

Explaining the Relationship between Foreign Policy Substitution & the Distributional Dilemma[°]

By

Anessa L. Kimball, Ph.D.[•]

Département de science politique
Université Laval

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[•] Assistant Professor, Université Laval; 4431 Pavillon Charles-De Koninck, Québec (QC) G1V0A6, Canada; 418-265-5872; anessa.kimball@pol.ulaval.ca

Explaining the Relationship between Foreign Policy Substitution & the Distributional Dilemma

Abstract : This paper provides an explanation for foreign policy substitution rooted in the leader's need to balance between guns and butter in the wake concerns about personal political survival. The distributional dilemma requires leaders to develop an equilibrium policy distribution between guns and butter in order to retain political office. Demands for social goods (butter) should inspire survival seeking leaders to shift resources away from military expenditures and towards alliance policies because observed alliances are efficient security policies (Palmer and Morgan 2006). Thus, constituent demands for more social goods shape a leader's willingness to substitute across security policy options where alliances encourage leaders to shift spending on military expenditures, thus providing both a causal mechanism and theoretical explanation for foreign policy substitution. The two main contributions of this article are to provide a link between the design of a state's security policy portfolio and the demands of the welfare state thus linking domestic politics to foreign policy behavior and to implement a simultaneous model that accounts for the endogenous relationship between security policy alternatives. A simultaneous model of alliance formation and state-level military expenditures after 1950 for all countries provides support for these claims.

I. Introduction

Research on the relationship between military expenditures and formal alliances is far from unified. While, in part, the division in the literature is based on differences in the spatial and temporal domain of the cases analyzed, another major factor contributing to those puzzling results is due to a lack of theoretical refinement with respect to the causal mechanism encouraging states to shift resources among the alternative options in their security policy portfolios (i.e. between military expenditures and alliance formation). This paper attempts to fill the lacuna in the literature by suggesting a possible mechanism which causes states to shift resources away from military expenditures and towards the creation of alliances under certain conditions. Where this argument differs from earlier treatments of the arms-alliance relationship is in its identification of what conditions cause shifts between these policies and the direction of the shift in security policy resources. In contrast, most existing research has focused on understanding the nature of the relationship; that is whether alliances substitute for arms production/investment (Morrow 1993; Palmer and Souchet 1994; Most and Siverson 1987; Morgan and Palmer 2003) or complement it (Russett 1970; Smith 1977; Smith and Smith 1983; Benoit 1973). As a result of that limited focus, there has been a failure to theorize about the factors affecting change in the complex relationship.¹

¹ Contemporary research suggests that the relationship is more complex than earlier treatments allowed (Mintz and Huang 1991, 1992; Diehl 1994; Mintz and Stevenson 1995; Carruba and Singh 2004; Skaperdas and Syropoulos 2001; Duval, n.d.).

I start from Baldwin's (1985) basic premise that leaders consider all foreign policy tools as complements rather than substitutes.² That is political leaders pursue a mix of different options, such as both arms and alliances, instead of pursuing all arms and no alliances or vice versa.³ When we observe the actual foreign policies pursued by states it is extremely rare to find cases where states pursue purely internal security at the cost of enhancing external security through some type of international cooperation.⁴ Thus, at face value, the alliance-arms complementary relationship premise seems reasonable. If those goods are complementary, then the task of researchers is to understand what causes states to shift resources between these two policy options. The identification of the factor causing that policy resource shift will also suggest the anticipated direction of that shift. This paper identifies a different causal factor which motivates leaders to shift resources among foreign policy tools and provides an empirical test of the refined argument based on alliance formation and state-level military expenditures after 1950.

² Most scholars credit Most & Starr (1989) with pioneering the study of foreign policy substitution. Recent work points to the use of simultaneous choice models, see the *Journal of Conflict Resolution* special issue on foreign policy substitution, volume 44, issue 1 (2000), Clark & Reed (2005) and Clark, Nordstrom & Reed (2008).

³ For simplicity, it is assumed states use only two foreign policy tools, that is, they develop more arms or create alliances as a response to the causal mechanism identified herein. Leaders possess more than two tools (e.g. arms purchases, sanctions, the use of force, etc). However, the focus herein is on the arms and alliances since it has received so much attention in the literature with so few unified findings; though including other tools in future analyses is an area where this project will be extended.

⁴ Only autarkic states truly rely on their own internal capacities for developing their security, North Korea is an apt example. Few states have entirely isolationist foreign policies even neutral states coordinate policies with others via formal agreements (see the Alliance Treaty Obligations & Provisions project (Leeds et al. 2000, 2002)).

II. Domestic political causes and foreign policy behavior⁵

The argument put forth combines two existing arguments advanced in the last decade regarding the factors motivating and shaping leader behavior. In combining the concepts drawn from the theory of political survival (Buono de Mesquita et al. 1999, 2003) with the central motivating element of the distributional dilemma (Powell 1999), this paper suggests a different causal mechanism to explain the decision of leaders to create new international alliances. The political survival and distributional dilemma research programs as well as this research project share a common rationalist base due to their assumptions that leaders seek to retain political office through the allocation of scarce resources to meet competing demands. “Were resources unlimited, then there would be no trade-off and no need to engage in any sort of internal balancing of resources (and [a]llocating more to the military would not reduce the amount that could be devoted to achieving intrinsically valued ends” (Powell 1999, 45).

In particular, the distributional dilemma identifies the source of the demand as the need to find an efficient and effective balance between guns and butter (i.e. the trade-off between national security and social security) in order to maximize current and future consumption (Powell, 1999). In contrast, the political survival theory identifies the source of the demand as being conditional upon the nature of a state’s selection institutions. Specifically, leaders are attentive to the size of the minimum winning coalition (MWC)⁶, as it determines what types of goods leaders provide (i.e. public or

⁵ This section draws from Kimball (forthcoming, 2010).

