

To Pay or NATO Pay

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Abstract

Previous studies on the North Atlantic Treaty Organisation have focused on finding theoretical and qualitative explanations for the imbalanced contributions, lacking a counterfactual for how much countries would dedicate to defence expenditure, should the alliance not exist. I examine NATO's expenditure trends, by calculating and comparing counterfactual figures to the actual military expenditures of member states. Results show that NATO membership has a convergence effect towards the NATO 2 percent of GDP threshold and is particularly salient in periods without external threats to the members. This finding is in line with the constructivist socialisation framework for international relations.

Keywords: NATO, Foreign Policy, Military Expenditure, Observational Design

1. INTRODUCTION

IN 2017, the United States spent 600.11 billion USD on defence, 3.22 percent of its Gross Domestic Product. That same year, Luxembourg's defence budget merely reached 260.73 million USD, about 0.44 percent of the European country's GDP. This imbalance is also salient among more comparable countries such as Greece and Spain, where in 2017, the former dedicated 2.5 percent of its GDP to defence whilst the latter just 1.24 percent, a difference of 11 billion USD (ABC 2016). Nevertheless, under NATO's *Principle of Collective Defence*, should the United States suffer an armed attack, Luxembourg, Greece and Spain (along with all the other members) share the duty to take forthwith action and restore the security of the North Atlantic area, potentially by means of the use of military force (NATO 1949). It is not difficult to see, however, the reasons behind the accusations against European countries for *free riding* on the US supply of defence (Binnendijk 2016).

In this paper, I investigate the relationship between the membership of the North Atlantic Treaty Organisation and military expenditure. Specifically, I study the implications of being part of the alliance manifested in the economic allocations of each state towards defence, with a particular attention to the European members. In substance, my project seeks to answer the following question: "What is the impact of NATO membership on military expenditure?"

Unequal burden-sharing has been a constant issue since the creation of the organisation in 1949. At the Wales Summit in 2014, NATO Defence Ministers agreed to commit a minimum of two per cent of their nations'

Gross Domestic Product (GDP) to defence spending (NATO 2014). The reason to establish the expenditure threshold at the 2 percent level results from the 90s budgetary patterns, where the median defence spending was around 2 percent of members' GDPs (Carnegie 2015). Subsequent NATO Summits have focused on encouraging the laggard half of the alliance to improve their spending (NATO 2005). Five years later, however, only three European countries—Estonia, Greece and the UK—satisfy such threshold.

Despite the rich literature on the asymmetric burden-sharing of the organisation, previous scholarship on NATO's budgetary issues suffers from one important shortcoming: the lack of a counterfactual. Without a counterfactual reference point as to how much countries would be spending on military in a world without the alliance, the conclusions on how NATO membership affects the behaviour of states in terms of budgetary allocations to defence cannot be considered more than informed speculations.

Should NATO appear irrelevant to influencing member states' behaviour, the alliance would lose its *raison d'être* and thus be at the verge of collapse. A failure in NATO's collective security mission would threaten the security of 603.73 million citizens that constitute 21 percent of the overall world economy and are responsible for 2/3 of the global military expenditure (NATO 2019). In a time when Russia's foreign policy unfolds to be expansionist (as demonstrated in their annexation of Crimea and Eastern Ukrainian regions), a disintegration of NATO would potentially bring about the largest shift in geopolitics since the end of the Cold War.

Pursuing this question at this time is of particular importance given the antagonism of President Trump

towards the organisation. This paper reacts to his words “I think NATO is obsolete” (ABC 2016) through a quantitative approach. More specifically, this capstone project develops a novel model that estimates counterfactual military expenditure for NATO members. Subsequently, I compare how further away from or closer to the 2 percent threshold the counterfactual values are with respect to the actual expenditures. Throughout the paper, I will be using the cases of Greece (a country currently spending more than 2 percent of GDP on defence) and Spain (a country spending below the 2 percent) to illustrate the methodology and results.

The results show support for the hypothesis that NATO membership has an impact on the states’ budget considerations. More specifically, NATO has a convergence effect, meaning that countries’ expenditure on defence approaches the 2 percent threshold over time as a result of their alliance commitments. Interestingly, the propensity to increase or decrease military expenditure to meet the threshold slows down in periods when NATO countries are facing external threats and warfare (i.e. Cold War and the Iraq War).

This capstone contributes to the literature in a number of ways. Firstly, it challenges Trump’s statement on the obsolescence of the organisation as well as those scholars that frame NATO as a mere collective action failure. Secondly, it develops a new methodology to calculate counterfactual military expenditure for NATO members. Calculating a counterfactual figure enables a more meaningful analysis on the ways in which NATO membership intervenes in countries’ defence budgets. Furthermore, this methodology could be extrapolated to the study of other military alliances such as, among others, the Council for Peace and Security in Central Africa or the Shanghai Cooperation Organisation. Lastly, the results stimulate a new wave of research on how member states may respond differently to their NATO commitment given geopolitical threats.

This paper develops as follows. Section 2 encompasses the literature and theoretical work relevant to the research question, which leads to my hypothesis listed in Section 3. Section 4 summarizes the data used in the project. Section 5 and 6 respectively contain the methodology and model. In Section 7, I present the results and in Section 8 I do the same with the limitations, both are put in conversation in the discussion, Section 9. Lastly, the conclusion is to be found in Section 10.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The debate on the relevance of NATO follows a long-standing discussion in international relations re-

garding the theoretical approaches that best apply to the interactions amongst nations. The many theories tend to be classified as belonging to one of the following three major schools of thought. (1) Realism holds that the international system is anarchic (Bull 1977). In the absence of a global central authority, realists emphasise the role of each state’s coercive power and its purpose to survive as the determinant of international politics (Goodin 2010). I would argue that this framework fails to explain the current behaviour of European NATO states, since there appears to be no appetite for using national military capabilities to exert power against other NATO members. On the contrary, NATO European states seem rather accepting of the US hegemony (Russett 1998). (2) Liberalists, on the other hand, emphasise the national characteristics of the individual states as determinants of their relations with other states (Shiraeve and Zubok 2014). In addition to seeking survival, states are believed to advance the interests of the individual or group in power through the international system (Doyle 2011). In the case of NATO, a liberalist status quo would take the form of high volatility in NATO contributions across time, based on the members’ electoral cycles. As it can be observed in Appendix I, this is not the case. (3) Lastly, constructivist ontology is built on a set of assumptions where the factors affecting behaviour are not perceived as objective facts. Instead, their importance arises from social meaning (Wendt 1999). The focus on social context and the role of social norms in international politics make constructivists emphasise the identity and beliefs held by the states as central to governments’ decision making processes. The constructivist socialisation theory implies that countries alter their behaviour to align that of the group (Hoffmann 2017), a logic that aligns with the NATO convergence effect I argue for in this paper. Hence, this paper frames NATO membership through the lens of social constructivism.

The constructivist approach regarding NATO has been a highly historical and qualitative one. Authors such as Schimmelfennig (2003), Kolodziej (2005) and Webber (2009) have revived the analysis of NATO through the constructivist lens. Under this new impulse, Snyder (2004) defines the organisation as a self-declared embodiment of a common identity where, in expressing the Euro-Atlantic identity, the members establish shared security norms. As Webber (2009) argues, these norms between states are imparted meaning through social interaction, and shared behaviours emanate from socialisation around these norms. I would argue that these principles of behaviour include the 2 percent of GDP expenditure threshold. This presumption is supported by the fact that, although countries are not for-

mally sanctioned by the organisation, under-spending has become an increasingly frowned upon behaviour by the strongest members (i.e. UK, US and Canada) (Cimbala and Forster 2010). Nonetheless, the available constructivist literature has not thoroughly examined how these norms materialise and quantitatively affect the behaviour of NATO states whilst aiming at maintaining and reinforcing the common transatlantic identity.

With no regard to the constructivist socialisation theory, the vast majority of scholarship on NATO has focused on explaining the unequal burden-sharing. In this paper, I define *burden-sharing* as “the distribution of costs and risks among members of a group in the process of accomplishing a common goal (ibid.)” Persistent unequal burden-sharing has puzzled scholars, policymakers and government officials (Biddle 2015; Daalder 2013). The expansive literature on the topic, however, examines the aggregate military expenditures as a share of GDP by taking the budgetary figures as both a given and the source of the problem. The conclusions reached by authors such as Babones (2018), who suggested to “drop collective defence”, label NATO as uninfluential and ignore the international, domestic and individual level features affecting each country’s budgetary processes. The deterministic conclusions of these scholars lead, hence, to impractical recommendations that do not capture the context constraining the states’ decision-making.

The North Atlantic Treaty Organisation has also been examined through the lens of prominent alliance formation theories. In the early years, scholars were interested in the manner in which the balance-of-threat logic applied to the Europeans’ engagement with the United States (Walt 1985). Balance-of-threat theory states that countries determine their level of security based on the real or perceived aggregate power, geographic proximity, offensive capabilities and offensive intentions of those who are considered “enemies” (Brooks and Wohlforth 2008). As the Soviet Union collapsed, a new wave of literature speculated about the fraying of the alliance once the common threat disappeared (Walt 1985). There is no previous study, however, that quantitatively analyses how changes in perceived threat (from Russia or else) would impact the military expenditure of NATO members with regard to the budgetary commitment of spending 2 percent of GDP in defence.

