Political cycles in public expenditure: butter vs guns

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A B S T R A C T

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This paper explores, theoretically and empirically, how governments may use the trade-off between social and military expenditure to advance their electoral and partisan objectives. Three key results emerge. First, governments tend to bias outlays towards social expenditure and away from military expenditure at election times. Second, the size of this tradeoff is larger when we exclude countries involved in conflict, where national security plays an important role on voter choice. Third, while certain categories of social expenditure are higher during left administrations, military expenditure is higher during right administrations. *Journal of Comparative Economics* **45** (2017) 582–604. Department of Politics and International Studies, Social Sciences Building, The University of Warwick, Coventry, CV4 7AL, United Kingdom; Department of Economics, University of Sheffield, 9 Mappin Street, Sheffield, S1 4DT, United Kingdom; Department of Economics, University of Sheffield, 9 Mappin Street, Sheffield, S1 4DT, United Kingdom.

1. Introduction

Politicians, when in office, have strong incentives to choose policies that will maximise their re-election prospects and promote their partisan agenda. The influence of government incentives on policy choices has been explored by the political cycle theories. The opportunistic (or electoralist) theories argue that all governments, regardless of ideological orientation, will manipulate economic policies around elections to raise their chances of being re-elected. The partisan theories claim that left-wing governments will engage in more income re-distribution and more expansionary policies than right-wing governments during their time in office. Opportunism and partisanship are often perceived as competing arguments and studied separately in the literature. Furthermore, despite the voluminous empirical studies, the evidence regarding which policy tools are actually preferred by governments for meeting their political aims is still inconclusive. Our paper contributes to this literature by providing a theoretical framework and empirical evidence on the role of social and military expenditure in generating political cycles, when politicians are motivated by both opportunistic and partisan considerations. The interac-

tive relationship between the two types of expenditure has been extensively discussed in studies considering the economic implications of military spending, but has never been systematically analysed within a political cycle framework.

Why should we expect political cycles to differ in timing and direction across social and military expenditure? A strong motivation can be found in a line of research arguing that the government faces a tradeoff between "butter" and "guns": if it devotes more resources to military activities without increasing the total budget, civilian sectors of the economy must pay by foregoing benefits they would otherwise receive, and vice versa (Russett, 1982). Since expenses for social programs have a more direct and more immediate political influence on voters during peace time than do military expenditure, increased allocations to "butter" in election years can partly occur at the expense of "guns" (Mintz, 1988). Central to "butter-vs-guns" thesis is also the role of government ideology in shaping budget priorities. Following the partisan theory claims, we would expect that left-wing governments will spend more than right-wing governments. However, given that right-wing parties tend to be more pro-military and in favour of a strong national defence (Klingemann et al., 1994; Whitten and Williams, 2011), we should also expect ideology to have the opposite effect on military spending.

Rogoff (1990) was the first to predict that electoral cycles can take the form of changes in the composition (rather than the level) of government spending. According to his model, each politician has a competence level, which is considered to be private information, and voters use the part of government spending they observe to make inferences about post-electoral competence. As a result, the incumbent tries to signal his competence before the election by shifting government outlays towards the more "visible" public goods and away from investment. Following the competence argument, Shi and Svensson (2006) show that electoral cycles can emerge even if most voters observe all government expenses, as long as some voters are uninformed. Thus, electoral cycles are more likely in developing countries (Shi and Svensson, 2006) or in "young democracies" (Brender and Drazen, 2005), due to lower access to free media or lack of familiarity with electoral politics. In a recent study, Drazen and Eslava (2010) support the existence of election-year fiscal manipulation in countries with sophisticated, well-informed voters, who are averse to high overall government spending. According to their model, citizens value government spending on some goods but not others, and rational, forward looking voters use the composition of public expenditure to make inferences about the incumbent's preferences. Electoral manipulation thus takes the form of shifting spending towards the goods that voters prefer in the attempt to convince them that the incumbent shares their spending priorities.

In this paper, we build a theoretical model to analyse how governments use the tradeoff between "butter" and "guns" as a means of advancing their electoral and partisan objectives. As in Drazen and Eslava (2010), the model relies on information asymmetries regarding how much politicians care about voters' utility, and focuses on a society with rational and forward-looking voters, who observe all government expenses; that is, the case of developed established democracies. Unlike the existing literature, the model rationalises the role of social and military expenditure in generating electoral compositional budget cycles and identifies the factors that shape the tradeoff between the two types of expenditure. It also shows that these electoral cycles can emerge in an environment in which governments have also partisan motivations. In particular, we argue that in all democratic countries voters tend to favour welfare spending (such as, old age, housing and health programs) and reward incumbents with the same spending choices. In addition, they assign low priority to military spending, as they consider it to be less important in periods of peace.[1] Politicians, on the other hand, differ in the value they assign to the two types of spending (which cannot be observed by voters), and, regardless of ideology, they all prefer to spend more on the military and less on social programs compared to voters. The latter is consistent with the argument that national defence is perceived by politicians as a general measure of status and prestige.[2] Voters cannot (ex ante) distinguish between politicians who manipulate the budget composition to attract votes and those whose spending preferences are consistent with what voters want. Hence, they form expectations regarding the type of politician (and thus the post-electoral spending) by observing the pre-electoral allocation to the two goods. Before the election, an incumbent politician will shift the composition of spending towards social welfare and away from defence to signal that his preferences are close to those of voters, which, in turn, will produce an electoral compositional budget cycle. The size of this cycle in our model changes when countries are involved in conflicts. In such economies, voters assign a relatively higher value to military spending due to security considerations, and their spending priorities become more aligned with those of politicians. As a result, a butter-vs-guns tradeoff becomes a less effective signal of the politician's type and the electoral cycle is now less pronounced. Finally, according to our model, politicians' spending decisions are also influenced by their ideological positions: left-wing governments tend to favour generous welfare policies and dovish foreign policies, whereas right-wing governments tend to favour austere welfare policies and hawkish foreign policies. This leads to the appearance of partisan cycles in the two types of expenditure, which can coincide with the compositional budget cycle of electoral-calendar timing.

We then test the main predictions of the theoretical model. Using data from a panel of 22 OECD countries from 1988 to 2009, we provide robust empirical evidence in line with these predictions. Our findings can be summarised as follows.

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[1] Wlezien (1996) shows that voters respond rather quickly to defence appropriations decisions and that policymakers respond directly to public preferences for defence spending and adjust its appropriations accordingly.

[2] Scholars of international relations almost unanimously agree that leaders are very concerned about the reputation and status of their state (see for example, Snyder and Diesing, 1977; McMahon, 1991; Mercer, 2010; Dafoe et al., 2014). Although the main factor determining a country's military expenditure is what it can afford, "status and prestige are certainly important and to be a proper state is thought to require armed forces" (Smith, 2009, p. 97). Ambition is a main motive for increasing military spending, as leaders are inherently ambitious and their forward-looking foreign policies require high investment in military spending (Castillo et al., 2001).

First, governments tend to bias outlays towards social expenditure and away from military expenditure at election times, lending support to a "butter-vs-guns" tradeoff within an electoral competition setting. Second, these effects become more pronounced when we exclude the countries with increased conflict involvement, where national security can play an important role on voter choice. Third, partisan distinctions are clearly discernible but differ between the two types of expenditure: while certain categories of social expenditure are higher during left administrations, military expenditure is higher during right administrations. These findings can explain why studies that treat electoral effects as symmetric across different expenditure categories and different countries, and fail to appreciate that political ideology has different dimensions, may find weak empirical support for the existence of political cycles.

Our paper has also important contributions to the empirical literature of political cycles in OECD countries. Prior empirical studies on this topic concentrate their analysis on the influence of government ideology and do not investigate electoral cycles (Potrafke, 2009; 2011), or focus on the detection of partisan and electoral effects in the overall level of social expenditure (Herwartz and Theilen, 2014). Furthermore, existing political cycle studies looking at compositional budget changes either ignore the impacts on military spending or employ the same empirical specification for all types of expenditure. Failure to control for important determinants of a country's military burden (such as, international threats, military interventions, the presence of an arms race, conflicts, alliances) is a serious concern when studying the influence of politics on military spending, as it leads to omitted variable bias. Our paper addresses these issues using the most recent data on social and military expenditure, a rich set of control variables, and the most recently developed econometric techniques. Moreover, it contributes to the literature on the interaction effects of globalization and government ideology. Recent empirical evidence points to the conclusion that the partisan influence on social expenditure in OECD countries has decreased over the past three decades, and several authors relate this finding to the effects of globalization.[3] Our results show that, while ideology has indeed lost some of its influence on the overall level of social spending, it has become more important for certain social policy areas. This suggests that globalization does not eliminate partisan cycles; it only directs politicians effort towards certain social policy programs.

The paper proceeds as follows. Section 2 reviews briefly related studies; Section 3 presents our theoretical framework; Section 4 describes the data on social and military expenditure; Section 5 outlines the empirical model specification; Section 6 reports the empirical results and investigates their robustness; Section 7 concludes.

2. Background

Rogoff (1990)'s electoral compositional budget cycle predicts that electoral incentives may induce the incumbent to shift public spending towards "visible" government current consumption and away from capital investment goods. A number of studies lend empirical support to this prediction using either multi-county panel data (Schuknecht, 2000; Vergne, 2009; Katsimi and Sarantides, 2012) or data for local government elections (Schneider, 2010; Veiga and Veiga, 2007). However, whether elections give rise to a substitution of capital for current expenditure or the opposite is still debatable. Katsimi and Sarantides (2012) point out that this can be attributed to different perceptions of which categories of public spending are actually "more visible". A common feature of the aforementioned studies is that they focus on specific categories of non-defence spending and fail to appreciate that military expenditure (which cannot be characterised by "low visibility") may also be sacrificed around elections as one way to enable increases in civilian expenditure. The tradeoff between "butter" and "guns" is very well established in the literature on the economic implications of military spending (Whitten and Williams, 2011) and the causes of civil conflict (Caruso, 2010), but has never been systematically analysed within an electoral competition setting.[4]

In a recent study, Efthyvoulou (2012) shows that the size of electoral fiscal cycles is negatively correlated with non-economic voting: the higher the level of non-economic voting, the weaker are politicians' incentives to manipulate fiscal policy as fewer voters can be influenced by an electoral boom in targeted welfare expenditures. This may also imply that in countries where non-economic matters are high on the public's political agenda, politicians may choose to pursue an appropriate set of non-economic policies to signal that their concerns are close to those of voters. While most categories of government spending are directly linked to redistributive policies, such as unemployment and old age benefits, defence spending is highly associated with non-economic priorities. This suggests that the extent to which politicians make "butter-vs-guns" tradeoffs may vary across countries and that the magnitude of the resulting effects may be determined by election politics and external security concerns.

A related literature focuses on the influence of electoral accountability on the likelihood of war. On one hand, Hess and Orphanides (1995; 2001) argue that an incumbent with low performance in handling the domestic economy has incentives to wage a conflict so as to display war leadership capabilities and increase the odds of re-election. In a similar vein, Conconi

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[3] For a detailed discussion of the literature on the interaction effects of globalization and government ideology, see Dreher, Sturm and Ursprung (2008) and Meinhard and Potrafke (2012).

[4] The available empirical studies on electoral defence spending cycles are solely based on single-country evidence and do not reach conclusive results: Nincic and Cusack (1979) show that the US military spending rises during the two years preceding the elections; Dalen and Swank (1996) show that the Dutch defence spending increases in election years; Mintz (1988) finds that the Israeli compensation of employees in the military sector is smaller in the year prior to elections (but no evidence of electoral effects in programs such as the procurement of weapons); and, Zuk and Woodbury (1986) and Karagöl and Turhan (2008) fail to find any trace of electoral cycles in military expenditure in the United States and Turkey, respectively.

et al. (2014) find that democratic dyads, in which one or both leaders are subject to binding term limits, are involved in armed conflicts as often as autocratic or mixed dyads. Interestingly, they also find that conflicts are less likely to occur during the first mandate. On the other hand, democratic peace theory has long argued that democratic incumbents avoid costly interstate conflicts; for example, due to their desire to be re-elected by conflict-averse public (see for example, Russett and Oneal, 2001). In fact, whereas there are political gains at the domestic level from negotiating a resolution to difficult international issues (Morrow, 1991), the potential target states may strategically avoid conflict with a state whose leaders are experiencing domestic political difficulties (Fordham, 2005). Despite the mixed arguments, this discussion clearly suggests that foreign policies do matter to the electorate and highlights the importance of exploring how the electoral "butter-vs-guns" tradeoffs may vary with respect to a country's level of conflict involvement.[5]

According to the partisan explanation of economic policy, parties of the left favour more state intervention, income redistribution and expansionary fiscal policies, compared to parties of the right. The empirical evidence strongly supports partisan effects on the size of the government, and moderately supports partisan effects in some specific policy areas; such as, social and welfare spending (see Franzese, 2002). In many cases, however, the evidence seems to suggest that partisan governments' resource to these policies depends heavily on their international and domestic politico-economic context. Andrews (1994) finds that globalization reduces the ability of governments to influence the domestic economy and leads to policy convergence, whereas Garrett (1995) and Potrafke (2009) show that globalization does not restrict, but rather encourages partisan politics. Other studies relate the weakening of partisan influences over the past three decades to an increased necessity of austerity (Kittel and Obinger, 2003), the process of European integration (von Hagen, 2006; Efthyvoulou, 2011), or a general institutional change that took place in the 1990s (Herwartz and Theilen, 2014).

While various categories of public spending have been widely explored by the partisan cycle literature, very few studies attempt to explain how partisan politics affect patterns of defence spending. This is partly because most studies of military spending focus on the United States, where the two-party/single-government context offers little variation, and partly because the predictions regarding the direction of effects are not clear-cut. On one hand, left-wing governments may use military spending as welfare policy in disguise, but, on the other hand, they may reduce military spending because of their dovish positions on international relations (Whitten and Williams, 2011). The existing empirical evidence is also contradictory. Kollias and Paleologou (2003) find that the Greek defence spending is higher during left administrations, Dalen and Swank (1996) and Karagöl and Turhan (2008) find the opposite effects for the Netherlands and Turkey, respectively, whereas Potrafke (2011) and Kauder and Potrafke (2015) find no evidence of partisan military cycles in OECD countries and Germany, respectively. Clearly, more analysis and empirical work are needed in order to determine which argument is more consistent with historical experience.