⁶ The MWC concept represents the smallest size group of individuals whose approval is required so a leader may retain political office (Buono de Mesquita et al. 1999).

private).⁷ As the size of the MWC increases, leaders need to provide public goods efficiently to satisfy constituents and be retained in the next selection cycle. “The smaller the number of supporters a leader needs to stay in power (the winning coalition) and the larger the pool from which these supporters can be drawn (the selectorate), the easier it is for leaders to survive” (McGillivray & Smith, 2005, 643). Since public goods require greater policy efficiency, leaders of democracies (i.e. states with the largest MWCs) should be reactive to domestic demands as constituent demands for more “butter” will affect their future vote choice about retaining the leader “because, as the winning coalition grows the prospects for political survival increasingly hinge on successful policy performance” (Bueno de Mesquita et al. 1999, 804).⁸ The need for efficient policies encourages leaders to seek out the policy instruments that “produce the maximum amount of the desired good given the resources available and the environmental constraints...the policies that we observe empirically are efficient” (Morgan & Palmer 2003, 185). Thus, leaders of democracies walk a tight rope strung between two ends representing national security and social security. And they must provide effective amounts of both goods to the MWC even in the face of changing levels of demand for either good. Thus, the provision of those goods is interdependent and leaders strategically trade-off between them to create an optimal balance.

[Insert Figure 1 about here]

⁷ Like Bueno de Mesquita and his co-authors (2003, 186-199), it is assumed that national security and social security are public goods.

⁸ Though these authors are referring to resource allocation during a conflict, similar constraints operate constantly since democratic leaders face the uncertainty of reselection regularly.

One way to conceptualize the argument is to utilize the economics concept of a production possibilities frontier (PPF) as shown in Figure 1⁹. The PPF depicts the process here as it assumes leaders/states have finite resources (similar to the argument here) and produce only two goods (here, national security¹⁰ or guns and social security or butter).¹¹ Consider the point (N*, S*) as a state's equilibrium policy allocation between national and social security. For simplicity, it is assumed N* and S* approximate the selectorate's demand for N and S and the bowed full line connecting the points represents their production possibilities. Any increase in demand for one good forces the leader to develop a new allocation equilibrium along that line. Now, imagine an increase in a leader's constituents' demand for S. Both current budget constraints and the relationship between the goods force the leader to reduce N to Q' incurring a national security loss equal to B (i.e. the opportunity cost to provide S1). Since the leader's political survival is

⁹ Other economic explanations for international cooperation are posed by Olson & Zeckhauser (1966) on alliances and Todd Sandler (2001, 2004). Olson and Zeckhauser's argument differs from the present argument in that actors here are vote maximizers thus they are reactive to domestic politics (not utility maximizers) and as such it does not directly follow that small states should free-ride as Olson and Zeckhauser conclude. Instead, the leader's reaction to her constituent's preferences should ensure small states contribute relative to their capacity so as to avoid international criticism. Jones reaches similar conclusions in his public choice exploration of alliances (2007).

¹⁰ Readers interested in the economics of defense spending should refer to work by Ron Smith (1977; Smith & Smith 1983), Emile Benoit (1973) and Sandler & Hartley (1990). The distributional dilemma has been examined with respect to trade openness (Skaperdas & Syropoulos 2001), economic growth (Mintz & Stevenson 1995) and European integration (Carruba & Singh 2004) while Mintz & Huang (1991, 1992) and Duval (no date) explored the exact nature of the dilemma itself.

¹¹ More information on the PPF can be found in Salvatore & Diulio (1996). Anderton (1990) presents a social science application using guns and butter.

dependant upon his effective provision of both goods, the increased demand for S requires the creation of a new equilibrium.

If there exists an alternative foreign policy tool providing $N \geq B$ for a cost of C (where $C < B$), then a strategic leader could employ this tool to supply S_1 . Morgan and Palmer¹² (2003) claim, “if an alliance is formed, each signatory must be able to produce the same foreign policy goods it was producing before the alliance with fewer resources, freeing those resources for use in other policies” (2003, 187). In essence, those observed alliance contracts allow states to ‘out-source’ some of their security burden. The crucial claim here is observed alliances: 1) increase foreign (or security) policy efficiency and 2) free resources. In other words, if alliances provide $N \geq B - C$, where C is the alliance formation cost¹³, then leaders can indirectly increase their pool of resources. An increase in resources from greater policy efficiency, similar to changes in technology, results in a shift outward of the PPF due to increased resources, indicated by the dashed line in Figure 1. The new equilibrium allows leader to continue providing N^* (without reducing security to Q') while having the resources to meet S_1 . By shifting the PPF outwards, the leader can now provide resources equal to (N^*, S_1) , represented by the “☆”. Beliefs

¹² For more detail, see Palmer & Morgan (2006).

¹³ The costs of alliance formation include a variety of non-monetary costs like the risk of abandonment and entrapment, the cost of trust, the consequences of appearing to rely on foreign patronage on a leader’s perceived competence, the risk of inspiring counter-alliances etc. Most alliances are reliable (Leeds et al., 2002) suggesting unreliable alliances are never formed and the costs of trust are included in alliance formation decisions.

regarding the future benefits to be accrued from new alliances encourage leaders to seek alliance contracts when challenged by demands.¹⁴

Importantly, this argument does not assume alliance formation is costless. If an alliance is formed then “the expected benefits of undertaking the action surpass the direct expected costs of the action: the expected value must be greater than the transaction costs. If the costs are greater than the benefits, the actor is better off not adopting the policy and presumably the action would not be selected” (Morgan & Palmer, 2006, 9). Thus, the costs of forming the alliance, C , are tacitly included in the decision to form the alliance and observing new alliances indicates $C < B$.

A key element of this argument is leaders form alliances due to the need to maximize allocations between N and S . Morgan and Palmer argue for an alliance to form “at least one state must have experienced a change in circumstances that would make it prefer an alliance that it previously did not desire” (2003, 187). In this project, the “change in circumstances” (i.e. the causal mechanism) is an increased demand for social security policies, indicated by the change from S^* to $S1$. This is consistent with the second type of change causing alliances to form according to Morgan and Palmer (2003, 188) “the cost to form and maintain an alliance goes down, relative to the costs of other actions.” Failing to address the new demand for $S1$ is the alternative action that is more costly for leaders. Political inaction increases the leader’s risk of losing political power due to failed policy performance (Bueno de Mesquita et al. 1999, 804) and consequently he becomes willing to pay higher costs for an alliance (specifically, willing to pay B less C to supply (N^* , $S1$)).

¹⁴ Contracts delineate the expectations of the partners (Goldberg, 1980) similar to Lake’s concept of relational contracting (1999) and the joint production economies of security.

