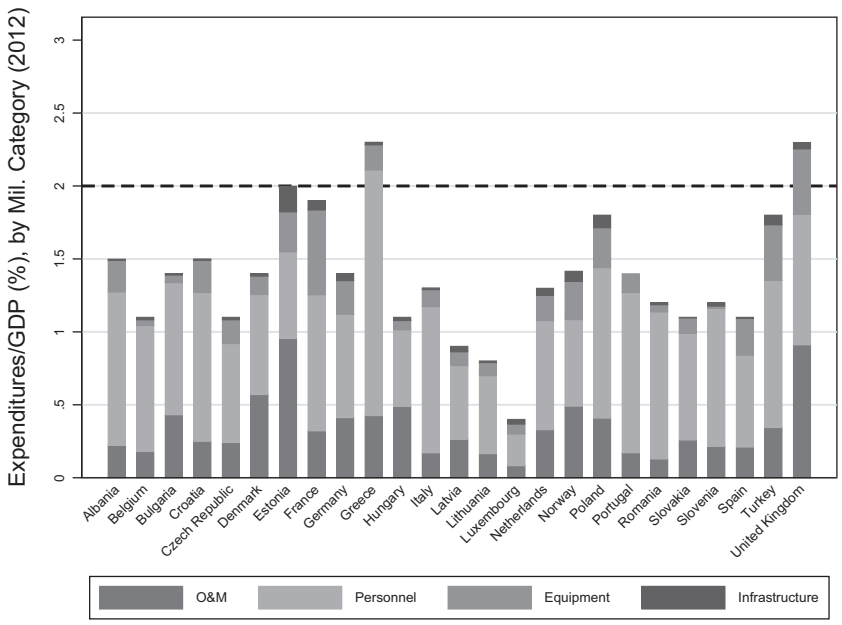

Figure 3. Military expenditures/GDP by type of expense. This bar graph demonstrates the wide variation in allocation decisions by NATO allies in the final year of the time period under investigation

allocation of scarce resources on the part of small states during a period in which NATO emphasized out-of-area deployments. Operational spending also accounts for activities such as UN peacekeeping (Sandler and Shimizu 2012, 58). Because such expenditures are less susceptible to particularistic uses and provide a close approximation of defense outputs during the period studied, they also help capture the elusive alliance solidarity concept highlighted by international security scholars. It is also notable that states like Denmark and Estonia have very different geographical situations and material considerations. They are, in fact, states with similar strategic cultures behaving similarly under differing structural conditions.

Such expenditures are not necessarily indicative of investing exclusively in activities in support of US interests with NATO as a vehicle. They indicate interest in capability, not quiescence. Allies with a higher focus on territorial defense than most, like Poland and Norway, devote an above-average proportion of defense resources to O&M expenditures, funding not only out-of-area operations but also, critically, training, equipment maintenance, and readiness, all of which NATO (2014) identifies as critical to ongoing adaptation. Likewise, while often undertaken outside the NATO framework, French operations in Africa or the Middle East in support of national or "European" interests have been conducted in close coordination with allies and are viewed positively by the United States.