Literature on NATO after the Cold War has focused instead on the evolving nature of the organisation from a public good to a joint-product, and the impact of this transformation on unequal burden-sharing (Oneal and Diehl 1994). Focusing on the American hegemony in the alliance and the apparent European tendency to free

ride, authors initially defined unequal burden-sharing as a collective-action problem (Olson and Zeckhauser 1966). As the alliance’s strategy moved from deterrence from the USSR to protection from Russia, the benefits of membership became increasingly excludable, provoking rivalry over the resources and causing NATO common security to cease being considered a pure public good. Regardless of the approach, many of these studies on post-Cold War NATO burden-sharing have, once again, been qualitative focusing almost exclusively on the informal and formal power dynamics amongst member states. Furthermore, there is a lack of application to contemporary challenges faced by the organisation such as Crimea’s annexation on the part of Russia.

As presented above, the unequal burden-sharing scheme has been used as a signaling mechanism to determine the obsolescence of the North Atlantic Treaty Organisation. Believing in the prominence of the alliance, my paper quantitatively examines the implications of belonging to NATO. Using constructivist thinking, I hypothesize that NATO member states have internalized a common defence culture that shapes national policy decisions regarding military spending. My quantitative strategy will first create a counterfactual expenditure value for all countries, should NATO not exist, and secondly, interact membership to NATO to compare how further away from or closer to the 2 percent threshold the counterfactual values are with respect to the actual military expenditures.

3. HYPOTHESES

Based on constructivist logic, I hypothesize that the common culture reinforced through repeated interactions within NATO develops into common behaviours among states. Member states are hence socialised into dedicating 2 percent of the national GDP to military expenditure:

H_1 : Membership of NATO has a convergence effect in shaping members’ defence budget allocations:

$H_{1.1}$: Countries spending over 2 percent of GDP in military expenditure spend less on defence than what they would should NATO not exist, getting closer to the common threshold.

$H_{1.2}$: Countries spending below 2 percent of GDP in military expenditure spend more on defence than what they would should NATO not exist, getting closer to the common threshold.

Due to the balance-of-threat dynamics, the convergence effect on member states is susceptible to the

geopolitical environment in which NATO countries operate. When facing major geopolitical threats (i.e. from the USSR during the Cold War, the Iraq War or Russia today), I expect the convergence tendency to slow down in view of the prioritisation of national security restoration:

H_2 : The convergence effect is weaker during periods of threat to NATO countries:

$H_{2.1}$: After the end of the Cold War (post-1991), the NATO convergence effect is stronger than during the Cold War.

$H_{2.2}$: In the Iraq War period (2003–2011), the convergence effect was weaker than the period before and after it.

$H_{2.3}$: After Russia annexed Crimea (post-2014), the NATO convergence effect is weaker than before the annexation.

Since NATO is the only collective security alliance relying on member states' national defence resources instead of a common budget, I expect the convergence effect to exclusively affect NATO members:

H_3 : Convergence towards the 2 percent is a unique phenomenon among NATO states.

4. DATA

The levels of military expenditure of NATO members have varied by country and across time around the 2 percent target as illustrated in Figures 5-7 of Appendix I. Below I present two density graphs showing the variance in the distribution of military expenditure between 1960 and 2017, across non-NATO states in Figure 1 and exclusively for NATO countries in Figure 2. The comparison between the two graphs shows a much narrower variance around the 2 percent threshold among NATO countries.

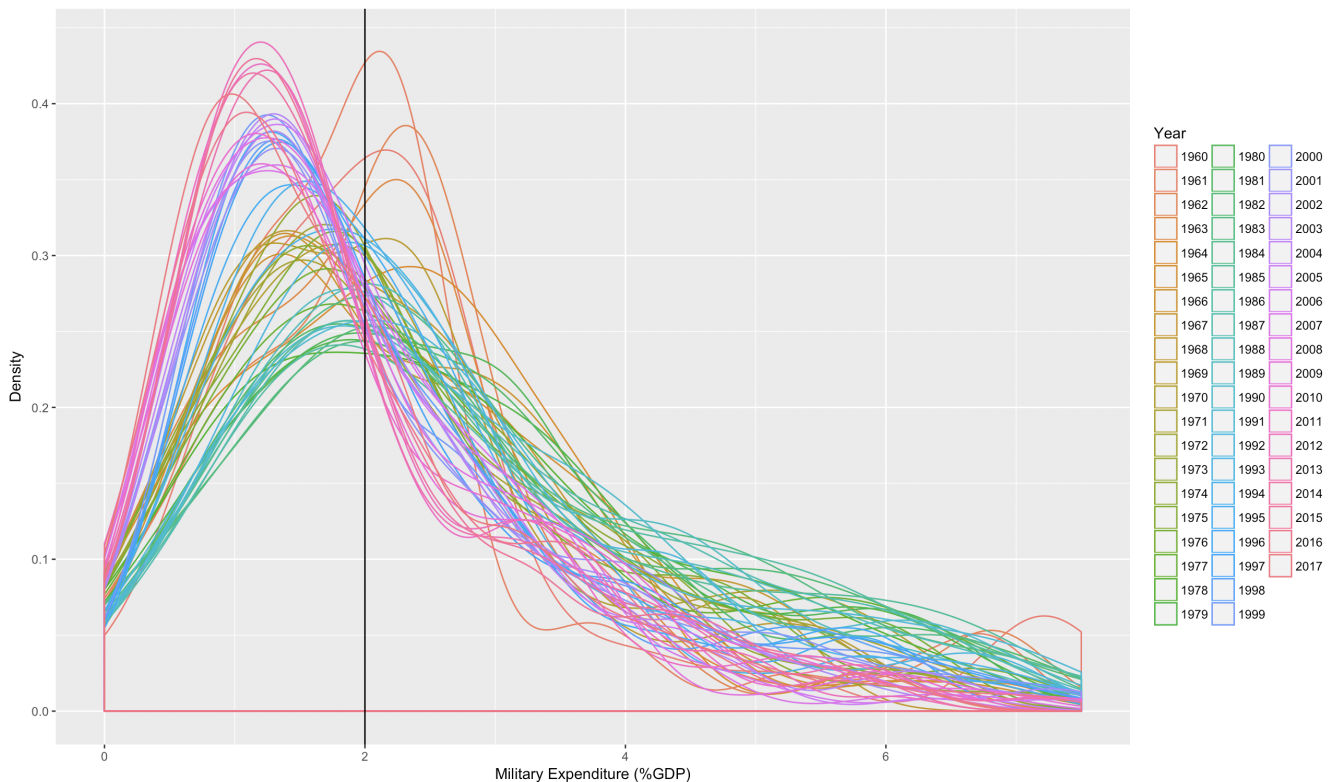


Figure 1: Density plot for NATO member states' military expenditure (1960-2017)

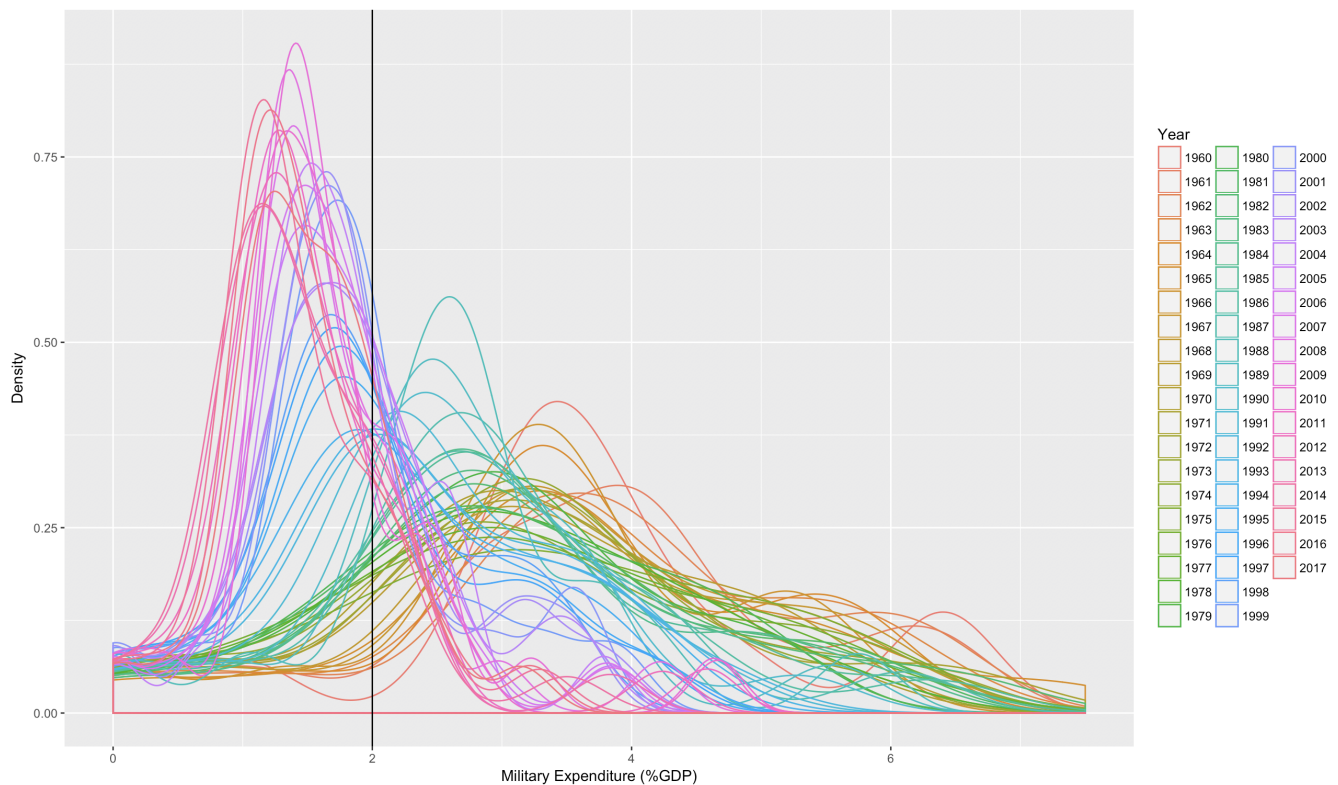


Figure 2: Density plot for non-NATO states' military expenditure (1960-2017)

