Atlanticism and Transatlantic Burden Sharing

The Relationship between Strategic Culture and Disaggregated Defense Investment

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Supplementary File A: Documents Used for Word Scores Content Analysis

The documents below reflect the highest level strategic document available for each country for each year in which such a document was produced. We included Allies' documents from before they were Allies but within the period we studied, as they were aspiring members and participating in NATO's Membership Action Plan (MAP): "Countries participating in the MAP submit individual annual national programmes on their preparations for possible future membership. These cover political, economic, defence, resource, security and legal aspects (NATO 2015)." We also included those national security strategy documents closely predating the period of our study (1999-2012) that were available, as they represented the strategic culture of the allies concerned at the outset of the period studied.

Country	**Year**	**Document Title**
Albania	2004	The National Security Strategy of the Republic of Albania
Albania	2005	The Military Strategy of the Republic of Albania
Albania	2012	Military Review
Belgium	2001	The Modernisation Plan 200-2015 of the Belgian Armed Forces
Bulgaria	2002	White Paper on Defence
Bulgaria	2010	White Paper on Defence and the Armed Forces of the Republic of Bulgaria
Bulgaria	2010	The Republic of Bulgaria's Armed Forces' Development Plan
Bulgaria	2011	Annual Report on the Status of Defence and the Armed Forces of the Republic of Bulgaria
Bulgaria	2014	National Programme: Bulgaria in NATO and in European Defence 2020
Canada	1994	White Paper on Defence
Canada	2004	Securing an Open Society: Canada's National Security Policy
Canada	2005	Canada's International Policy Statement Defence
Canada	2008	Canada First: Defence Strategy
Canada	2012	Report on Plans and Priorities 2012-2013
Croatia	2005	Strategic Defence Review
Croatia	2006	The Croatian Amed Forces Long-Term Development Plan 2006-2015
Czech Republic	1997	National Defence Strategy of the Czech Republic
Czech Republic	2002	Military Strategy of the Czech Republic

Czech Republic	2004	Military Strategy of the Czech Republic
Czech Republic	2008	Military Strategy of the Czech Republic
Czech Republic	2011	The White Paper on Defence
Czech Republic	2012	The Defence Strategy of the Czech Republic
Denmark	2004	The Danish Defence Agreement 2005-2009
Denmark	2008	Danish Defence: Global Engagement
Denmark	2010	The Danish Defence Agreement 2010-2014
Estonia	2004	National Security Concept
Estonia	2009	Long Term Defence Development Plan 2009-2018
Estonia	2010	National Security Concept
France	2002	Loi de Programmation Militaire
France	2008	White Paper on Defence and National Security
Germany	1994	White Paper on the Security of the Federal Republic of Germany and the Situation and Future of the Bundeswehr
Germany	2003	Defence Policy Guidelines
Germany	2006	White Paper
Germany	2011	Defence Policy Guidelines
Greece	1997	White Paper for the Armed Forces
Hungary	2004	National Security Strategy
Hungary	2012	National Security Strategy
Italy	2004	Strategic Concept
Italy	2005	The Chief of the Italian Defence Staff Strategic Concept
Latvia	2003	Report on State Defence Policy and Armed Forces Development
Latvia	2012	The State Defence Concept
Lithuania	2002	National Security White Paper

Lithuania	2002	Defence Policy White Paper
Lithuania	2008	Guidelines of the Minister of National Defense for 2009-2014
Lithuania	2011	Defence Policy of Lithuania
Lithuania	2012	National Security Strategy
Netherlands	2000	Summary of Defence White Paper 2000
Netherlands	2005	Netherlands Defence Doctrine
Netherlands	2007	National Security: Strategy and Work Programme
Netherlands	2010	Future Policy Survey: New Foundation for Netherlands Armed Forces
Norway	2003	A New Defence for a New Time
Norway	2004	Relevant Force: Strategic Concept of the Norwegian Armed Forces
Norway	2005	The Further Modernization of the Norwegian Armed Forces 2005-2008
Norway	2005	Norwegian Defence
Norway	2006	Norwegian Defence
Norway	2008	Norwegian Defence
Norway	2012	Future Acquisitions for the Norwegian Armed Forces 2012-2020
Poland	2001	White Paper
Poland	2003	The National Security Strategy of the Republic of Poland
Poland	2007	The National Security Strategy of the Republic of Poland
Poland	2008	Vision of the Polish Armed Forces 2030
Poland	2009	The Defense Strategy of the Republic of Poland
Romania	2004	Military Strategy of Romania
Romania	2005	The National Security Strategy of Romania
Romania	2007	The National Security Strategy of Romania
Slovakia	2001	Security Strategy of the Slovak Republic
Slovakia	2003	Doctrine of the Armed Forces
Slovakia	2005	Security Strategy of the Slovak Republic
Slovakia	2005	Defence Strategy of the Slovak Republic

Slovenia	2004	Strategic Defence Review Comprehensive Summary
Slovenia	2006	Military Doctrine
Slovenia	2009	Defence Sector Strategic Review
Spain	2000	Defence White Paper
Spain	2003	Strategic Defence Review
Spain	2004	National Defence Directive
Spain	2008	National Defence Directive
Spain	2012	National Defence Directive
Turkey	2000	Defense White Paper
Turkey	2007	Defense White Paper
United Kingdom	1998	Strategic Defence Review: Modern Forces for the Modern World
United Kingdom	2002	Strategic Defence Review: A New Chapter
United Kingdom	2003	Delivering Security in a Changing World: Defence White Paper
United Kingdom	2004	Delivering Security in a Changing World: Future Capabilities
United Kingdom	2005	Defence Industrial Strategy - Defence White Paper
United Kingdom	2006	The Future of the United Kingdom's Nuclear Deterrent
United Kingdom	2010	A Strong Britain in an Age of Uncertainty: The National Security Strategy

Supplementary File B: The Joint Product Model

Joint product theorists expressed the argument with the following equation:

1.) ALLDEF = *f(*PRICE, FULL, SPILLINS, THREAT, STRATEGIC),

with the following representing a pure public good model:

2.) ALLDEF = *f(*PRICE, FULL, THREAT, STRATEGIC),

where ALLDEF represents alliance-wide defense spending; PRICE (often unavailable) represents the relative price of defense goods to nondefense goods; FULL represents the individual ally's income plus the value of defense spending of the rest of the alliance; THREAT represents the "enemy's" defense expenditures; and STRATEGIC "indicates changes in the military doctrine of the alliance (Sandler and Hartley 1999)." The key difference between the two theoretical set-ups is SPILLINS, which accounts the spillover effects of one country's expenditure choices on others, by calculating the defense expenditures of the rest of the alliance members combined.

Sandler and Hartley use the coefficient of the SPILLINS variable in equation 1 in order to determine whether, in a particular period, the joint product model offers a better explanation for allies' behavior than does the pure public good model – if the coefficient on SPILLINS is significantly different from zero, then the joint product model indeed offers a superior explanation. This approach is foundational for any study of alliance burden sharing, and has been used to assess theories of private benefits among allies, as well as the choice to bear a larger than predicted share of the collective defense burden either freely or because of influence exercised by the United States

Supplementary Table B: Replication of Sandler and Hartley (1999) Using Error Correction Model and Disaggregated Expenditures