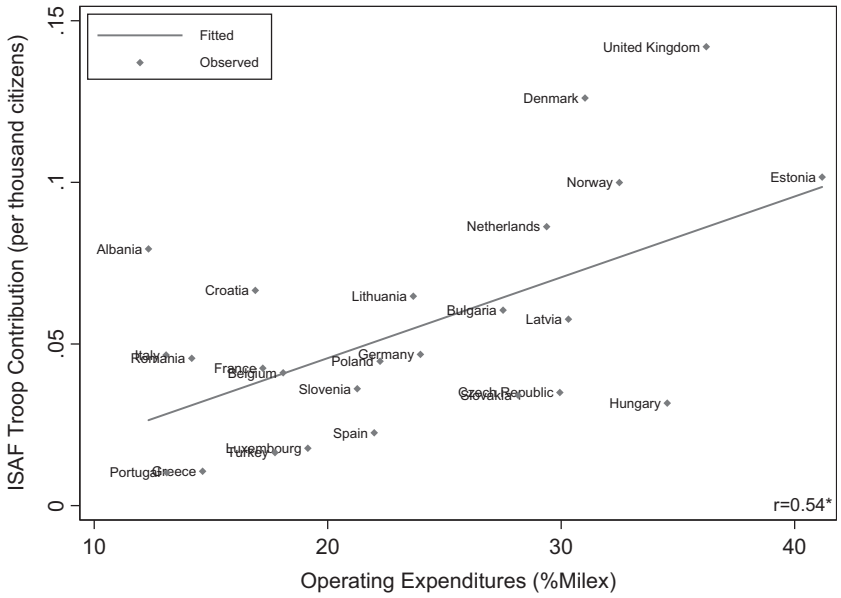

Figure 4. Correlation between O&M expenditures (2007 to 2013) and troop contributions to international security assistance force (ISAF) mission in Afghanistan

Our theoretical case for disaggregation also relates to the international security and comparative politics literatures, which suggest disaggregation for three main reasons. First, focusing on operational expenditures helps distinguish between bandwagoning and balancing behavior (Walt 1987; Cladi and Locatelli 2012). In an era in which the United States was the driving force behind a major NATO operation in Afghanistan, it is very unlikely that allies would be able to divert O&M expenditures in any significant way to accruing private benefits (Oneal 1990), or to balancing against the United States (Posen 2006). The strong correlation between O&M expenditures and ISAF burden-sharing supports this insight. Second, focusing on operational expenditures addresses questions of reliability in an alliance—the extent to which allies fulfill alliance commitments, particularly in times of conflict (Gartzke and Gleditsch 2004; Leeds, Mattes, and Vogel 2009). Third, disaggregating helps account for issues of intent and signaling. Theories on the importance of commitment and dependence (Snyder 2007) suggest using O&M expenditures as a rough proxy for "an arrangement of values that disposes one to act in a certain way" (Snyder 2007, 169). When defense resources are scarce, committing them to operate overseas in support of a US-led operation signals commitment, implying that allies may rely on one another for "core values" (Snyder 2007, 167). Additionally, theoretical work on coordination, which "imposes peacetime costs on allies," and specialization, which "may leave…allies exposed to other threats" (Morrow 1994, 272), suggests that O&M expenditures are a good indicator of alliance solidarity. For example, a small ally investing significant resources in out-of-area operations may be doing so at the expense of its ability to respond independently to Russian threats.

NATO allies have also wrestled with a key sovereignty question—the trade-off between specialization and "assured access" (NATO 2013) to key defense capabilities in time of need. NATO (Smart Defence) and the EU (Pooling and Sharing) each have programs to encourage members to specialize where possible, to pool acquisition resources and programs, and to share key assets that might otherwise be unaffordable. For example, while some may argue that a lack of night bombing capabilities on the part of smaller allies is indicative of free-riding, intensive participation by those same allies in operations, for instance in the form of light infantry or special operations units, suggests not only significant engagement, but specialization. This specialization implies commitment and is valuable: a company of Estonian commandos deployed in Afghanistan in 2009 would have been more useful to the Alliance than a single Estonian F-16,[18] as NATO's emphasis on Special Operations Forces (SOF) cooperation suggests. Consider also allies who own a mere one-fourth "share" of a C-17 transport aircraft; pooling ownership of an expensive expeditionary asset in a period in which expeditionary capabilities were crucial in the Alliance indicates commitment to NATO, not free-riding. Finally, we draw attention to our use of the share of an ally's defense budget allocated to the four sub-categories of expenditures, rather than the share of that ally's GDP allocated to each sub-category, as NATO's own monitoring and evaluation metrics focus on the former.[19]

In order to address potential omitted-variable bias, we introduce a battery of controls into our analysis, corresponding to important confounders identified in the rich extant literature discussed above. These include variables to capture key covariates from the burden-sharing, collective action, and potential threat literatures; comparative politics of government spending literature; and critical structural determinants, such as GDP and population. We describe the theoretical motivation for these variables in detail and provide descriptive statistics for them in Supplementary Files G and H.[20]

[18]The purchase of a single F-16 would represent 2 percent of Estonia's annual defense budget; a single F-35 represents nearly a quarter of Estonia's defense budget.