The literature informs the methodology of this capstone and determines the factors included to calculate the counterfactual military expenditures, should NATO not exist. I extract the list of independent variables from the extensive scholarship on the factors that affect states' military spending. Those who advocate for the power of the international system argue that macro-level elements such as warfare among states, civil and social violence within neighbouring states (Okamura 1991) and global economic patterns (Pérez-Forniés, Gadea, and Pardos 2004) are the primary determinants of national defence policies. Closer to the liberalist argument, a number of scholars argue that domestic features determine military expenditure. They accentuate the role of national economic growth (Beniot 1978), population size (Alonso and Martinez 2007), the political and electoral systems, the democratic health of government structures (Dudley and Montmarquette 1981), and the size of the armed forces (Alonso and Martinez 2015). A third body of literature focuses on the manner in which the individual characteristics of national leaders are decisive in determining military expenditure. The most prominent features include gender, the religious and military background of the head of state, and the ideology in office (Throsby and Withers 2001).

The sample used in this study includes a total of 12534 observations from 216 states. Data from 1960 till

2017 allows to build a reliable model to calculate the counterfactual military expenditure of NATO members, should the organisation not exist. Inferring the independent variables from the above-mentioned literature, the data includes a combination of numerical, logical and categorical values. Appendix II presents the summary statistics for all variables. For some parameters, there is a high level of missingness, which increases the more distant in time the observation is. Missing values are excluded from the modelling equation.

Following the literature, the parameters I use to build the counterfactual can be divided into three main categories:

- Features of the international system to be inputted in the model through the following measurements:
 - i. *Interstate MEPV*: the aggregate magnitude of all major episodes of interstate political violence including international violence and warfare. Data obtained from the Center for Systematic Peace.
 - ii. *MEPV in neighbouring states*: the aggregate magnitude of all major episodes of societal and interstate political violence in all neighbouring countries. Data obtained from the Center for Systematic Peace.

- iii. *Global economic shocks*: calculated as the total number of financial, sovereign debt, stock market and currency crises. Data provided by Professor Muhammet Bas, Division of Social Science at New York University Abu Dhabi.
- Features of the domestic politics to be inputted in the model through the following measurements:
 - i. *Societal MEPV*: the aggregate magnitude of all major episodes of political violence nationally including civil and ethnic violence and warfare. Data obtained from the Center for Systematic Peace.
 - ii. *GDP*: measured in current US dollars. Data obtained from the World Bank.
 - iii. *Population*: measured in thousands. Data obtained from the World Bank.
 - iv. *Size of the armed forces*: measured in total personnel. Data obtained from the World Bank.
 - v. *Political system*: classified as *Presidential*, *Assembly-Elected President* or *Parliamentary*. Data obtained from the Inter-American Development Bank.
 - vi. *Democratic health*: measured using the Polity IV metric as computed by the Center for Systematic Peace.
 - vii. *Electoral system*: classified as *Plurality* vs *Proportion*. Data obtained from the Inter-American Development Bank.
- Features of the individuals responsible for policy to be inputted in the model through the following measurements:
 - i. *Gender*: measured as the proportion of women in parliament. Data obtained from the World Bank.
 - ii. *Is the chief executive a military officer?*: dummy obtained from the Inter-American Development Bank.
 - iii. *Ideology in office*: classified as *Right*, *Left*, *Center* or *No Executive*. Data obtained from the World Bank.
 - iv. *Does party of executive control all houses?*: dummy obtained from the Inter-American Development Bank.
 - v. *Is the party in office listed as nationalist?*: dummy obtained from the Inter-American Development Bank.
 - vi. *Religion of party or head of state in office*: classified as *Catholic*, *Christian*, *Islamic*, *Hindu*, *Buddhist* or *Other/Secular*. Data obtained from the Inter-American Development Bank.

5. METHODOLOGY

To test my hypotheses, I require a methodology that captures convergence dynamics. With that purpose, I start this section by reviewing common practices in the literature. I hereafter decide to develop my own methodology to test convergence towards the 2 percent through the computation of a counterfactual military expenditure using the independent variables mentioned above.

A potential way of assessing the impact of NATO membership on state behaviour would be to calculate the residuals of a regression that predicts military expenditure using the parameters specified in the data section. The residual values would include the variation on military expenditure that the model created fails to explain. Subsequently, I would input the information on NATO membership to test whether further variation in defence allocations is explained. Although this would certainly illustrate the absolute impact of membership on state behaviour, it would not expose the direction of this impact, and does not address my hypothesis on convergence towards the 2 percent threshold. It would, however, be possible to build a predicting equation for military expenditure and add NATO membership as a Boolean variable. This method, unfortunately, suffers from the same limitation as the residual methodology.

Common practice in the field would alternatively test the NATO effect by creating a single regression—with military expenditure as dependent variable—where all the independent variables are interacted with NATO membership. This method would produce a coefficient for the effect of NATO membership in relation to each parameter, which would need to be aggregated to find the overall convergence effect hypothesized on this paper. I aim instead to find a singular NATO convergence effect coefficient.

In view of the limitations of the prevailing practices, I choose to build my own model that precisely tackles the question of: does NATO have a convergence effect towards the 2 percent? In order to answer with a single figure, I calculate the counterfactual defence expenditure figures, should the alliance not exist. Then, I compare the counterfactual figures to each state's actual military expenditure to examine whether the real expenditure is closer or further away from the 2 percent threshold. I call this difference between the counterfactual and the real values the *NATO effect*.

Going more in-depth, I develop a two-step methodology illustrated through the cases of Spain and Greece. In the first stage, I address the question of: what would a NATO country spend on military expenditure if NATO did not exist? A mismatch between the counterfactual and the real expenditure—in line with this paper's expectation—would indicate that NATO membership has an effect on states' budgetary allocations to defence. Ideally, the first-stage modelling equation would produce a predicted military expenditure value that in the case of Spain is below the actual figure, whilst in the case of Greece the predicted value would be above the actual military expenditure.

In the second step, I use the counterfactual figures to calculate the difference against the 2 percent threshold. For countries below the threshold, Spain, the difference would be a negative one whilst it would be a positive difference for those above the threshold, i.e. Greece. Lastly, I interact the difference with respect to the threshold with NATO membership (as a dummy) to explain the actual military expenditures of the countries.

As a result, I come up with a single coefficient on the effect of NATO on member states' military expenditure behaviour. If there is a convergence effect at play, the coefficient of this interaction will be a negative figure. In the case of Spain, when the negative interaction effect is multiplied with the negative threshold difference, it produces a positive figure for the NATO effect. This would indicate that the result of membership is an increase in actual expenditure, getting closer to the 2 percent in comparison to the Spanish military expenditure should NATO not exist. In the case of Greece, when the negative interaction effect is multiplied with the positive threshold difference, it would produce a negative figure for the NATO effect. This would indicate that the result of membership is a decrease in actual expenditure, also getting closer to the 2 percent in comparison to the Greek military expenditure should NATO not exist. In other words, a negative interaction coefficient would point at a convergence tendency towards the two

percent correlated with NATO membership.

6. MODEL

First-Stage Modelling Equation

I construct an initial regression that models military expenditure across countries in order to calculate a counterfactual defence expenditure value for NATO countries, should NATO not exist. This regression follows an ordinary linear regression structure:

$$\begin{aligned} \text{Military Expenditure}_{ij} = & \beta_0 \\ & + \beta_1 \text{Interstate and Societal MEPV}_{ij} \\ & + \beta_2 \text{MEPV in Neighbouring States}_{ij} \\ & + \beta_3 \text{Global Economic Shocks}_{ij} \\ & + \beta_4 \text{GDP}_{ij} \\ & + \beta_5 \text{Population}_{ij} + \beta_6 \text{Total Military Personnel}_{ij} \\ & + \beta_7 \text{Political System}_{ij} \\ & + \beta_8 \text{Polity IV}_{ij} + \beta_9 \text{Electoral System}_{ij} \\ & + \beta_{10} \text{Gender}_{ij} \\ & + \beta_{11} \text{Military Officer as Chief Executive}_{ij} \\ & + \beta_{12} \text{Ideology in Office}_{ij} \\ & + \beta_{13} \text{Executive controls all Legislative Houses}_{ij} \\ & + \beta_{14} \text{Nationalist Executive}_{ij} \\ & + \beta_{15} \text{Religion of Executive}_{ij} + \epsilon_{ij}^1 \end{aligned}$$

The dependent variable, military expenditure, is to be measured as the percentage of GDP allocated to defence by any given country (*i*) at any given year (*j*). I use the first-stage modelling equation to calculate the fitted values for NATO countries. I understand these figures as the counterfactual estimation for how much members would spend on defence, should NATO not exist. Appendix III contains a scatter plot showing the correlation of the actual military expenditures and the counterfactual values. NATO countries are represented in blue points and non-NATO countries

¹Due to the high level of missingness for some independent variables, I build a second specification that increases the number of observations significantly and allows for advanced calculations regarding the impact of the Cold War, the Iraq War and Russia's annexation of Crimea:

$$\begin{aligned} \text{Military Expenditure}_{ij} = & \beta_0 + \beta_1 \text{Interstate and Societal MEPV}_{ij} + \\ & \beta_2 \text{MEPV in Neighbouring States}_{ij} + \beta_3 \text{GDP}_{ij} + \beta_4 \text{Population}_{ij} + \\ & \beta_5 \text{Political System}_{ij} + \beta_6 \text{Polity IV}_{ij} + \beta_7 \text{Electoral System}_{ij} + \\ & \beta_8 \text{Military Officer as Chief Executive}_{ij} + \beta_9 \text{Religion of Executive}_{ij} + \\ & \beta_{10} \text{Ideology in Office}_{ij} + \beta_{11} \text{Nationalistic Executive}_{ij} + \epsilon_{ij} \end{aligned}$$

in orange. The close distribution of the non-NATO countries around the 45-degree line indicates that the first-stage modelling equation is reliable at predicting military expenditure and more sophisticated methods such as machine learning are not needed.