Dependent Variables	(1) Δ Military Expenditures/GDP (%)	(2) Δ Operating Expenditures/Country Total (%)	(3) Δ Equipment Expenditures/Country Total (%)	(4) Δ Personnel Expenditures/Country Total (%)	(5) Δ Infrastructure Expenditures/Country Total (%)
L.Dependent Variable	-0.110***	-0.076*	-0.275***	-0.055**	-0.154***
	(0.014)	(0.037)	(0.083)	(0.021)	(0.052)
L."Full" (long)	-0.002	-0.501	1.428*	-0.808	-0.249
	(0.032)	(1.113)	(0.814)	(0.676)	(0.274)
Δ "Full" (short)	-1.970***	-14.244	20.843**	3.281	-1.974
	(0.545)	(14.942)	(9.679)	(16.706)	(5.637)
L.Spillins (ln)	-0.753**	-5.932	-5.498	2.898	-1.714
	(0.335)	(8.684)	(5.182)	(8.202)	(3.444)
Δ Spillins (ln)	0.710	-8.389	-9.345	11.700	-9.546
	(0.423)	(9.773)	(12.782)	(18.012)	(6.661)
L.NATO Strategy Excludability	0.050	-0.928	1.699	-2.699	1.030
	(0.051)	(1.462)	(1.428)	(1.680)	(0.716)
Δ.NATO Strategy Excludability	0.104**	-2.364	2.327**	-2.512**	0.569**
	(0.043)	(1.936)	(1.028)	(0.998)	(0.270)
L.Russian Military Expenditures (ln)	0.439**	2.513	2.811	-1.092	0.097
	(0.170)	(4.070)	(2.656)	(3.509)	(1.476)
Δ.Russian Military Expenditures (ln)	1.131**	5.187	7.308	-15.115**	0.127
	(0.458)	(4.701)	(5.597)	(6.757)	(2.233)
Constant	5.603	63.905	26.351	-9.617	25.799
	(3.342)	(90.979)	(58.813)	(94.949)	(36.056)
Observations	245	245	245	245	245
R-squared	0.233	0.067	0.176	0.065	0.114
rmse	0.175	5.055	4.133	4.356	1.457

Appendix B reports the results of Error Correction Models on different measures of military spending. Panel A replicates the fully-specified Model 10 from Table 3, but tests the robustness of the correlation to additional theoretical controls. Robust standard errors, clustered at country level, in parentheses (*** p<0.01, ** p<0.05, * p<0.1); L: one year lag; Δ: first difference; ln: natural log taken.

Supplementary File C: A Closer Look at Important Allies

A brief, descriptive analysis of the British and French cases is illustrative of the phenomenon. Figure H represents the bivariate correlation between Atlanticism and operational spending in France and the United Kingdom, with Germany as an additional point of reference. Europe's three largest states exemplify the relationship observed among all the allies considered in this study.

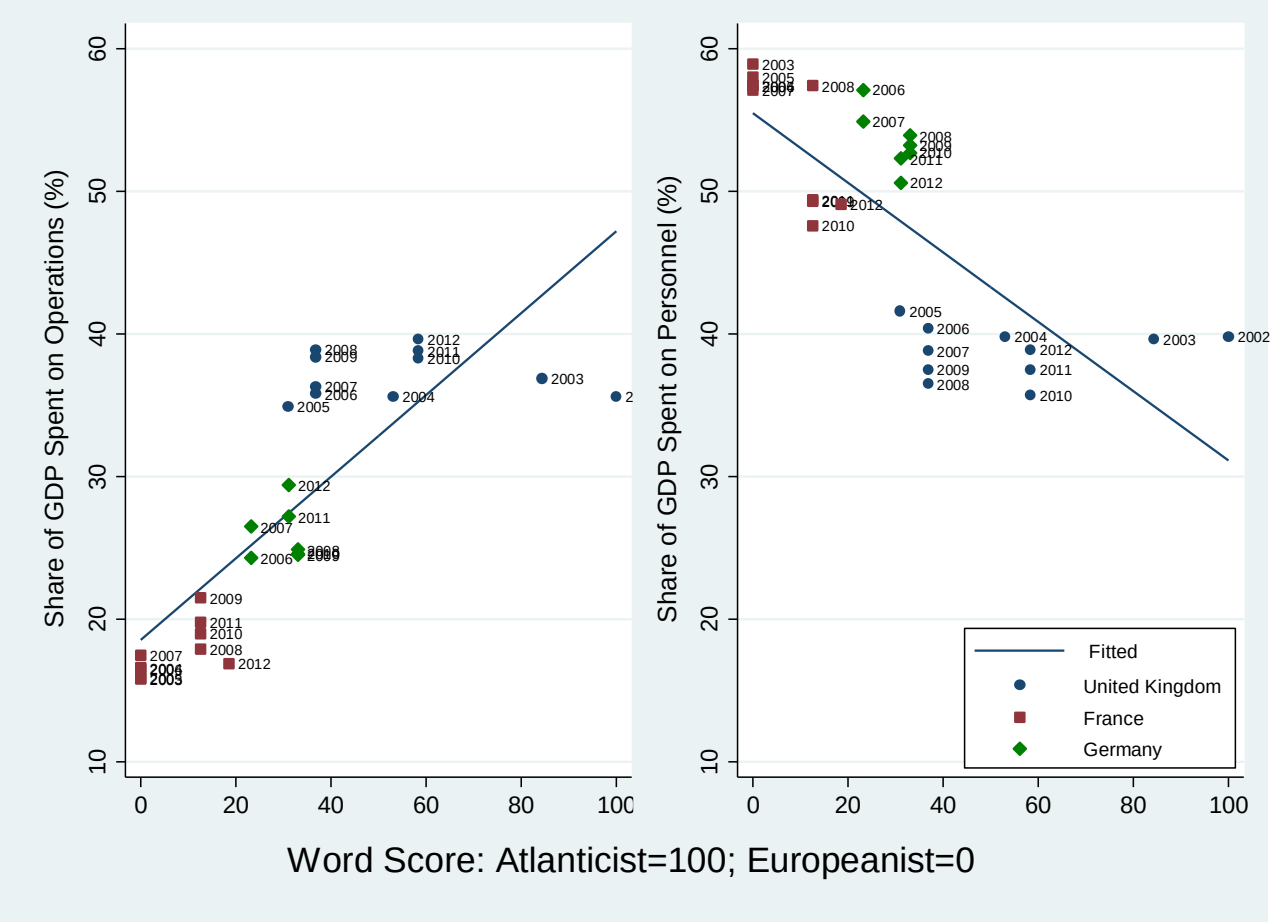
The UK's higher Atlanticism score predicts, according to our theory, higher operating expenditures and lower personnel expenditures. This prediction is borne out significantly, with the UK spending 52% more than France on operations (37.19 % v. 17.74%) and 40% less on personnel (38.73% to 54.16%).

Perhaps even more instructive is a comparison of France's mean values before and after it's (comparatively Atlanticist) 2008 White paper on Defense and Security. The document captures both a shift in the orientation of national leadership and long-developing trends among policy elites: while the commission that authored it was set up by newly-elected President Nicolas Sarkozy, it was notable for the breadth of its membership, the latitude it had in performing its task, and the transparency of its work (Major 2008). The Atlanticist shift represented by this document would predict that France would begin to substitute operating for personnel expenditures. This was, in fact, the case, with France allocating 16 percent more to operating and 14 percent less to personnel[1] in the years that followed. France has also spent, on average, 34 percent more on equipment since 2008, also an important development. Critically, these trends in defense investment have persisted under Socialist President Hollande, who has also continued

[1] As France decided to end conscription in 1996 and the last French conscripts were demobilized in 2001, there is no reason to consider the effects of France's transition to an AVF after 2008.

and perhaps even intensified Sarkozy's Atlanticist shift in foreign policy orientation (Weinstein 2014).