[19]Results are not an artifact of this choice (see Supplementary File F).

[20]See Supplementary File G for descriptive statistics and File H for variable descriptions and robustness checks. Table 1 presents bivariate correlations of key variables. Also see Supplementary Files K and L to observe within-country variation on our main variables over time.

Model Specification

We begin with a bivariate analysis between O&M expenditures and our Atlanticism score, depicted below in Figure 5. Averaging over the period (1999–2012), Atlanticist countries devote a significantly higher share of their military expenditures to operations, with the allocation ranging from around 40 percent in Estonia and the United Kingdom to around 10 percent in Albania and Italy ($r = .47$, $p = .026$). There is some concern that the bivariate correlation may be biased positively by omitted variables, calling out for multivariate analysis that can address alternative explanations.

Theoretically, ECM is the most appropriate model because strategic culture theory suggests that the effects of our key independent variable, as well as many of our controls, will be dynamic and accrue over time. Critically, the use of an ECM also allows us to estimate both short- and long-term effects (De Boef and Keele 2008, 191). The theoretical assumption underlying the use of ECM is that the hypothesized relationship approximates a moving equilibrium in which resource allocation may respond differently to short-term (one-year) changes in a state's foreign policy orientation, but the actual effects of evolutionary shifts in strategic culture truly become apparent over the long run. This fits with our conception of strategic culture as a variable that changes over time, but that exhibits underlying stickiness due to historical determinants. A quick look at the within-country variation suggests that, in line with constructivists' predictions, Atlanticism does change within a country over time, but these changes accrue quite slowly.[21] Average budget allocations, while noisier, also demonstrate a similar pattern of within-country variation that moves slowly over time. As a result, this seems to be an ideal theoretical application of the ECM.

Methodologically, the ECM framework is appropriate and recommended for stationary data that is not cointegrated.[22] Scholars have shown that the single-equation ECM is appropriate for stationary time series and is not prone to spurious inferences when data are highly autoregressive or "near-integrated" (De Boef and Keele 2008, 195). While our two key variables do not show signs of cointegration or stationarity, autocorrelation is a concern. We believe ECM is the most theoretically appropriate estimator, but our results are not dependent on its use: we also test our models using standard panel estimation, analysis with a lagged dependent variable, and with panel-corrected errors and receive substantively similar results.[23]

In general, error correction models regress a first-differenced dependent variable on (i) its lagged level, (ii) the lagged levels of all potentially co-integrating covariates, and (iii) the first differences of the covariates that change quickly enough to generate meaningful variance.

All of our potential covariates vary in this way, except for the excludability of NATO strategy, which changes for all countries at the same time, and proximity to Russia. We estimate the ECM using the following specification:

$$\Delta y_{i,t} = \alpha + \beta_o y_{i,t-1} + \beta_j x_{i,t-1} + \beta_k \Delta x_{i,t} + \varphi_t + u_{i,t} \qquad (1)$$

where β_k captures the effect of short-run changes and β_0 captures how quickly the dependent variable returns to equilibrium. Long-run effects are estimated as the product of the short-run effect $\beta_k \Delta x_{i,t}$ and a long-run multiplier, or

$$-\frac{\beta_j + \beta_k}{\beta_o - 1} \qquad (2)$$

In our case, y_{it} is the percentage of country i's defense budget devoted to operations during year t, and x is the *Word Scores* Atlanticism score for a country's national security document in a particular year. Each model also includes a matrix of control variables, outlined above, that we employ to address omitted-variable bias. φ_t is a set of year fixed effects in the fully specified models. When these variables demonstrate sufficient time variance, we employ them in the ECM framework, estimating both short- and long-term effects. Because our time frame is relatively short compared to the number of observations, our data may reflect panel-specific shocks, and because our number of time periods (t) is less than the number of countries (n), we cluster standard errors by country to address potential non-independence.