The above claims suggest a number of hypotheses to examine. A primary claim is domestic politics are linked to interstate alliance behavior because leaders believe formed alliances are efficient therefore, increases in the demand for social policies (i.e. changes in circumstances) should increase the chances a state forms an alliance contract. Those constituent demands require rational vote-maximizing leaders to respond; most alternative responses to those demands involve a time-inconsistency problem.¹⁵ Since resources and time are limited for leaders, alliances are a relatively efficient method for managing those demands. A general inference suggests increases in the demand for social policies encourage leaders to seek security policy efficiency by creating an alliance contract. The most general inference is presented first because the argument's simplest form suggests alliances can substitute for changes in security policy spending and, thus, satisfy the need for more allocation towards social policies.

Alliance Formation Hypothesis 1: As the demand for social security policies within states increases, then the likelihood of alliance formation should increase.

Thus, rational and responsive leaders should react to increased demand for S by seeking alliance contracts. Alliance contracts allow leaders to supply the same level of N while shifting outwards state resource capacity (because of the efficiency gained through contracting) therefore allowing leaders to meet S1.

¹⁵ Thus, the simplest form of the argument assumes it is more difficult (with respect to time, effort, risk, etc.) to manipulate the existing budget in order to free resources or invest in arms production (which does not materialize until the next period (Powell 1999)), than to seek alliance contracts. While alliance formation is posited to free resources, it is not expected that resources will be freed instantly only that allying frees resources more quickly than alternative options (e.g. budget reallocation or arms technology improvements).

The contracting explanation also suggests states have different needs for policy efficiency depending upon institutional constraints. It is more difficult for leaders experiencing higher levels of political competition to find an optimum balance between social and national security effort to maintain the support of their MWC. Leaders with large MWCs must provide public goods, which require greater resources (Bueno de Mesquita et al., 2003, 96). Since those leaders are constrained by the types of goods they must provide to ensure their political survival (i.e. their inclination for office retention strongly encourages them pursue policy options which make S1 attainable), leaders of states with large MWCs are more likely to form alliances relative to less constrained states. Observed alliances increase security efficiency and reveal resources for allocation towards other demands (Morgan & Palmer, 2003), thus alliances are a good policy tool for leaders facing resource allocation constraints.

Alliance Formation Hypothesis 2: As the size of a state's MWC increases, then the likelihood of alliance formation should increase.¹⁶

The hypotheses above suggest several endogenous explanations for foreign policy behavior similar to the work of others (e.g. David (1991) and Levy & Barnett (1992)). However, this explanation does not exclude exogenous causes for behavior, such as threats, though the emphasis here rests upon internal factors.

The contracting explanation emphasizes the role of domestic political concerns in shaping the foreign policy when direct security threats do not dominate the political agenda. This explanation also emphasizes the interdependence among national security and social security demands thus any analysis of this explanation must account for both

¹⁶ Though democratic leaders should be more sensitive to domestic demands because their political tenure depends upon policy performance, the general argument posits independent effects for each of those factors.

sources which can affect a “change in circumstances” motivating alliance formation.

Threats should uniformly lead to increases in security policy allocation and, thus, alliance formation. This claim is consistent those of realists about the relationship between both power politics (Waltz, 1979) and external threats (Walt, 1987) with alliance behavior.¹⁷ Measuring increasing threat levels is another way to capture increases in the demand for N.

Alliance Formation Hypothesis 3: As threat levels increase, then the likelihood of alliance formation should increase.

It is noted that including measures of threat in the analysis is necessary to parse out the effects of domestic demands for social security on alliance behavior after accounting for the relationship between threats and alliances. The presence of support for both endogenous and exogenous causal mechanisms will cast doubt upon simple realist explanations for alliance formation.

The hypotheses above suggest a set of factors shaping alliance decisions that substantially differs from other accounts (Walt, 1987; Stein, 1990). However, this argument lacks an explanation of the barriers or disincentives to alliance formation. A problem arises because the known barriers to alliance formation are unobservable and non-measurable empirically (e.g. credibility of commitment, uncertainty about the future distribution of gains, beliefs about the reputation of the signatories, costs of trusting one’s potential partner) but are accounted for by leaders when considering alliance formation

¹⁷ Threats may also originate from internal sources, such as riots or demonstrations, motivating leaders to ally to consolidate power (Levy & Barnett, 1991; Barnett & Levy, 1992). However, internal threats are endogenized in the variable accounting for domestic demand for social security goods as the factors leading individuals to organize collectively and make demands of the government are typically related to an under-provision by the government of desired goods.

costs, C. Additionally, the argument presented herein assumes each state is equally likely to form an alliance in any given period (i.e. a compatible partner exists for each state every year). While this is a rather strong assumption, it is not uncommon in the alliance literature as others make this assumption implicitly or use sample selection methods to account for this unobservable factor (Lai & Reiter, 2000; Siverson & Emmons, 1990; Simon & Gartzke, 1996; Gibler 2008). Compatibility, an important component of alliance behavior, is addressed elsewhere as an obstacle to forming alliances (Author, no date). In order to capture, alliance opportunities the number of states in a state's politically relevant international environment will be included in these models as a control variable.

Until now, it has been assumed the nature of the relationship between military expenditures and alliances is one of complementarity and based on the arguments of Morgan and Palmer (2003), it has been put forth that when constituents demand more social security, then leaders may engage in alliance formation to create resources so they may respond to the demand. Thus, an empirical model of alliance formation can be specified to include measures accounting for the demand for social security goods, the type of regime and the level of security threat facing a state. Evidence provided by an empirical model would confirm support for the general causal mechanism explaining the relationship between the provision of national security and social security goods and the formation of an alliance as a national security policy option. Yet, in the realm of national security leaders often have several alternative policy options to supply security. While the formation of an alliance is one option, some leaders may opt to shift military expenditures in order to free resources. Since the claims above suggest domestic

demands encourage alliance formation, it is also relevant to consider how those same domestic demands may also shape allocations between security policy options. As the base of foreign policy substitution arguments assume that the behaviors arise from the same stimuli (Most and Starr 1989).