3. A theoretical model

Building upon the framework developed by Rogoff and Sibert (1988), Rogoff (1990) and Drazen and Eslava (2010), we now present a theoretical model that explains how politicians use the butter-vs-guns tradeoff to increase their re-election chances and to promote their partisan objectives. The aim of the model is threefold: first, to understand why citizens vote for politicians who engage in such tradeoff for opportunistic purposes, and under which conditions this can be an equilibrium; second, to identify factors that shape this electoral fiscal manipulation; and, third, to outline how electoral and partisan cycles, two phenomena which are usually studied separately, can co-exist when we focus on social and military spending.

3.1. Voters

We consider a simple two-period economy in which elections take place at the end of period 1 and two candidates (parties) face each other: an incumbent I and a challenger C.[6] Voters derive utility from two different types of public goods: social expenditure g_t and military expenditure m_t. In addition, they derive utility from the ideological stance of the politician in office. Thus, the utility of voter i with ideology π^i in period $t = 1, 2$ can be written as

$$V_t^i = f(g_t) + W b(m_t) - \left(\pi^i - \pi^Q\right)^2, \qquad Q \in \{I, C\} \tag{1}$$

where W takes the value 1 if the country is in conflict, and 0 otherwise, capturing the fact that voters care about military expenditure only in the face of conflict,[7] and $\left(\pi^i - \pi^Q\right)$ represents the distance between the ideology of the voter and the ideology of the politician in power $Q \in \{I, C\}$. We assume that voters have preferences over the two goods which are separable, and that the two functional forms satisfy $f'(g_t) > 0$, $f''(g_t) < 0$, $b'(m_t) > 0$, $b''(m_t) < 0$.

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[5] Note that the argument that leaders sometimes go to war to divert attention from domestic problems is controversial and imbued with caveats and exceptions; for example, the country must experience a recession. We therefore refrain from directly tackling this issue, which also falls outside the scope of our paper.

[6] Although we consider a two period model, our results also hold under a more complex dynamic model in which the weight the politician puts on voters changes every two periods.

[7] This allows us to simplify our analysis. It must be stressed, however, that the results are robust to an alternative specification in which voters assign positive value to military spending in every period and this value is relatively higher when the country is in conflict.

At the beginning of period 1, the incumbent politician decides on the spending allocation to the two goods. The election takes place at the end of period 1 and voters decide whether to vote for the incumbent or the challenger. The present expected discounted utility of individual i in period 1 is given by

$$U_1^i = V_1^i(I) + \beta E_1 V_2^i(Q)$$

where β is the discount factor and E_1 is the expectation operator conditional on information in period 1. A voter prefers the incumbent over the challenger if he expects to receive more utility from the former in period 2.

We also assume that a military conflict, when occurs, lasts for both periods. We will therefore examine how the politico-economic equilibria look like under two scenarios: one in which the country is in peace and one in which the country is in conflict.[8]

3.2. Politicians

The incumbent politician must decide at any point in time how to allocate resources to the two goods, g_t and m_t.[9] Thus, the budget constraint of the government is given by

$$s_t = g_t + m_t$$

All politicians are characterised by the following utility function

$$V_t^{P|Q} = \omega_P \left[f(g_t) + Wb(m_t) - \frac{1}{N} \sum_{i=1}^N \left(\pi^i - \pi^Q \right)^2 \right] + \underbrace{l(\pi^P)h(m_t)}_{\text{ideology}} + D_t^P \left[\underbrace{n(m_t)}_{\text{status}} + X \right] - \left(\pi^P - \pi^Q \right)^2 \tag{2}$$

where the function $V_t^{P|Q}$ indicates the current level of utility of a politician P when politician Q is in office, ω_P is the weight the politician puts on voters, N is the constant population size, and D_t^P takes the value 1 if P is in office and 0 otherwise.

The first part of Eq. (2) captures how much the politician cares about voters. The second part captures the utility derived from military expenditure conditional on the politician's ideological position π^P, as we expect right-wing politicians to be more concerned about defence and national security compared to their left-wing counterparts. We assume that the function $h(m_t)$ satisfies $h'(m_t) > 0$ and $h''(m_t) < 0$, and, without loss of generalisation, that $l'(\pi^P) > 0$. The third part of Eq. (2) captures the returns to political power, which consists of two elements: the value of "status" $n(m_t)$ associated with investment in military spending (with $n'(m_t) > 0$ and $n''(m_t) < 0$) and a fixed value X of being in office. Finally, the fourth part of Eq. (2) captures the disutility of having a different ideology represented in office.

The weight ω_P is known to the politician, but is only observed by voters after the election. Thus, before the election, voters try to infer the value of ω_P from the incumbent's spending decisions in period 1. For simplicity and to avoid excessive notation, we assume that there are two types of politicians with weights $\{\omega_H, \omega_L\}$. We denote with $\Pr(\omega_P = \omega_H) = p$ the probability that the politician is a "good" politician (cares a lot about voters) and with $\Pr(\omega_P = \omega_L) = 1 - p$ the probability that the politician is a "bad" politician (does not care much about voters). Also, we assume for simplicity that $\omega_H \to \infty$ (the good politician only cares about voters and not himself), although our results do not strictly depend on this assumption. We will solve the problem by backward induction and focus on Perfect Bayesian Equilibria.

3.3. Equilibrium

The post-election period. In the post-election period, the incumbent politician maximises his current level of utility. A good politician chooses the budget composition that maximises the voters' current utility, which depends on the military condition of the country. When the country is in peace, he allocates all the budget to social expenditure. When the country is in conflict, he chooses the level of social expenditure, g^*, such that

$$f'(g^*) - b'(s - g^*) = 0 \tag{3}$$

Note that the concavity of both functions ensures that an optimal solution with $0 < g^* < s$ exists.[10] Consequently, in period $t = 2$, a good politician plays the following strategy:

$$g_2(\omega_P = \omega_H/I) = \begin{cases} s & \text{if } W = 0 \\ g^* & \text{otherwise} \end{cases} \tag{4}$$

A bad politician, instead, cares also about himself. He thus chooses the level of social expenditure, g^{**}, such that

$$\omega_L \left[f'(g^{**}) - Wb'(s - g^{**}) \right] - l(\pi^I)h'(s - g^{**}) - n'(s - g^{**}) = 0$$

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[8] In a more complete model in which we allow for uncertainty about the existence of a conflict after the elections, our main results will not be altered. However additional elements, like the probability of having a conflict, will re-define the parameter space under which the electoral cycle equilibrium holds. While interesting, this dimension is beyond the scope of our paper.

[9] Since the aim of the model is to show how political parties manipulate the budget composition to get re-elected, we assume that the volume of public expenditure is fixed.

[10] The solution is interior as long as $f'(0) > b'(s)$ and $f'(s) < b'(0)$.

Note that $b'(.)$, $h'(.)$ and $n'(.)$ are all positive and thus $g^{**} < g^* < s$.[11] Also note that a bad politician chooses a higher level of military expenditure because higher investment in armed forces can improve his "status", and, if right-wing, satisfy his hawkish foreign policy preferences.[12] Rearranging the previous equation we obtain

$$\omega_L f'(g^{**}) = \omega_L W b'(s - g^{**}) + l(\pi^I) h'(s - g^{**}) + n'(s - g^{**}) \tag{5}$$

The left-hand-side (LHS) of Eq. (5) is monotonically decreasing in g, while the right-hand-side (RHS) is monotonically increasing in g. As long as $\omega_L > 0$, an interior solution exists. Moreover, it follows from (5), that: (i) the level of social expenditure g^{**} is a positive function of the weight ω_L and a negative function of the incumbent's ideology π^I; and, (ii) when $W = 1$ (the country is in conflict), the bad politician chooses a lower level of social expenditure, g^{***}, such that $g^{***} < g^{**}$. Consequently, in period 2, a bad politician plays the following strategy:

$$g_2(\omega_P = \omega_L / I) = \begin{cases} g^{**}(\pi^I) & \text{if } W = 0 \\ g^{***}(\pi^I) & \text{otherwise} \end{cases} \tag{6}$$

The above results can be summarised in the following proposition:

Proposition 1. *In the post-election period: (i) good politicians choose a higher level of social expenditure than bad politicians; (ii) all politicians, regardless of ideology, choose higher levels of military expenditure when the country is in conflict; (iii) politicians favouring more hawkish foreign policies and less generous social assistance (right-wing politicians) choose a higher level of military expenditure (lower level of social expenditure), regardless of the military condition of the country.*

The election period. In the election period, good politicians always choose the budget composition that is most preferred by voters and thus provide the maximum possible level of social expenditure (as they do in the post-election period); that is, $g_2(\omega_P = \omega_H / I) = g_1(\omega_P = \omega_H / I)$. Bad politicians, on the other hand, follow the good politicians' strategy only when the benefits of doing this outweigh the costs. In this subsection, we will explore this issue by making a distinction between a peaceful economy and a country in conflict.

The peaceful economy. In the election period, a bad incumbent politician chooses the budget composition that corresponds to $g_1 = s$ only when:

$$U^I(g_1 = s / \omega_P = \omega_L) \geqslant U^I(g_1 = g^{**}(\pi^I) / \omega_P = \omega_L)$$

It can be shown (see Appendix A.3.1 for details) that this condition is satisfied when

$$\Delta H(g^{**}(\pi^I)) + (n(s - g^{**}(\pi^I))$$

$$\leq \beta \Delta \rho(s) \left[\underbrace{\left(\Delta H(g^{**}(\pi^I)) - \Delta H(g^{**}(\pi^C)) \right) + p \Delta H(g^{**}(\pi^C))}_{\text{rents from policy choices}} + \underbrace{n(s - g^{**}(\pi^I)) + X}_{\text{rents from political power}} + \Delta \Pi \right] \tag{7}$$

where $\Delta \rho(s) = \rho(s) - \rho(g^{**}(\pi^I))$ and $\rho(.)$ is the politician's expected probability of re-election from choosing a certain budget composition. The LHS of Eq. (7) represents the opportunity cost for the incumbent (with ideology π^I) of choosing $g_1 = s$ instead of $g_1 = g^{**}(\pi^I)$. It consists of two terms: the first term, $\Delta H(g^{**}(\pi^I))$, is the loss in utility resulting from his policy choices, given by

$$\Delta H(g^{**}(\pi^I)) = \omega_L \left(f(g^{**}(\pi^I)) - f(s) \right) + l(\pi^I) h(s - g^{**}(\pi^I)) \tag{8}$$

whereas the second term, $(n(s - g^{**}(\pi^I))$, is the loss in "status" associated with lower military spending. As shown in Eq. (8), $\Delta H(g^{**}(\pi^I))$ consists of two elements: (i) the value of voters' disutility from the implemented policy being far away for what they prefer; and, (ii) the loss to the incumbent from implementing a policy that does not reflect his ideological preferences (which increases when the politician is on the right of the political spectrum).

The RHS of Eq. (7) represents the future expected benefits for the incumbent (with ideology π^I) from choosing $g_1 = s$ instead of $g_1 = g^{**}(\pi^I)$. This is captured by the current value of the expected re-election rents multiplied by the expected increased probability of re-election, $\Delta \rho(s)$, when he chooses $g_1 = s$ instead of $g_1 = g^{**}(\pi^I)$. More precisely, the first term in brackets (on the RHS of Eq. (7)) is the gain to the incumbent from implementing his preferred policies in the post-election period, the second term represents the rents of holding office, and the third term, $\Delta \Pi$, is the change in utility reflecting the incumbent's preferred ideology. Specifically, $\Delta \Pi$ is written as

$$\Delta \Pi = \omega_L \left[\sum_{i=1}^{N} \frac{(\pi^i - \pi^C)^2}{N} - \sum_{i=1}^{N} \frac{(\pi^i - \pi^I)^2}{N} \right] + (\pi^I - \pi^C)^2$$

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[11] Assume that ω_L is low enough such that: $\omega_L f'(s) < l(\pi^I) h'(0) + n'(0)$. This ensures that the bad politician does not want to allocate all sources to social expenditure.

[12] Assume that the larger the value of π^I, the more to the right the politician is.

that is, the sum of: (i) the gain (loss) to the incumbent from the implemented ideological policy being close (far) from that of voters; and, (ii) the incumbent's own utility gain from having the implemented policy representing his ideological position rather than that of his opponent.

The electoral tradeoff between "butter" and "guns" is clearly reflected in Eq. (7). If the incumbent politician provides butter to voters in the election period, he will lose the rents associated with choosing a higher level of guns, but he will increase the probability of being re-elected in the next period. This, in turn, will allow him to obtain certain gains: one associated with holding office (entering both the opportunity cost today and the future expected benefits) and one associated with partisanship (included in the ΔH term).

To sum up, in the election period, a bad politician plays the following strategy:

$$g_1(\omega_P = \omega_L/I) = \begin{cases} s & \begin{array}{c} \text{if (7) holds} \\ \text{with strict inequality} \end{array} \\ \begin{array}{c} s \text{ with probability} \\ q \in [0, 1] \end{array} & \text{if (7) holds} \\ 0 & \text{otherwise} \end{cases}$$

The economy in conflict. When the economy is in conflict, the strategy for each type of politician changes slightly, replacing $g_1 = s$ by $g_1 = g^*$ and $g^{**}(\pi^I)$ by $g^{***}(\pi^I)$.[13] Since $s > g^* > g^{**}(\pi^I) > g^{***}(\pi^I)$, we cannot say with certainty whether the variation in military expenditure between the election period and the post-election period depends on the military condition of the country. Under restrictive assumptions, however, it can be shown that the electoral reduction in military spending is indeed smaller when the economy is in conflict than when the economy is in peace. The following proposition focuses on this result.