The results are presented in Table 2 below. The table is divided into two panels, which each display seven models. To situate our work in the larger literature on burden-sharing, we begin with the standard dependent variable of "Military Expenditures/GDP (%)" in Panel A, which is simply a measure of each state's military burden in a given year. At the height of operations in Afghanistan, for example, the United States led this category, spending over 4 percent of GDP on defense, followed by the United Kingdom (just over 3 percent). In Panel B, however, we shift our focus to our favored measure: the share of expenditures allocated to operations. Note that North American NATO members are dropped from all analyses, so that we can focus our attention on European NATO members. US and Canadian military expenditures, however, are included in the *spillins* measure, so as not to miss the key effect of spillovers on European allies' choices.

Each panel follows an identical progression through the regression models. We first establish the bivariate relationship, before testing the strength of that relationship by adding control variables to address alternative hypotheses in the literature and important confounders. Of course, additional controls can never eliminate entirely unobserved heterogeneity. In the second model, we add measures of collective action to account for the public good insight that countries with more wealth at stake will spend more on defense. The third model adds joint product variables (a dummy for excludability of NATO strategy, and the natural log of Russian military expenditures), along with additional threat variables that measure threat proximity, and vulnerability to terrorism. The fourth model adds our controls for domestic politics to ensure that our result is not an artifact of party politics or institutional constraints in a particular country. The fifth and

[21] See Supplementary Files G1 and G2 for full plots.

[22] Ibid. We test for cointegration of the dependent and independent variables using the Westerlund (2007) test, using STATA's *xtwest* procedure, where the null hypothesis is no cointegration by inferring whether the error-correction term in a conditional panel error-correction model is equal to zero. The *p*-value for the test of panel cointegration is 0.829, indicating we cannot reject the null. We test for stationarity within panels using STATA's *xtunitroot* procedure, calculating an inverse chi-squared score of inverse chi-squared (292.544, $p = 0.0000$), which indicates we can reject the presence of unit roots and assume stationary data with panels. Tests of autocorrelation using the panel *actest* reveal that serial dependency in the dependent variable is a problem ($p = .000$, indicating a rejection of the null of no autocorrelation).

[23] See Supplementary File J.

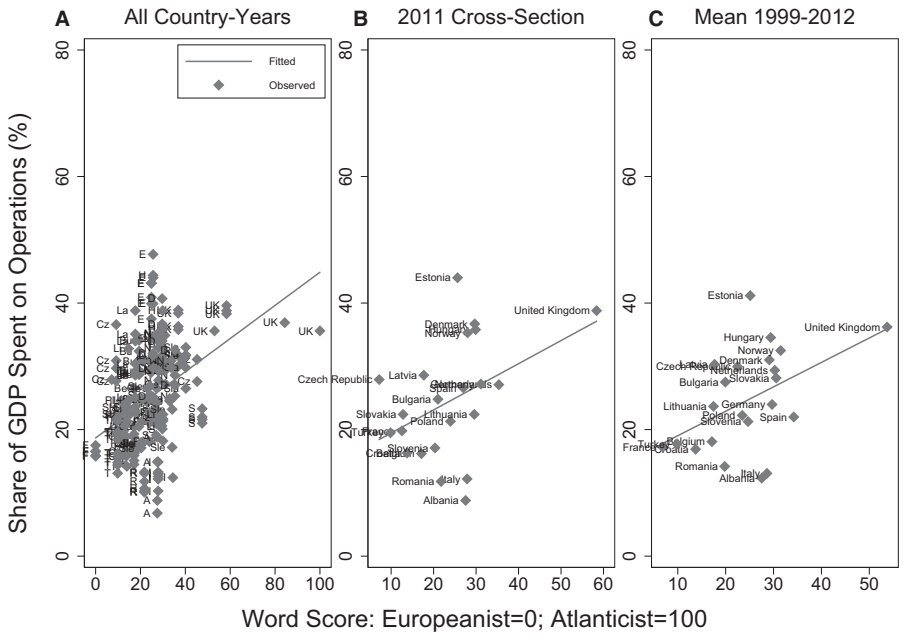

Figure 5. Correlation between Atlanticism and operations spending

final model in each panel evaluates the robustness of our results when year fixed effects are added.

Results

The key finding in Panel A is that the relationship between Atlanticism and military burden is not significantly different from zero: there is no evidence that Atlanticism affects overall military expenditure decisions. The only variable that is consistently significant is GDP with *spillins* from other allies, which is consistent with joint product analysis.