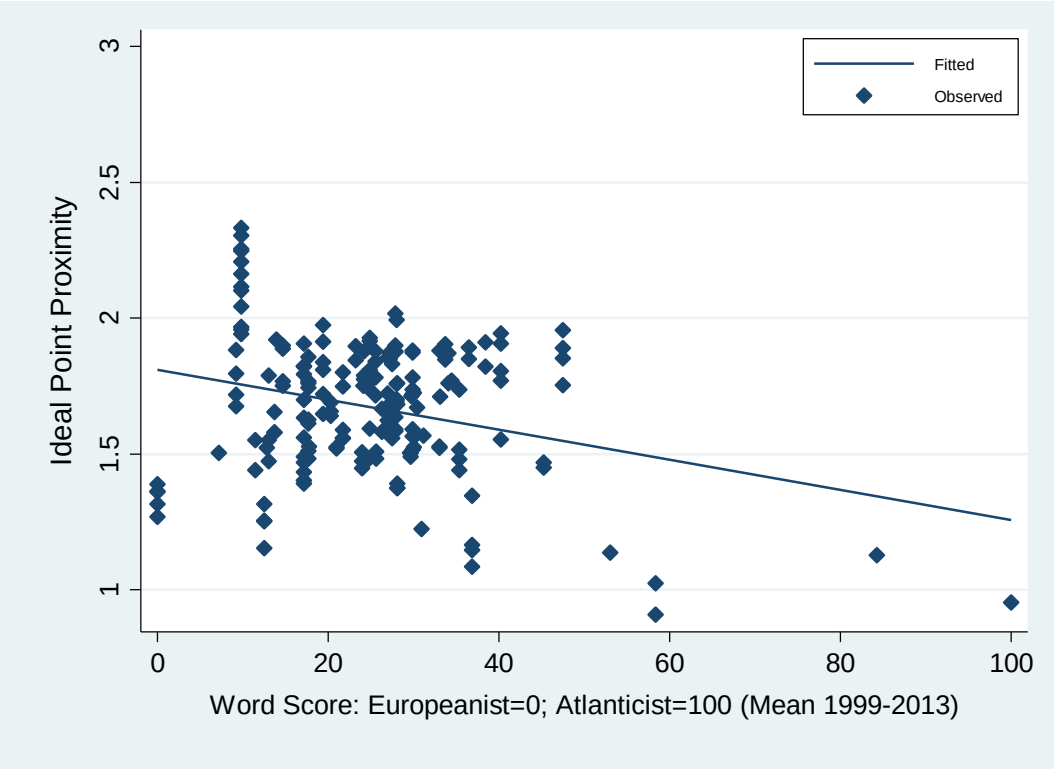
Supplementary Figure C: Atlanticism and Expenditures for France, UK, and Germany over Time



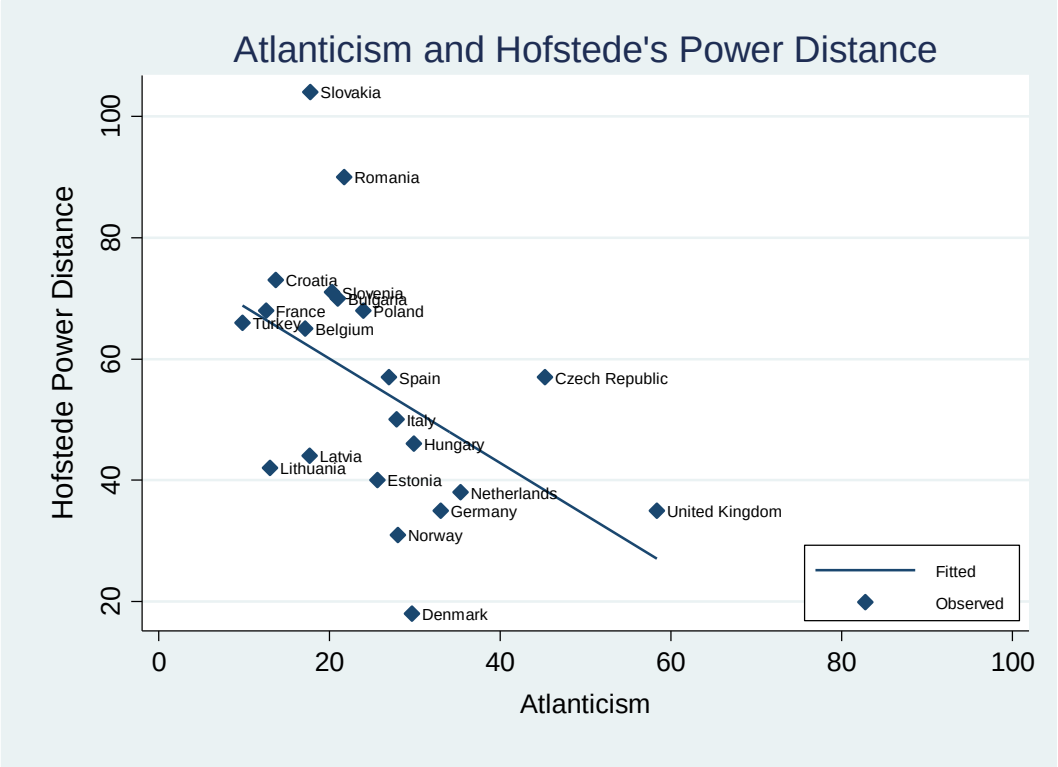
Supplementary File D: Discussion of Correlation between Strategic Culture and Extant Measures of Culture

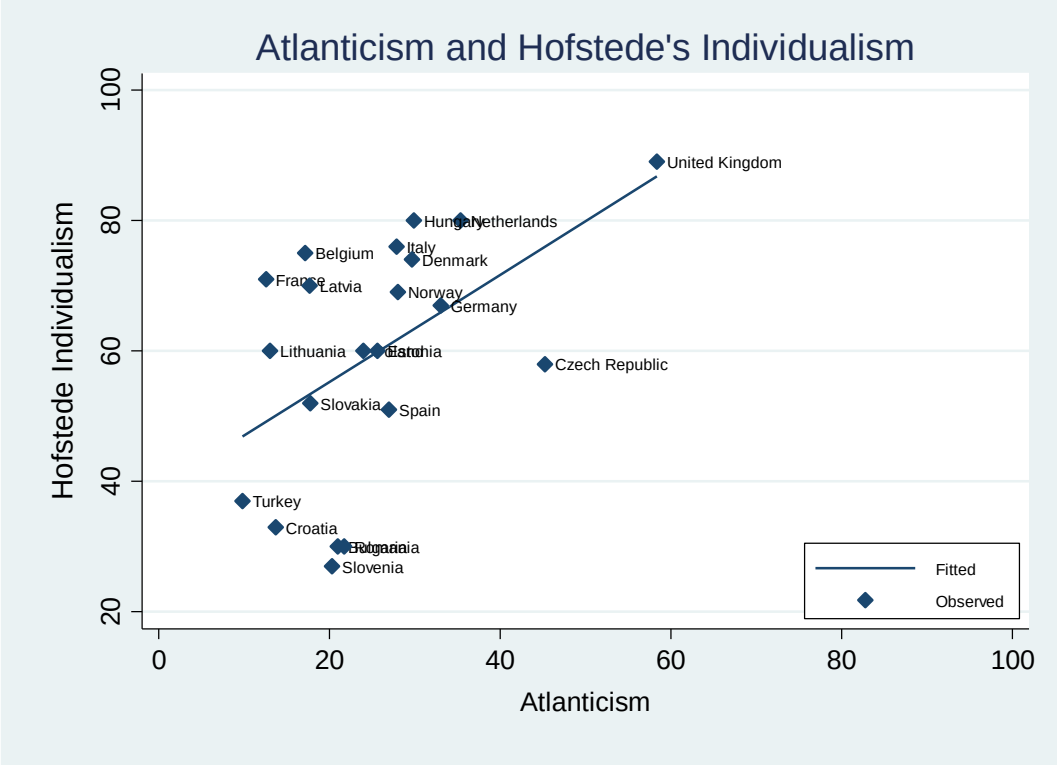
Extant theory would predict a positive correlation between Hofstede's cultural dimension of individualism and Atlanticism, and a negative correlation between Hofstede's cultural dimension of uncertainty avoidance and Atlanticism. Similarly, one should expect a negative correlation with Biehl et al., because authors classify countries' foreign policy orientation as Atlanticist (1), Balanced (2), or Europeanist (3), and also with the proximity of ideal point estimates generated by Bailey et al., as a lower score there indicates closer proximity in orientation on issues of global importance. Figure C1 provides a graphical illustration of the correlation with Bailey at al. Figure C2 shows the bivariate correlation between Atlanticism and the Hoftstede data in 2010. Supplementary Table G replicates our analysis, but replaces Atlanticism with the Biehl et al. coding in a standard framework, as Biehl does not vary enough over time to use an ECM.