Second-Stage

With the convergence hypothesis in mind, I calculate the effect of NATO membership in the difference between the counterfactual values and 2 percent threshold with respect to the actual military expenditures.

The second-stage regression takes the following form:

$$\begin{aligned} \text{Military Expenditure}_{ij} = & \beta_0 \\ & + \beta_1(\text{Counterfactual Expenditure}_{ij} - 2) \cdot (\text{NATO}) \\ & + \beta_2(\text{Counterfactual Expenditure}_{ij} - 2) \\ & + \beta_3(\text{NATO}) + \epsilon_{ij} \end{aligned}$$

In order to test whether the convergence is towards the mean instead of the 2 percent threshold, I repeat the second-stage regression with respect to the mean military expenditure of NATO countries:

$$\begin{aligned} \text{Military Expenditure}_{ij} = & \beta_0 + \beta_1(\text{CE}_{ij} \\ & - \text{NATOMean}) \cdot (\text{NATO}) \\ & + \beta_2(\text{Counterfactual Expenditure}_{ij} \\ & - \text{NATOMean}) + \beta_3(\text{NATO}) + \epsilon_{ij} \end{aligned}$$

7. RESULTS

First-Stage Modelling Equation

The modelling equation for military expenditure upholds the choice of the parameters selected to predict the counterfactual expenditure. In terms of the *features of the international system*, the presence of major episodes of both political and social violence increases the average spending in military expenditure of any given country. This result is significant in the case of internal violence as well as in the case of warfare against other states. Similarly, the involvement of neighbouring countries in acts of civil and political violence either internally or internationally leads to a statistically significant increase in the military expending of border-sharing states. Lastly, global economic patterns appear to not have a statistically significant impact on defence expenditure, although the direct effect of economic crises might be shadowed by controlling for GDP.

This leads me to the second category of independent variables, *features of the domestic politics*. The features listed can be divided in those found to increase military expenditure with statistical significance: bigger size of armed forces, enjoying executive control over all the legislative houses and the parliamentary political systems; and, on the other hand, those with decreasing statistical impact on defence budgeting: GDP, population size and democratic health (as measured by Polity IV). Variables that had a similar negative correlation but a lack of statistical significance include the presidential political systems and both of the plurality and the proportional electoral systems. At the *individual level*, nationalistic governments both from the right and the left have an increasing statistically significant correlation with military expenditure. Interestingly, gender (as the proportion of women in parliament), and military background and official religion of the executive do not have a statistically significant impact on a given country's military expenditure.

A regression table with the coefficients for the first-stage modelling equation is provided in Appendix IV. As shown in such table, the model explains about 60 percent of the total variation in military expenditure across countries. This result allows me to confidently move into the data analysis of the second-stage of the model.

Second-Stage

In relation to H₁: *Membership of NATO has a convergence effect in defence*

The second-stage regression finds that the impact of being in NATO is a residual tendency to converge to the 2 percent defence expenditure at the 99 significance level (H₁). The interaction coefficient is -0.19 percent, where the negative sign implies that countries above the 2 percent tend to decrease their spending (H_{1,1}) and those below tend to increase theirs (H_{1,2}) from that should NATO not exist. In the case of Greece, this suggests that in 2017 its military expenditure would have been around 2.98 percent of national GDP instead of the 2.5 percent that was actually spent. Simultaneously, those below the threshold increase their budget allocations towards military expenditure to approach the 2 percent guideline. If Spain were not a NATO member, its military expenditure in 2017 would have been a 1.01 percent of the national GDP instead of the 1.24 percent actually spent. I illustrate the difference between actual and counterfactual expenditure with regard to the threshold in Figure 3.

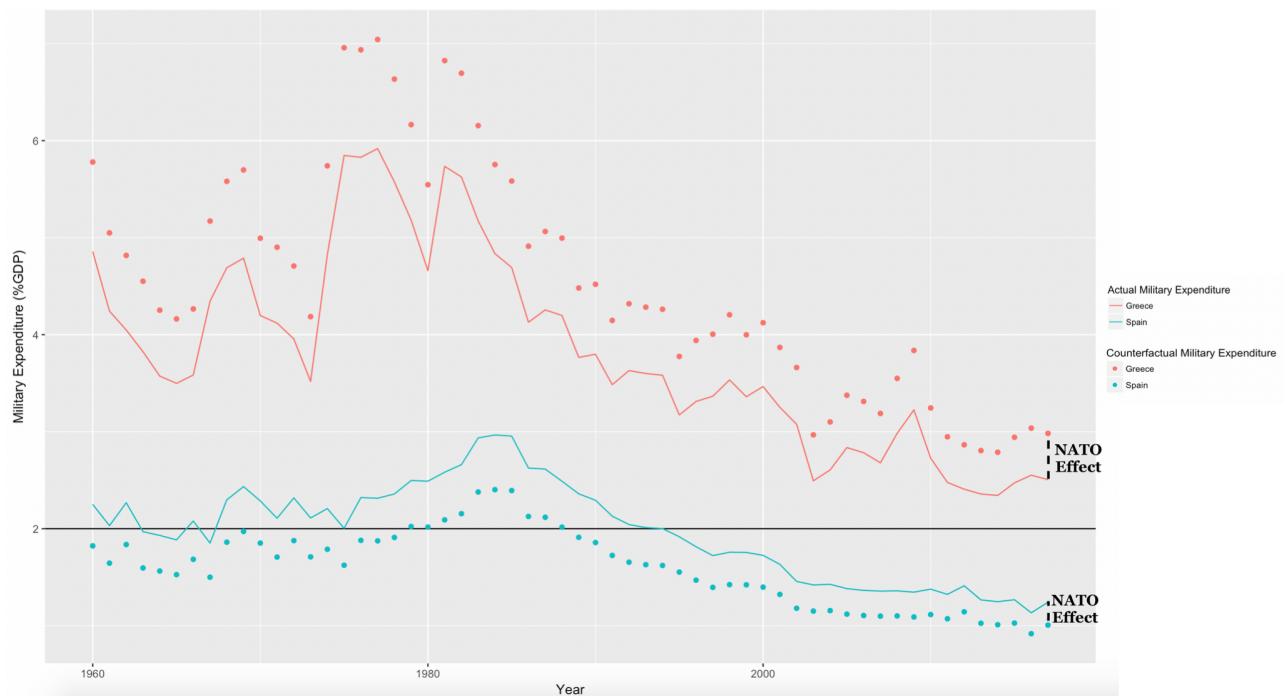


Figure 3: Comparison between actual and counterfactual military expenditures for Greece and Spain with respect to the 2 percent threshold (1960-2017)

The convergence effect not only continues to be significant once the US and Canada are excluded from the regression but, in fact, the effect raises to the -0.25 percent figure. These results are presented in table 1.

Additionally, when testing for convergence towards the mean expenditure (2.26 percent) instead of the 2 percent threshold, I find a very similar converging trend that equally persists when only looking at European NATO members. This could be due to the fact that no country has a military expenditure between 2 percent and the mean of 2.26 percent.

Although it would be interesting to carry out the convergence test separately for the countries above and below the threshold (and the mean), the presence of only three countries over the 2 percent level reduces the sample size to an extent where the calculations for those above are no longer significant. Nevertheless, I am able to calculate the impact of NATO membership exclusively for under-spending European countries, finding a substantially larger effect of -0.38 percent. I am still, however, unable to differentiate whether this convergence is towards the 2 percent threshold or the mean. This difference is critically relevant since it would have implied an increase of 145.75 billion USD in 2016 (NATO 2019).

In relation to H₂: NATO convergence effect is weaker during periods of threat

H_{2.1}: Post-1991 the NATO convergence effect is stronger than during the Cold War

Using the simplified version of the first-stage modelling equation, I find that, as hypothesized, there is a significant difference in the convergence effect during the Cold War (a period of threat) and after the end of it in 1991. Pre-1991, the convergence effect is present but not statistically significant, while after the end of the Cold War the converging tendency is both significant and strengthens to -0.44 percent. As before, the statistical significance of the convergence effect is maintained when only looking at European members yet, it is not possible to differentiate whether the convergence is towards the 2 percent threshold or towards the mean military expenditure.

H_{2.2}: During the Iraq War the convergence effect was weaker than before and after it

I also find support for the hypothesis that the convergence effect is weakened during periods under external security threats when analysing the impacts of the Iraq War. In the period between 2003 and 2011, when the NATO-led offensive was ongoing in Iraq, the convergence effect was -0.22 percent, and -0.34 percent for European members alone. This is, in fact, a significantly smaller converging trend compared to that of the rest of the post-Cold War period. Table 2 presents this difference.