In Panel 2, however, we substitute our disaggregated measure of O&M expenditures. In Model 6, we find that Atlanticism has a strongly positive relationship with operations expenditures both in the long and short term: historical reservoirs of Atlanticism are strong predictors of operations expenditures today, which is consistent with constructivist analysis. Even more interestingly, however, short-term shifts toward Atlanticism in allies' strategic documents are also associated with immediate increases in spending on operations, indicating that the effect of strategic culture may be quite dynamic. Both long- and short-term relationships are extremely robust. As each additional confounder is added, the relationship moves very little. Moreover, the substantive implications of Atlanticism are sizable.

In the fully specified model, the short-term effects of Atlanticism, the coefficient on the first difference is 0.068. To put this number in perspective, a one-standard-deviation annual change in Atlanticism (12.51) would yield a .85 percentage point change in annual spending on operations. Considering that the mean annual allocation to operations is 25 percent and the maximum one-year change recorded in the dataset is 9 percentage points, this change is substantively meaningful on its own.

This short-term fluctuation, however, does not consider the accumulation in Atlanticism and expenditures over time. To do this, we must consider the coefficient on the lagged term in Model 10, which is also statistically significant and sizable (0.051). Using equation 2 (above), we calculate a long-run multiplier of 0.104,[24] indicating that changes in O&M expenditures associated with shifts toward Atlanticism accumulate over time, generating critical long-term changes in defense resource allocation.

Following De Boef and Keele, we plot in Figure 6 below the cumulative change in spending on operations after a one-standard-deviation change in Atlanticism (about 12.5 points). The line graph plots the cumulative short- and long-term effects after a country converges toward or diverges from Atlanticist norms. The solid line shows that after each movement, the effect of the convergence would slowly build up in spending on operations, until 10 years after a shift toward Atlanticism the concerned country would spend about 1.5 percentage points more on operations relative to that at the beginning of the period.

Importantly, these results are not dependent on the presence of France or the United Kingdom in the analysis. Results even increase somewhat when the two panels are excluded from analysis.[25]

Surveying the other control variables, we find that collective action measures (GDP and *spillins*) are again significant in the long term, indicating that free-riding remains an issue. The correlation between operations and short-term changes in Russian military expenditures is large, positive, and significant at the 5 percent level. None of the other threat or domestic political variables is significantly correlated with operational expenditures in the fully specified model.

The second panel of Figure 6 plots the long-run effects of convergence toward Atlanticism on personnel expenditures, using the fully specified Model 11. Ten years after convergence, Atlanticist countries spent 1.09 percentage points less on personnel relative to similarly situated peers.[26] This potential substitution effect suggests further research on the determinants of personnel expenditures.

In sum, our empirical analysis demonstrates a strong correlation between Atlanticist strategic cultures and the share of military expenditures allies spent on operations.

[24] *Equation* 4 : $-\frac{(.068+.051)}{(-.134-1)} = \frac{.119}{1.134} = .1049$

[25] See Supplementary Table 1 for results.

[26] Supplementary Table L shows that both the operations and personnel results are robust to additional controls.