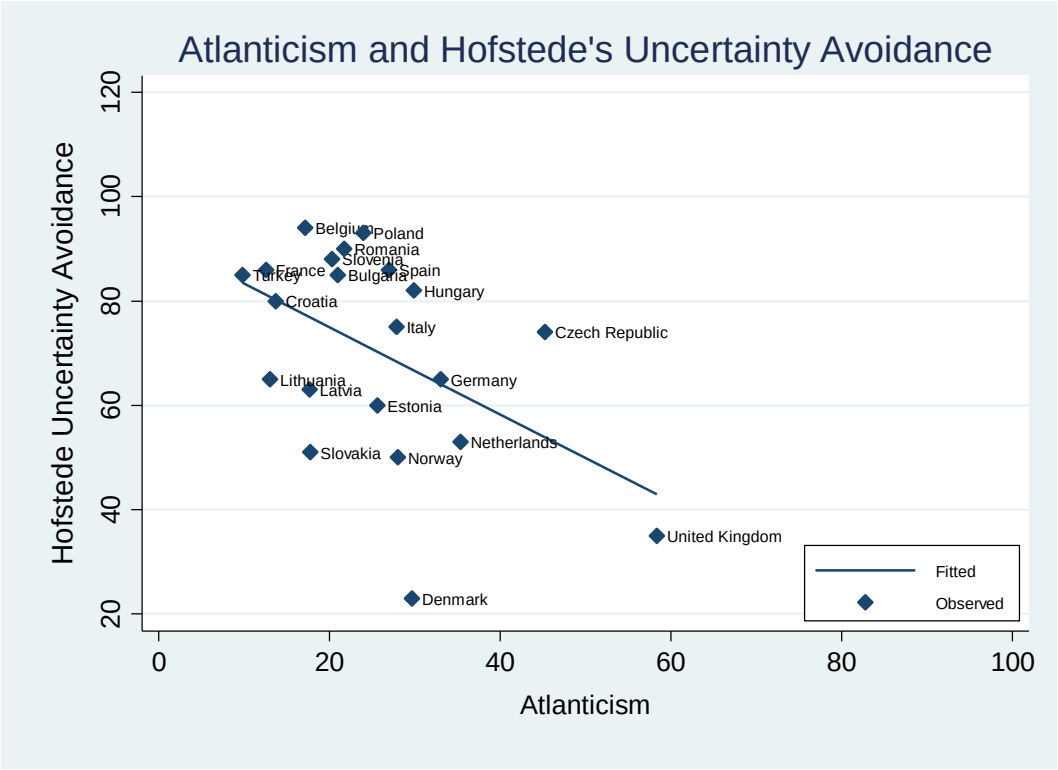
Figure D1: Scatterplot of Atlanticism and Ideal Point Proximity (Bailey et al. 2013)



Supplementary Figure D2: Scatterplot of Atlanticism and Hofstede Measures of National Culture in 2010






Atlanticism and Hofstede's Uncertainty Avoidance
Hofstede Uncertainty Avoidance
120
100
80
60
40
20
0
20
40
60
80
100
Atlanticism
Belgium
Poland
Romania
Slovenia
France
Spain
Turkey
Bulgaria
Hungary
Croatia
Italy
Czech Republic
Lithuania
Germany
Latvia
Estonia
Netherlands
Slovakia
Norway
United Kingdom
Denmark
Fitted
Observed

Supplementary Table D: Replication using Biehl et al. Measure of Atlanticism

Dependent Variables	**Δ Military Expenditures/GDP (%)**		**Δ Operating Expenditures/Country Total (%)**		**Δ Personnel Expenditures/Country Total (%)**	
	(1)	(2)	(3)	(4)	(5)	(6)
L.Biehl Atlanticism (1= Europeanist, 3=Atlanticist)	0.093	0.074	5.628***	3.049***	-15.559***	-12.318***
	(0.121)	(0.129)	(0.479)	(0.343)	(1.734)	(1.027)
L.GDP + Spillins (ln)		-1.390***		6.702		-10.015*
		(0.152)		(26.317)		(5.217)
L.Population (ln)		0.587***		-2.631		-0.722
		(0.043)		(11.592)		(0.989)
L.Russian Military Expenditures (ln)		2.095***		-1.135		15.562***
		(0.316)		(36.510)		(4.642)
L.Terrorism: Human Cost		0.000***		-0.000		0.002
		(0.000)		(0.003)		(0.001)
NATO Strategy Excludability		-2.410***		0.394		0.000
		(0.317)		(30.393)		(0.000)
Capital Proximity to Moscow (ln)		-0.191		-8.042*		10.117**
		(0.121)		(4.525)		(4.111)
L.Right-Leaning Party		-0.032		1.049		0.560
		(0.034)		(1.352)		(0.608)
L.Veto Points		0.022		0.297		-1.014***
		(0.017)		(0.659)		(0.319)
Years FE	No	Yes	No	Yes	No	Yes
Constant	1.713***		10.840***		97.729***	
	(0.249)		(3.886)		(5.383)	
Observations	239	234	239	234	239	234
Panels	0.808	0.880	0.535	0.535	0.925	0.938
R-squared	25	25	25	25	25	25
RMSE	0.206	0.195	5.057	5.065	4.270	4.145

OLS with panel correct standard errors with panel specific AR1 correction (*** p<0.01, ** p<0.05, * p<0.1)

Supplementary File E: Bivariate Correlations Between Operating Expenditures and the ratio of land forces deployed to national wealth, ratio of soldiers deployed in Afghanistan to total population, and ratio of deployed personnel to total personnel

	Variables	1	2	3	4	5
1	Operating Expenditures/MILEX (%)	1				
2	Deployed Forces/GDP	0.3529*	1			
3	ISAF Troops/Capita	0.5464*	0.1762	1		
4	Deployed Troops/Total Force	0.2128*	-0.1144	0.4716*	1	
5	Equipment Expenditures/MILEX(%): 2-year lag	0.1630*	-0.0927	0.1944	0.3939*	1

Sources: NATO, European Defense Agency

Supplementary File F: Replication of Table 2 Standardizing by Share of GDP

Finally, we draw attention to the fact that we use 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. Second, the former is more indicative of actual choices made within defense budgets. Current debates across the Alliance highlight the fact that ministries of defense must choose to allocate a fixed sum of resources among competing domains. Discussions in the UK about how to allocate dwindling defense resources among services; in France about how to pay for increasing personnel expenditures while maintaining a grueling operating tempo in the wider Middle East; and in Germany when contemplating how to distribute increased resources devoted to defense are all prime examples. Allies that spend significant proportions of their defense budgets on personnel, like heavily Europeanist allies Portugal (75%), Belgium (69%), Italy (68%), and Spain (60%), also face difficult choices between allocating the remaining 25%-40% of their defense budgets to investments in readiness (operating expenditures) or modernization (equipment expenditures). In the United States, discussions about which components of the Department of Defense should absorb the costs of sequestration, pitting not only service against service, but particularly personnel against equipment and readiness (as funded by operations and maintenance expenditures), make this point even more clearly. Nonetheless, to make sure that our results are not an artifact of this measurement choice, we re-run all analysis with GDP in the denominator instead of total military expenditures, finding that the substantive conclusions remain the same.