If the claims of this explanation are supported empirically, then forward looking leaders may react prospectively in determining resource allocations. In particular, changes in military expenditures at the margins should be observed based on the forward looking calculations made by leaders. More specifically, states should not approach the relationship between arms and alliances as zero-sum as states must retain some level of national security by providing a mix of security policy goods. Yet, it should be the case that changes in beliefs about the probability of forming alliances should affect the rate at which a state spends on the military. Therefore, as states develop better beliefs about the costs and obligations that may be required by future alliance commitments, then states should decrease military expenditures.

Thus, the genuine test of the microfoundations of the contracting explanation would be an examination of how domestic demands for social security expenditures affect the rate at which states change their military expenditures over some defined time period. Those domestic demands for social security expenditures require some action by leaders or leaders will be punished electorally in the future (i.e. they will lose political power). But responding to that demand is difficult for leaders because resources are finite. So in order to spend more on social security and to alleviate the burden of the domestic demand, leaders shift resources away from national security expenditures. Leaders do this

by producing security more efficiently via alliances. Thus, domestic demands for social security are the trigger forcing leaders to re-shape their security policy portfolios.

However, since adjustments in security policies are only likely to occur at the margins,¹⁸ increasing demand for social security expenditures should negatively affect the rate of change in military expenditures because those demands should force leaders to decrease the rate at which states spend on security in order to increase allocations towards social security expenditures. Or, in other words, constituent demands in the current year should negatively affect military expenditures in the next several years resulting in a negative effect on the rate of change in military allocations over time. In fact, since the policy allocation process is slow and cumbersome leader's reactions to the demands are expected to take some time so the effect of domestic demands for social security policy expenditures should affect the rate of change in a state's military expenditures in the coming several years though the focus here is on uncovering the short term effects. Thus, the level of domestic demand for social security expenditures from the past year affects the rate of change in military expenditures. This claim suggests domestic demands affect adjustments in military expenditures near the margins.

Military Spending Hypothesis 1: Previous domestic demands for social security expenditures should negatively affect the rate of change in military policy expenditures.

¹⁸ Changes in policy allocations appear at the margins because of budget inertia and the time lag between creating and effectively implementing policies. This is in contrast with existing arguments which suggest the relationship should be one of strict substitution or complementarity between alliances and the level of military expenditures. The careful reader will note this argument more clearly specifies the relationship in suggesting domestic demands should affect the rate of annual change of military spending, not the level as other scholars posit.

However, what if one considers the case where leaders are more prospective with respect to military expenditures. The microfoundations of the theory imply leaders are forward-looking and seek to ensure re-election. In fact, it could be the case that leaders make decisions about military expenditures in the current period, given increased demands for social goods, based on beliefs about the potential for future alliances. If this is true, then a leader's beliefs about alliance possibilities (more technically, those beliefs are the predicted probability of alliance formation for state i in year t) should affect military expenditures. In fact, if leaders strongly believe the creation of a new alliance is likely in the short term, then it should negatively affect their military expenditures in the current period. In essence, as the chances of an alliance increase, states should reduce military expenditures due to their expectations of security efficiency to be gained through allying which will allow leaders to circulate resources away from security demands and redistribute them towards domestic demands for social security policies in the short term. Again, these are factors influencing small changes in behavior so it is entirely possible a relationship cannot be determined because the effects are too negligible. Since alliance policies and military expenditure policies are inter-connected decisions for states, the potential for the formation of an alliance should not increase the rate at which states change their military expenditures because resources freed by alliance formation are taken from military expenditures should be allocated towards domestic demands—thus, alliance formation should negatively affect the rate of change in military expenditures.

Military Spending Hypothesis 2: Alliance formation should be negatively associated with a state's rate of change in military expenditures.

The preceding paragraphs have presented two sets of hypotheses, the first relevant to developing a model of alliance formation and the second relevant to understanding the mechanisms affecting changes in military expenditures focusing on the role of domestic demands and alliance formation specifically. The next section will detail how these claims might be linked to an econometric model to examine the alliance formation and military expenditure processes individually and simultaneously.

III. Modeling the claims of the contracting explanation

As previously mentioned, these claims will be examined on a set of cases where the units of analysis are state-years after 1950. The temporal range was chosen in order to maximize the spatial scope of the reliability of the military expenditure data. Moreover, since a leader's sensitivity to the demands of his selectorate is a crucial element of the argument here, this time period includes a sufficient number of democratic states to develop inferences about the effect of MWC size on foreign policy choice. The structure of the argument suggests leaders make simultaneous decisions about alliance formation and military expenditures pointing to an empirical model that can simultaneously capture these two processes.

One way to capture the simultaneity of the two processes is to estimate a two-stage probit least squares model (Keshk 2003) adapted from Maddala (1983, 240-242).¹⁹ This model can be used when one of the dependant variables is fully observed and the other is observed as a dichotomy. This modeling approach employs three modeling step in order to produce a final model. In the first step, separate probit and regression models are

¹⁹ This model has been implemented in international relations to understand the relationship between trade and conflict (Keshk, Pollins, & Reuveny 2004) as well as the liberal peace (Kim and Rousseau 2005).

estimated. The second step instrumentalizes parameter estimates for the dependant variables and includes the instrumentalized variables as an explanatory variable in a second model of each process thus eliminating the correlation between the endogenous explanatory variables and error terms that violates methodological assumptions of the OLS and probit models. By including the instrumentalized variable, the model captures the endogeneity between the two processes without biasing estimates. The final step corrects the standard errors of the estimates of the two models with the instrumentalized variables. This two-staged estimator provides an unbiased and efficient parameter estimator of each parameter in the model (Amemiya 1978; Maddala 1983).