Table 2. Correlates of aggregated and disaggregated military expenditures

Dependent variables	*A. Δ Military expenditures/GDP (%)*					*B. Δ Operating expenditures/Milex (%)*					*C. Δ Other Categories/Milex (%)*		
Independent variables	*(1) Baseline*	*(2) Collective action*	*(3) Joint product/ Threat*	*(4) Domestic institutions*	*(5) Years in NATO*	*(6) Baseline*	*(7) Collective action*	*(8) Joint product/ Threat*	*(9) Domestic institutions*	*(10) Years in NATO*	*(11) Personnel*	*(12) Equipment*	*(13) Infrastructure*
L. Dependent variable	–0.101***	–0.093***	–0.094***	–0.096***	–0.096***	–0.073**	–0.095**	–0.129**	–0.142***	–0.134**	−0.068**	−0.334***	−0.265***
	(0.021)	(0.017)	(0.018)	(0.016)	(0.025)	(0.031)	(0.037)	(0.049)	(0.047)	(0.047)	(0.029)	(0.105)	(0.087)
Δ Atlanticism	0.002	0.002	0.001	0.001	0.002	0.037**	0.065***	0.066***	0.073***	0.068**	−0.074*	−0.017	−0.003
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.014)	(0.019)	(0.021)	(0.024)	(0.027)	(0.043)	(0.041)	(0.025)
L. Atlanticism	0.002**	0.002**	0.001*	0.001	0.002	0.048***	0.048**	0.059***	0.055**	0.051**	−0.020	−0.030	−0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.014)	(0.018)	(0.020)	(0.022)	(0.022)	(0.019)	(0.024)	(0.009)
Δ GDP + Spillins (ln)		–0.032	–0.319	–0.247	–1.790*		–18.286	–16.136	–15.285	–9.322	19.275	−0.795	−3.532
		(0.744)	(0.738)	(0.702)	(0.993)		(11.792)	(13.742)	(14.177)	(16.254)	(29.497)	(19.902)	(9.954)
L. GDP + Spillins (ln)		0.108	0.155**	0.191**	0.153*		0.832	1.944	2.986*	2.987*	−4.815**	2.749	1.495*
		(0.064)	(0.070)	(0.075)	(0.083)		(1.207)	(1.251)	(1.439)	(1.448)	(1.813)	(1.966)	(0.830)
Δ Population (ln)		–0.683	–0.782	0.551	0.206		32.055	74.191*	82.267*	91.306*	−165.866*	198.744	22.727
		(1.577)	(1.300)	(1.608)	(3.331)		(35.672)	(39.648)	(47.542)	(46.920)	(83.107)	(132.267)	(27.027)
L. Population (ln)		–0.023	–0.034	–0.039	–0.033		–0.353	–0.604	−0.903*	−0.855*	0.867	0.068	−0.488
		(0.021)	(0.027)	(0.029)	(0.025)		(0.423)	(0.383)	(0.448)	(0.468)	(0.528)	(0.407)	(0.339)
Capital proximity to Moscow (ln)			–0.002	–0.021	–0.027			–1.121	–1.112	–1.095	2.347	−2.613	−1.246
			(0.050)	(0.056)	(0.054)			(0.709)	(0.834)	(0.819)	(1.503)	(1.837)	(0.884)
Δ Russian milex (ln)			0.514	0.584	8.830			17.151**	18.095**	–139.146	350.122	−135.250	−39.311
			(0.394)	(0.368)	(6.995)			(7.785)	(7.447)	(188.021)	(214.432)	(274.235)	(89.536)
L. Russian milex (ln)			–0.003	–0.023	3.592			–1.230	–1.980	–83.384	193.032	−70.535	−22.024
			(0.063)	(0.082)	(3.594)			(1.226)	(1.435)	(99.733)	(115.166)	(145.774)	(47.561)
Δ Terrorism: Human cost			–0.000***	–0.000***	–0.000			0.001	0.001	0.000	0.002	−0.000	−0.000
			(0.000)	(0.000)	(0.000)			(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
L. Terrorism: Human cost			–0.000*	–0.000*	–0.000			0.001	0.000	–0.000	0.004	−0.000	−0.000
			(0.000)	(0.000)	(0.000)			(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.001)
NATO strategy excludability			–0.140	–0.143	–2.289			2.183	2.266	53.296	−119.352	42.627	12.548
			(0.138)	(0.137)	(2.253)			(1.954)	(1.830)	(62.976)	(73.127)	(92.115)	(30.045)
Δ Right-leaning party				0.093***	0.086*				0.788	0.932	−0.469	−0.917	−0.195
				(0.030)	(0.049)				(0.954)	(1.029)	(1.643)	(1.101)	(0.519)
L. Right-leaning party				–0.032	–0.023				–0.828	–0.920	0.784	−1.073	−0.227
				(0.026)	(0.033)				(0.699)	(0.693)	(0.915)	(0.775)	(0.261)
Δ Veto points				0.039	0.040*				0.084	0.042	0.552	−0.812**	0.167
				(0.049)	(0.021)				(0.566)	(0.591)	(0.399)	(0.357)	(0.236)
L. Veto points				0.012	0.008				0.089	0.124	−0.103	−0.002	0.024
				(0.013)	(0.011)				(0.319)	(0.321)	(0.280)	(0.255)	(0.125)
Constant	0.063	–1.423	–1.882	–2.060	–39.903	0.579	–9.473	–5.949	–11.643	849.982	−1,990.285	734.279	224.452
	(0.038)	(0.878)	(1.392)	(1.243)	(38.039)	(0.646)	(16.353)	(18.605)	(19.787)	(1,052.344)	(1,223.053)	(1,549.134)	(504.517)
Year fixed effects	No	No	No	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Observations	187	165	143	143	143	187	165	143	143	143	143	143	143
R-squared	0.189	0.215	0.290	0.344	0.403	0.032	0.073	0.115	0.134	0.150	0.194	0.241	0.214
rmse	0.144	0.149	0.152	0.149	0.145	3.461	3.407	3.468	3.486	3.540	4.032	3.929	1.643