Proposition 2. *If the economy is in conflict and $\omega_L \to 0$, then military expenditure is subject to less electoral manipulation.*

Proof. Notice that $g^{***}(\pi^I)$ is obtained from the following condition:

$$\omega_L f'(g^{***}(\pi^I)) = \omega_L b'(s - g^{***}(\pi^I)) + l(\pi^I)h'(s - g^{***}(\pi^I)) + n'(s - g^{***}(\pi^I))$$

Also note that, as $\omega_L \to 0$, $g^{***}(\pi^I) = g^{**}(\pi^I) = 0$. Consequently, under a conflict environment, the bad politician will choose $g_1 = g^*$ with probability q, while under a peaceful environment, he will choose $g_1 = s$ with the same probability. Since $s > g^*$ and in period 2 both $g^{***}(\pi^I)$ and $g^{**}(\pi^I)$ collapse to zero, the result follows. □

3.4. Voting behaviour

The voter i votes for the incumbent if he expects to receive higher utility in $t = 2$ under the incumbent than under the challenger; that is, when the following condition holds:

$$E[U(g_2/I, g_1)] - \left(\pi^i - \pi^I\right)^2 \geqslant E[U(g_2/C)] - \left(\pi^i - \pi^C\right)^2 \tag{9}$$

In period 1 the voter does not observe how much the incumbent or the challenger care about him. To infer the challenger's type, he can only use information about the (ex-ante) distribution of ω_P. On the other hand, to infer the incumbent's type, he can also use the information provided by the realised value g_1. We assume that the voter uses the Bayes' rule to obtain $\Pr(\omega_P = \omega_H/g_1)$. Note that $\Pr(g_1 = g^{**}(\pi^I)/\omega_P = \omega_H) = 0$, and thus, $\Pr(g_1 = s/\omega_P = \omega_H) = 1$ ($g_1 = g^{***}(\pi^I)$ and $g_1 = g^*$, respectively, under conflict).[14] Applying the Bayes' rule (see Appendix A.3.3 for details), we have that[15]

$$\Pr(\omega_P = \omega_H/g_1 = s) = \frac{p}{p + (1-p)q} \tag{10}$$

Using previous information, Eq. (9) can be written as

$$\Delta p(g_1)\left[f(\tilde{g}_2) - f(g_2(\pi^I)) + W\left[b(s - \tilde{g}_2) - b\left(s - g_2(\pi^I)\right)\right]\right] > \left(\pi^i - \pi^I\right)^2 - \left(\pi^i - \pi^C\right)^2 \tag{11}$$

where $\tilde{g}_2 \in \{s, g^*\}$ and $g_2(\pi^I) \in \{g^*(\pi^I), g^{**}(\pi^I)\}$ depending on whether the economy is in conflict, and, $\Delta p(g_1) = p(g_1) - p$ reflects how voters change their beliefs about the type of the incumbent when they observe g_1. The LHS of Eq. (11) represents the expected gain (loss) in utility from public good consumption if the incumbent is re-elected, while the RHS represents the cost (benefits) in terms of ideology if the re-election occurs. The RHS will be positive when the voter's ideology is further away from that of the incumbent than from that of the challenger.

Note that the sign of this inequality depends on the ideology of the voter and the spending decisions of politicians. For simplicity, we assume that there exist three types of voters based on ideological preferences: the incumbent's core voters ($\hat{\pi}^I$), the challenger's core voters ($\hat{\pi}^C$) and the swing voters ($\hat{\pi}^M$), who are ideologically in the middle of the two candidates. The first two types always vote for their preferred candidate, regardless of his spending choices in period 1. The

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[13] The expression for Eq. (7) also changes (see Appendix A.3.2 for details).
[14] Note that a good politician will never choose $g_1 = g^{**}(\pi^I)$ ($g_1 = g^{***}(\pi^I)$ under conflict).
[15] When the economy is in conflict, we have that: $\Pr(\omega_P = \omega_H/g_1 = g^*) = \frac{p}{p+(1-p)q}$.

swing voters, on the other hand, vote on the basis of the policy actions taken by the incumbent in period 1 ($\hat{\pi}^M = \frac{\hat{\pi}^I + \hat{\pi}^C}{2}$). Consequently, the behaviour of voters can be summarised in the following proposition.

Proposition 3. *(Voting strategies). In an election period, the optimal voting strategy of an individual i with ideology $j = \{I, M, C\}$ is given by: (i) if $\pi^i = \hat{\pi}^I$, then he votes for the incumbent with probability 1; (ii) if $\pi^i = \hat{\pi}^C$, then he votes for the challenger with probability 1; (iii) if $\pi^i = \hat{\pi}^M$, then he votes the incumbent with probability $r(g_1)$, where*

$$r(g_1) = \begin{cases} 1 & \text{if } p(g_1) > p \\ r \in [0,1] & \text{if } p(g_1) \geqslant p \\ 0 & otherwise \end{cases}$$

Consider for simplicity that the proportion of voters with an ideology j is given by ϕ^j. Let us assume that $\{\phi^I, \phi^C\}$ are less than half, otherwise electoral cycles cannot emerge (politicians' choices have no effect on voting behaviour). Let us also assume that the winner is chosen by simple majority rule. If $p(g_1) < p$, the challenger obtains a proportion $\phi^C + \phi^M$ of the votes, and since $\phi^I < 1/2$ and abstention is not allowed,[16] the challenger wins the elections. If $p(g_1) > p$, the incumbent obtains a proportion $\phi^I + \phi^M$ of the votes, and since $\phi^C < 1/2$, the incumbent will get re-elected. Finally, in case $p(g_1) = p$, the incumbent will obtain $\phi^I + r\phi^M$ and get re-elected if $\phi^I + r\phi^M \geqslant 1/2$. To sum up, the incumbent will remain in office when $p(g_1) \geq p$, provided that, in case of equality, there is a sufficiently large number of swing voters ($r \geqslant \frac{1/2 - \phi^I}{\phi^M}$). This has an important implication: a bad politician who decides to stick to his most preferred spending choices will never win the elections.

3.5. Politico-economic equilibria

We can now characterise the possible politico-economic equilibria and study the properties of these equilibria. A Perfect Bayesian Equilibrium is a vector of strategies and a set of beliefs for politicians and voters such that: (i) the incumbent's strategy is optimal given his beliefs and the strategy of voters; (ii) voters' behaviour is optimal given their own beliefs and the strategy of politicians; and (iii) politicians' and voters' beliefs are consistent with the implied outcomes. In this section, we will focus on a peaceful economy. Similar equilibria, however, can be obtained when the economy is in conflict (see Appendix A.3.4 for details).

We can make a distinction between three cases depending on whether condition (7) holds. Note that, for all three cases, $\Delta \rho(s) = 1$, as this constitutes an equilibrium set of beliefs for politicians.

Case 1: If condition (7) holds with strict inequality, the incumbent will choose to play $g_1 = s$ with probability 1, and the swing voters will set $p(g_1 = s) = p$ and zero otherwise. Hence, the swing voters will vote for the incumbent with probability $r \geqslant \frac{1/2 - \phi^I}{\phi^M}$[17] and the incumbent will get re-elected with probability 1 provided that he plays $g_1 = s$.[18] In this case we have a pooling equilibrium since both good and bad politicians are playing the same set of strategies.

Case 2: If condition (7) holds with strict equality, the incumbent will choose to play $g_1 = s$ with probability q, and the swing voters will set $p_1(g_1 = s) \geqslant p$ and zero otherwise. The incumbent will thus get re-elected with probability 1 provided that he plays $g_1 = s$.[19] In this case we have a mixed equilibrium.

Case 3: If condition (7) does not hold (LHS of (7) > RHS of (7)), the incumbent will choose to play $g^{**}(\pi^I)$, and the swing voters will set $p(g_1 = s) = 1$ and zero otherwise. Hence, the swing voters will vote for the challenger with probability 1, resulting in the incumbent losing the elections. In this case we have a separating equilibrium since good and bad politicians are playing different strategies in the election period.

3.6. Theoretical predictions

The discussion in the previous section generates the first prediction of our model

Prediction 1. A tradeoff between "butter" and "guns" can serve as a political-electoral tool. During election periods, politicians shift the composition of public spending towards social expenditure and away from military expenditure to improve their re-election prospects.

Proposition 4. *The incumbent politician's ideological positions influence his spending choices. When the incumbent favours austere welfare policies and hawkish foreign policies, the average level of military expenditure (social expenditure) is larger (smaller).*

Proof. In the election period the incumbent chooses either $g_1 = s$ ($g_1 = g^*$ when the country is in conflict) with probability q or his most preferred level. In the post-election period, he always chooses his most preferred level. Consequently, the

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[16] The results hold when there is abstention, but this is equally distributed across ideologies.

[17] If $r < \frac{1/2 - \phi^I}{\phi^M}$, then the incumbent anticipates that he will not get re-elected and chooses to deviate.

[18] Note that $\Delta \rho(s) = 1$ is consistent with the equilibrium since $\rho(s) = 1$ and $\rho(g_1^{**}(\pi^I)) = 0$.

[19] If $q = 1$, then $p(g_1 = s) = p$ and the incumbent will get re-elected provided that $r \geqslant \frac{1/2 - \phi^I}{\phi^M}$ (which is the pure strategy equilibrium defined above).

average level of military (social) expenditure is larger under an incumbent who favours increased allocations to "guns" ("butter"). □

This proposition summarises the second prediction of our model

Prediction 2. Social expenditure are higher during left administrations, whereas military expenditure are higher during right administrations.

Proposition 5. *When the economy is in conflict the average level of military expenditure is larger.*

Proof. When the economy is in conflict, the incumbent's choice in the election period is $g_1 = g^*$ with probability q, regardless of his ideology or type. When the economy is in peace, his choice in the election period is $g_1 = s$ with the same probability. Since $s > g^*$ and the post-election level of military expenditure is always larger under a conflict environment (see Proposition 1(ii)), the result follows. □

Proposition 5, together with Proposition 2, lead to the third prediction of our model

Prediction 3. When the country is in conflict: (i) the average level of military expenditure is larger; (ii) military spending (and thus the budget composition) is subject to less electoral manipulation. The latter does not prevent the occurrence of partisan cycles: under a conflict environment, politicians of both ideologies engage in smaller electoral defence cutbacks.

We now proceed to test these three predictions. In the next sections, we first describe the key features of the data on social and military expenditure and then specify the empirical model for carrying out the tests.

4. Data on social and military expenditure

We consider yearly data on social and military expenditure, as a share of GDP, for 22 OECD countries (see Table A.1). Data on social expenditure are obtained from the OECD Social Expenditure Database (SOCX) for the period 1981-2009. SOCX includes social spending flows controlled by the general government that can be attributed to an individual beneficiary; hence excludes pure public goods like national defence. The database groups social expenditure into nine policy areas depending on their social purpose,[20] with old age, health and family expenditure being the largest spending items. Panel (a) of Fig. 1 illustrates that, on average, public social spending-to-GDP ratios increased most significantly in the early 1990s and, again, at the end of the 2000s. In between these decennial turning points spending-to-GDP ratios changed little; during the 1980s the average public social spending-to-GDP ratio oscillated around 19%, while after the economic downturn in the early 1990s it oscillated around 22% (see also Adema et al., 2012).

Data on military expenditure are taken from the Stockholm International Peace Research Institute (SIPRI), which is considered to be the most reliable data source on aggregated military expenditure from 1988 onwards. We do not explore military spending prior to 1988 since the alternative source which covers this period - the Correlates of War (COW) Database - is notoriously less accurate (Bove and Brauner, 2015). Moreover, combining the two sources is problematic in terms of comparability because the exact definition of what comprises military spending varies over time and across countries, and these variations are not captured in the same way by the two sources.[21] Panel (b) of Fig. 1 shows that, since the end of the Cold War, the average military spending-to-GDP ratio has been steadily declining: from 2.4% in 1988 to 1.7% in 2009. This is primarily a consequence of the demise of the Soviet threat. In addition, during the last decade, most European countries have been imposing austerity measures to reduce their budget deficits, with heavy cuts in military expenditure. It must be stressed that 14 out of the 22 sampled OECD countries are members of the NATO military alliance, and thus, contribute to NATO's commonly funded budgets.[22] In addition, they support NATO by maintaining forces and assets that they pledge to NATO through a defence planning process (Johnson and Thomas, 1999). As shown in panel (c) of Fig. 1, the average military spending-to-GDP ratio in NATO countries is between 0.7 and 1.2 percentage points higher than in non-NATO countries.

5. Empirical model specification

To test the predictions of Section 3.6, we employ an empirical specification that builds on the work of Potrafke (2009) and Efthyvoulou (2012) in the selection and transformation of variables, and takes the following form:

$$\Delta \ln Y_{it} = \alpha \Delta \ln Y_{it-1} + \beta \mathbf{X}_{it} + \gamma \mathbf{Z}_{it} + \delta \text{'Election'}_{it} + \vartheta \text{'Ideology'}_{it} + \mu_i + \lambda_t + \varepsilon_{it} \qquad (\text{M.1})$$

where $\Delta \ln Y_{it}$ is the growth rate of Y_{it} in country i and year t, $Y_{it} \in \{\text{'TSE', 'TME'}\}$ is the share of social or military expenditure to GDP (or the ratio of military-to-social expenditure), $\mathbf{X}_{it}$ is a vector of expenditure-specific control variables, $\mathbf{Z}_{it}$ is a vector of variables capturing economic and politico-institutional constraints; 'Election'$_{it}$ and 'Ideology'$_{it}$ are indicators coding the

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[20] These areas are: old-age, survivors, incapacity-related benefits, health, family, active labour market policies, unemployment, housing, and other social policy areas.

[21] Bove and Brauner (2015) find major inconsistencies between SIPRI and COW and emphasise the difficulties in extending the SIPRI data backwards in time.

[22] NATO alliance members are asked to spend on their militaries a minimum of 2% of GDP; yet, very often members do not meet this target.