Thus, the empirical models reported in the next section will be specified as indicated below, though alternative specifications will include lagged variables to capture temporal trends:

$$\begin{aligned} \text{Probability of Alliance Formation} = & \alpha + \beta_1 \text{ Change in Demand for Social Security} \\ & \text{Allocations} + \beta_2 \text{ Large MWC} + \beta_3 \text{ Sum of Rivals} + \beta_4 \text{ Sum of MIDs in PRIE} + \beta_5 \\ & \text{Capability Ratio relative to PRIE} + \beta_6 \text{ Number of States in PRIE} + \gamma_2 \\ & \text{Instrumentalized Logarithm of Changes in Military Expenditures} + \varepsilon_i \end{aligned}$$

$$\begin{aligned} \text{Changes in Military Expenditures}^{20} = & \alpha - \beta_1 \text{ Demand for Social Security Policies}_{(t-1)} \\ & + \beta_2 \text{ Large MWC} + \beta_3 \text{ Sum of Rivals} + \beta_4 \text{ Sum of MIDs in PRIE} + \gamma_1 \\ & \text{Instrumentalized Probability of Alliance Formation} + \varepsilon_i \end{aligned}$$

²⁰ The model specification here aims at maximizing the number of observations and contains some of the elements identified by other scholars as factors shaping military spending such as economic factors (Smith 1977) and threat related factors (Sandler & Hartley 1990) though admittedly this model is simplified. Alternative specifications of this model (i.e. reported model 3 & 4) include GDP/capita, however due to missing values the inclusion of this variable reduces the number of observations.

The variables used in these models come from a variety of places. The dependant variable in the alliance formation equation is perhaps the simplest variable to measure as alliance formation is observed when two states signed a new alliance agreement in a given year (assuming it is not a secret commitment). The data used herein are part of the Alliance Treaty Obligations and Provisions (ATOP) project on alliance reliability (Leeds and co-authors 2000, 2002). Those data improve upon the reliability data of Sabrosky (1980) based on the Correlates of War (COW) Alliance Dataset.²¹ The ATOP data is selected because it includes a larger geographical domain than the COW data (based on v. 2.1, 1996 [Leeds et al., 2000]). Moreover, a substantial difference between ATOP and COW in terms of the number of alliances formed exists (Leeds et al., 2000; Leeds & Mattes, 2007) and the ATOP data include more specificity regarding alliance obligations. These data are publicly available from 1816-2000. The dependent variable is coded '1' if the state is a signatory to a new alliance agreement during a given year and 0, otherwise.²²

²¹ The COW alliance dataset, originally compiled by Singer and Small from 1816-1960s (1966) and further updated through 2000 by Gibler and Sarkees (2003), is the best known alternative to the ATOP data.

²² This variable accounts for new alliances (of any type), so all other years the alliance is in effect are coded as 0. Since this is an initial analysis examining a new explanation for alliance behavior, the research design maximizes the number of observable implications by including all alliance types though future research could explore which alliance designs give leaders policy flexibility. Drawbacks to a binary construction include that 1) when a state forms more than one new alliance in a given year the state is still coded as 1 for the year and 2) it assumes all alliance types are equivalent. For example, in 1815 Austria-Hungary forms 4 separate bilateral agreements (one with Hesse and Tuscany, two with Two Sicilies) but each state actor involved receives a score of 1 on the dependant variable for that year only. Thus, the dependant variable

Social policy demand is the most difficult concept to capture. A historical explanation for the development of the welfare state and review the major theories for the welfare state would be insightful; however, space considerations prevent such a review here.²³ The argument presented herein assumes (consistent with Powell, 1999) leaders must provide both social policies and security policies to retain office. Social policies, in this light, are any government expenditure meant to increase the welfare of constituents not related to military expenditures.²⁴

When examining social policy expenditures, the relationship between social policy *supply* by the government and social policy *demand* by constituents must be considered. Two problems arise: 1) supply does not have to equal demand²⁵ (though they are likely to be highly correlated) and 2) existing measures of social policy supply are temporally limited. In other words, only since WWII have governments started voluntarily reporting social policy expenditures and the voluntary aspect of their reportage limits both their spatial and temporal availability. Responsible leaders should supply social policies nearly equivalent to the demands for those policies.

should be interpreted as the probably a state forms at least one new alliance contract (of any design) during a given year.

²³ The relationship between the welfare state and military concerns in early 20th century in Lloyd George's United Kingdom is explored by Wrigley (1976) for a comparison with its precursor Bismarck's Germany, see Ritter (1986). Theoretical explanations for the welfare state can be found in Korpi (1983), Baldwin (1991), Keech (1995) and Swank (2003).

²⁴ This definition is consistent with Altfeld's (1984) conceptualization of wealth.

²⁵ In abstract, the equilibrium between what citizens demand and governments supply is determined by extractive capacity of government, measured by taxes. Relative political capacity (Arbetman & Kugler, 1997), the ratio of actual government extraction to anticipated government extraction, would be an ideal measure but the reliability and availability of these data before 1960 is severely limited.

Since social expenditure data are available for a limited temporal domain and require conversion from national currencies to an international standard, seeking some measure of social policy demand that is highly correlated with supply and available for a longer temporal and wider spatial domain is advisable. Infant mortality rates provide a useful measure of social demand which can serve as a proxy for the government's supply of social policy goods as these rates are extremely responsive to government expenditures on social programs (Pampel Jr. & Pillai, 1986; Riphienberg, 1997; van der Berg, 1998). Conley and Springer show after accounting for country level effects that "public health spending does have a significant impact in lowering infant mortality rates, net of other factors, such as economic development...state spending affects infant mortality both through social mechanisms and through medical ones" (2001, 768) in an analysis of 19 countries over 30 years. Those authors suggest infant mortality rates are sensitive over the short-term to state investments in health and medical care (2001, 769) and "infant mortality is a generally accepted indicator of a nation's health and quality of life, particularly for the poorest members of society" (2001, 770). Infant mortality has been used as a quality of life measure (Esty et al. 1999; Urdal, 2005) and captures the distributional aspect of government goods more closely than alternative measures (e.g. GDP/capita). In other words, infant mortality rates reflect a government's respect for the welfare of its citizens (Abouharb & Kimball, 2007). As infant mortality rates increase, it indicates a decrease in the government's respect for social welfare resulting in an increase constituent demand for social policy allocations.

