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# Military Rivalries, Alliances and Taxation

## The International Origins of Modern Fiscal Contracts

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# Military Rivalries, Alliances and Taxation: The International Origins of Modern Fiscal Contracts

Agustín Goenaga and Alexander von Hagen-Jamar

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# Military Rivalries, Alliances and Taxation

## The International Origins of Modern Fiscal Contracts[1]

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## Abstract

Bellicist theories of comparative development predict increases in taxation as the result of military rivalries. Others claim that this causal relationship is contingent on particular geographical, institutional, and historical conditions. In this paper, we explore the conditional effects of military rivalries on taxation during the 19th and 20th centuries using time-series cross-section models. We hypothesize that international norms of territoriality, inter-state military alliances, and regime type will condition the direction and magnitude of the effect of rivalries on taxation. Our models suggest that from 1815 to 1945 the effects of rivalry on taxation were insignificant independently of these systemic, dyadic, and institutional factors. However, after 1945 when norms of territorial integrity consolidated, democracies with strong military allies responded to military pressures by lowering taxes in the short-term, reoriented public expenditures towards social spending, and ultimately increased taxes in the long run through a reconfiguration of the fiscal contract. Conversely, autocracies

[1] Prepared for presentation at the 2016 APSA Annual Meeting, September 1-4, 2016

with strong allies responded to military pressures by increasing taxes in the short-term, capturing as much wealth as possible but failing to consolidate durable fiscal institutions.

# I Introduction

A dominant strand in the literature on political development holds that military conflicts create competitive pressures between states that lead to the centralization of authority and the expansion of tax revenues (Tilly and Ardant 1975; Tilly 1993). Behind this explanation is a contractarian logic, where exogenous pressures create incentives for state and societal actors to centralize resources in order to collectively provide for security against external threats. As states develop around these fiscal contracts, they establish coercive and administrative institutions that further increase their capacity to raise revenue and provide other public goods. Inspired in this "Bellicist" view of political development, several studies have found positive effects of military pressures on government revenues across geographic and historical contexts (Thies 2004; Thies 2005; Thies 2007; Scheve and Stasavage 2012; Scheve and Stasavage 2012).

Others have noted that the conditions of pre-modern Europe that inspired classical Bellicist arguments have not been present in other regions and historical periods, where military pressures have instead weakened state institutions — and by extension taxation —, as was the case in Latin America and Sub-Saharan Africa during the 19th and 20th centuries (Herbst 2000; Centeno 1997; Centeno 2003). According to these accounts, military rivalries only trigger state-building trajectories if the state already enjoys relatively high levels of state capacity (Boucoyannis 2010); if high population density makes territorial losses more costly than the human or financial costs of war (Herbst 2000); if social cohesion or inclusive political institutions help to solve the collective action dilemmas of pooling resources together (Centeno 2003; Besley and Persson 2009; Dincecco 2009; Dincecco 2011; Dincecco 2015; Gennaioli and Voth 2015; Sambanis, Skaperdas, and Wohlforth 2015); if the outcome of war can be determined by financial resources — i.e. the "costliness" of war (Gennaioli and Voth 2015); if the occurrence of conflict threatens the lives and property of the entire population — i.e., it is a "total" rather than a "limited" war (Centeno 2003); if the rulers can only finance military expenditures through taxation rather than foreign sources of revenue (Reno 1999); and if the international system allows for the natural selection of weak political units that fail to face the requirements of war (Jackson and Rosberg 1982).

When do military rivalries contribute to the expansion of taxation and when do they erode state institutions? In this paper, we propose a single theory of the conditional effects of military pressures on taxation from 1815

to the present day. We argue that since 1815 the nature of the relationship between military rivalries and taxation has been conditioned by three factors: (1) the consolidation of international norms of territorial integrity and sovereignty that made rivalries less threatening; (2) the proliferation of international alliances as a strategy of national defense that substituted investments in military capabilities; and (3) the diffusion and expansion of democratic institutions that changed the terms of the fiscal contract between rulers and citizens. By looking at the interaction between military rivalries and these three conditioning factors, we show how the effects of military rivalries on taxation mutated over time, losing significance in some cases, creating new fiscal contracts in other contexts, or propping up predatory states in yet another set of cases.