H_{2.3}: *After Russia's annexation of Crimea the NATO convergence effect weakened*

The simplified version of the first-stage modelling equation is not sufficient to answer hypothesis 2.3. Although there is abundant data for the time frame before Russia's annexation of Crimea, unfortunately, only 3 variables (GDP, Population and Total Military Personnel) have updated observations post-2016. I choose not to oversimplify the model nor come up with values for the rest of parameters post-2016 through machine learning as it is unlikely to provide reliable data. Hence, I calculate the pre-annexation convergence tendency, which results to be, unsurprisingly, in complete alignment with that found for H₁, -0.19 percent. Albeit being unable to statistically calculate convergence after Russia's annexation of Crimea, a visual examination of the data seems to point to a salient increase in military expenditure by Eastern European countries: Bulgaria ascending from 1.32 percent to 1.55 percent, Latvia moving from 1.05 percent to 1.72 percent, whilst Lithuania increased from 1.14 percent to 1.75 percent and Romania from 1.45 percent to 1.97 percent of GDP spent on military.

In relation to H₃: *Convergence towards the 2 percent is a unique NATO phenomenon*

The first-stage modelling equation also provides noteworthy information regarding the trends in military spending among countries outside of the alliance. In fact, I find support for the hypothesis that the convergence effect towards spending 2 percent of GDP in defence is a phenomenon exclusive to NATO members. The counterfactual values for non-NATO countries calculated through the first-stage modelling equation correlate 1 to 1.01 with these states' actual military expenditure at the 99 percent significance level. This contrasts with the divergence between the counterfactual values of NATO countries and their real expenditures, illustrating the different behaviour between the two groups that results from the alliance membership or lack of it. This difference can be observed in the graph below. The flatter best-fit line for NATO countries (blue) points at a converging effect that differentiates them from non-NATO states (orange), whose line of best fit falls almost perfectly on the 45-degree line.

Robustness Checks

In order to test the reliability of my results, I run two different robustness checks. First, I test the soundness of the results of my first-stage modelling equation by running a heteroskedasticity test. The heteroskedasticity robustness check provides a more accurate account of the variance and covariance of the regression coefficients by correcting for the possibility that the controlled

variables have different error variance. The result of the heteroskedasticity test confirms that the findings of the first-stage modelling equation are reliable since the variables found significant assuming homoskedasticity are still significant when heteroskedasticity is accounted for. Appendix IV includes a table with the coefficients of the first-stage modelling equation along with those of the heteroskedasticity test.

Secondly, I re-run the analysis whilst lagging the dependent variable of military expenditure. As a result, some of the parameters of the first-modelling regression are no longer significant (i.e. right and left ideology in office, GDP or the monopoly over all the legislative houses) and in some cases the estimates are considerably changed. More importantly, the NATO effect is no longer apparent in the second stage. I will be discussing the implications of this in the discussion section below.

8. LIMITATIONS

A primary limitation encountered in this project is the irregularity in the data available. This takes two forms. First, a number of variables such as military expenditure are either self-reported or obtained from open sources. Nevertheless, as detailed in Section 4, the data was obtained from established sources such as the World Bank, the Centre for Systemic Peace or the Inter-American Development Bank. I trust these sources to guarantee data veracity.

Secondly, the data suffers from a high level of unknowns. One way to address this problem is to exclude the variables with high missingness from the model. In the case of the women in parliament measurement, for instance, NA exclusion decreases the sample size by 75 percent leading to a major reduction of the observations available for the second-stage equation, since counterfactual values are only calculated for the observations with all data available. Although maximum likelihood or multiple imputation techniques could have been used to create plausible figures for the missing observations, I choose not use these statistical techniques because they assume data to be missing at random, which is not the case for the parameters used in this project. Instead, in an attempt to increase the sample size and as stated in the methodology section, I build an alternative specification to the model which includes a smaller number of parameters and increases the total observations available by 30 percent. This, of course, comes at the cost of accuracy, where the initial more comprehensive model explained 60 percent of the variation in military expenditure, the latter simpler model only accounts for 20 percent of such variation.

Table 1: Results of Second Stage-Equation: Convergence Effect

	Military Expenditure (%GDP)	
	All NATO	European NATO
Constant (β_0)	2.004*** (0.031)	1.981*** (0.028)
Difference with 2% Threshold (β_2)	1.060*** (0.040)	1.038*** (0.034)
NATO dummy (β_3)	0.036 (0.049)	
Convergence Effect(β_1)	-0.187*** (0.064)	
European NATO dummy(β_3)		0.069 (0.050)
European Convergence Effect (β_1)		-0.245*** (0.077)
Observations	687	687
R ²	0.616	0.619
Adjusted R ²	0.614	0.617
Residual Std. Error (df = 683)	0.563	0.561
F Statistic (df = 3; 683)	364.958***	369.559***
Note:	*p<0.1; **p<0.05; ***p<0.01	

Table 2: Results for Convergence Effect during Periods of Threat

	Military Expenditure (%GDP)			
	Post-Cold War		During Iraq War	
	All NATO	European NATO	All NATO	European NATO
Constant (β_0)	1.958*** (0.043)	1.961*** (0.043)	1.989*** (0.047)	1.981*** (0.047)
Difference with 2% Threshold (β_2)	0.978*** (0.031)	0.961*** (0.031)	0.677*** (0.040)	0.659*** (0.038)
NATO dummy (β_3)	0.035 (0.108)		-0.162 (0.112)	
Convergence Effect(β_1)	-0.439*** (0.114)		-0.229** (0.097)	
European NATO dummy (β_3)		0.030 (0.123)		-0.206 (0.128)
European Convergence Effect(β_1)		-0.404** (0.172)		-0.343** (0.149)
Observations	2,823	2,823	1,234	1,234
R ²	0.266	0.264	0.204	0.203
Adjusted R ²	0.265	0.263	0.202	0.202
Residual Std. Error	2.002 (df = 2819)	2.005 (df = 2819)	1.499 (df = 1230)	1.499 (df = 1230)
F Statistic	340.396*** (df = 3; 2819)	336.539*** (df = 3; 2819)	105.206*** (df = 3; 1230)	104.748*** (df = 3; 1230)
Note:	*p<0.1; **p<0.05; ***p<0.01			

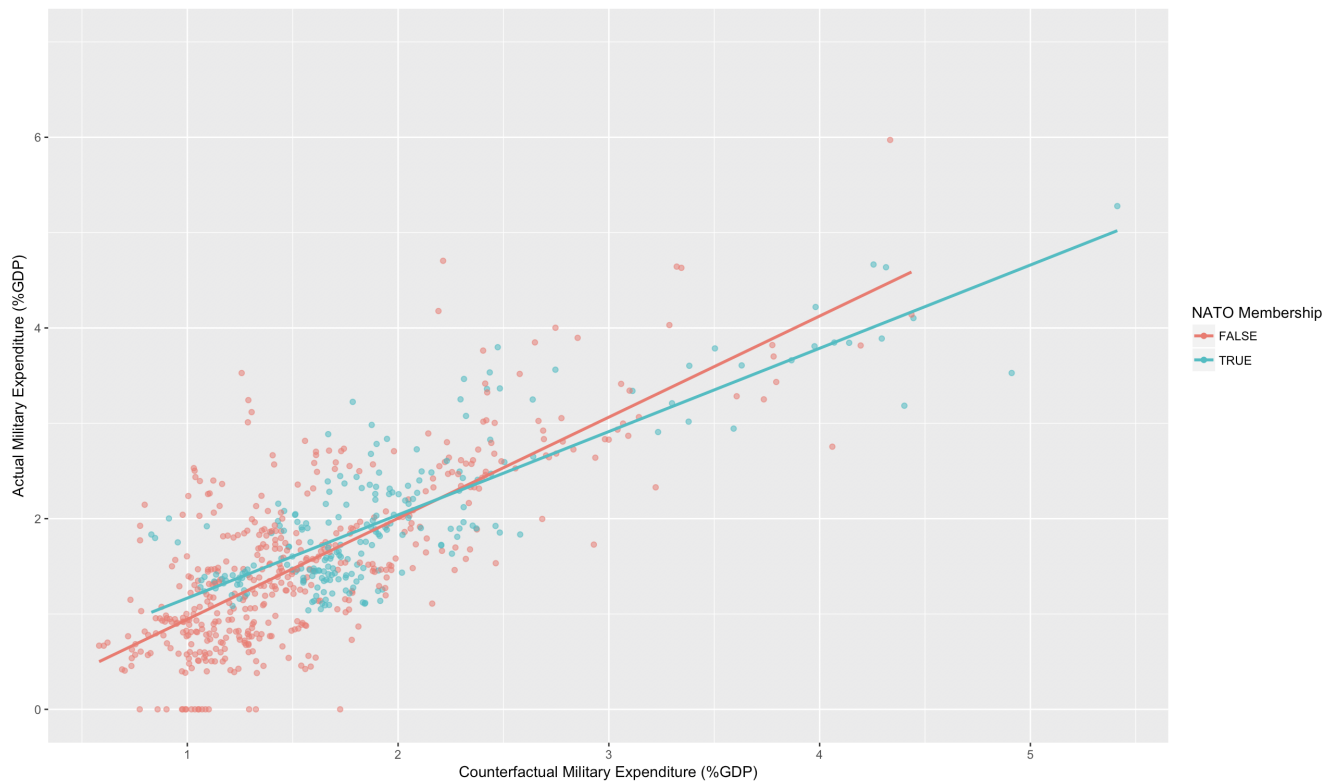


Figure 4: Comparison of the relationship between actual and counterfactual military expenditure for NATO and non-NATO states.