(a) Social expenditure

(b) Military expenditure
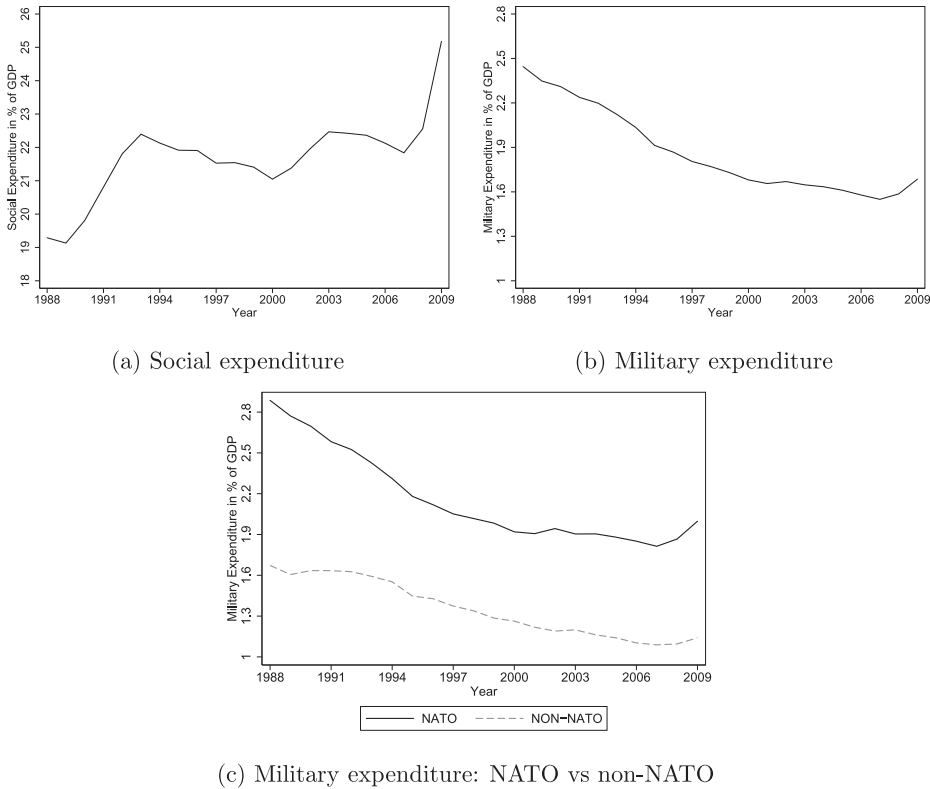

(c) Military expenditure: NATO vs non-NATO

Fig. 1. Social and military expenditure in % of GDP: cross-country averages.

timing of elections and the government's political orientation (with higher values indicating more left-wing governments), respectively; μ_i and λ_t represent country-specific effects and year-specific effects, respectively; ε_{it} is an *i.i.d.* error term.

The existence of a butter-vs-guns tradeoff at election timing (Prediction 1) is confirmed when the coefficient on 'Election'$_{it}$ is positive in the social expenditure equation and negative in the military expenditure equation. Since this tradeoff is more appealing to voters (and thus military spending is subject to more electoral manipulation) when a country is in peace (Prediction 3), we expect the coefficient on 'Election'$_{it}$ in the military expenditure equation to be larger in absolute value when we exclude the countries involved in conflicts. Finally, to verify the existence of partisan effects in the two types of expenditure of the opposite direction (Prediction 2), the coefficient on 'Ideology'$_{it}$ must have a positive sign in the social expenditure equation and negative in the military expenditure equation.

Vector $\mathbf{X}_{it}$ in the social expenditure equation contains the following commonly used control variables: the growth rate of real GDP per capita ($\Delta\ln$ 'GDP per capita') to capture changes in economic development; the growth rate of the unemployment rate ($\Delta\ln$ 'Unemployment') to capture the influence of the domestic business cycle; and, the growth rate of the dependency ratio ($\Delta\ln$ 'Dependency Ratio') - measured by the ratio of people younger than 15 or older than 64 to the working age population - to capture social support requirements resulting from changes in population age structures. On the other hand, vector $\mathbf{X}_{it}$ in the military expenditure equation contains the following measures of conflict involvement and security threats: the growth rate of the size of armed forces as a percentage of the labour force ($\Delta\ln$ 'Armed Forces'); the growth rate of potential and actual enemies' military expenditure ($\Delta\ln$ 'Rivals'); a 0-1 dummy variable capturing the abolition of the draft and the shift to an all-volunteer force ('Volunteers'); a 0-1 dummy variable capturing external military operations and wars[23] ('Wars'); and, a 0-1 dummy variable coding NATO membership and allowing for the effects of alliance spill-ins ('NATO'). Finally, vector $\mathbf{X}_{it}$ in the military-to-social expenditure equation includes all the aforementioned control variables.

As pointed out in Section 2, globalization may cause a convergence around market-friendly policies. In addition, separation of powers can work as a commitment device and moderate politically-driven fiscal policy manipulations (Saporiti and Streb, 2008). To control for such constraints, we include in vector $\mathbf{Z}_{it}$ two variables: the growth rate of the KOF index of economic globalization ($\Delta\ln$ 'Globalization') and the POLCON index of political constraints ('Political Constraints'). The KOF

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[23] This variable takes value 1 during year t and year $t + 1$ of external military operations (for example, ISAF in Afghanistan, UN missions) and/or intra-state and inter-state wars. The Correlates of War data set defines war as sustained combat, involving organised armed forces, resulting in a minimum of 1,000 battle-related deaths. Intra-state (civil) wars refer to those that predominantly take place within the recognised territory of a state, whereas inter-state wars to those that take place between states.

index of economic globalization embraces the economic dimension of globalization and is constructed using data on actual flows and restrictions. On the other hand, the POLCON index of political constraints includes information on veto players, and thus, measures the degree of institutional constraints on the executive branch of the government.

The electoral variable 'Election'$_{it}$ codes the year the executive is elected. In other words, it equals 1 in the years of legislative elections in parliamentary countries and in the years of presidential elections in presidential countries, and 0 in all other years. The partisan variable 'Ideology'$_{it}$ is the Potrafke (2009)'s government ideology index, which places the cabinet on a left-right scale with values between 1 and 5. Specifically, it takes the following values: 1 if the share of governing right-wing parties in terms of the seats in the cabinet and in parliament is larger than 2/3; 2 if it is between 1/3 and 2/3; and, 3 if the share of centrist parties is 50% or if the left-wing and right-wing parties form a coalition government that is not dominated by one side or the other. The index is symmetric and takes the values 4 and 5 if left-wing parties dominate. Following Potrafke (2009; 2012), we normalise this variable (mean zero, variance one) so that we can directly interpret the coefficients and marginal effects across the specifications. Table A.1 reports the number of elections in the sample, whereas Table A.2 reports descriptive statistics and data sources for all the aforementioned variables.

Eq. (M.1) is a standard panel data specification, in which all continuous variables are in growth rates. Taking growth rates offers two advantages: first, it avoids problems of spurious inference when the time-series are non-stationary in levels;[24] second, it eliminates time-invariant, country-specific effects in levels. On the other hand, using growth rates does not control for potential country-specific time trends in levels, and thus, it is sensible to estimate Eq. (M.1) using either the fixed effects or the random effects estimator. A Hausman test indicates that the model with random effects is preferable to fixed effects for all equations, which is consistent with the fact that our sampled countries are drawn from a larger population of OECD countries. Hence, we adopt the random effects (RE) estimator[25] and use heteroscedasticity and autocorrelation consistent standard errors to calculate the corresponding test statistics. In addition, in order to account for the possibility of contemporaneous correlation across countries, we present the results of regressions with panel-corrected standard errors (PCSE) according to Beck and Katz (1996), assuming a panel-specific first-order autocorrelation structure. An econometric problem that arises here is that the growth rates of public expenditure may exhibit persistence over time, and thus static model estimates will suffer from omitted variable bias. Tests of statistical significance reveal that, while the estimate of parameter α fails to reach statistical significance in the equations of military expenditure and military-to-social expenditure, it is highly significant in the equation of social expenditure. This suggests that social expenditure should preferably be modelled with a dynamic structure. In accordance with the large sample properties of the GMM methods, the well-known first-differencing and system-GMM estimators are biased in our case and small-sample bias-corrected estimators are more appropriate. Consequently, for the social expenditure equation, we also consider the bias-corrected least-squares dummy variable (LSDV) estimator developed by Bruno (2005) and designed for dynamic panel data models with small N.[26]

6. Empirical findings

6.1. Basic results

We start by estimating the total social expenditure ('TSE') equation for the period 1981-2009 using a dynamic framework (see column (1) of Table 1). As a first point, we can notice that our proxies for economic development and business cycle fluctuations (namely, growth rates of per capita GDP and unemployment) display the expected sign and are highly statistically significant. Furthermore, our results indicate that a higher degree of economic globalization is associated with a retrenchment in social spending.[27] Turning now to our variables of interest, we find evidence confirming the predictions of our model: the coefficients on 'Election' and 'Ideology' have the expected positive sign and are statistically significant at conventional levels of significance. Qualitatively, the findings imply that the growth rate of social expenditure (as a share of

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[24] Indeed, panel unit root tests indicate that some of our variables are non-stationary in levels, but become stationary when transformed into first difference form.

[25] Note that, in presence of slowly changing variables, fixed effects soak up most of their explanatory power, and they "make it hard for such variables to appear either substantively or statistically significant" (Beck, 2001, p. 285). For a number of countries, the ideology variable changes only once during the sampled period, and, more generally, some countries can be characterised as 'more left-wing' (or 'more right-wing'), on average, compared to others. Thus, by using fixed effects, we fail to capture this variation across countries and lose important information. Despite random effects being our preferred method, we do test whether the inferences change when the model is estimated by fixed effects (see Section 6).

[26] We choose the Blundell and Bond (1998) estimator as the initial estimator in which the growth rates of GDP per capita and unemployment rates are treated as endogenous variables and the instruments are collapsed as suggested by Roodman (2006). Since the analytical variance estimator performs poorly for large coefficients of the lagged dependent variable (Bruno, 2005), we undertake 200 replications of the procedure to bootstrap the estimated standard errors. The results remain qualitatively the same when the Arellano and Bond (1991) and the Anderson and Hsiao (1982) are chosen as initial estimators or when we undertake different number of bootstrap replications, such as 50, 100 or 500. The preference of the RE estimator, the PCSE estimator and the bias-corrected LSDV in this context is also discussed in Potrafke (2009).

[27] Using the overall KOF index (instead of its economic subindex) results in a statistically insignificant coefficient, as in Potrafke (2009). This suggests that the social and political dimensions of globalization do not play an important role in explaining the dynamics of social spending in our sampled countries.

Table 1
Political cycles in social expenditure.

	Dependent variable: Δln Total Social Expenditure (Δln TSE), Δln Subcomponents of Social Expenditure (Δln SSE).							
	1981–2009		1988–2009					
	Bias-corrected LSDV		Bias-corrected LSDV		Random effects		Panel-corrected SE	
	Δln TSE (1)	Δln SSE (2)	Δln TSE (3)	Δln SSE (4)	Δln TSE (5)	Δln SSE (6)	Δln TSE (7)	Δln SSE (8)
Lagged Dependent	0.203***	0.146***	0.228***	0.233***				
	(5.56)	(3.91)	(5.30)	(5.14)				
Δln GDP per capita	-0.696***	-0.792***	-0.800***	-0.884***	-0.812***	-0.903***	-0.767***	-0.758***
	(6.95)	(7.76)	(7.93)	(7.44)	(6.34)	(4.79)	(7.47)	(6.94)
Δln Unemployment	0.038***	0.005	0.030***	0.006	0.048***	0.020	0.047***	0.025**
	(3.06)	(0.40)	(2.59)	(0.46)	(3.83)	(1.30)	(4.11)	(2.05)
Δln Globalization	-0.005***	-0.005***	-0.004**	-0.005***	-0.003	-0.004	-0.002	-0.003**
	(2.68)	(2.87)	(2.48)	(2.75)	(1.22)	(1.34)	(1.41)	(2.03)
Δln Dependency Ratio	0.211	0.281	0.064	0.311	-0.006	0.220	-0.122	0.351
	(1.10)	(1.44)	(0.26)	(1.04)	(0.02)	(0.54)	(0.48)	(1.13)
Political Constraints	-0.013	0.009	-0.013	0.004	-0.032	-0.026	-0.043***	-0.050***
	(0.45)	(0.30)	(0.41)	(0.12)	(1.27)	(1.02)	(4.39)	(4.34)
Election	0.007***	0.007***	0.009***	0.007**	0.008***	0.006**	0.008***	0.005**
	(2.84)	(2.74)	(2.92)	(2.01)	(5.13)	(2.38)	(3.48)	(2.19)
Ideology (Left-Wing)	0.003**	0.004***	0.002	0.005***	0.001	0.005**	0.001	0.004**
	(2.30)	(3.51)	(1.43)	(2.90)	(0.73)	(2.26)	(0.63)	(2.35)
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	598	598	460	460	460	460	460	460
Number of N	22	22	22	22	22	22	22	22
R^2-Overall					0.56	0.40	0.54	0.41

Columns report estimated coefficients (z-statistics). 'SSE' includes three categories of social expenditure: old age, family and incapacity-related benefits. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level, respectively.

GDP) increases by about 0.7 percentage points in election years,[28] and by about 0.3 percentage points when the ideology variable increases by one standard deviation.

Do left-wing governments generate higher welfare effort by targeting certain, more vulnerable social groups? To answer this question, we implement the same analysis for all possible combinations of the nine social policy areas, and we find that the impact of partisanship becomes stronger and statistically more robust when we focus on three categories of social expenditure, namely old age, family and incapacity-related benefits ('SSE'). As shown in column (2) of Table 1, once we allow the dependent variable to include only these programs, the coefficient on 'Ideology' becomes larger in absolute value and is now statistically significant at the 1% confidence level. On the other hand, the results on the electoral variable remain essentially the same as those obtained for the aggregated measure.

Columns (3) and (4) of Table 1 report the results when we estimate the same regression set-up for the shorter time period 1988-2009. This allows us to compare the findings on social expenditure with those on military expenditure - which are only available for the post-1987 period - and to investigate the persistence of the reported effects in a period characterised by deepened globalization. Overall, the results confirm the existence of a large election-year increase in the growth of both aggregated and disaggregated measures of social expenditure ('TSE' and 'SSE', respectively), but at the same time, indicate strong partisan shifts only in the latter. This, in turn, suggests that the discipline and compensation effects of globalization do not contradict each other and can actually co-exist. Welfare-enhancing preferences create incentives for leftist governments to increase social expenditure and compensate citizens for the risks of globalization. However, the discipline effect of globalization may restrict their capacity to produce partisan cycles in all social welfare programs and direct their effort towards certain categories. The reported effects largely persist when we consider a static framework (see columns (5)–(8)).

We continue by estimating the total[29] military expenditure ('TME') equation for the period 1988-2009 using RE. Looking at column (1) in Table 2, we can notice that economic development plays an important role in explaining the dynamics of military spending. Furthermore, we find positive and significant growth effects arising from the proportion of the labour force in armed forces and the level of rivals' military spending, consistent with the traditional external action-reaction explanation of military expenditure. The variable 'Wars' also exerts a positive influence on the dependent variable. Concerning our variables of interest, we can see that the coefficient on 'Ideology' is negative and statistically significant, indicating that the more to the left a government is, the less will spend on the military (consistent with our theoretical predictions).