Table 2 reports the results of five series of Error Correction Models. The dependent variable in Panel A is the first difference in overall military burden. The dependent variable in Panel B is the first difference in expenditures on military operations/total military expenditures. The dependent variables in Panel C are the first differences in the other three categories of military operations/total military expenditures for the fully specified model only. Robust standard errors, clustered by country, in parentheses ($^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$). L. = one-year lag. Δ = first difference. ln = natural log.

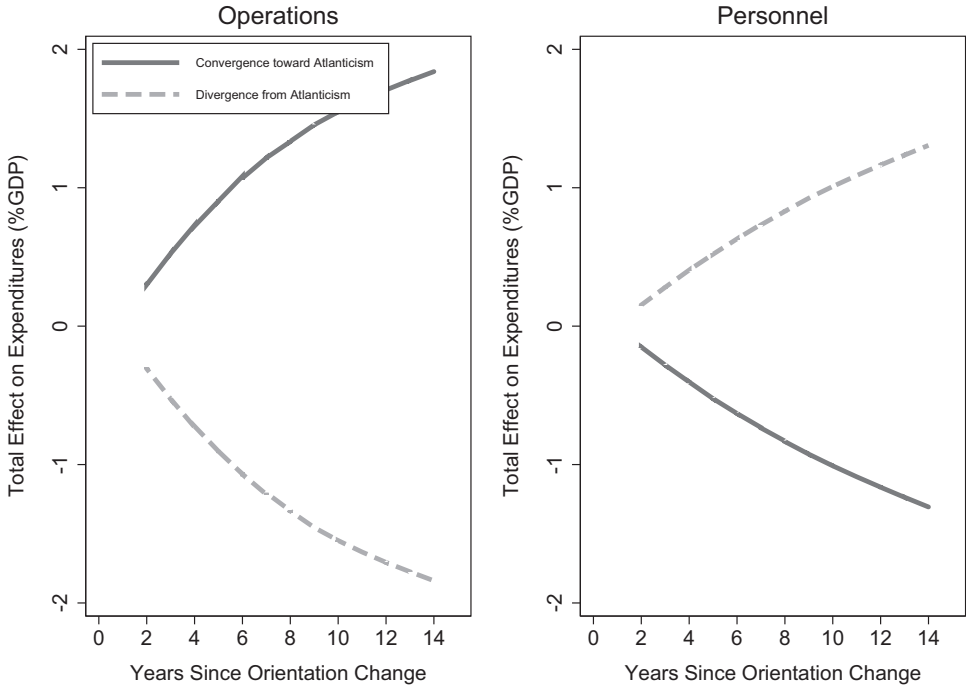

Figure 6. Long-run effects of changes in foreign policy orientation. Following De Boeuf and Keele (2008), we plot the cumulative change in spending on operations after a one-standard-deviation change in Atlanticism (about 12.5 points). The line graph plots the cumulative short- and long-term effects of a country converging toward or diverging from Atlanticism in year one

Atlanticist countries are more willing to allocate resources to operations, rather than on personnel. This means that it is impossible to observe a strong relationship between Atlanticism and overall military expenditures, as the two trends cancel each other out in the aggregate measure.