Furthermore, it cannot be ignored that the computation of the counterfactual values for the NATO members draws extensively from non-NATO members' data. Given that the number of non-NATO states is much larger than that of member states, the coefficients could be biased towards more accurately accounting for patterns among the former than the latter. However, I do not consider this a particularly weakening limitation since NATO member states account for 2/3 of the global military expenditure, which balances the potential biases in the coefficients.

Another important shortcoming of this paper is the inability to distinguish whether convergence is towards the mean or towards the 2 percent threshold. Although both possibilities feed into the socialisation theory of constructivist thought, it is paramount to be able to determine whether countries will continue to progressively adjust their military budget to reach the 2 percent mark or whether the convergence tendency is a much more dynamic process with countries eventually adjusting their military expenditure around an average figure. The difference is considerable since there is a 0.26 percent gap between the two values (as of 2016), which would translate into an over 152 billion USD increase in contributions to common defence yearly (NATO 2019).

9. DISCUSSION

The results find the hypothesized convergence effect towards the 2 percent (or, plausibly, towards the mean). NATO appears to have a significant effect on the military expenditure behaviour of its member states (most notably, among European members). Member states' behaviours are impacted in the following way: on the one hand, for countries with a military expenditure above the 2 percent threshold, membership of NATO leads to a decrease in their budgetary allocation to defence, compared to what their defence spending would have been should the alliance not exist. On the other hand, those spending less than the dictated 2 percent, tend to increase their military expenditure from that should they not be NATO members. Although this paper fails to clarify the end mark of this convergence (the 2 percent threshold or the NATO mean), the possibility that the convergence is towards the mean does not, in any way, contradict the socialisation constructivist approach. In fact, Webber suggests that the socialisation process is a two-way street, where institutional structures constraint the behaviours of the states while the states simultaneously constitute the norms that constraint the institution (Webber 2009). The mutual constitutive effect implies that member states could be shifting the minimum expenditure norm from 2 percent to the mean, in a com-

mon understanding of the need for a well-resourced collective defence alliance.

A potential counterargument to my findings is to question whether the results found are indeed due to the *NATO effect*, as I argue. Could this convergence be explained through another rationale? Despite recognising the validity of such a question, I have put great effort in minimizing the possibility that this might indeed be the case. By including as many parameters affecting military expenditure as the literature upholds and data available allows, I reduce the possibility that the budget allocations are affected by factors not included in the first-stage modelling equation. As a result, I formulate the correlation that any unexplained variation in military expenditure from the first-stage modelling equation must be driven by the only remaining independent variable: NATO membership. Additionally, the 1-1.01 correlation between actual and counterfactual military expenditures for non-NATO countries contrasts with the greater disparity between the two figures among NATO states. Given that the single most distinguishing factor across the two groups is membership of NATO or lack of such, I can confidently correlate the difference in behaviour to the NATO effect.

Robustness checks are a helpful tool to reaffirm the trustworthiness of the findings. The heteroskedasticity test supports the argument that the parameters included are indeed accurate predictors of military expenditure and the residual effect can indeed be framed as arising from NATO membership socialisation. As mentioned in the results section, when the first-stage modelling equation is run with the lagged dependent variable, the convergence effect is no longer significant. I attribute this to the small number of states incorporated into NATO and the lack of countries leaving the alliance, leading to the NATO effect to be absorbed as country fixed effects through the lagged military expenditure. In fact, those states joining post-1960 are fundamentally members of the Eastern bloc and were incorporated into NATO eight years after the Warsaw Pact dissolved (Carpenter and Conry 1998). It's thus fair to assume that, through such eight-year period, they underwent a socialisation and adaptation process to NATO practices in order for the organisation to accept their membership. This understanding aligns with the Schimmelfennig's explanation about NATO enlargement within the constructivist framework. He argues that states such as Hungary, the Czech Republic or Poland were only accepted once they had internalised the organisation's values and norms (Schimmelfennig 1998). As a result, the transition period diffuses the NATO effect over. Since the lagged dependent variable on the first-stage modelling equation controls for the NATO effect by

including it in the previous year's military expenditure, it is no surprise that no NATO effect is found in the second-stage.

Consequently, the results show a strong support for the constructivist argument in the context of NATO. The implications of these findings mainly revolve around the importance of the organisation for the member states, particularly the European ones. In other words, the commitment to common defence is not, as suggested by some (Babones 2018), threatened by a lack of belief in the organisation. Nonetheless, it is still worth mentioning that although member states are found to be spending more than what they would if they were not NATO members, 24 out of the 27 European states continue to have a defence budgetary allocation below that agreed upon in 2014.

Furthermore, the results show a slowdown of convergence in periods of external threats. The importance of this finding arises from two matters. First, with regards to the burden-sharing debates, it calls upon the need for analysing the overarching trends within spending patterns, rather than examining NATO behaviour over short periods that might be subject to the presence of external threats. Secondly, it suggests that such periods will require a further reinforcement of common practices within the institution. This is essential in the NATO of today where the presence of expansionist Russia could potentially hinder the attainment of the 2 percent target in the short-term for under-spending members. This paper shows that in periods of geopolitical challenges additional emphasis must be placed in maintaining institutional cohesiveness.

Lastly, it is worth discussing the dynamics of the alliance that might be behind the NATO effect and their possible implications for other military alliances such as the Warsaw Pact. Since convergence was not significant during the Cold War, one could argue that the eventual dissolution of the Eastern military bloc was caused by the same balance-of-threat dynamics that weaken the NATO effect in periods such as the Iraq War. Additionally, the democratic and liberal nature of NATO members could arguably be behind the reinforcement of norm socialisation, which would contrast again with the hierarchical structure of the Warsaw Pact and explain its fragmentation. Alternatively, the size of the regional alliance could be a key determinant its capacity to alter members' behaviour. Further research would need to dive deep into these different possibilities.

10. CONCLUSION

The results find evidence for the argument that in addition to international, domestic and individual-level

factors, belonging to NATO has a residual converging impact on member states' defence budget allocations. The NATO effect can be framed in a socialisation constructivist argument where countries are influenced by the strategic culture of the organisation, implying that the institution persistently affects the behaviour of the member states. Far from being obsolete, NATO's shared institutional beliefs, norms and practises influence members' military expenditure in a unique manner that sets the allies aside from non-NATO countries. Although relatively weakened by external threats, the NATO effect brings about a significant converging tendency towards 2 percent of members' GDP, and potentially towards the more ambitious threshold of 2.26 percent.

In addition to endorsing the importance of NATO, this paper opens new paths for research in the future. It would be valuable to closely examine the convergence trends and the impact of new threats identified in this paper. Future scholarship should aim to determine the eventual benchmark for the convergence tendency and the quantitative impact of Russia's expansionist foreign policy. The methodology developed in this paper could contribute in significantly facilitating such further studies. Furthermore, it would be interesting to create a cross-comparison to examine whether socialisation dynamics operate in other international institutions where member states are expected to make economic contributions such as the Organisation for Security and Cooperation in Europe (OSCE), the Council for Peace and Security in Central Africa or the Shanghai Cooperation Organisation. The broader implication of such finding would reinforce the constructivist argument in the debates around the dynamics governing international relations.

REFERENCES

- ABC, NEWS (2016). "'This Week' Transcript: Donald Trump and Sen. Bernie Sanders". In: URL: <https://abcnews.go.com/Politics/week-transcript-donald-%5C%20trump-sen-bernie-sanders/story?id=37949498>.
- Alonso, M.A. and A. Martnez (2015). "Factores explicativos del gasto en defensa en los países OTAN". In: *Instituto de Estudios Fiscales a Antonio Fonfría y de la Cátedra de Mercados y Política Industrial de la Universidad de Barcelona*.
- (2007). "Los determinantes del gasto militar en los países europeos de la Alianza Atlántica: Un estudio a través de un modelo de datos de panel para el periodo 1975-2005". In: *9th Global Economic Congress, Madrid*.
- Babones, S. (2018). "Is the old NATO dead?" In: *National Interest*. URL: <https://ses.library.usyd.edu.au/bitstream/handle/2123/18369/Is%5C%20the%5C%20old%5C%20NATO%5C%20dead%5C%3f.pdf?sequence=2&isAllowed=y>.
- Beniot, E. (1978). "Growth and defence in developing countries". In: *Economic Development and Cultural Change* 2.26.
- Biddle, W (June 2015). "Senate Bars Move to Reduce Troops with NATO Forces". In: *The New York Times*. URL: <https://www.nytimes.com/1984/06/21/us/senate-bars-move-to-reduce-troops-with-nato-forces.html>.
- Binnendijk, H. (2016). "World Out of Balance: International Relations and the Challenge of American Primacy". In: *RAND Corporation*, pp. 61–96. URL: https://www.rand.org/pubs/research_reports/RR1210.html.
- Brooks, S. and W. Wohlforth (2008). "World Out of Balance: International Relations and the Challenge of American Primacy". In: *Princeton University Press* 2, pp. 201–213. URL: <http://www.jstor.org/stable/j.ctt7sxgh.pdf>.
- Bull, H. (1977). "The Anarchical Society: A Study of Order in World Politics". In: *London: Macmillan*, pp. 6–41.
- Carnegie, Europe (2015). "NATO Must Put Its Money Where Its Mouth Is." In: *Carnegie Europe project*. URL: <https://carnegieeurope.eu/strategieurope/?fa=60271>.
- Carpenter, T.G. and B. Conry (1998). *NATO Enlargement: Illusions and Reality*. Washington DC: CATO Institute. ISBN: 1-882577590.
- Cimbala, J. and P. Forster (2010). "Multinational Military Intervention: NATO Policy, Strategy and Burden Sharing". In: *Cornwall: Ashgate*.
- Daalder, I. (2013). "Ambassador Ivo Daalder Remarks at Carnegie Europe, Brussels". In: *United States Mission to NATO, Brussels*.
- Doyle, M.W. (2011). *Liberal Peace: Selected Essays*. Routledge.
- Dudley, L. and C. Montmarquette (1981). "The demand for military expenditures: An international comparison". In: *Public Choice* 37.1. An optional note, pp. 5–31.
- Goodin, R.E. (2010). *The Oxford Handbook of International Relations*. Oxford University Press. ISBN: 978-0-19-958558-8.
- Hoffmann, M. (2017). "Norms and Social Constructivism in International Relations". In: *Oxford Research Encyclopedia of International Studies*. URL: <http://oxfordre.com/internationalstudies/view/>