As the Bellicist literature has repeatedly indicated, military rivalries tended to increase taxation in pre-modern Europe, a time and place characterized by an anarchic international system and intense wars of territorial conquest motivated by high levels of population density. However, during the 19th century, especially after the Concert of Europe of 1815, the international security environment began to change. Military alliances increasingly became a viable alternative for many states to procure external defense, instead of undertaking major investments in their domestic military capabilities. By pooling military capabilities together, military allies created economies of scale in the procurement of external defense, generating efficiencies in how they could spend public revenues. Early democracies in particular benefited in the long run from these efficiencies, since they gave those democracies the opportunity to respond to citizen demands for a wider array of public services (from education, health and social spending to infrastructural investment) and for lower levels of taxation in the short term, without making themselves vulnerable to external threats. In other words, the outsourcing of national defence to international alliances opened the opportunity to transform the nature of the fiscal contracts of early democracies, which in the long-run would facilitate the expansion of taxation driven by growth in social (rather than military) spending (Piketty 2014:477).

Democracies without allies, on the other hand, had to keep investing on their military capabilities to survive, and therefore continued to increase taxes as a result of military pressures, much in the vein of conventional Bellicist arguments. Similarly, non-democracies had no incentives to lower taxation regardless of whether they had allies or not, so rivalries produced short-term increases in taxation as those regimes expanded military capabilities to face external threats, repress domestic

challengers, and capture more wealth from their populations. Predatory states began to take shape under those conditions, since short-term fiscal extraction failed to build strong long-term fiscal institutions, much in the vein of the trail of "blood and debt" described by Centeno (Centeno 2003).

After WWII, the consolidation of strong international norms that fixed borders and protected territorial integrity further changed the international security environment. This magnified the opposite effects of rivalries and alliances on fiscal development (Jackson and Rosberg 1982). As in the 19th century (but to a much greater degree), post-war democracies with powerful allies were able to free valuable resources by further outsourcing their defense expenditures, for example through the creation of international organizations like the North Atlantic Treaty Organization (NATO). Non-democratic rulers with powerful allies could also rely on the protection of their foreign patrons. However, rather than shifting the nature of the fiscal contract to the provision of social services, autocrats used alliances to not only protect themselves from foreign enemies but to maximize the amount of resources that they could extract from the population in the short-term and for their private benefit. Finally, contrary to the pre-war period, even for states with no powerful allies, the new international security environment reduced the effects of military pressures on taxation, regardless of whether they were democracies or autocracies.

In sum, during the 19th and 20th centuries, military pressures only made states where they combined with democratic institutions and international economies of scale in the procurement of national defense that allowed citizens to re-negotiate the fiscal contracts with their rulers, lowering taxes in the short run but creating the conditions for long-term fiscal expansion. Everywhere else, rivalries either had no effect on taxation, or fostered predatory states that maximized extraction in the short term but failed to build strong fiscal institutions in the long run.

In this paper we test these theoretical argument about the short- and long-term effects of military rivalry on taxation under different international contexts and domestic political institutions through several time-series models that cover the period 1815-2015. As part of our analyses we include two-stage least squares estimation (2SLS) using instrumental variables, where we model levels of military spending to evaluate whether the relationship between rivals' military capabilities and levels of taxation follows our proposed causal mechanisms. As a robustness check, we reproduce these models using two different dependent variables: taxation per capita in 1990 GK dollars and tax ratios (taxes as a percentage of GDP).

In what follows we offer first a brief overview of Bellicist arguments and how the literature has added nuance to the claim that military pressures build states. We then spell out how each of the three conditional factors we propose — norms of territorial integrity, international alliances, and political institutions — are expected to affect the relationship between military rivalries and taxation in the short-term. In the third section, we describe our data and the time-series models we use to test the theoretical expectations of our argument. The fourth section discusses the results of those models and offers some preliminary thoughts about the implications of those results for long-term trajectories of fiscal and political development.

## II War and military rivalries in context

*The Bellicist argument*

One of the most influential explanations of the development of state capacity builds on the fiscal-military model of state formation (Hintze 1975; Tilly and Ardant 1975; Tilly 1993; Downing 1993). The classical version of this argument is Charles Tilly's description of the state as a protection racket. From this perspective, central rulers were capable of offering protection to the populations in their territory in exchange for revenue. This process of state formation began with the military revolution of the late Middle Ages that made warfare more costly on towns and cities (Spruyt in Boix and Stokes 2009, 214). To build mass armies as opposed to the heavy cavalries of noblemen, monarchs had to rely much more on their populations, not only to extract revenue to finance long-lasting and expensive wars, but also to populate the rank-and-file of their mass infantries. This had a profound effect on the contract between rulers and subjects, leading to the rise of the centralized, sovereign, territorial state as a dominant form of political organizations. As evolutionary pressures generated by the bellicose environment of Early Modern Europe continued, other forms of political organization (city-states, city-leagues, empires) gradually disappeared and states began to emerge all over the continent (Spruyt 1996).