Our findings are correlational, and do not demonstrate a causal relationship between Atlanticism and operations expenditures. Doing so would require identifying exogenous assignment of an Atlanticist foreign policy orientation, which the complexity of strategic culture renders very difficult. Nevertheless, it is clear that the relationship is robust to multiple specifications and not spurious. Three other concerns, though, may cast doubt on our conclusion that strategic culture is associated with burden-sharing on NATO operations.

First, we might simply be observing underlying trends in both foreign policy orientation and expenditures, a problem the ECM is designed to mitigate. Beyond the statistical modeling choice, however, if correlated trending were an issue, we would also observe it in the relationship between Atlanticism and top-line expenditures. In fact, we find that foreign policy orientation has no long- or short-term association with overall expenditures.

Second, the relationship may be due to reverse causality. This appears unlikely: it is hard to imagine how experience in overseas operations would influence word choices in strategic documents written before (often many years before) decisions to participate. Relatedly, strategic documents may simply capture rhetoric justifying expenditure decisions. While this is plausible, historical reservoirs of Atlanticism correlate with an array of alternative measures of culture and remain significant even after we parse out the short-term changes that might be due to *ex-post* political justifications.

Finally, some unobserved factor, such as historical or socio-cultural determinants, may be driving both changes in Atlanticism and expenditure decisions. The limited variance explained of our modeling indicates that there may be determinants of burden-sharing that remain unknown. The differential results for types of expenditures can ameliorate concerns about unobserved heterogeneity. It is difficult to conceive of an unobserved historical factor that could drive *both* short-term increases in operations and reductions in personnel expenditures. Thus, while we cannot claim to have uncovered a causal relationship, we have uncovered a strong correlation that is consistent with our theoretical expectations, robust to changes in model specification, and unlikely to have arisen from common statistical pitfalls.

Conclusion

We introduced a theory explaining how one dimension of strategic culture (Atlanticism) shapes burden-sharing among NATO allies. While geostrategic and economic considerations continue to exert a strong effect on military expenditures, we establish that foreign policy orientation, reflected in both the language used in national security strategy documents and in expert analysis, plays an important role in predicting the operational expenditures of allies. More Atlanticist allies tend to spend more on operations, while more Europeanist allies appear to spend more on personnel. Future research should further investigate this apparent phenomenon and seek to uncover the drivers of personnel expenditures.

By operationalizing one dimension of strategic culture and measuring its effect on material decision-making, we help establish that allied elites, in similar material situations, make different choices about the allocation of resources. We offer an explanation for this difference. Quite apart from important considerations such as national wealth, conventional threat proximity, or exposure to threats from

non-state actors, strategic culture appears to exert a powerful effect on how states allocate resources—not simply *to* defense, but *among* possible uses of military expenditures.

By uncovering and explaining a relationship between strategic culture, as articulated in national strategic documents, and resource allocation behavior, we identify an additional "pathway from grand strategy to state behavior" (Mitzen 2015, 67). Doing so helps bridge the constructivist–materialist gap in the international security literature.

Our identification of meaningful variation and discernable patterns in the way states allocate resources within defense budgets helps open a new area of exploration in the burden-sharing literature. In light of what both NATO and the EU ask of their members in terms of defense spending, increased understanding of *where* and *how* countries spend their defense budgets carries with it significant policy implications. Where countries choose to spend their money offers a far more precise indication of their commitment to the alliance than top-line defense budgets. The fact that the language used in strategic documents is a strong predictor of this behavior identifies a potential tool for analysts wishing to predict state behavior at critical junctures, including building alliances and sustaining them in times of crisis. In the context of the Wales Pledge, the contents of allies' national strategic documents in the years immediately following may help predict the extent to which those allies will comply with the Pledge's guidelines through 2024. We aim to explore both the material and the ideational drivers of disaggregated defense spending in future research.

In short, strategic culture is related to material choices in a meaningful way. The importance of Atlanticism suggests that NATO's encouragement of strategic cultural convergence among allies is a wise approach, as are efforts by both NATO and the EU to avoid "beauty contests" between the two organizations. Not only are the costs of doing so limited, the benefits are higher than many purely rationalist theories would predict.

Supplemental Information

Supplemental information is available at the *International Studies Quarterly* data archive.

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