- 10 . 1093 / acrefore / 9780190846626 . 001 . 0001 / acrefore-9780190846626-e-60.
- Kolodziej, E. (2005). *Security and the International Relations*. Cambridge University Press.
- NATO (March 2019). *Defence Expenditure of NATO Countries (2011-2018)*. Press Release. URL: https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2019_03/190314-pr2018-34-eng.pdf.
- (February 2005). *Summit meeting of the North Atlantic Council*. Press Release 020. URL: <https://www.nato.int/docu/pr/2005/p05-020e.htm>.
- (April 1949). *The North Atlantic Treaty*. Press Release. URL: https://www.nato.int/nato_static_fl2014/assets/pdf/stock_publications/20120822_nato_treaty_en_light_2009.pdf.
- (September 2014). *Wales Summit Declaration*. Press Release 120. URL: https://www.nato.int/cps/en/natohq/official_texts_112964.htm.
- Olson, Mancur and Richard Zeckhauser (1966). "An economic theory of alliances". In: *The review of economics and statistics*, pp. 266–279.
- Oneal, John R. and Paul F. Diehl (1994). "Theory of Collective Action and NATO Defense Burdens: New Empirical Tests". In: *SAGE Journals*. URL: <https://journals.sagepub.com/doi/pdf/10.1177/106591299404700208>.
- Pérez-Forniés, C., M.D. Gadea, and E. Pardos (2004). "Gasto en defensa y renta en los países de la Alianza Atlántica". In: *Hacienda Pública Española* 170 (3), pp. 137–153.
- Russell, Richard (1998). "American Diplomatic Realism: A Tradition Practised and Preached by George F. Kennan". In: *Diplomacy and Statecraft* 11 (3), pp. 159–182.
- Schimmelfennig, Frank (1998). "Nato Enlargement: A Constructivist Explanation". In: *Security Studies* 8 (2-3), pp. 198–234. doi: 10.1080/09636419808429378.
- (2003). *The EU, NATO and the Integration of Europe: Rules and Rhetoric*. Cambridge: Cambridge University Press, p. 72. ISBN: 9780804788977.
- Shirayev, Eric B. and Vladislav M. Zubok (2014). *International Relations*. New York: Oxford University Press.
- Snyder, Jack (2004). "One World, Rival Theories". In: *Foreign Policy* 145, pp. 53–62.
- Wallander, Celeste A. (July 2000). "Institutional Assets and Adaptability: NATO after the Cold War". In: *International Organization* 54.4, pp. 705–735.
- Walt, Stephen M. (July 1985). "Alliance Formation and the Balance of World Power". In: *International Security* 9.4. URL: <http://www.christoph-rohde.de/walt/allianceformationandbop1985.pdf>.
- Webber, Mark (2009). *Thinking NATO through Theoretically*. URL: <https://ecpr.eu/Filestore/PaperProposal/e004327f-8597-4408-b51a-2e8fabdb21.pdf> (visited on 04/08/2009).
- Weitsman, Patricia A. (2013). *Waging War: Alliances, Coalitions, and Institutions of Interstate Violence*. Stanford: Stanford University Press. ISBN: 9780804788977.
- Wendt, Alexander (1999). *Social Theory of International Politics*. Cambridge: Cambridge University Press. ISBN: 9780511612183.

11. APPENDIX

Appendix A

Variation in military expenditure between 1960-2017 for European members of NATO:

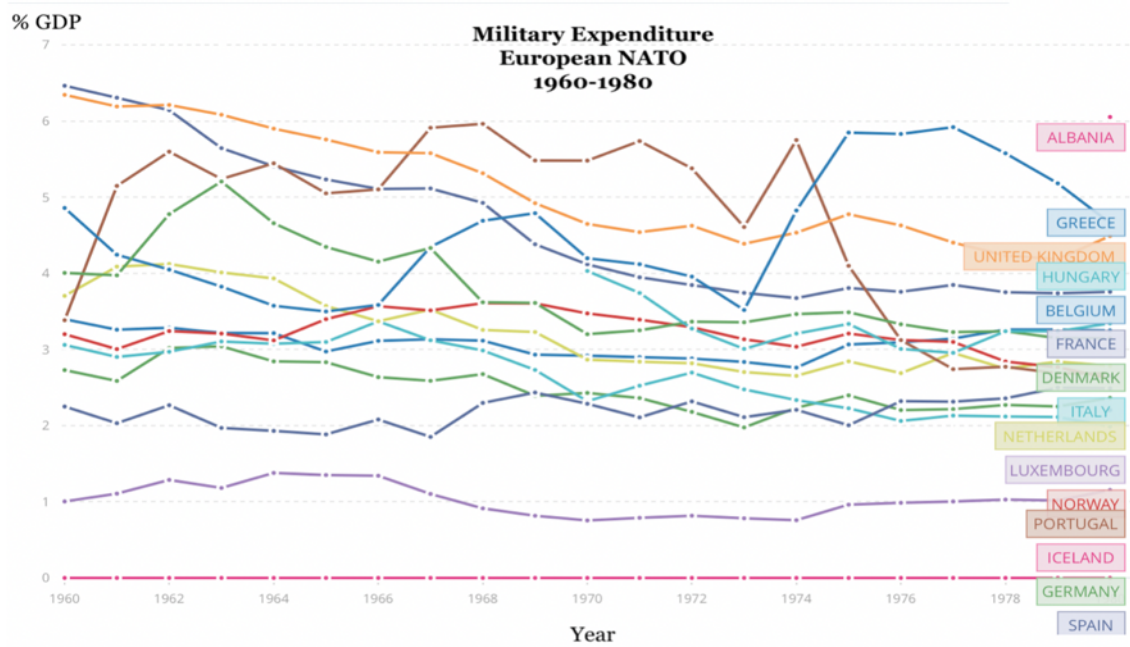


Figure 5: Variation in military expenditure of NATO countries (1960-1980)

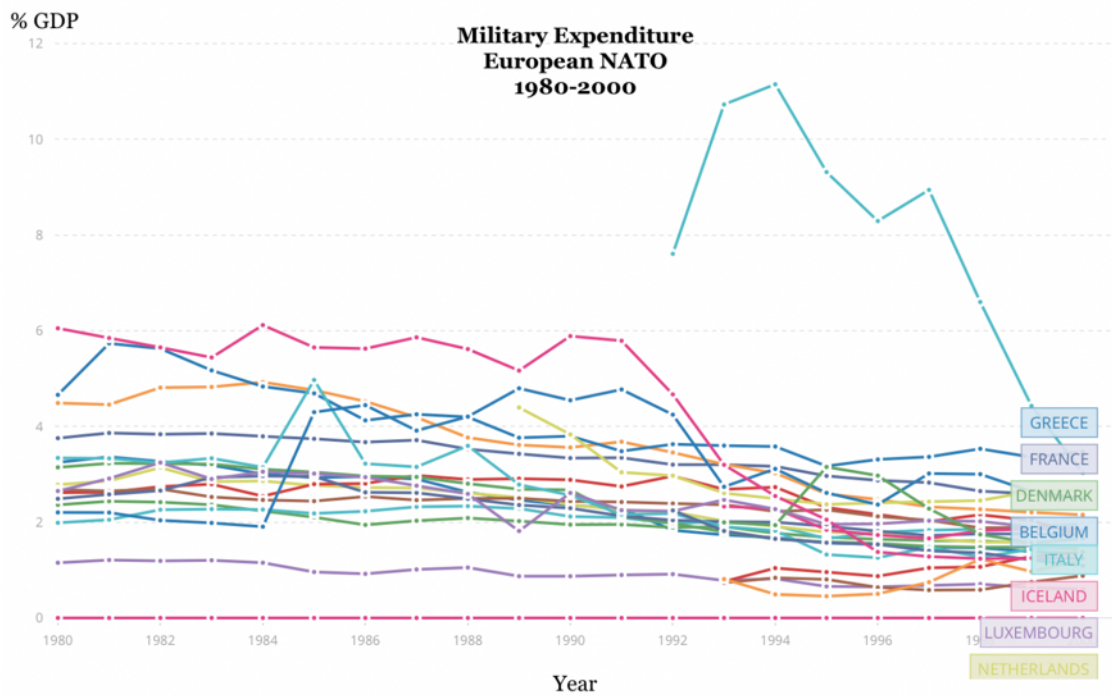


Figure 6: Variation in military expenditure of NATO countries (1980-2000)