There are several benefits of using infant mortality rates (IMR) to capture government respect for its citizen's welfare (Abouharb & Kimball, 2007). First, IMRs are collected

by most states in regularly scheduled censuses despite some variation within and across states. Second, the United Nations' interest in measuring the 'quality of life' has led the organization to collect IMR data for all recognized states from 1950 onwards, so more IMR data are available than social expenditure data in this period. Finally, IMRs are naturally on the same metric, whereas actual social policy expenditures are reported in national currencies and require conversion introducing imprecision to the measure. Here infant mortality rates are recorded as the number of deaths (by infants less than 12 months old) per 1,000 live births (excluding still births).²⁶ Therefore, the values for each country are directly comparable making interpretation easier.²⁷

The analyses here utilize two variables based on the infant mortality rate. The first variable accounts for the annual level of infant mortality which is included in the military expenditure models. States' IMRs decrease as they allocate more budget resources towards social policies, thus lower IMRs suggest a state has allocated more resources toward social goods implying its budget is somewhat constrained (i.e. it would be difficult for this state to allocate more resources toward N without sacrificing allocations toward S). As the infant mortality level increases then, there should be a

²⁶ The annual infant mortality rate data for all countries in the world used in this project were collected by Abouharb & Kimball (2007).

²⁷ Despite the benefits of using infant mortality rates to proxy demand for social policies several caveats should be noted (for details, see Abouharb & Kimball, 2007). First, governments might strategically underreport infant mortality rates to conceal poor social policy provision, thus the reported rate may be less than the actual rate. Relatedly, as infant mortality data is collected via national census births outside of hospitals or among minority groups are *less* likely to be reported despite the fact that those infants are much more susceptible to experiencing mortality in the first year. Nonetheless, the authors argue the IMRs collected closely reflect the actual rates within states.

negative effect on changes in military expenditures. The second variable included most approximates the “change in circumstances” identified by Morgan and Palmer (2003) as a causal factor in alliance formation. This variable measures the change in the previous year’s infant mortality rate relative to the average rate over the previous three years. This variable is meant to account for the distance between actual government provision of social goods and the anticipated government provision based on expectations developed by knowing the provision levels over the past few years. As the distance between the previous year’s IMR and the 3 year average IMR increases, states should be more likely to form alliances.

Another key concept is the size of the minimum winning coalition (MWC). This measure has been used by Bueno de Mesquita and his colleagues (2003) in the multiple econometric models presented throughout their book.²⁸ *W* is a composite measure accounting for the extent to which political competition exists within a state and “polities that meet more of the criteria seem to us more likely to have a larger coalition than polities that meet fewer criteria, because the criteria speak directly to the dependence on more or fewer people in gaining and holding political office” (2003, 135).

A final key causal concept is the level of threat facing a state. There are many conceptions of threat leading to the problem of including only some imperfect cross-section of the types of threats leaders’ likely face. In this project, several measures of external or exogenous threats are explored. External threats comprise threats to the external security of the state. External threats are classified into two categories: direct security threats and indirect security threats. Direct security threats comprise threats

²⁸ The authors discuss their institutional measures consistent with the selectorate theory in their book (2003, 134-135).

directly affecting the security of the state. The measure of direct security threats included in this analysis is the number of rivals for the state (Stinnett and Diehl 2001). This continuous variable ranges from 0 to 16 with a mean of .165 and a standard deviation of .668. As the number of rivals a state has rises, then the chances the state forms an alliance increase (Hypothesis 3). Indirect security threats comprise threats to states due to their surrounding environment. The measure of indirect security threats employed is from Zeev Maoz's work on Politically Relevant International Environments (PRIE) (1996, 1997). A variable accounting for the number of militarized interstate disputes (MIDs) in a state's PRIE not involving the state itself is included. This variable has a mean of 20, a standard deviation of 18.6 and a range from 0 to 165. As the number of MIDs in a state's PRIE increases, then the chances it forms an alliance increase (Hypothesis 3). Thus, positive coefficients on all of the external threat measures are expected.²⁹ Finally, two other PRIE based variables to control for alliance opportunities on the right-hand side of the equation instead of using a sample selection mechanism (such as testing the model on only politically relevant dyads) are employed. One measure captures the number of states in a state's PRIE as a capture for alliance opportunities. The other measure proxies a state's willingness to form alliances by measuring a state's capability ratio relative to its PRIE.³⁰ Though these measures are included under the guise of control variables, they also reflect the threats states face to

²⁹ The PRIE data is only available from 1816 until 1995 so it determines the upper limit of my time period.

³⁰ This variable captures a state's power relative to its political relevant neighbors, as a state become more powerful it should be more likely to ally in order to institutionalize the status quo.

some degree and as such the control variables are correlated with the explanatory variable measures of threat around .5.³¹

The second model uses military expenditures data generated by EUGene (Bennett and Stam 2000) from the Composite Index of National Capabilities (Singer, Bremer and Stuckey 1972). The various models estimated use different measures calculated from the military expenditure variable since data on the level of annual military expenditures are extremely heterogenous across the sample and exhibit some temporal autocorrelation. All models estimated capture the effects of the independent variables of interest on the following dependent variables: 1) the change in the annual level of military expenditures between the current year and the previous year and 2) the logarithm of the change in the annual level of military expenditures between the current year and the previous year.³² The specification in these models uses a one-year lag for the demand for social security policies though results are robust for any lag between one and five years previous. Gross Domestic Product per capita data comes from the Penn World Tables (version 6.1) (Heston, Summers & Aten 2002). All other variables included in the military expenditure model come from the sources described above. The next section reports

³¹ While that correlation is below a level that would cause collinearity concerns in the model, it is possible these variables may account for some of the variance in alliance formation anticipated to be accounted for by the other threat variables.

³² I introduce natural logarithm of the annual change in military expenditure dependent variable in order to standardize changes in expenditures that vary widely across countries and, additionally, the potential non-constant variance in the errors associated with fitting a model of military spending would be washed out without logging the dependent variable. Moreover, in models five and six I include some form of a lag of the dependant variable to account for autocorrelation since it is not appropriate to include time splines (Beck, Katz, & Tucker 1998) in these models (Keshk, Pollins & Reuveny 2005, 1169).

results for set of models estimated to capture the alliance formation process and its indirect effect on military expenditure decisions for leaders.

IV. Results and Discussion

[Table 1 about here]

Table 1 reports parameter estimates for a series of two-stage probit least squares models³³ where the continuous variable equation explores the factors that affect changes in military expenditures is linked via an instrumentalized endogenous variable to a binary alliance formation equation.³⁴ Models one, three, and five use the change in the annual level of military expenditures between the current year and the previous year as the dependant variable in the OLS model while models two, four, and six are estimated using a dependant variable that measures the logarithm of annual change in military expenditures.