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[28] We have also controlled for governments' behaviour in the year prior to elections. The pre-election variable appears to be statistically insignificant when added to the model, implying that politicians engage in social spending increases only in election years.

[29] Data on components of military expenditure are not currently available for all sampled countries/years to undertake a similar econometric analysis at the disaggregated level.

Table 2

Political cycles in military expenditure (1988-2009).

Dependent variable: $\Delta\ln$ Total Military Expenditure ($\Delta\ln$ TME); Method: random-effects						
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\ln$ GDP per capita	-0.573***	-0.561***	-0.564***	-0.497***	-0.585***	-0.666***
	(3.53)	(3.48)	(3.43)	(2.89)	(3.48)	(3.77)
$\Delta\ln$ Globalization	0.001	0.001	0.001	0.001	0.001	0.001
	(0.01)	(0.29)	(0.24)	(0.32)	(0.46)	(0.22)
$\Delta\ln$ Armed Forces	0.022***	0.021**	0.022**	0.022**		0.019**
	(2.62)	(2.51)	(2.46)	(2.47)		(2.47)
$\Delta\ln$ Rivals	0.126***	0.121***	0.134***	0.138***		0.115**
	(3.03)	(3.00)	(2.96)	(3.14)		(2.47)
Volunteers	0.002	0.002	0.002	0.001	0.000	0.017**
	(0.23)	(0.28)	(0.23)	(0.17)	(0.07)	(2.24)
Wars	0.017***	0.018***	0.017***	0.017***	0.015**	0.009
	(3.01)	(3.18)	(2.92)	(3.01)	(2.50)	(0.93)
Political Constraints	-0.023	-0.022	-0.024	-0.020	-0.021	-0.074
	(0.82)	(0.80)	(0.84)	(0.74)	(0.70)	(1.68)
NATO	-0.003	-0.010	-0.004	-0.003	-0.006	-0.005
	(0.58)	(1.39)	(0.65)	(0.49)	(0.82)	(0.65)
Election	0.001					
	(0.14)					
Election $*$ NATO[1]		0.010				
		(1.23)				
Pre-Election $*$ NATO[1]			-0.011**	-0.012**	-0.010**	-0.016**
			(2.42)	(2.48)	(2.12)	(2.20)
Election $*$ NATO[0]		-0.014***	-0.014***	-0.014**	-0.014***	-0.014**
		(2.62)	(2.59)	(2.51)	(2.71)	(2.34)
Ideology (Left-Wing)	-0.004*	-0.004*	-0.004*	-0.004*	-0.004*	-0.004
	(1.69)	(1.74)	(1.68)	(1.71)	(1.82)	(1.49)
$\Delta\ln$ Unemployment				0.021		
				(1.36)		
$\Delta\ln$ Dependency Ratio				-0.134		
				(0.60)		
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	462	462	462	462	462	336
Number of N	22	22	22	22	22	16
R^2	0.22	0.23	0.23	0.24	0.22	0.23
Dependent variable: $\Delta\ln$ Total Military Expenditure ($\Delta\ln$ TME); Method: panel-corrected SE						
Pre-Election $*$ NATO[1]			-0.012**	-0.012**	-0.010**	-0.019**
			(2.01)	(2.08)	(1.79)	(2.01)
Election $*$ NATO[0]		-0.014**	-0.014**	-0.014**	-0.014**	-0.014*
		(2.06)	(2.03)	(2.10)	(2.07)	(1.88)
Ideology (Left-Wing)	-0.004*	-0.004*	-0.004*	-0.004*	-0.004*	-0.006*
	(1.80)	(1.78)	(1.73)	(1.70)	(1.69)	(1.67)

Columns report estimated coefficients (z-statistics). Column (6) excludes the following countries: Canada, France, Italy, Spain, the United Kingdom and the United States. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level, respectively. For brevity and comparability, the table displays the results of regressions with PCSE only for the variables of interest.

Specifically, the estimate suggests that the growth rate of military expenditure (as a share of GDP) decreases by about 0.4 percentage points when the ideology variable increases by one standard deviation. Finally, the results in column (1) provide no evidence of electoral impacts in military spending.

As noted in Section 4, nearly two-third of our sampled countries are members of NATO, and as such, they need to provide sufficient funds for modernising and restructuring their defence forces to meet NATO's requirements. This may suggest that politicians' abilities to manipulate military spending for electoral gains are, to some extent, conditioned by NATO membership. To test this hypothesis, we replace the electoral variable by the interaction terms 'Election$*$NATO[1]' and 'Election$*$NATO[0]' (coding elections in NATO and non-NATO members, respectively) and run the same regression as before. As shown in column (2) of Table 2, the coefficient on 'Election$*$NATO[0]' is negative and highly statistically significant. A possible explanation for the failure to find electoral shifts in NATO countries is that the necessary defence cutbacks in NATO members are actually made in the year preceding the election. NATO members are less reliant on soldiers and more on capital (Bove and Cavatorta, 2012), and spending on physical inputs is more rigid and takes longer to adjust for electoral purposes compared to spending on military personnel, whose timing is easier to fine tune. We thus experiment with both pre-election and on-election year cycles and find evidence in line with the above explanation: defence spending grows in smaller than normal proportions during the election year or the year prior to an election depending on whether the

country is a member of the NATO alliance[30] (see column (3)). Qualitatively, the findings suggest that the election-induced decrease in the growth rate of military spending (as a share of GDP) is 1.1 percentage points in NATO countries (in the pre-electoral year) and 1.4 percentage points in non-NATO countries (in the electoral year). The reported results are invariant to tests of robustness, such as, including among the explanatory variables the growth rates of the unemployment rate and the dependency ratio (see column (4)), and excluding from the model the variables $\Delta\ln$ 'Armed Forces' and $\Delta\ln$ 'Rivals' which may be endogenous relative to the dependent variable (see column (5)).

The findings of the previous five paragraphs provide robust evidence that supports the predictions of our theoretical model (Section 3.6). Specifically, the opposite sign of the electoral variable in the equations of social and military spending indicate the existence of a butter-vs-guns tradeoff at election timing: increased allocations to "butter" during elections come partly at the expense of "guns" (Prediction 1). Similarly, the opposite sign of the ideology variable in the two equations implies that partisanship plays a different role for the two types of expenditure: left-wing governments favour increased allocations to "butter", while right-wing governments favour increased allocations to "guns" (Prediction 2). At the same time, our results point to the complexity of electoral and partisan effects, as outlined by the literature on context-conditional political cycles (Franzese, 2002). More precisely, the timing of electoral defence reductions is different across different country groups (NATO vs non-NATO members), while the size and significance of partisan shifts in welfare spending become stronger when we focus on certain social policy areas.

According to the last prediction of our theoretical model (Prediction 3), the timing of elections has a weaker influence on military spending when a country is involved in conflicts. This happens because, in such economies, voters assign a relatively higher value to military spending due to security considerations, and hence, policymakers do not have the same capacity to gain votes by engaging in pre-electoral tradeoffs between "butter" and "guns". We thus continue our analysis by excluding the 6 countries with the highest frequency of external military operations and conflicts (as indicated by the variable 'Wars'), namely Canada, France, Italy, Spain, the United Kingdom and the United States. The results presented in column (6) of Table 2 support the aforementioned prediction. Specifically, when we focus on the remaining 16 countries, the coefficient on 'Pre-Election $*$ NATO[1]' becomes larger in absolute value and retains its statistical significance, suggesting that the electoral-induced military cutbacks in the 6 excluded NATO countries are, on average, smaller. Our results persist when we estimate the same regression package using PCSE (see lower part of Table 2).

Finally, we run the regressions of Table 2 using the growth rate of military-to-social expenditure ('TME'/'TSE') as dependent variable, taking the timing of effects into account. As shown in Table 3a, the estimates on the political variables support, once again, our theoretical predictions: governments sacrifice military spending around elections to enable vote-seeking increases in social spending, especially in countries with no conflicts, and decide how to allocate national resources to the two goods based on their ideological preferences. As expected, the results on the ratio of military-to-social expenditure (which can more adequately capture the tradeoffs between "butter" and "guns") are economically and statistically more significant than those reported in the previous tables. Similar results are obtained when we re-define the dependent variable as the growth rate of military spending to the disaggregated measure of social spending ('TME'/'SSE') - see lower part of Table 3a. The partisan effects on the latter variable are much more pronounced, since the three social programs included in 'SSE' are more influenced by government ideology. Finally, estimating the same regression set-up using fixed (country) effects and adding the lagged dependent variable does not change the inferences on the electoral and partisan variables (see Table 3b).

6.2. Robustness Checks

We test the robustness of our findings in several ways. First, we check whether the reported effects depend on country-level idiosyncratic characteristics. Persson and Tabellini (2002; 2003) and Albalate et al. (2012) argue that the nature of political system may affect fiscal policy maneuverability around elections. More precisely, they suggest that fewer vetoes and more stable conditions in parliamentary regimes (compared to presidential regimes) and greater demand/preference for broad-based fiscal instruments in proportional systems (compared to majoritarian systems) can induce more waste, rent opportunities and re-distribution in favour of the majority and lead to higher electoral cycles in broad-based programs. Similarly, one can argue that the design of fiscal relation across the levels of government can play an important role: high degree of fiscal decentralization may induce opportunistic politicians to focus more on local public goods and generate electoral cycles in geographically targeted programs during local (rather than central) government elections. Following this discussion, we re-estimate the regression specification of column (4) in Table 3a after excluding the countries with presidential regimes, those with majoritarian elections, and those with the highest level of fiscal decentralization (as reported in the 2009 OECD National Accounts Statistics). Estimates based on the restricted sub-samples of countries are similar to the baseline estimates and the key findings presented in the previous section do not change (see columns (1)–(3) of Table 4). Notice that the relatively larger electoral effects in columns (2) and (3) are mostly driven by the fact that some of the excluded countries have high frequency of conflicts and thus less pronounced electoral military cycles. Indeed, when we carry out the same robustness tests for the social expenditure equation, the electoral effects are remarkably consistent with

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[30] We have also augmented the regression model with dummy variables coding both electoral and pre-electoral years for the two country groups, and performed equality tests on the estimated parameters. The results of these tests confirm the reported findings.

Table 3a

Political cycles in military-to-social expenditure ratio (1988-2009).

Dependent variable: △ln ('TME'/'TSE'); Method: random-effects						
	(1)	(2)	(3)	(4)	(5)	(6)
△ln GDP per capita	0.232	0.244	0.237	0.010	0.210	0.168
	(1.08)	(1.16)	(1.11)	(0.04)	(0.93)	(0.67)
△ln Globalization	0.001	0.002	0.002	0.001	0.002	0.001
	(0.38)	(0.59)	(0.59)	(0.45)	(0.66)	(0.15)
△ln Armed Forces	0.020**	0.019**	0.020**	0.022**		0.018**
	(2.09)	(2.02)	(2.01)	(2.09)		(2.22)
△ln Rivals	0.164*	0.158*	0.175*	0.175*		0.182
	(1.72)	(1.67)	(1.71)	(1.97)		(1.36)
Volunteers	0.001	0.001	0.001	0.001	0.001	0.028***
	(0.12)	(0.07)	(0.12)	(0.16)	(0.32)	(2.98)
Wars	0.021***	0.021***	0.020***	0.018***	0.018**	0.011
	(3.66)	(3.82)	(3.61)	(2.91)	(3.19)	(1.03)
Political Constraints	0.018	0.019	0.017	0.018	0.020	-0.053*
	(0.63)	(0.69)	(0.59)	(0.60)	(0.69)	(1.65)
NATO	-0.001	-0.009	-0.002	-0.002	-0.003	-0.009
	(0.28)	(1.25)	(0.27)	(0.38)	(0.53)	(1.08)
Election	0.007					
	(0.88)					
Election * NATO[1]		0.010				
		(1.23)				
Pre-Election * NATO[1]			-0.021***	-0.020***	-0.019***	-0.026**
			(3.19)	(3.18)	(3.00)	(2.76)
Election * NATO[0]		-0.020***	-0.020***	-0.019***	-0.020***	-0.020***
		(4.04)	(4.03)	(3.76)	(4.12)	(3.85)
Ideology (Left-Wing)	-0.005**	-0.005**	-0.004**	-0.005**	-0.005**	-0.004
	(2.03)	(2.05)	(1.98)	(2.03)	(2.21)	(1.34)
△ln Unemployment				-0.041**		
				(2.24)		
△ln Dependency Ratio				-0.332		
				(0.88)		
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	460	460	460	460	460	334
Number of N	22	22	22	22	22	16
R^2	0.17	0.17	0.19	0.19	0.17	0.16

Dependent variable: △ln ('TME'/'TSE'); Method: panel-corrected SE						
Pre-Election * NATO[1]			-0.022***	-0.022***	-0.021***	-0.029***
			(3.38)	(3.27)	(3.14)	(2.71)
Election * NATO[0]		-0.023***	-0.023***	-0.022***	-0.023***	-0.023***
		(2.96)	(2.92)	(2.84)	(2.90)	(2.91)
Ideology (Left-Wing)	-0.006**	-0.006**	-0.006**	-0.006**	-0.006**	-0.006*
	(2.30)	(2.28)	(2.17)	(2.18)	(2.14)	(1.61)

Dependent variable: △ln ('TME'/'SSE'); Method: random-effects						
Pre-Election * NATO[1]			-0.016**	-0.016**	-0.015**	-0.020**
			(2.35)	(2.39)	(2.20)	(2.17)
Election * NATO[0]		-0.020***	-0.020***	-0.019***	-0.020***	-0.019***
		(3.45)	(3.44)	(3.06)	(3.49)	(3.12)
Ideology (Left-Wing)	-0.008**	-0.007**	-0.007**	-0.007**	-0.008**	-0.009**
	(2.43)	(2.40)	(2.40)	(2.47)	(2.52)	(2.57)

See notes for Table 2. For brevity and comparability, the table displays the results of regressions with PCSE and the regressions on △ln ('TME'/'SSE') only for the variables of interest.

those in Table 1 (see Table A.3), suggesting that the nature of political system and fiscal decentralization have no significant impact on our findings.