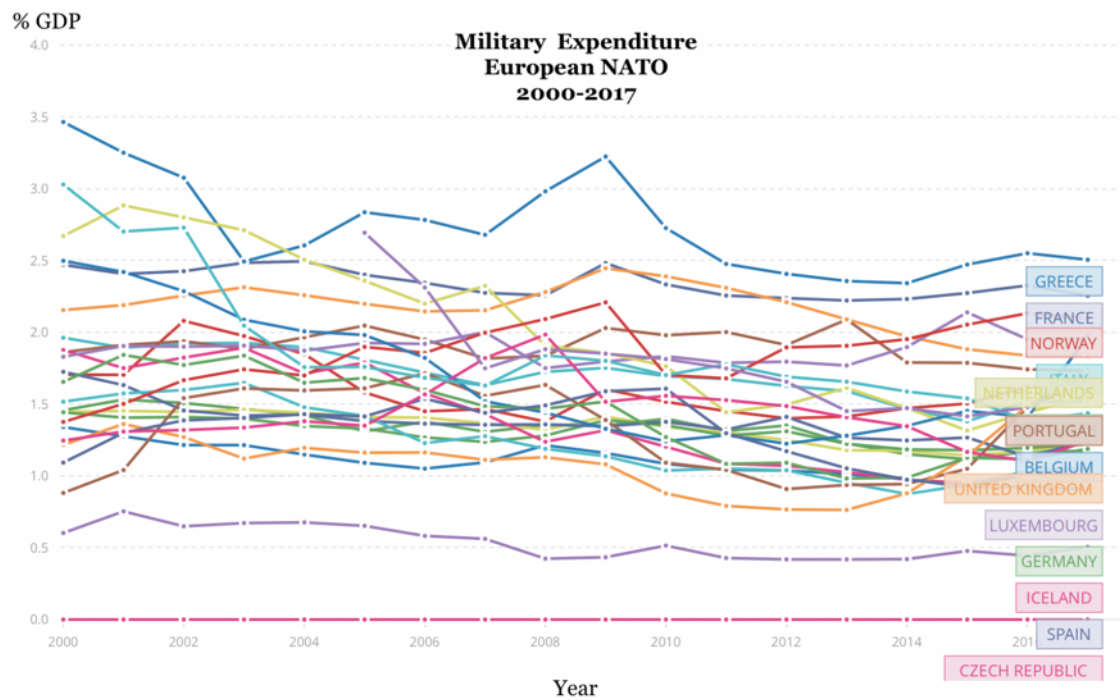


Figure 7: Variation in military expenditure of NATO countries (2000-2017)

Appendix B

Table 3: Summary Statistics for Numerical Variables

<i>Variable</i>	<i>Min</i>	<i>Median</i>	<i>Mean</i>	<i>Max</i>	<i>St. Dev.</i>	<i>NA</i>
Military Expenditure (% GDP)	0.00	1.98	2.83	117.35	3.40	5553
GDP (current USD)	8.82e+06	7.18e+09	1.676e+11	1.94e+13	872871529561	3103
Women in Parliament (%)	0.00	13.50	15.99	63.80	11.01	8593
Population (thousands)	4.27e+03	4.18e+06	2.67e+07	1.38e+09	108922910	77
Armed Personnel	0.00	39500	182236	4135000	447539.2	7828
Interstate MEPV	0.00	0.00	0.11	9.00	0.66	4901
Civil MEPV	0.00	0.00	0.665	10.00	1.65	4893
MEPV in Neighbouring States	0.00	0.00	3.37	34.00	5.17	4898

Table 4: Summary Statistics for Categorical Variables

<i>Variable</i>	<i>Factor</i>	<i>N</i>	<i>NA</i>
NATO Member	TRUE	1081	0
	FALSE	11453	
NATO EU Member	TRUE	975	0
	FALSE	11559	
Political System	Assembly-elected President	799	5533
	Parliamentary	2294	
	Presidential	3908	
Electoral System	Plurality	3639	2064
	Proportional Representation	3000	
	Other (i.e. No election)	3831	
Head of State member of Armed Forces	TRUE	1330	5537
	FALSE	5667	
Executive Ideology	Left	2146	8476
	Centre	492	
	Right	1420	
Nationalistic Executive	TRUE	921	5620
	FALSE	5993	
Religion of Executive	Catholic	24	5608
	Christian	241	
	Hindu	33	
	Islamic	215	
	Other/Secular	6413	

Appendix C

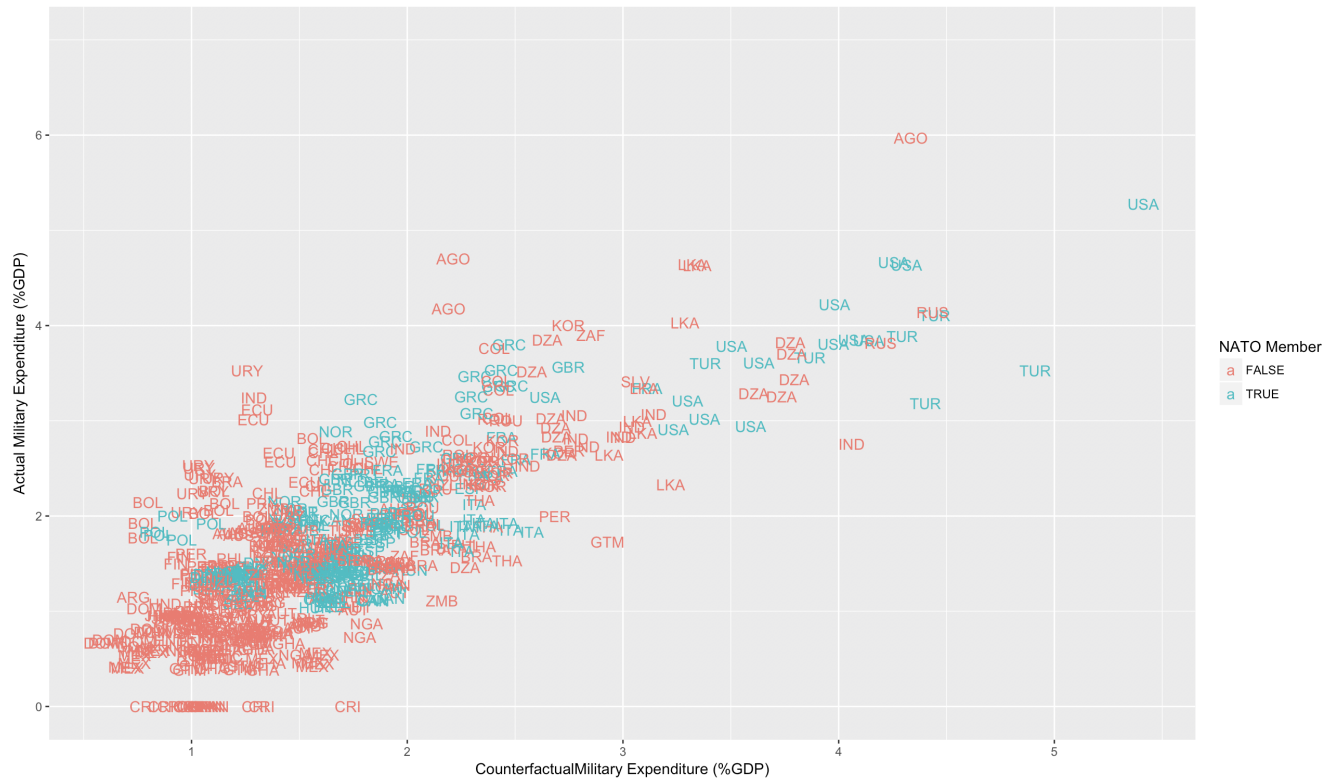


Figure 8: Relation between actual and counterfactual military expenditures for NATO and non-NATO countries (1960-2017)

Appendix D

Table 5: First-Stage Modelling Equatio Results with Heteroskedasticity Test

	Dependent variable:	
	Mil.Expend	
	(1)	(2)
GDP	−7.48e-14*** (2.56e-14)	−7.48e-14*** (2.43e-14)
Women in Parliament	−0.005 (0.003)	−0.005 (0.003)
system Parliamentary	0.270* (0.160)	0.270** (0.114)
system Presidential	−0.177 (0.165)	−0.177 (0.128)
military	−0.304* (0.174)	−0.304* (0.207)
Left executive	0.557*** (0.079)	0.557*** (0.068)
Right executive	0.270*** (0.077)	0.270*** (0.069)
Nationalist executive	0.360*** (0.123)	0.360** (0.140)
Hindu executive	0.341 (0.313)	0.341 (0.268)
Secular executive	−0.020 (0.091)	−0.020 (0.071)
All Houses control	0.198*** (0.058)	0.198*** (0.059)
Plurality system	−0.040 (0.057)	−0.040 (0.057)
PR system	−0.113 (0.071)	−0.113 (0.070)
Population	−7.32e-09*** (4.16e-10)	−7.32e-09*** (4.16e-9)
Personnel	2.94e-06*** (1.49e-07)	2.94e-06*** (1.21e-07)
Interstate MEPV	0.520*** (0.123)	0.520*** (0.079)
Societal MEPV	0.224*** (0.023)	0.224*** (0.032)
MEPV in Neighbouring States	0.025** (0.012)	0.025** (0.016)
Economic Crisis	0.011 (0.025)	0.011 (0.026)
PolityIV	−0.027* (0.014)	−0.027* (0.018)
Constant	32.374*** (10.168)	32.374*** (10.927)
Observations	687	687
R ²	0.610	0.610
Adjusted R ²	0.597	0.597
Residual Std. Error (df = 665)	0.575	0.575
F Statistic (df = 21; 665)	49.476***	49.476***

Note:

*p<0.1; **p<0.05; ***p<0.01