This discussion draws heavily from the results reported in Model 4 which accounts for the influence of economic factors but omits the temporal aspect though the results are similar across the models. Across the alliance formation models presented, hypotheses one and two receive the strongest support highlighting the role of domestic factors in shaping alliance behavior (despite the sign of the coefficient for large MWC size being opposite from its anticipated direction). Moreover, the explanatory variables selected to capture threats in the alliance formation model are not significantly different from zero

³³ This model is implemented in STATA using the “cdsimeq”, see Keshk (2003) for more detail.

³⁴ Though simultaneous models are reported here, individual OLS and probit models based on model 4 yield highly consistent results though the parameter estimates are different in magnitude. The results from the individual models are available from the author upon request.

though the control variables are positive and significant as expected; in fact, the state-PRIE relative capabilities measure likely also accounts for threats.³⁵

However, the focus of this research is to explore the role of domestic demands and alliance formation potential on changes in military expenditures so as to examine the microfoundations of the contracting explanation. According to the hypotheses posed earlier, there are two independent variables of interest in the military expenditure models relevant to arguments presented herein. First, domestic demands for social spending should negatively affect the rate of change in military expenditures as demands should force leaders to revisit policy allocation decisions. Second, the probability of alliance formation should also be negatively related to changes in military expenditures. The coefficients reported in table 1 confirm the first hypothesis but cast doubt upon the second expectation as alliance formation appears to increase changes in the level of military expenditures. Observational evidence to support this claim arises from the fact that 128 of the 403 alliances (32%) formed after 1949 contain “active military assistance” provisions (Leeds et al. 2000, 2002). Despite the coefficient parameter reported being positive, the true inference to be drawn from the model may be different because of how the nonlinearities in the maximum likelihood model affect the marginal effects in the continuous variable regression model.

[Table 2 about here]

Table 2 reports the marginal effects³⁶ calculated after model 4 as reported on Table 1. In this case, the marginal effects are more meaningful for the OLS model than

³⁵ Alternative specifications without the control variables result in positive and statistically significant threat measures.

³⁶ Obtained by specifying « mfx » after estimating the empirical model.

the MLE model because of that model's non-linearity. Marginal effects are elasticities calculated as the change in the dependant variable for a 1% change in the independent variable. The marginal effects reveal support for military spending hypothesis 2 since the instrumentalized variable capturing alliance formation negatively affects changes in military expenditures. For every one unit increase in the instrumentalized variable reflecting alliance formation, the log of the change in annual military expenditures is anticipated to decrease by .90 units³⁷. Additionally, each one unit increase in demand for social security goods results in a .095 unit decrease in the log of the annual change in military expenditures. Given the predicted value of this dependant variable is equal to 4.2, a one unit increase in the instrumentalized alliance formation variable should decrease the log of annual changes in military spending to 3.3 units or by 20%. Thus, both relationships posed for the military expenditure model are supported empirically. Most of the marginal effects reported for the military spending model are significant except the variable measuring external threats as a state's number of rivals that is insignificant in the empirical models using the log of annual change in military expenditures as the dependant variable as well as in their marginal effects.

This provides empirical support for the claim that alliances and arms expenditures are complements to one another and alliances may be used as substitutes for military expenditures as states shift resources away from military expenditures when the probability they form an alliance becomes more likely. Moreover, domestic demands for social security have a clear relationship to both of these security policies—they increase

³⁷ Military expenditures, the base of this dependant variable, are measured in thousands of US dollars in the current year. Thus, the units here would be the logarithm of the annual change in military expenditures in thousand of dollars.

the chances of alliance formation and have a negative relationship with changes in a state's level of military expenditures even after accounting for how alliances negatively affect military expenditures. Those domestic demands are the causal mechanism or stimuli shaping both types of behavior. The finding that domestic demands consequentially affect security policy option choice even after empirically accounting for the endogenous relationship between arms and alliances suggests this project provides a major contribution to the literature on foreign policy substitution in its empirical and theoretical contribution as to what causes states to re-organize foreign policy portfolios—domestic demands for social security expenditures.

V. Conclusions

This paper examined the microfoundations of the contracting explanation by suggesting domestic demands for social security expenditures shape the relationship between arming and allying for individual states. The reason why domestic demands for social security expenditures shape how leaders allocate resources between arming and allying is because leaders care about retaining political power. Leaders need to design efficient security policies so as to free resources to allocate towards domestic demands. In fact, the findings here suggest domestic demands negatively affect changes in a state's level of military expenditures despite their positive influence on alliance potential AND the negative relationship between alliance formation and changes in a state's level of military expenditures. Moreover, results here suggest changes in a state's predicted probability of an alliance are inversely related to changes in military expenditures. Thus, there is evidence to support the microfoundations of the contracting explanation of alliance formation as social security expenditure demands from a leader's domestic

environment influences how the leader allocates resources between the sources of security within his security portfolio, arms and allies. Moreover, the basic expectations of the contracting explanation model continue to receive robust support despite being subjected to differences in the unit of analysis and time domain relative to earlier analyses. The unique implication of the research here is that the domestic political factors (i.e. veto players and the constraints/demands associated with MWC size) suggested by others to either impede cooperation (Putnam 1989; Milner 1997) for leaders or be unassociated with it (Waltz 1979) not only inspire leaders to seek out cooperation according to the arguments presented here but also affect the allocation of resources towards national security. So, in abstract, domestic political demands have a double-edge when considering how they can affect cooperative behavior among states. Clearly, the findings of this paper point to the fact that domestic factors cannot be marginalized in our study of international cooperation and, indeed, they should rightfully share a central role in our studies of cooperation and security portfolio design along with power politics factors.