We also experiment with an alternative election indicator that allows the electoral effects to differ depending on whether the election takes place very early in the year.[31] More precisely, we re-define the electoral variable to take value 1 in year t if an election takes place during the last 10 months of year t and the first 2 months of year $t + 1$, and 0 otherwise. As shown in column (4) of Table 4, the findings discussed in Section 6.1 are not much influenced by this exercise. Another concern with our results is that treating all elections as predetermined may bias our estimates of electoral cycles. As suggested by

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[31] According to our theoretical framework, when a large fraction of voters is undecided, high levels of social spending are recognised as being politically motivated, which creates a natural limit to governments' opportunistic behaviour (see also Drazen and Eslava, 2010). Thus, the shift towards social expenditure is expected to occur only in the immediate period before elections.

Table 3b
Political cycles in military-to-social expenditure ratio (1988-2009) (continued).

Dependent variable: Δln ('TME'/'TSE'); Method: fixed-effects						
Pre-Election * NATO[1]			-0.022***	-0.021***	-0.020***	-0.027**
			(3.35)	(3.40)	(3.14)	(2.90)
Election * NATO[0]		-0.020***	-0.020***	-0.019***	-0.021***	-0.020***
		(4.52)	(4.50)	(4.16)	(4.69)	(4.00)
Ideology (Left-Wing)	-0.006*	-0.006*	-0.005*	-0.005*	-0.005*	-0.005
	(2.07)	(2.05)	(2.01)	(2.07)	(1.98)	(1.37)

Dependent variable: Δln ('TME'/'SSE'); Method: fixed-effects						
Pre-Election * NATO[1]			-0.017**	-0.017**	-0.016**	-0.021**
			(2.55)	(2.62)	(2.37)	(2.32)
Election * NATO[0]		-0.020***	-0.020***	-0.019***	-0.020***	-0.020***
		(3.59)	(3.59)	(3.22)	(3.65)	(3.72)
Ideology (Left-Wing)	-0.009**	-0.008**	-0.008**	-0.008**	-0.008**	-0.010**
	(2.63)	(2.59)	(2.58)	(2.65)	(2.51)	(2.60)

Dependent variable: Δln ('TME'/'TSE'); Method: random-effects; including lagged dependent						
Pre-Election * NATO[1]			-0.020***	-0.020***	-0.018***	-0.024**
			(3.15)	(3.15)	(2.94)	(2.53)
Election * NATO[0]		-0.019***	-0.018***	-0.018***	-0.019***	-0.018***
		(3.64)	(3.62)	(3.36)	(3.83)	(3.16)
Ideology (Left-Wing)	-0.005**	-0.005*	-0.005**	-0.005**	-0.005**	-0.004
	(2.02)	(2.02)	(1.96)	(2.04)	(2.20)	(1.36)

Dependent variable: Δln ('TME'/'SSE'); Method: random-effects; including lagged dependent						
Pre-Election * NATO[1]			-0.015**	-0.016**	-0.014**	-0.018**
			(2.36)	(2.41)	(2.20)	(2.02)
Election * NATO[0]		-0.019***	-0.019***	-0.018***	-0.020***	-0.019***
		(3.28)	(3.28)	(2.83)	(3.38)	(3.08)
Ideology (Left-Wing)	-0.008**	-0.008**	-0.007**	-0.008**	-0.008**	-0.009**
	(2.39)	(2.35)	(2.36)	(2.44)	(2.48)	(2.52)

See notes for Table 2. For brevity and comparability, the table displays the results only for the variables of interest.

Rogoff (1990), incumbent governments may strategically choose the timing of elections depending on economic outcomes and call early elections when the economy is doing well. On the other hand, when the election is known well in advance, incumbent politicians have more time and greater opportunity to manipulate fiscal policy (Brender and Drazen, 2005). To address these issues, we consider a weighted electoral variable that takes the value 0.5 in the years of non-predetermined elections, as in Efthyvoulou (2012).[32] This does not change our baseline estimates either, suggesting that assigning the same weight to all elections does not lead to misleading inferences (see column (5) of Table 4). The results for the political variables remain also qualitatively the same when we leave the statistically insignificant control variables out of the model specification (see column (6)).

Finally, we conduct further tests of robustness, such as using the CHECKS index of the World Bank's DPI as an indicator of political constraints (instead of the POLCON index) and implementing the tests described in this section using fixed effects and adding the lagged dependent variable in the static specifications. Once again, the inferences on the political variables, as discussed in Section 6.1, do not change (results available upon request).

7. Conclusions

The existing literature on political compositional budget cycles has focused on the interactive relationship between current and capital expenditure, while the existing literature on the butter-vs-guns dilemma has mainly considered the economic implications of military spending. No prior studies, however, have attempted to explain the butter-vs-guns tradeoff within a political cycle setting: that is, how politicians use this tradeoff to gain votes or to curry partisan favour. The current paper presents a theoretical model and empirical evidence aiming at filling this gap. Our analysis produces three key results. First, incumbent politicians sacrifice military spending at elections times as a way to enable increases in social spending. Second, the degree to which governments engage in such tradeoffs is smaller for countries involved in conflicts, where national security plays an important role on voter choice. Finally, the spending allocation to the two public goods depends on the government's political orientation: parties of the left favour increased allocations to "butter", such as old age, family and incapacity-related benefits, whereas parties of the right favour increased allocations to "guns".

Our findings offer further insights on how incumbents manipulate public expenditure for political purposes and point to three aspects of contextual variation in the emerging cycles. First, patterns of electioneering are not symmetric across

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[32] We classify an election as predetermined if it is held either at the constitutionally determined election interval or within the expected year of the constitutionally fixed term. Among the 180 elections in our full sample (1981-2009), 151 are classified as predetermined.

Table 4

Political cycles in military-to-social expenditure ratio (1988-2009): robustness tests.

Dependent variable: Δln ('TME'/'TSE'); Method: random-effects	(1)	(2)	(3)	(4)	(5)	(6)
Δln GDP per capita	-0.050	-0.146	-0.043	0.002	0.012	
	(0.22)	(0.58)	(0.17)	(0.01	(0.05)	
Δln Globalization	0.001	0.001	0.04	0.001	0.001	
	(0.44)	(0.08)	(1.39)	(0.42)	(0.45)	
Δln Armed Forces	0.022**	0.022**	0.034	0.022**	0.22**	0.022**
	(2.06)	(2.17)	(1.29)	(2.10)	(2.12)	(2.21)
Δln Rivals	0.163*	0.158	0.169*	0.174*	0.172*	0.174*
	(1.90)	(1.56)	(1.91)	(1.94)	(1.96)	(1.82)
Volunteers	0.004	0.015	0.006	0.001	0.002	
	(0.45)	(1.55)	(0.81)	(0.13)	(0.22)	
Wars	0.020***	0.019***	0.012**	0.018***	0.018***	0.017***
	(3.11)	(2.99)	(2.29)	(2.92)	(2.87)	(3.55)
Political Constraints	0.014	-0.017	0.067*	0.018	0.017	
	(0.45)	(0.41)	(2.21)	(0.60)	(0.58)	
NATO	-0.004	-0.006	0.005	-0.002	-0.003	
	(0.57)	(0.79)	(0.75)	(0.26)	(0.44)	
Pre-Election * NATO[1]	-0.020***	-0.026***	-0.026***	-0.020***	-0.022***	-0.021***
	(3.00)	(3.66)	(3.76)	(3.48)	(3.83)	(3.57)
Election * NATO[0]	-0.019***	-0.019***	-0.015***	-0.017***	-0.021***	-0.017***
	(3.80)	(3.64)	(3.54)	(3.11)	(3.80)	(4.60)
Ideology (Left-Wing)	-0.004*	-0.004	-0.006**	-0.005**	-0.004**	-0.004*
	(1.71)	(1.43)	(2.30)	(2.02)	(1.99)	(1.93)
Δln Unemployment	-0.048***	-0.050***	-0.029*	-0.041**	-0.041**	-0.043**
	(2.96)	(3.16)	(1.80)	(2.27)	(2.21)	(2.39)
Δln Dependency Ratio	-0.292	-0.343	-0.625	-0.339	-0.312	
	(0.80)	(0.95)	(1.42)	(0.89)	(0.82)	
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	439	376	334	460	460	460
Number of N	21	18	16	22	22	22
R^2	0.19	0.17	0.20	0.19	0.19	0.19
Dependent variable: Δln ('TME'/'TSE'); Method: panel-corrected SE						
Pre-Election * NATO[1]	-0.022***	-0.028***	-0.030***	-0.022***	-0.023***	-0.014***
	(3.02)	(3.08)	(3.69)	(3.22)	(3.32)	(2.30)
Election * NATO[0]	-0.022***	-0.022***	-0.018**	-0.020**	-0.024***	-0.022***
	(2.79)	(2.70)	(2.11)	(2.44)	(2.82)	(3.03)
Ideology (Left-Wing)	-0.005**	-0.005*	-0.006**	-0.006**	-0.006**	-0.005*
	(2.05)	(1.80)	(1.98)	(2.15)	(2.12)	(1.77)
Dependent variable: Δln ('TME'/'SSE'); Method: random-effects						
Pre-Election * NATO[1]	-0.016**	-0.020***	-0.024***	-0.015**	-0.017***	-0.016**
	(2.21)	(2.66)	(3.29)	(2.27)	(2.82)	(2.57)
Election * NATO[0]	-0.019***	-0.019***	-0.012**	-0.018**	-0.022***	-0.019***
	(2.99)	(2.95)	(2.17)	(2.42)	(3.05)	(5.09)
Ideology (Left-Wing)	-0.006**	-0.009***	-0.009**	-0.007**	-0.007**	-0.007**
	(2.03)	(2.69)	(2.37)	(2.48)	(2.43)	(2.41)

Equation in column (1) excludes the countries with presidential regime: the United States. Equation in column (2) excludes the countries with majoritarian electoral system: Canada, France, the United Kingdom and the United States. Equation in column (3) excludes the six highest fiscally decentralised countries: Belgium, Canada, Finland, Germany, Spain and Switzerland. Equation in column (4) controls for the timing of elections within the year. Equation in column (5) assigns a smaller weight to non-predetermined elections. Equation in column (6) excludes the statistically insignificant control variables. For brevity and comparability, the table displays the results of regressions with PCSE and the regressions on Δln ('TME'/'SSE') only for the variables of interest.

different types of expenditure: politicians respond to voters' spending priorities and change the budget composition in a way that can purchase votes more effectively. Second, both dimensions of political ideology (determined by welfare policy preferences and foreign policy preferences) are influential in shaping the composition of public spending. Third, politicians' incentives and capacity to enact electoral and partisan policies are affected by external economic constraints, the conflict environment and strategic opportunities. These observations can explain why studies that focus on aggregate measures of public expenditure, employ the same empirical specification across different expenditure categories, and ignore the context conditionality of political cycles, may find weak empirical support for such cycles. As Franzese (2002; 2003) points out, reports of the empirical demise of political cycle theories may have been greatly exaggerated and researchers should rekindle their attention to this field - especially in the direction of addressing theoretical and empirical inadequacies of prior models.

Acknowledgements

Appendix A

A.1. Further insights on partisan cycles

In this section we provide additional insights on ideology regularities in social and military spending by looking at four cases: Australia, Belgium, Spain and the United States. A visual inspection of Fig. A.1 reveals evidence of partisan cycles in the allocation of public spending in Australia, where, from 1988 to 1996, Bob Hawke, leader of the Labor Party, increased the share of social spending by more than 5 percentage points, while, on overage, military spending was slightly reduced. We can then observe a remarkable change in policies from 1997 to 2007, as a Liberal-National coalition won the federal elections and interrupted the left-wing government's sharp increase in social spending. The growth in social spending was again restored in 2007, when the Labor won the elections.

Belgium is an interesting case as it exhibits a clear-cut tradeoff between social and military spending over the whole period. In most years, drops in social spending are paralleled by increases in military spending and vice-versa. Moreover, from 1988 on, we can see signs of partisan cycles, with a marked increase in social spending and a parallel decline in military spending, partly because of the end of the Cold War and the ensuing partial disarmament across NATO countries. From 1999, as the ideology index moves from 3 to 4, we can observe a noticeable growth in the level of social spending, which reached an all-time high of almost 30% in 2009, and a continuous reduction in the level of military spending.

Spain also provides support to the existence of partisan cycles in public spending. When Felipe González Márquez, General Secretary of the Spanish Socialist Workers' Party, came into power in 1982, he oversaw the establishment of a com-
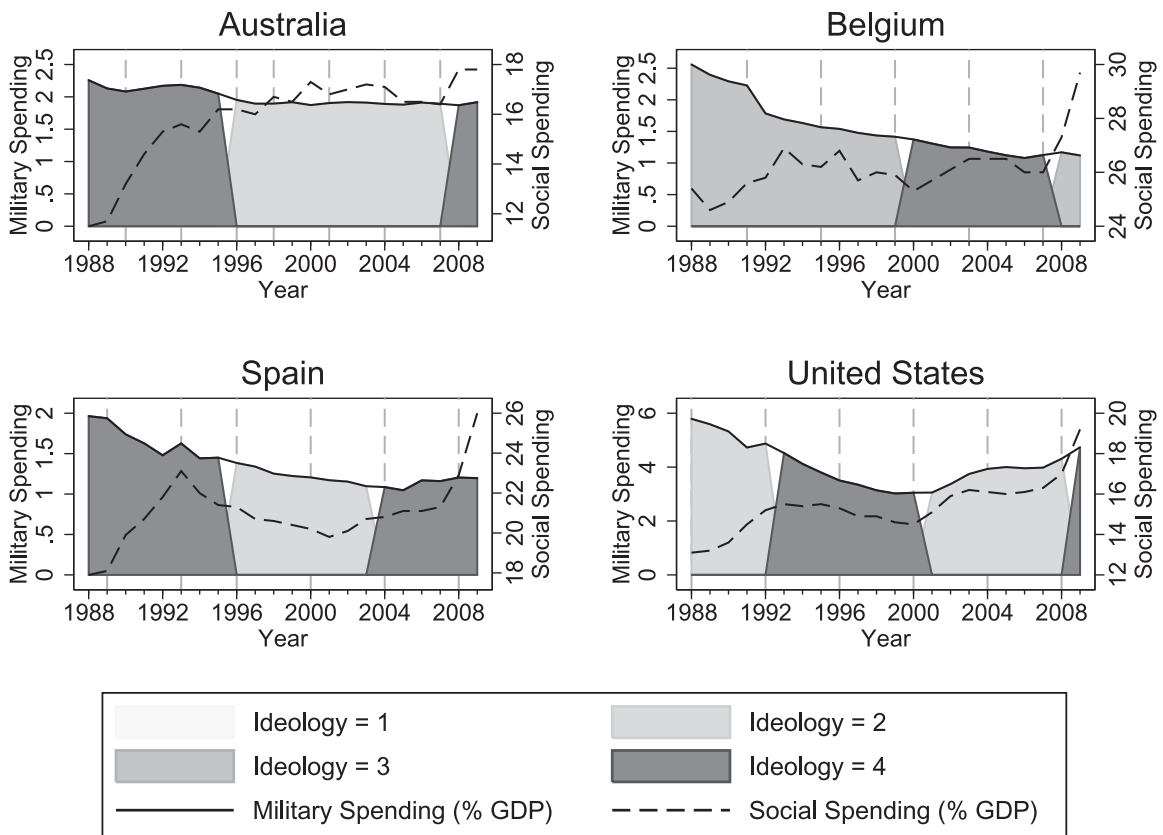

Fig. A.1. Single-country evidence of partisan cycles.

prehensive welfare state, including the improvement of a number of social programs, such as pensions and unemployment benefits. Accordingly, social spending increased by almost 5 percentage points between 1988 and 1993, the year of the elections, while military spending steadily declined. When José María Aznar of the People's party replaced the left-wing government, he implemented a number of cuts to both social and military spending, while the return of a leftist government, under Zapatero, brought the level of social spending back to the 1993 levels. Military spending was left almost untouched, and slightly increased after 2004, partially because of the Spanish involvement in Afghanistan.