Supplementary Table F: Robustness of Table 2 to Standardization by GDP

Dependent Variables	A. Δ Military Expenditures/GDP (%)					B. Δ Operating Expenditures/Milex (%)					C. Δ Other Categories/Milex (%)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Independent Variables	Baseline	Collective Action	Joint Product/Threat	Domestic Institutions	Years in NATO	Baseline	Collective Action	Joint Product/Threat	Domestic Institutions	Years in NATO	Personnel	Equipment	Infrastructure
L. Dependent Variable	-0.101***	-0.093***	-0.094***	-0.096***	-0.096***	-0.073*	-0.072**	-0.091**	-0.108***	-0.109***	-0.068**	-0.334***	-0.265***
	(0.021)	(0.017)	(0.018)	(0.016)	(0.025)	(0.038)	(0.032)	(0.036)	(0.034)	(0.035)	(0.029)	(0.105)	(0.087)
Δ Atlanticism	0.002	0.002	0.001	0.001	0.002	0.001**	0.002**	0.001**	0.002**	0.002***	-0.074*	-0.017	-0.003
	(0.002)	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.043)	(0.041)	(0.025)
L.Atlanticism	0.002**	0.002**	0.001*	0.001	0.002	0.001***	0.001***	0.001***	0.001**	0.001**	-0.020	-0.030	-0.006
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.019)	(0.024)	(0.009)
Δ GDP + Spillins (ln)		-0.032	-0.319	-0.247	-1.790*		-0.159	-0.242	-0.234	-0.501	19.275	-0.795	-3.532
		(0.744)	(0.738)	(0.702)	(0.993)		(0.246)	(0.338)	(0.328)	(0.425)	(29.497)	(19.902)	(9.954)
L.GDP + Spillins (ln)		0.108	0.155**	0.191**	0.153*		0.058**	0.081***	0.102***	0.095***	-4.815**	2.749	1.495*
		(0.064)	(0.070)	(0.075)	(0.083)		(0.027)	(0.027)	(0.029)	(0.028)	(1.813)	(1.966)	(0.830)
Δ Population (ln)		-0.683	-0.782	0.551	0.206		0.287	0.561	1.036	1.079	-165.866*	198.744	22.727
		(1.577)	(1.300)	(1.608)	(3.331)		(0.664)	(0.752)	(0.860)	(0.898)	(83.107)	(132.267)	(27.027)
L.Population (ln)		-0.023	-0.034	-0.039	-0.033		-0.015	-0.019**	-0.024**	-0.023**	0.867	0.068	-0.488
		(0.021)	(0.027)	(0.029)	(0.025)		(0.009)	(0.008)	(0.009)	(0.008)	(0.528)	(0.407)	(0.339)
Capital Proximity to Moscow (ln)			-0.002	-0.021	-0.027			-0.013	-0.015	-0.017	2.347	-2.613	-1.246
			(0.050)	(0.056)	(0.054)			(0.018)	(0.021)	(0.021)	(1.503)	(1.837)	(0.884)
Δ Russian Milex (ln)			0.514	0.584	8.830			0.429**	0.454**	-0.031	350.122	-135.250	-39.311
			(0.394)	(0.368)	(6.995)			(0.193)	(0.174)	(2.985)	(214.432)	(274.235)	(89.536)
L.Russian Milex (ln)			-0.003	-0.023	3.592			-0.016	-0.034	-0.435	193.032	-70.535	-22.024
			(0.063)	(0.082)	(3.594)			(0.033)	(0.037)	(1.611)	(115.166)	(145.774)	(47.561)
Δ Terrorism: Human Cost			-0.000***	-0.000***	-0.000			0.000	-0.000	-0.000	0.002	-0.000	-0.000
			(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.001)
L.Terrorism: Human Cost			-0.000*	-0.000*	-0.000			0.000	0.000	0.000	0.004	-0.000	-0.000
			(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)	(0.003)	(0.003)	(0.001)
NATO Strategy Excludability			-0.140	-0.143	-2.289			0.032	0.031	0.308	-119.352	42.627	12.548
			(0.138)	(0.137)	(2.253)			(0.035)	(0.034)	(1.026)	(73.127)	(92.115)	(30.045)
Δ Right-Leaning Party				0.093***	0.086*				0.034*	0.034*	-0.469	-0.917	-0.195
				(0.030)	(0.049)				(0.016)	(0.019)	(1.643)	(1.101)	(0.519)
L.Right-Leaning Party				-0.032	-0.023				-0.022	-0.022	0.784	-1.073	-0.227
				(0.026)	(0.033)				(0.015)	(0.015)	(0.915)	(0.775)	(0.261)
Δ Veto Points				0.039	0.040*				0.009	0.009	0.552	-0.812**	0.167
				(0.049)	(0.021)				(0.014)	(0.014)	(0.399)	(0.357)	(0.236)
L.Veto Points				0.012	0.008				0.000	-0.000	-0.103	-0.002	0.024
				(0.013)	(0.011)				(0.005)	(0.005)	(0.280)	(0.255)	(0.125)
Constant	0.063	-1.423	-1.882	-2.060	-39.903	-0.013	-0.789**	-0.894	-0.952*	3.374	-1,990.285	734.279	224.452
	(0.038)	(0.878)	(1.392)	(1.243)	(38.039)	(0.011)	(0.369)	(0.594)	(0.508)	(17.062)	(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	0.061	0.120	0.171	0.218	0.231	0.194	0.241	0.214
rmse	0.144	0.149	0.152	0.149	0.145	0.0682	0.0669	0.0695	0.0685	0.0696	4.032	3.929	1.643

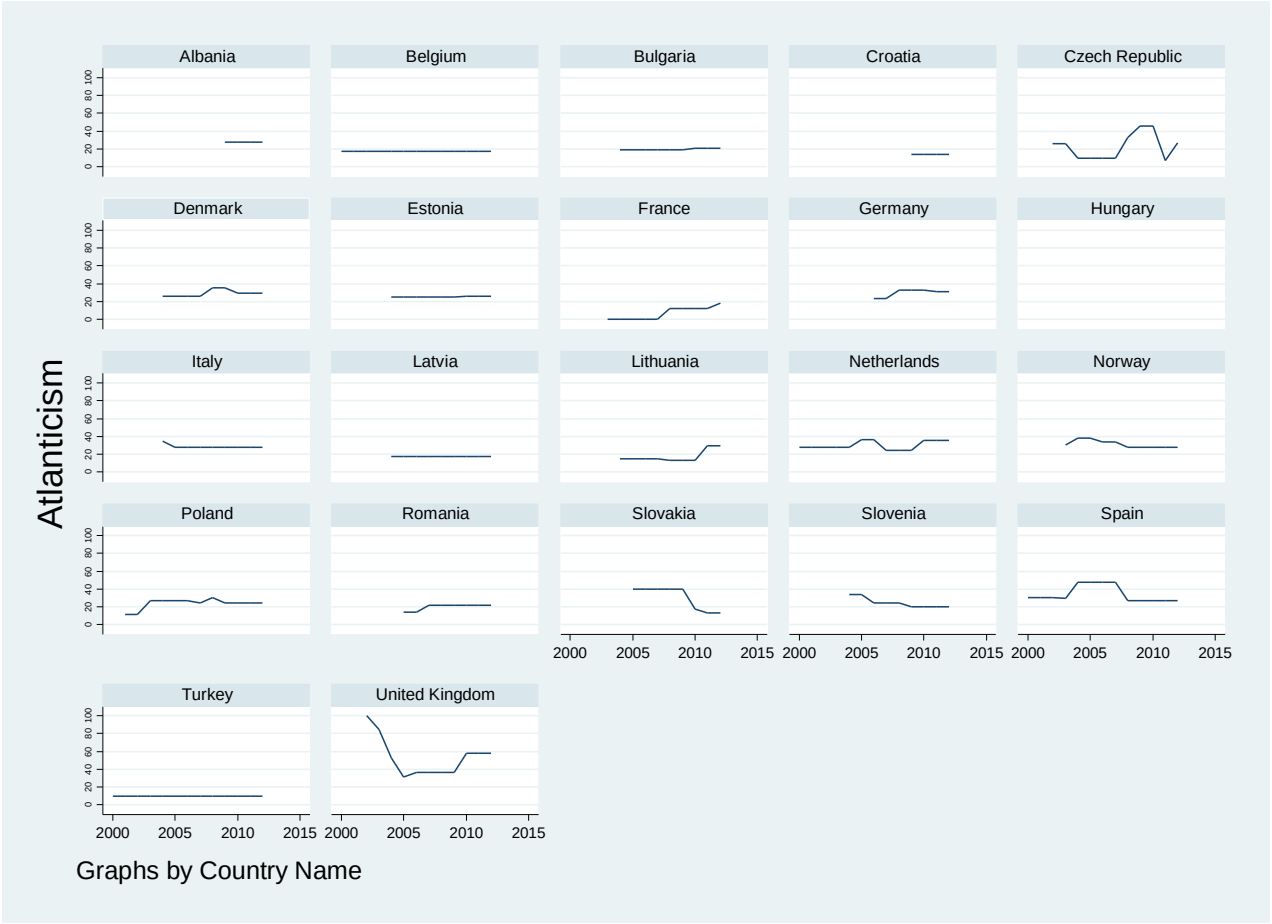
Supplementary Table F reports the results of five series of Error Correction Models. The dependent variable in Panel A is the first difference in overall military burden. The dependent variable in Panel B is the first difference in expenditures on military operations/GDP. The dependent variables in Panel C are the first differences in the other three categories of militay operations/GDP 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