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Figure 1: The Contracting Explanation portrayed by a Production Possibilities Frontier

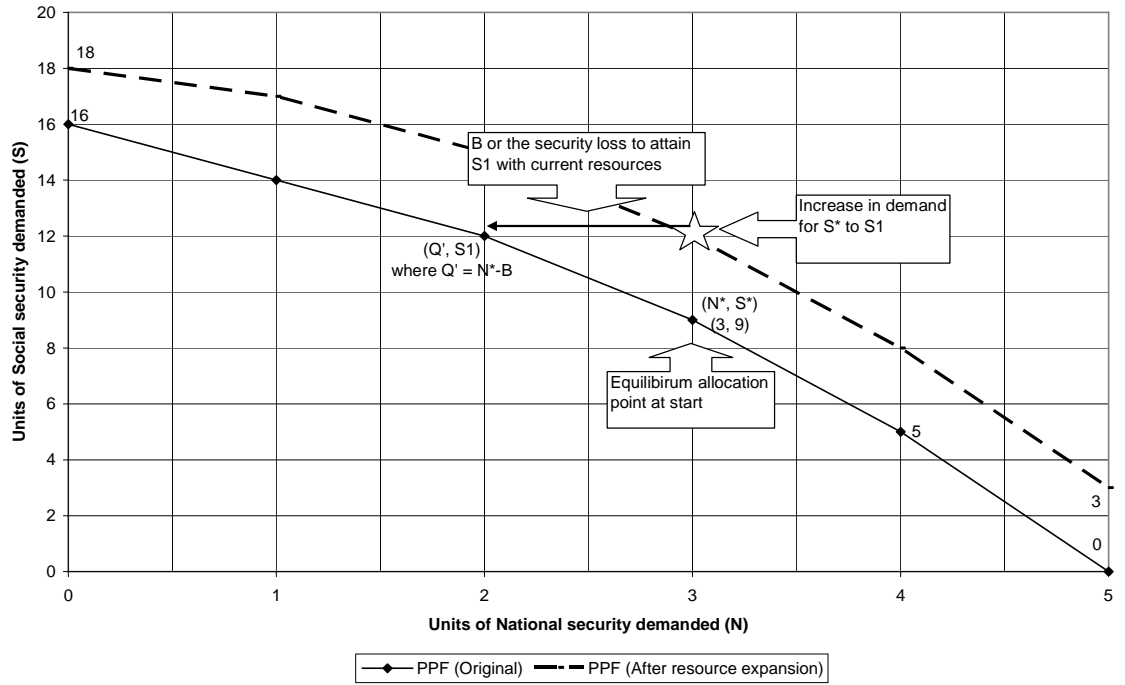


Table 1: Two-stage Probit Least Squares parameter estimates of alliance formation & military expenditures, 1950-1995

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Military Expenditure Least Squares Regression Model</i>						
Dependant Variable is the _____ of Military Expenditures	Change in Level	Log of Change in Level	Change in Level	Log of Change in Level	Change in Level	Log of Change in Level
Lag of the Level of IMR (-)	-681.05 (,1052)	-0,0091** (,0030)	934,21 (1271)	-0,0054** (,0036)	954,84 (1955)	-0,0056 (,0039)
Large MWC	24186 (108214)	-1,1135** (,3053)	-222957* (147477)	-0,7040** (,4123)	295890 (230141)	-0,4920 (,4620)
Number of Rivals (+)	1764299** (247180)	-0.1002 (,6934)	2044244** (268600)	-0,0021 (,7159)	1928830** (357269)	-0,4967 (,7654)
Number of MIDs in PRIE (+)	6079** (2556)	-0,0045 (,0038)	10098** (3802)	0,0227** (,0105)	3751,6 (5314)	0,0157 (,0109)
Instrumentalized Alliance Formation (-)	431950* (285733)	1,5135** (,8033)	-259991 (362380)	2.687** (,9877)	2388672** (535285)	3.8343** (1,102)
GDP/capita	na	na	67,86** (14,59)	0,0002** (,00004)	na	na
Lag of Capabilities	na	na	na	na	-2,1e-07** (4971336)	-0,1513 (10.56)
Constant	568506 (394322)	5,498** (1,1088)	-772377 (574068)	7,4032** (1,571)	3195332** (845777)	9.2165** (1.740)
<i>Alliance Formation Probit Model</i>						
Change in IMR relative to 3yr Ave. (+)	0,0043 (,0039)	0,0055** (,0021)	0,0054** (,0021)	0,0055** (,0020)	0,0055** (,0020)	0,0053** (,0020)
Large MWC (+)	-0,1016 (,0813)	-0,0420 (,0662)	-0.1874** (,0616)	-0,1790** (,0608)	-0,1958* (,0621)	-0,1792** (,0623)
Number of Rivals (+)	-0,8989	0,1783**	0,0828	0,1116	-0,1284	0,1109

	(1,615)	(,0969)	(,2137)	(,0937)	(,1179)	(,0968)
Number of MIDs in PRIE (+)	-0.0049	-0,0045	-0,0012	-0,0005	-0,0015	-0,0012
	(,0062)	(,0039)	(,0023)	(,0020)	(,0020)	(,0020)
Instrumentalized Military Expenditures	5,98e-07	0,0541	9,42e-08	0,0246	1,0 e-07**	0,0533**
	(9,14e-07)	(,0565)	(9,09e-08)	(,0262)	(3,27e-08)	(,0198)
Capability Ratio to PRIE	0.0458	1,3499	2,936**	2,6093**	3.2161**	2,0637**
	(4,899)	(2,008)	(,8810)	(1,048)	(,8172)	(,9354)
Number of states in PRIE	0.0064**	0,0061**	0,0065**	0,0056**	0,0066**	0,0055**
	(,0032)	(,0018)	(,0017)	(,0015)	(,0015)	(,0015)
Number of new allies (t-1)	na	na	na	na	0,0092*	0,0076
					(,0057)	(,0057)
Constant	-1,3453*	-1,5447**	-1,4273**	-1,5284**	-1,436**	-1,6317**
	(,1155)	(,1484)	(,0570)	(,1002)	(,0538)	(,0844)
N	5640	5640	4400	4400	4400	4400

Table 2: Marginal effects for variables of interest (Based on Model 4)

DV = Log in the Change of Military Expenditures	M.E.	Hyp # (Direction)	Confirmation
Lag of the Level of IMR (-)	-0,0956* (,0619)	MS-H1 (-)	Yes
Large MWC	-0,068* (,0402)	NA	
Instrumentalized Alliance Formation (-)	-0,9009* (0,336)	MS-H2 (-)	Yes
Number of Rivals	-0,00002 -0,0066	NA	
Number of MIDs in PRIE	0,1449* (,067)	NA	
GDP/capita	0,1555* (,0329)	NA	