Following the collapse of the Soviet Union in 1989, the reduction in military spending in the US was accompanied by an increase in social expenditure; notwithstanding the presence of a conservative presidency (George H. W. Bush), there was a short term tradeoff between defence and welfare spending. Under Bill Clinton's presidency (1993-2001), the military burden was severely reduced, and went from 5% to almost 3% of the GDP. Social spending was, on average, much larger than in the previous administration, but was reduced after the beginning of his second term, and then increased again slightly before the elections in 2001. Under George W. Bush (2001-2009), there was a quick recovery in the share of the budget devoted to the armed forces. Yet, the growth in social spending continued unabated at the beginning of his first term, possibly because of the inertia, then it was reduced toward his second term in office and increased again before the elections in 2009. Finally, under Obama, social spending was significantly increased, in part due to worsening economic conditions after the 2008 crisis.

A.2. Tables

See Table A.1, Table A.2 and Table A.3.

Table A.1
Number of elections in the sample (1988-2009).

Country	Elections	Country	Elections	Country	Elections
Australia	8 (10)	Greece	8 (10)	Portugal	7 (9)
Austria	7 (9)	Ireland	6 (8)	Spain	6 (8)
Belgium	6 (8)	Italy	7 (8)	Sweden	6 (8)
Canada	7 (8)	Japan	7 (9)	Switzerland	6 (7)
Denmark	8 (10)	Luxembourg	5 (6)	United Kingdom	5 (6)
Finland	6 (7)	Netherlands	6 (9)	United States	6 (7)
France	5 (7)	New Zealand	8 (10)		
Germany	7 (8)	Norway	6 (8)		

The number in parenthesis indicates the number of elections included in the full sample for social expenditure (1981-2009).

Table A.2
Descriptive statistics and data sources (1988-2009).

Variable	Obs	Mean	Std Dev	Min	Max	Source
Total Social Expenditure (% of GDP)	482	21.7	4.9	10.7	35.7	SOCX
Subcomponents of Social Expenditure (% of GDP)	482	11.7	3.4	5.0	20.4	SOCX
GDP per capita	484	23848.1	8941.6	7930.4	56389.2	WDI
Unemployment Rate	484	7.1	3.6	0.5	23.9	WDI
Globalization (KOF economic subindex)	484	77.1	12.6	36.0	98.9	Dreher (2006)[a]
Dependency Ratio	484	49.7	3.3	43.1	65.2	WDI
Political Constraints (POLCON index)	484	0.49	0.09	0.23	0.72	Henisz (2000)
Total Military Expenditure (% of GDP)	484	1.9	0.9	0.5	5.8	SIPRI
Armed Forces (% of Labour)	484	1.2	0.8	0.1	5.2	SDM
Rivals	484	3133.4	17177.0	0	218402	Dunne et al. (2009)
Volunteers	484	0.25	0.43	0	1	Bove and Cavatorta (2012)
Wars	484	0.15	0.35	0	1	COW
Election	484	0.27	0.45	0	1	Various Sources
Ideology (Left-Wing)	484	2.9	0.9	1	4	Potrafke (2009)

SOCX: OECD Social Expenditure Database; **WDI**: World Bank's World Development Indicators; **SIPRI**: Stockholm International Peace Research Institute; **COW**: Correlates of War Project; **SDM**: Swedish Defence Ministry; [a] KOF Index of Globalization, Version 2013.

Table A.3
Political cycles in social expenditure (1988-2009): robustness tests.

Dependent variable: $\Delta\ln$ Total Social Expenditure ($\Delta\ln$ TSE), $\Delta\ln$ Subcomponents of Social Expenditure ($\Delta\ln$ SSE); Method: Bias-corrected LSDV									
$\Delta\ln$ TSE (1)	$\Delta\ln$ SSE (2)	$\Delta\ln$ TSE (3)	$\Delta\ln$ SSE (4)	$\Delta\ln$ TSE (5)	$\Delta\ln$ SSE (6)	$\Delta\ln$ TSE (7)	$\Delta\ln$ SSE (8)	$\Delta\ln$ TSE (9)	$\Delta\ln$ SSE (10)
Lagged Dependent									
0.225***	0.243***	0.199***	0.250***	0.216***	0.232***	0.225***	0.233***	0.227***	0.233***
(5.08)	(5.13)	(4.07)	(4.85)	(4.22)	(4.29)	(5.22)	(5.12)	(5.28)	(5.12)
$\Delta\ln$ GDP per capita									
-0.800***	-0.873***	-0.792***	-0.873***	-0.773***	-0.791***	-0.796***	-0.880***	-0.801***	-0.884***
(7.22)	(6.73)	(6.52)	(6.19)	(6.37)	(5.38)	(7.87)	(7.41)	(7.94)	(7.45)
$\Delta\ln$ Unemployment									
0.031***	0.006	0.031**	0.008	0.013	-0.003	0.030***	0.007	0.030***	0.007
(2.63)	(0.46)	(2.16)	(0.47)	(0.84)	(0.17)	(2.63)	(0.49)	(2.61)	(0.48)
$\Delta\ln$ Globalization									
-0.004***	-0.006***	-0.004**	-0.005**	-0.005**	-0.08***	-0.004**	-0.005***	-0.004**	-0.005***
(2.58)	(2.89)	(2.16)	(2.44)	(2.74)	(3.34)	(2.45)	(2.74)	(2.50)	(2.76)
$\Delta\ln$ Dependency Ratio									
0.067	0.372	0.122	0.299	0.148	0.659*	0.066	0.312	0.054	0.303
(0.26)	(1.24)	(0.42)	(0.88)	(0.53)	(1.91)	(0.26)	(1.04)	(0.22)	(1.02)
Political Constraints									
-0.013	0.006	0.002	0.005	-0.013	-0.005	-0.013	0.005	-0.012	0.005
(0.43)	(0.17)	(0.05)	(0.10)	(0.36)	(0.11)	(0.39)	(0.13)	(0.38)	(0.14)
Election									
0.009***	0.007**	0.009**	0.007*	0.009***	0.009**	0.008***	0.006*	0.009***	0.007*
(3.09)	(2.06)	(2.42)	(1.70)	(2.61)	(2.12)	(2.61)	(1.82)	(2.88)	(1.92)
Ideology (Left-Wing)									
0.002	0.006***	0.003*	0.007***	0.003	0.006***	0.002	0.005***	0.002	0.005***
(1.54)	(3.12)	(1.72)	(3.17)	(1.63)	(2.67)	(1.39)	(2.88)	(1.37)	(2.87)
Fixed Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	437	437	374	374	332	332	458	458	458	458
Number of N	21	21	18	18	16	16	22	22	22	22

See notes for Table 1. Equations in columns (1) and (2) exclude the countries with presidential regime: the United States. Equations in columns (3) and (4) exclude the countries with majoritarian electoral system: Canada, France, the United Kingdom and the United States. Equations in columns (5) and (6) exclude the six highest fiscally decentralised countries: Belgium, Canada, Finland, Germany, Spain and Switzerland. Equations in columns (7) and (8) control for the timing of elections within the year. Equations in columns (9) and (10) assign a smaller weight to non-predetermined elections.

A.3. Theoretical model: proofs

A.3.1. *Equation 7*

In the election period, a bad politician chooses the level of military expenditure $g_1 = s$ when

$$U^I(g_1 = s/\omega_P = \omega_L) \geqslant U^I(g_1 = g^{**}(\pi^I)/\omega_P = \omega_L) \tag{A.i}$$

First, we get an expression for both components

$$U^I(g_1 = s/\omega_P = \omega_L) =$$

$$\omega_L\left(f(s) - \frac{1}{N}\sum_{i=1}^{N}\left(\pi^i - \pi^I\right)^2\right) + X +$$

$$\beta\left[\begin{array}{l}\rho(s)\left[\omega_L\left(f(g^{**}(\pi^I)) - \frac{1}{N}\sum_{i=1}^{N}\left(\pi^i - \pi^I\right)^2\right) + X + l\left(\pi^I\right)h(s - g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))\right] + \\ (1-\rho(s))\left[\begin{array}{l}p\left(\omega_L\left(f(s) - \frac{1}{N}\sum_{i=1}^{N}\left(\pi^i - \pi^C\right)^2\right) - \left(\pi^I - \pi^C\right)^2\right) + \\ (1-p)\left(\omega_L\left(f(g^{**}(\pi^C)) - \frac{1}{N}\sum_{i=1}^{N}\left(\pi^i - \pi^C\right)^2\right) + l\left(\pi^C\right)h(s - g^{**}(\pi^C)) - \left(\pi^I - \pi^C\right)^2\right)\end{array}\right]\end{array}\right]$$

$$U^I(g_1 = g^{**}(\pi^I)/\omega_P = \omega_L) =$$

$$\omega_L\left(f(g^{**}(\pi^I)) - \frac{1}{N}\sum_{i=1}^{N}\left(\pi^i - \pi^I\right)^2\right) + X + l\left(\pi^I\right)h(s - g^{**}(\pi^I)) + n(s - g^{**}(\pi^I)) +$$

$$\beta \left[\begin{array}{l} \rho\big(g^{**}(\pi^I)\big)\left[\omega_L\left(f(g^{**}(\pi^I)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^I\big)^2\right) + X + l\big(\pi^I\big)h(s - g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))\right] + \\[4mm] \big(1 - \rho(g^{**}(\pi^I))\big)\left[\begin{array}{l} p\left(\omega_L\left(f(s) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^C\big)^2\right) - \big(\pi^I - \pi^C\big)^2\right) + \\[4mm] (1-p)\left(\omega_L\left(f(g^{**}(\pi^C)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^C\big)^2\right) + l\big(\pi^I\big)h(s - g^{**}(\pi^C)) - \big(\pi^I - \pi^C\big)^2\right) \end{array} \right] \end{array} \right]$$

Substituting the last couple of equations into (A.i) and rearranging terms, we obtain

$$\omega_L\big(f(s) - f(g^{**}(\pi^I))\big) - l\big(\pi^I\big)h(s - g^{**}(\pi^I)) - n(s - g^{**}(\pi^I)) +$$

$$\beta\big[\rho(s) - \rho(g^{**}(\pi^I))\big]\left[\left(\omega_L\left(f(g^{**}(\pi^I)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^I\big)^2\right) + X + l\big(\pi^I\big)h(s - g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))\right)\right] +$$

$$\beta\big[\rho(g^{**}(\pi^I)) - \rho(s)\big]\left[\begin{array}{l} \left(\omega_L\left(f(g^{**}(\pi^C)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^C\big)^2\right) - \big(\big(\pi^I - \pi^C\big)^2\big)\right) + \\[3mm] p\big(\omega_L[f(s) - f(g^{**}(\pi^C))]\big) + (1-p)l(\pi^I)h(s - g^{**}(\pi^C)) \end{array} \right] \geqslant 0$$

Define $\Delta H(g^{**}(\pi^I)) = \omega_L\big(f(g^{**}(\pi^I)) - f(s)\big) + l\big(\pi^I\big)h\big(s - g^{**}(\pi^I)\big)$. Using this expression and rearranging terms, the previous condition becomes

$$\beta\big[\rho(s) - \rho(g^{**}(\pi^I))\big]\left[\left(\omega_L\left(f(g^{**}(\pi^I)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^I\big)^2\right) + X + l\big(\pi^I\big)h(s - g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))\right)\right] +$$

$$\beta\big[\rho(g^{**}(\pi^I)) - \rho(s)\big]\left[\begin{array}{l} \left(\omega_L\left(f(g^{**}(\pi^C)) - \frac{1}{N}\sum_{i=1}^{N}\big(\pi^i - \pi^C\big)^2\right) - \big(\big(\pi^I - \pi^C\big)^2\big)\right) + \\[3mm] p\big(\omega_L\big(f(s) - f(g^{**}(\pi^C))\big)\big) + (1-p)l(\pi^I)h(s - g^{**}(\pi^C)) \end{array} \right]$$

$$\geqslant \Delta H(g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))$$

Further rearrangement yields

$$\beta\big[\rho(s) - \rho(g^{**}(\pi^I))\big]\left[\begin{array}{l} \left[\left(\begin{array}{l} \omega_L\big(f(g^{**}(\pi^I)) - f(g^{**}(\pi^C))\big) + \\ X + l\big(\pi^I\big)\big[\big(h(s - g^{**}(\pi^I)) - h(s - g^{**}(\pi^C))\big)\big] + n(s - g^{**}(\pi^I)) \end{array} \right)\right] + \\[5mm] p\Delta H(g^{**}(\pi^C)) + \frac{1}{N}\left(\sum_{i=1}^{N}\big(\pi^i - \pi^C\big)^2 - \sum_{i=1}^{N}\big(\pi^i - \pi^I\big)^2\right) + \big(\pi^I - \pi^C\big)^2 \end{array} \right]$$

$$\geqslant \Delta H(g^{**}(\pi^I)) + n(s - g^{**}(\pi^I))$$

Finally, we obtain that

$$\Delta H(g^{**}(\pi^I)) + n(s - g^{**}(\pi^I)) \leq$$
$$\beta\big[\rho(s) - \rho(g^{**}(\pi^I))\big]\big[\Delta H(g^{**}(\pi^I)) - \Delta H(g^{**}(\pi^C))\big] + X + p\Delta H(g^{**}(\pi^C)) + n(s - g^{**}(\pi^I)) + \Delta\Pi \qquad \text{(A.ii)}$$