Supplementary File G: Descriptive Statistics of Variables Used in Main Analyses

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent Variables					
Military Expenditures/GDP (%)	295	1.72	0.74	0.4	5.4
Operating Expenditures/Country Total (%)	295	23.87	9.14	6.8	78.7
Personnel Expenditures/Country Total (%)	295	57.63	12.85	26.0	84.1
Equipment Expenditures/Country Total (%)	295	15.22	6.52	1.2	38.3
Infrastructure Expenditures/Country Total (%)	295	3.56	3.01	0	19
Independent Variables					
Atlanticism (Word Scores: Europeanist=0 Atlanticist=100	209	24.86	12.51	0	100
Hofstede Individualism	24	57.13	19.20	27.0	89
Hofstede Uncertainty Avoidance	24	73.71	21.21	23.0	112
Biehl et al. FP Orientation (Atl.=1, Bal.=2, Eur.=3)	244	1.74	0.64	1	3
Voeten et al. Ideal Point Proximity (UNGA Alignment)	270	1.65	0.25	0.9	2.63
GDP + Spillins (ln)	270	14.15	0.41	13.5	15.16
Population (ln)	270	16.32	1.37	13.0	18.23
NATO Strategy (1=Excludable, 0=Non-Excludable)	295	0.72	0.45	0	1
Russian Military Expenditures (ln)	295	10.91	0.35	10.1	11.41
Proximity of Capital City to Moscow (ln)	270	7.53	0.37	6.7	8.28
Terror: Citizens Hurt (ln)	245	23.13	87.30	0	1129
Years in NATO	295	34.61	24.71	0	63
Years in NATO Squared	295	1806.21	1540.82	0	3969
Change in National Security Strategy (1=Change, 0=No Change)	253	0.17	0.37	0	1
Change in NATO Strategic Concept (1=Change, 0=No Change)	253	0.14	0.35	0	1
US Troops Stationed in Country (ln)	295	4.51	3.10	0	11.24
Trade with United States (% GDP)	217	0.03	0.02	0	0.12
Right-Leaning Party	245	0.34	0.48	0	1
Veto Points (DPI)	295	3.38	1.89	0	7
Popular View of US Global Leadership Role (1=Positive, 6=Negative)	105	2.80	0.39	2.13	4.12

Supplementary File G1: Variation over Time in Operating and Personnel Expenditures (By Country)

Supplementary File G2: Variation over Time in Atlanticism (By Country)



Supplementary File H: Discussion of Main and Additional Controls and Replication of Table 2 w/ Additional Controls

Main Control Variables

In order to address potential omitted variable bias, we introduce controls into our analysis, corresponding to important confounders identified in the rich extant literature.

Burden-sharing, Collective Action, and Threat

We build on the Sandler & Forbes (1980) Joint Product Model in three ways. First, we add a disaggregated measure of defense spending. Second, we add a continuous variable that represents with relative precision the actual strategy of not just the Alliance as a whole, but of individual allies. Third, this continuous variable offers a variation of threat that includes measures of both proximity and perception associated with the international security literature. In so doing, we address measurement issues raised by the model's architects (Hartley and Sandler 1999), are consistent with recent analysis in the international security and strategic culture literatures, and address policy exigencies faced by allies.

Also based on the defense economics literature, we control for the natural logs of the sum of each ally's *GDP* (World Bank 2015) and *"spillins"* from other allies' military expenditures, and of the state's *population* (Sandler and Hartley 1999, World Bank 2015). We also address joint product theorists' notion of a particular strategy's *excludability* by using a dummy variable taking the value of 1 when NATO's overall strategy focuses on protection as opposed to deterrence (Sandler and Hartley 1999, Gonzalez and Mehay 1991). Finally, in a robustness test, we control for the percentage of

an ally's force comprised of *conscripts* in 2000, and whether or not an ally had initiated a transition to an All-Volunteer Force (AVF) in 2000 (Sandler and Hartley 1995, Jehn and Selden 2002, Hartley 2003).[2]

In order to address the theorized effect of threat capabilities and proximity on resource allocation decisions, we control for the natural log of *threat military expenditures* (Sandler and Hartley 1999), and of the *proximity* of each ally's capital to Moscow (Gleditsch 2013).[3] Controlling for the *human cost of terrorism* (LaFree and Dugan 2007), measured in citizens killed addresses vulnerability and threat perceptions related to non-state actors.

We also control for domestic institutional and political variables. First, a dummy variable for right-leaning party in power (Gabel and Huber 2000, Volkens, et al. 2014) addresses the literature linking electoral evolutions to international behavior. Second, veto points (Keefer and Stasavage 2003), a comprehensive measure of all actors with the ability to thwart policy change including independent executives, multiple legislative bodies, and number of parties in the ruling coalition, addresses the influence of domestic political checks and executive autonomy on the evolution of strategic documents and the transmission of strategic culture to material behavior. Controlling for veto points accounts for the well-founded argument that "NATO's procedures allow each member's political processes to shape what it contributes and what its troops do." While the

[2] Substantive findings are unchanged by these controls.
[3] Using Russian military expenditures and proximity to Moscow accounts in part for Walt's four factors affecting the level of threat a particular state may pose. An Ally's *perception* of threat will presumably be captured in its own strategic documents, which are the data source for our explanatory variable. Because we were concerned that a threat from Russia might be dated, we initially collected distance from Iran also. Recent events have highlighted the importance of proximity to Russia in allies' calculations, and proximity to Iran had similar effects to proximity to Russia.

literature on party politics and defense investment does not indicate that right-leaning parties allocate more resources to defense, controlling for both party politics and political checks helps address concerns that, rather than expressions of evolving strategic culture, national strategic documents may merely reflect the political agenda of the ruling party.

Finally, we include year fixed effects because of the theoretical effect of the extent to which membership in the Alliance is itself institutionalized, along with the possibility that a new member may invest considerably in defense in order to gain NATO membership, only to free ride.

Additional Controls

Supplementary Table H shows that both the operations and personnel results are robust to additional control variables regarding strategic and economic interdependence between the US and NATO allies, which scholars have suggest may be plausibly correlated with both Atlanticism and military expenditures. These include: 1) the percentage of an ally's force comprised of conscripts in 2000, and whether or not an ally had initiated a transition to an All-Volunteer Force (AVF) in 2000; 2) the *number of U.S. troops* stationed on an ally's territory (Kane 2006), in order to account for the effect of that troop presence on political (Machain and Morgan 2013) and economic behavior (Biglaiser and DeRouen 2007); 3) the weight of trade with the United States in a member's GDP (Barbieri, Keshk and Pollins 2012), as economic interdependency may affect alignment choices (Rosecrance 2014, Copeland 1996, Long and Leeds 2006); and 4) a dummy variable for *change in national security strategy* to control for the effect of shifting priorities among allies, as well as possible shifts in threat perception. None of

these controls had a substantive influence on our main parameters of interest; 5) and dummy variables for whether a country is a former Warsaw Pact or current EU member.

Supplementary Table H: Robustness to Additional Controls

Dependent Variables	**A. ΔOperating Expenditures/Milex (%)**						**B. ΔPersonnel Expenditures/Milex (%)**					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Independent Variables	Conscription	U.S. Troops	Trade with U.S.	Strategy Change	EU	Former Warsaw Pact	Conscription	U.S. Troops	Trade with U.S.	Strategy Change	EU	Former Warsaw Pact
L.Dependent Variable	-0.142***	-0.127***	-0.177***	-0.134**	-0.129**	-0.123**	-0.079**	-0.070**	-0.066**	-0.068**	-0.054*	-0.052*
	(0.046)	(0.045)	(0.057)	(0.047)	(0.052)	(0.053)	(0.028)	(0.027)	(0.028)	(0.029)	(0.029)	(0.028)
L.Atlanticism	0.055**	0.050**	0.052*	0.051**	0.046*	0.041*	-0.020	-0.026	-0.032	-0.020	-0.010	-0.007
	(0.023)	(0.022)	(0.028)	(0.022)	(0.026)	(0.023)	(0.022)	(0.018)	(0.023)	(0.019)	(0.019)	(0.016)
ΔAtlanticism	0.081***	0.067**	0.090**	0.068**	0.068**	0.072***	-0.086*	-0.074*	-0.077	-0.074*	-0.074	-0.068
	(0.026)	(0.027)	(0.033)	(0.027)	(0.028)	(0.023)	(0.047)	(0.042)	(0.060)	(0.043)	(0.046)	(0.043)
L.GDP+Spillins (ln)	3.152**	3.044**	3.300	2.987*	2.991**	2.348	-5.044***	-5.483***	-2.214	-4.815**	-4.649**	-4.601**
	(1.437)	(1.319)	(1.947)	(1.448)	(1.408)	(1.858)	(1.458)	(1.889)	(2.194)	(1.813)	(1.697)	(1.845)
ΔGDP+Spillins (ln)	-14.079	-6.674	-20.359	-9.322	-7.646	-6.974	21.943	20.309	42.751	19.275	15.995	16.090
	(15.336)	(17.152)	(24.250)	(16.254)	(16.541)	(16.419)	(28.531)	(29.792)	-39.076	(29.497)	(29.791)	(30.092)
L.Population (ln)	-1.044**	-0.803	-1.348**	-0.855*	-0.940*	-0.777	1.072**	0.765	0.576	0.867	0.991	0.988
	(0.453)	(0.476)	(0.496)	(0.468)	(0.534)	(0.675)	(0.446)	(0.538)	(0.521)	(0.528)	(0.632)	(0.634)
Δ Population (ln)	97.264*	97.603*	44.750	91.306*	48.552	18.895	-183.079**	-184.281*	-139.354	-165.866*	-72.522	-112.947
	(47.293)	(50.904)	(56.134)	(46.920)	(51.318)	(83.900)	(73.256)	(89.933)	(81.405)	(83.107)	(49.750)	(88.538)
L.Russian Milex (ln)	-1.688	-86.822	7.309	6.136			4.668**	193.124	3.266	8.151		
	(1.400)	(100.410)	(12.392)	(11.865)			(2.028)	(115.677)	(16.217)	(14.478)		
ΔRussian Milex (ln)	15.603*	-146.150	34.580	55.520			-12.681	348.158	-77.461	-51.910		
	(7.613)	(189.332)	(60.119)	(54.260)			(10.420)	(215.773)	(80.254)	(63.400)		
L.Terrorism: Human Cost	0.000	-0.000	0.001	-0.000	-0.000	-0.000	0.004*	0.004	0.003	0.004	0.004	0.004
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Δ Terrorism:Human Cost	0.001	0.001	0.001	0.000	0.000	0.000	0.002	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
NATO Strategy Excludability	2.106	55.423	-3.606	-2.418	-0.730	-0.479	-1.575	-119.130	-3.408	-4.290	4.248**	4.249**
	(1.811)	(63.433)	(6.608)	(6.607)	(2.165)	(2.165)	(1.777)	(73.461)	(8.938)	(8.182)	(1.594)	(1.584)
Capital Proximity to Moscow (ln)	-0.842	-1.013	-0.357	-1.095			2.040	2.253	1.065	2.347		
	(0.902)	(0.834)	(1.155)	(0.819)			(1.584)	(1.480)	(1.493)	(1.503)		
L.Right-Leaning Party	-0.870	-0.845	-1.852*	-0.920	-1.001	-1.197	0.982	0.592	0.551	0.784	0.863	0.819
	(0.710)	(0.761)	(0.960)	(0.693)	(0.750)	(0.773)	(0.981)	(0.925)	(1.217)	(0.915)	(0.950)	(1.002)
ΔRight-Leaning Party	0.813	1.085	0.422	0.932	0.792	0.595	-0.237	-0.695	-0.928	-0.469	-0.229	-0.264
	(1.034)	(0.981)	(1.267)	(1.029)	(1.044)	(1.063)	(1.831)	(1.671)	(1.989)	(1.643)	(1.509)	(1.656)
L.Veto Points	0.054	0.130	-0.104	0.124	0.113	0.071	-0.088	-0.075	0.282	-0.103	-0.082	-0.082
	(0.325)	(0.332)	(0.346)	(0.321)	(0.310)	(0.301)	(0.287)	(0.294)	(0.323)	(0.280)	(0.257)	(0.247)
ΔVeto Points	-0.032	0.056	-0.511	0.042	0.011	-0.046	0.866	0.576	1.111**	0.552	0.594	0.593
	(0.599)	(0.596)	(0.599)	(0.591)	(0.576)	(0.566)	(0.563)	(0.418)	(0.407)	(0.399)	(0.399)	(0.381)
Δ AVF Shock		-0.028						0.217				
		(0.136)						(0.134)				
L. AVF Shock		0.418						-0.181				
		(0.343)						(0.270)				
L.US Troops (ln)	0.002						0.007					
	(0.023)						(0.042)					
ΔUS Troops (ln)	-0.029						0.032					
	(0.021)						(0.039)					
L.US Trade/GDP			15.006						-4.833			
			(16.132)						(15.972)			
ΔUS Trade/GDP			126.530						33.159			
			(91.829)						(64.055)			
ΔNATO Strategy Change				1.753	0.225	0.287				-3.619	-1.476	-1.537
				(2.096)	(1.060)	(1.078)				(2.402)	(1.240)	(1.221)
EU Membership Status Indicator					-0.279						0.560	
					(1.144)						(1.017)	
Former Warsaw Pact Indicator						-0.708						-0.458
						(1.394)						(1.274)
Constant	-18.387	884.724	-116.636	-100.390	-38.511**	-29.727	10.114	-1,981.749	-1.248	-27.542	64.890***	64.867**
	(17.814)	(1,060.233)	(135.397)	(131.256)	(18.168)	(24.454)	(26.033)	(1,227.863)	(183.376)	(164.038)	(22.307)	(25.301)
Observations	143	143	118	143	143	143	143	143	118	143	143	143
R-squared	0.156	0.163	0.218	0.150	0.145	0.147	0.164	0.205	0.224	0.194	0.181	0.180
rmse	3.468	3.541	3.520	3.540	3.549	3.545	4.039	4.038	4.126	4.032	4.065	4.067

Supplementary Table H reports the results of two series of ECM. Panel A replicates the fully-specified Model 10 from Table 2, but tests the robustness of the correlation to additoinal theoretical controls. Panel B does the same, but with personnel as the dependent variable. Robust standard errors clustered at country, level in parentheses(*** p<0.01, ** p<0.05, * p<0.1). L.=one-year lag. Δ=first difference. ln=natural log

Table I: Robustness of Table 2 to Dropping France, Dropping UK, dropping both France and UK, and changing the Europeanist pole to Belgium