A.3.2. Footnote 13

When the economy is in conflict, condition (A.i) becomes

$$U^I(g_1 = g^*/\omega = \omega_L) \geqslant U^I(g_1 = g^{***}(\pi^I)/\omega = \omega_L) \qquad \text{(A.iii)}$$

Using (A.iii) and following the same procedure as above, we arrive at the following condition:

$$\Delta\tilde{H}(g^{***}(\pi^I)) + n(s - g^{***}(\pi^I)) - n(s - g^*) \leq \qquad \text{(A.iv)}$$

$$\beta\big[\rho(g^*) - \rho(g^{***}(\pi^I)\big]\big[\Delta\tilde{H}(g^{***}(\pi^I)) - \Delta\tilde{H}(g^{***}(\pi^C))\big] + X + p\Delta\tilde{H}(g^{***}(\pi^C)) + n(s - g^{***}(\pi^I)) + \Delta\Pi \qquad \text{(A.v)}$$

where

$$\Delta\tilde{H}(g^{***}(\pi^I)) = \omega_L\left[f(g^{***}(\pi^I)) - f(g^*) + \underbrace{b(s - g^{***}(\pi^I)) - b(s - g^*)}_{\text{voters' utility change}} \right] + l\big(\pi^I\big)\big[h\big(s - g^{***}(\pi^I)\big) - h\big(s - g^*\big)\big] \qquad \text{(A.vi)}$$

Compared to the case of a peaceful economy there are two main differences. First, the most preferred level of military expenditure for the politician changes to $g^{***}(\pi^I)$. Second, the definition includes other elements since: (i) voters assign now positive value to military expenditure and the change in their utility is part of the politician's opportunity cost; and (ii) the positive level of military expenditure in the election period affects the utility of politicians (reflected in the last element in (A.vi)). Finally, note that the loss in "status" to the incumbent politician when playing g^* instead of $g^{***}(\pi^I)$ is different from that when playing s instead of $g^{**}(\pi^I)$.

A.3.3. *Equation 10*

The Bayes' theorem states that

$$\Pr(\omega_P = \omega_H / g_1 = s) = \frac{\Pr(g_1 = s/\omega_P = \omega_H)\,\Pr(\omega_P = \omega_H)}{\Pr(g_1 = s)}$$

Notice that: (i) $\Pr(g_1 = s/\omega_P = \omega_H) = 1$, since a good politician always follows that strategy; (ii) $\Pr(\omega_P = \omega_H) = p$ is an assumption in the model; and, (iii) $\Pr(g_1 = s) = p + (1-p)q$, since a proportion p of politicians are "good" and thus always play s, while a proportion $(1-p)$ of politicians are "bad" and thus play $g_1 = s$ with probability q. Substituting these three probabilities into the previous condition the result follows.

A.3.4. Equilibria when the economy is in conflict

We can make a distinction between three cases depending on whether the following condition holds:

$$\Delta \tilde{H}(g^{***}(\pi^I)) + n(s - g^{***}(\pi^I)) - n(s - g^*) \leq$$
$$\beta\left[\Delta\tilde{H}(g^{***}(\pi^I)) - \Delta\tilde{H}(g^{***}(\pi^C))\right] + X + p\Delta\tilde{H}(g^{***}(\pi^C)) + n(s - g^{***}(\pi^I)) + \Delta\Pi \tag{A.vii}$$

Case 1: If condition (A.vii) holds with strict inequality, the incumbent will choose to play $g_1 = g^*$ with probability 1, and the swing voters will set $p(g_1 = g^*) = p$ and zero otherwise. Hence, the swing voters will vote for the incumbent with probability $r \geqslant \frac{1/2 - \phi^I}{\phi^M}$ and the incumbent will get re-elected with probability 1 provided that he plays $g_1 = g^*$. In this case we have a pooling equilibrium since both good and bad politicians are playing the same set of strategies.

Case 2: If condition (A.vii) holds with strict equality, the incumbent will choose to play $g_1 = g^*$ with probability q, the swing voters will set $p_1(g_1 = g^*) \geqslant p$ and zero otherwise. The incumbent will thus get re-elected with probability 1 provided that he plays $g_1 = g^*$. In this case we have a mixed equilibrium.

Case 3: If condition (A.vii) does not hold (LHS of (A.vii) > RHS of (A.vii)), the incumbent will choose to play $g^{***}(\pi^I)$, and the swing voters will set $p(g_1 = g^*) = 1$ and zero otherwise. Hence, the swing voters will vote for the challenger with probability 1, resulting in the incumbent losing the elections. In this case we have a separating equilibrium since good and bad politicians are playing different strategies in the election period.

References

Adema, W., Fron, P., Ladaique, M., 2012. Is the European welfare state really more expensive? Indicators on social spending, 1980-2012; and a manual to the OECD Social Expenditure Database (SOCX). OECD Social, Employment and Migration Working Papers, No. 124.

Albalate, D., Bel, G., Elias, F., 2012. Institutional determinants of military spending. J. Comparat. Econ. 40 (2), 279–290.

Anderson, T., Hsiao, C., 1982. Formulation and estimation of dynamic models using panel data. J. Econ. 18 (1), 570–606.

Andrews, D., 1994. Capital mobility and monetary adjustment in Western Europe 1973-1991. Policy Sciences 27 (4), 425–455.

Arellano, M., Bond, S., 1991. Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. Rev. Econ. Stud. 58 (2), 277–297.

Beck, N., 2001. Time-series-cross-section data: what have we learned in the past few years? Ann. Rev. Polit. Sci. 4, 271–293.

Beck, N., Katz, J., 1996. Nuisance vs. substance: specifying and estimating time-series cross section models. Polit. Anal. 6 (1), 1–36.

Blundell, R., Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models. J. Econ. 87 (1), 115–143.

Bove, V., Brauner, J., 2015. The demand for military expenditure in authoritarian regimes. Defence Peace Econ. doi:10.1080/10242694.2014.925325.

Bove, V., Cavatorta, E., 2012. From conscription to volunteers: budget shares in NATO defence spending. Defence Peace Econ. 23 (3), 273–288.

Brender, A., Drazen, A., 2005. Political budget cycles in new versus established democracies. J. Monet. Econ. 52 (7), 1271–1295.

Bruno, G., 2005. XTLSDVC: Stata module to estimate bias corrected LSDV dynamic panel data models. Statistical Software Components, Boston College Department of Economics.

Caruso, R., 2010. Butter, guns and ice-cream theory and evidence from Sub-Saharan Africa. Defence Peace Econ. 21 (3), 269–283.

Castillo, J., Lowell, J., Tellis, A., Munoz, J., Zycher, B., 2001. Military expenditures and economic growth. Santa Monica: RAND Corporation.

Conconi, P., Sahuguet, N., Zanardi, M., 2014. Democratic peace and electoral accountability. J. Eur. Econ. Assoc. 12 (4), 997–1028.

Dafoe, A., Renshon, J., Huth, P., 2014. Reputation and status as motives for war. Ann. Rev. Polit. Sci.

Dalen, H., Swank, O., 1996. Government spending cycles: ideological or opportunistic? Public Choice 89 (1), 183–200.

Drazen, A., Eslava, M., 2010. Electoral manipulation via voter-friendly spending: theory and evidence. J. Dev. Economics 92 (1), 39–52.

Dreher, A., 2006. Does globalization affect growth? Evidence from a new index of globalization. Appl. Econ. 38 (10), 1091–1110.

Dreher, A., Sturm, J., Ursprung, H., 2008. The impact of globalization on the composition of government expenditures: evidence from panel data. Public Choice 134 (3), 263–292.

Dunne, J., Perlo-Freeman, S., Smith, R., 2009. Determining military expenditures: arms races and spill-over effects in cross-section and panel data. University of the West of England, Department of Economics Discussion Papers, No. 901.

Efthyvoulou, G., 2011. Political cycles under external economic constraints: evidence from Cyprus. J. Econ. Bus. 63 (6), 638–662.

Efthyvoulou, G., 2012. Political budget cycles in the European Union and the impact of political pressures. Public Choice 153 (3), 295–327.

Fordham, B., 2005. Strategic conflict avoidance and the diversionary use of force. J. Polit. 67 (1), 132–153.

Franzese, R., 2002. Electoral and partisan cycles in economic policy and outcomes. Ann. Rev. Polit. Sci. 5, 369–421.

Franzese, R., 2003. Macroeconomic policies of developed democracies. Cambridge: Cambridge University Press.

Garrett, G., 1995. Capital mobility, trade and the domestic politics of economic policy. Int. Org. 49 (4), 657–687.

Henisz, W., 2000. The institutional environment for economic growth. Econ. Polit. 12 (1), 1–31.
Herwartz, H., Theilen, B., 2014. Partisan influence on social spending under market integration, fiscal pressure and institutional change. Eur. J. Polit. Econ. 34.
Hess, G., Orphanides, A., 1995. War politics: an economic, rational-voter framework. Am. Econ. Rev. 85 (4), 828–846.
Hess, G., Orphanides, A., 2001. Economic conditions, elections, and the magnitude of foreign conflicts. J. Public Econ. 80 (1), 121–140.
Johnson, H., Thomas, C., 1999. NATO: implications of European integration for allies defense spending. Washington: Diane Publishing Co.
Karagöl, E., Turhan, A., 2008. External debt, defence expenditures and political business cycles in Turkey. Defence Peace Econ. 19 (3), 217–224.
Katsimi, M., Sarantides, V., 2012. Do elections affect the composition of fiscal policy in developed, established democracies? Public Choice 151 (1), 325–362.
Kauder, B., Potrafke, N., 2015. The growth in military expenditure in Germany 1951-2011: did parties matter? Defence Peace Econ. doi:10.1080/10242694. 2015.1050276.
Kittel, B., Obinger, H., 2003. Political parties, institutions, and the dynamics of social expenditure in times of austerity. J. Eur. Public Policy 10 (1), 20–45.
Klingemann, H.-D., Hofferbert, R., Budge, I., 1994. Parties, policies and democracy. Boulder, CO: Westview Press.
Kollias, C., Paleologou, S., 2003. Domestic political and external security determinants of the demand for Greek military expenditure. Defence Peace Econ. 14 (6), 437–445.
McMahon, R., 1991. Credibility and world power: exploring the psychological dimension in postwar American diplomacy. Diplomatic Hist. 15 (4), 455–472.
Meinhard, S., Potrafke, N., 2012. The globalization-welfare state nexus reconsidered. Rev. Int. Econ. 20 (2), 271–287.
Mercer, J., 2010. Reputation and international politics. Ithaca: Cornell University Press.
Mintz, A., 1988. Electoral cycles and defense spending. Comp. Polit. Stud. 21 (3), 368–381.
Morrow, J., 1991. Electoral and congressional incentives and arms control. J. Conflict Resolut. 35 (2), 245–265.
Nincic, M., Cusack, T., 1979. The political economy of US military spending. J. Peace Res. 16 (2), 101–115.
Persson, T., Tabellini, G., 2002. Do electoral cycles differ across political systems? Bocconi University, Innocenzo Gasparini Institute for Economic Research Working Papers, No. 232.
Persson, T., Tabellini, G., 2003. The economic effects of constitutions. Cambridge, MA: The MIT Press.
Potrafke, N., 2009. Did globalization restrict partisan politics? An empirical evaluation of social expenditures in a panel of OECD countries. Public Choice 140 (1), 105–124.
Potrafke, N., 2011. Does government ideology influence budget composition? Empirical evidence from OECD countries. Econ. Govern. 12 (2), 101–134.
Potrafke, N., 2012. Political cycles and economic performance in OECD countries: empirical evidence from 1951-2006. Public Choice 150 (1), 155–179.
Rogoff, K., 1990. Equilibrium political budget cycles. Am. Econ. Rev. 80 (1), 21–36.
Rogoff, K., Sibert, A., 1988. Elections and macroeconomic policy cycles. Rev. Econ. Stud. 55 (1), 1–16.
Roodman, D., 2006. How to do xtabond2: an introduction to difference and system GMM in Stata. Center for Global Development Working Papers, No. 103.
Russett, B., 1982. Defense expenditures and national well-being. Am. Polit. Sci. Rev. 76 (4), 767–777.
Russett, B., Oneal, J., 2001. Triangulating peace: democracy, interdependence, and international organizations. New York: Norton.
Saporiti, A., Streb, J., 2008. Separation of powers and the political business cycles. Public Choice 137 (1), 329–345.
Schneider, C., 2010. Fighting with one hand tied behind the back: political budget cycles in the West German states. Public Choice 142 (1), 125–150.
Schuknecht, L., 2000. Fiscal policy cycles and public expenditure in developing countries. Public Choice 102 (1), 115–130.
Shi, M., Svensson, J., 2006. Political budget cycles: do they differ across countries and why? J. Public Econ. 90 (8), 1367–1389.
Smith, R., 2009. Military economics: the interaction of power and money. Basingstoke: Palgrave Macmillan.
Snyder, G., Diesing, P., 1977. Conflict among nations: bargaining, decision making, and system structure in international crises. Princeton: Princeton University Press.
Veiga, L., Veiga, F., 2007. Political business cycles at the municipal level. Public Choice 131 (1), 45–64.
Vergne, C., 2009. Democracy, elections and allocation of public expenditures in developing countries. Eur. J. Polit. Econ. 25 (1), 63–77.
von Hagen, J., 2006. Fiscal rules and fiscal performance in the European Union and Japan. Monet. Econ. Stud. 24 (1), 25–60.
Whitten, G., Williams, L., 2011. Buttery guns and welfare hawks: the politics of defense spending in advanced industrial democracies. Am. J. Polit. Sci. 55 (1), 117–134.
Wlezien, C., 1996. Dynamics of representation: the case of US spending on defence. Brit. J. Polit. Sci. 26 (1), 81–103.
Zuk, G., Woodbury, N., 1986. US defense spending, electoral cycles, and Soviet-American relations. J. Conflict Resolut. 30 (3), 445–468.