	A. Without France			B. Without UK			C. Without France or UK			D. Belgium00/United Kingdom02		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dependent Variables	**Δmilburden**	**Δoperating**	**Δpersonne**	**Δmilburden**	**Δoperating**	**Δpersonne**	**Δmilburden**	**Δoperating**	**Δpersonne**	**Δmilburden**	**Δoperating**	**Δpersonne**
Independent Variables												
L.Dependent Variable	-0.103***	-0.131**	-0.079**	-0.114***	-0.142**	-0.068**	-0.096***	-0.134**	-0.068**	-0.112***	-0.096**	-0.070*
	(0.018)	(0.047)	(0.029)	(0.016)	(0.052)	(0.030)	(0.016)	(0.047)	(0.029)	(0.022)	(0.042)	(0.037)
ΔAtlanticism	0.003*	0.075**	-0.090**	0.001	0.048	-0.058	0.002	0.068**	-0.074*	-0.001	0.024	-0.017
	(0.001)	(0.029)	(0.042)	(0.002)	(0.028)	(0.066)	(0.001)	(0.027)	(0.043)	(0.001)	(0.022)	(0.025)
L.Atlanticism	0.003**	0.060**	-0.037	0.001	0.055*	-0.024	0.002	0.051**	-0.020	0.001	0.043	-0.021
	(0.001)	(0.026)	(0.025)	(0.001)	(0.028)	(0.026)	(0.001)	(0.022)	(0.019)	(0.002)	(0.035)	(0.040)
ΔGDP + Spillins (log)	-2.351*	-5.911	13.713	-1.657	-3.321	16.983	-1.790	-9.322	19.275	-0.871	-4.286	-7.613
	(1.229)	(17.430)	(29.088)	(1.462)	(17.453)	(33.951)	(1.193)	(16.254)	(29.497)	(1.280)	(12.775)	(24.860)
L.GDP + Spillins (log)	0.083	2.602	-4.463**	0.096	3.041*	-5.103**	0.153*	2.987*	-4.815**	0.217**	2.830*	-5.912***
	(0.101)	(1.699)	(2.028)	(0.097)	(1.644)	(1.928)	(0.083)	(1.448)	(1.813)	(0.091)	(1.593)	(1.941)
ΔPopulation (log)	0.629	98.687**	-182.619*	1.198	90.384*	-161.934*	0.206	91.306*	-165.866*	2.785	86.498	-261.094**
	(2.180)	(46.731)	(88.404)	(2.104)	(46.915)	(82.481)	(1.753)	(46.920)	(83.107)	(3.114)	(58.804)	(115.765)
L.Population (log)	-0.018	-0.785	0.878	-0.023	-0.874*	0.905	-0.033	-0.855*	0.867	-0.039	-0.993**	1.223**
	(0.033)	(0.486)	(0.543)	(0.034)	(0.496)	(0.526)	(0.030)	(0.468)	(0.528)	(0.025)	(0.416)	(0.532)
Capital Proximity to Moscow (log)	-0.044	-1.224	2.703*	-0.038	-1.223	2.375	-0.027	-1.095	2.347	-0.093	-0.995	3.587*
	(0.065)	(0.810)	(1.511)	(0.066)	(0.857)	(1.585)	(0.060)	(0.819)	(1.503)	(0.085)	(0.689)	(1.839)
ΔRussian Milex (log)	10.972	-196.762	438.714**	10.214	-148.630	351.039	8.830	-139.146	350.122	13.316*	-233.689	237.425
	(6.585)	(189.024)	(195.665)	(6.533)	(197.963)	(222.741)	(6.561)	(188.021)	(214.432)	(6.613)	(154.966)	(225.131)
L.Russian Milex (log)	4.593	-112.273	239.659**	4.379	-86.902	193.498	3.592	-83.384	193.032	6.004*	-129.033	129.339
	(3.501)	(100.750)	(105.638)	(3.443)	(104.920)	(119.821)	(3.477)	(99.733)	(115.166)	(3.433)	(82.666)	(119.446)
ΔTerrorism: Human Cost	-0.000**	0.000	0.002	-0.000**	0.000	0.002	-0.000***	0.000	0.002	-0.000***	0.000	0.003*
	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.002)	(0.000)	(0.001)	(0.002)
L.Terrorism: Human Cost	-0.000	-0.001	0.004	-0.000	-0.001	0.004	-0.000	-0.000	0.004	-0.000	-0.001	0.005*
	(0.000)	(0.002)	(0.003)	(0.000)	(0.002)	(0.003)	(0.000)	(0.002)	(0.003)	(0.000)	(0.002)	(0.003)
L.NATO Strategy Excludability	-2.878	71.236	-148.280**	-2.781	55.071	-119.409	-2.289	53.296	-119.352	-2.963	71.048	-70.368
	(2.216)	(63.702)	(67.439)	(2.177)	(66.229)	(76.018)	(2.193)	(62.976)	(73.127)	(1.885)	(46.235)	(65.656)
ΔRight-Leaning Party	0.084***	1.027	-0.590	0.088***	0.999	-0.499	0.086***	0.932	-0.469	0.062	-0.076	-0.220
	(0.026)	(1.038)	(1.579)	(0.028)	(1.023)	(1.643)	(0.027)	(1.029)	(1.643)	(0.037)	(1.264)	(2.150)
L.Right-Leaning Party	-0.023	-0.984	1.029	-0.008	-0.867	0.826	-0.023	-0.920	0.784	-0.038	-0.412	0.099
	(0.026)	(0.704)	(0.941)	(0.023)	(0.753)	(0.985)	(0.025)	(0.693)	(0.915)	(0.032)	(0.661)	(0.867)
ΔVeto Points	0.040	0.039	0.580	0.042	0.035	0.581	0.040	0.042	0.552	0.067	0.078	0.655
	(0.043)	(0.591)	(0.392)	(0.043)	(0.593)	(0.402)	(0.044)	(0.591)	(0.399)	(0.051)	(0.420)	(0.472)
L.Veto Points	0.007	0.126	-0.093	0.013	0.150	-0.103	0.008	0.124	-0.103	0.018	-0.099	-0.178
	(0.009)	(0.325)	(0.294)	(0.012)	(0.342)	(0.295)	(0.010)	(0.321)	(0.280)	(0.013)	(0.275)	(0.279)
Constant	-49.465	1,162.006	-2,490.717**	-47.353	887.781	-1,991.484	-39.903	849.982	-1,990.285	-66.692*	1,347.277	-1,318.707
	(37.540)	(1,061.679)	(1,122.995)	(36.630)	(1,106.893)	(1,271.779)	(36.949)	(1,052.344)	(1,223.053)	(36.544)	(874.914)	(1,269.760)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	136	136	136	135	135	135	143	143	143	129	129	129
R-squared	0.428	0.159	0.220	0.415	0.150	0.191	0.403	0.150	0.194	0.490	0.162	0.175
rmse	0.146	3.603	4.013	0.146	3.648	4.160	0.145	3.540	4.032	0.134	3.044	3.616

Table D1 reports the results of five series of Error Correction Models, excluding France and the United Kingdom, using military burden and operating expenditures as dependent variables. Panel A excludes France, Panel B excludes the UK, and Panel C excludes both. Panel D uses Belgium as the Europeanist Anchor instead of France. All columnts include year fixed effects. 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

Supplementary Table J: Test of models using standard panel estimation, analysis with a lag dependent variable, and with panel corrected errors

Dependent Variables	A. Operating Expenditures/Milex			B. Personnel Expenditures/Milex		
	(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables	Baseline	Full Standard	Full PCSE	Baseline	Full Standard	Full PCSE
L. Dependent Variable	0.802***	0.827***	0.927***	0.953***	0.870***	0.964***
	(0.138)	(0.051)	(0.038)	(0.020)	(0.038)	(0.013)
Atlanticism		0.051***	0.031***		-0.047*	-0.037**
		(0.019)	(0.010)		(0.026)	(0.016)
L. GDP + Spllins (ln)		3.139**	2.479***		-4.404	-3.064***
		(1.531)	(0.548)		(2.688)	(0.651)
L. Population (ln)		-0.985*	-0.681**		0.742	0.344*
		(0.543)	(0.325)		(0.948)	(0.183)
Capital Proximity to Moscow (ln)		-0.513	0.112		1.848	0.932
		(0.806)	(0.420)		(1.230)	(1.055)
L. Russian Milex (ln)		110.171**	-3.057***		19.357	3.551***
		(55.474)	(0.865)		(66.183)	(1.009)
L. Terrorism: Human Cost		-0.000	0.000		0.000	-0.000
		(0.001)	(0.001)		(0.002)	(0.001)
L. NATO Strategy Excludability		-124.670**	-0.549		-16.791	0.921
		(61.641)	(1.185)		(73.401)	(1.020)
L. Right-Leaning Party		-1.107*	-0.959***		0.648	0.351
		(0.594)	(0.324)		(0.968)	(0.481)
L. Veto Points		-0.048	0.033		-0.120	-0.067
		(0.335)	(0.155)		(0.269)	(0.235)
Constant	5.780*	-1,142.606**		1.955	-142.570	
	(3.071)	(556.869)		(1.341)	(670.415)	
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	270	180	180	270	180	180
R-squared	25	22	22	25	22	22
Number of ccode	0.618	0.847	0.969	0.895	0.898	0.980
rmse	5.872	3.229	2.831	4.271	3.756	3.639

Supplementary Table J reports the results of testing models using standard panel estimation (columns 1,2, 4 & 5), a lagged dependent variable, and panel corrected standard errors (colmuns 3 & 6). Robust standard errors (*** p<0.01, ** p<0.05, * p<0.1)