Similar arguments have been made to explain changes in state capacity, and especially taxation, in subsequent centuries. Cameron J. Thies, for example, proposes to consider external rivalry, rather than the actual occurrence of war, as the key driver of state capacity beyond the context

of Early Modern Europe (Thies 2004; Thies 2005). Testing the relationship between rivalries and extractive capacity in a series of articles, he claims that external rivalries and internal ethnic rivalries (but not political ones) have positive effects on tax ratios (2004). He finds that among 20th century South American countries, interstate wars have had no significant impact on extractive capacity, while civil wars have a statistically significant negative effect. Nevertheless, when considering rivalries instead of the occurrence of war, Thies finds that long-term, threatening inter-state relationships increase extractive capacity among South American countries, as expected by the Bellicist model (Thies 2005). He has replicated these analyses in other contexts, finding similar results among Sub-Saharan African countries between 1975 and 2000 (2007), and for Central America throughout the 20th century (Thies 2004; Thies, Chyzh, and Nieman 2015).

*Country-level conditions*

Other scholars dispute these claims. They accept the explanatory power of Bellicist arguments for the emergence of the state and the expansion of state capacity in Early Modern Europe, but insist that the causal relationship between military competition and state capacity does not hold in other geographic or historical contexts. In this regard, comparativists, historical sociologists and economists often emphasize country-level characteristics that condition this causal relationship. For example, Jeffrey Herbst (2000) has advanced a persuasive argument showing why states emerged early on in Europe but not in Africa, and how these factors triggered long-term path-dependencies that explain the weakness of today's African states. According to him, low demographic pressures and a vast territory spared pre-colonial African polities from the pressures of warfare. The availability of land made exit a more attractive option than fighting. European colonialism did not change this, since it tended to only establish governmental institutions in the coastline, where European merchants took resources (raw materials, precious minerals, slaves) without developing the state infrastructure outside the commercial centers. Moreover, the colonial grid respected by European rulers created strong artificial boundaries, where it was not necessary to invest in state infrastructure to protect the hinterland.

Timothy Besley and Torsten Persson (Besley and Persson 2009; Besley, Ilzetzki, and Persson 2013) emphasize instead how politics conditions the effects of war on state capacity by influencing the ways in which rulers choose to face military pressures. They suggest that where political

institutions make rulers more likely to make forward-looking investments in common interest public goods (such as external defense), fiscal and legal capabilities expand. This occurs where checks and balances are present. Conversely, where this type of political institutions is absent, rulers may either choose to distribute rents to supporters (when political stability is high) or supply sub-optimal levels of both rents and public goods (when political stability is low). This argument is consistent with similar claims about the conditioning effects of "limited government", "inclusive institutions" and "open-access orders" cited by institutional economists (Dincecco 2009; Dincecco 2011; Dincecco 2015; North, Wallis, and Weingast 2009; Acemoglu and Robinson 2013)

Others have suggested that war-making is already endogenous to prior levels of state capacity, a united political elite, a coherent concept of a nation, and an administrative core (Centeno 2003:24, 106-107; also see Boucoyannis 2010; Gennaioli and Voth 2015; Sambanis, Skaperdas, and Wohlforth 2015). Where elites are divided and society is fragmented along racial and ethnic lines, or where institutional capacity is too fragile, military conflicts further undermine the ability of the state to tax its citizens, causing instead the destruction of administrative institutions and the reliance on public debt to finance expenditures (Centeno 2003:23).

*System-level conditions*

IR scholars have recurrently argued that system level characteristics affect the ways in which states relate to each other, changing, among other things, the likelihood and nature of military conflict (Finnemore 2003). This insight has important implications for Bellicist theories of political development. For example, Robert H. Jackson and Carl G. Rosberg (1982) argue that the normative transformation in the international system that followed World War II, fixing existing borders and reducing inter-state warfare, had a deleterious effect for state formation in Africa. In their story, it is not merely that post-colonial African rulers had no reason to invest in the construction of professional bureaucracies, efficient fiscal policies or the provision of public services, since they already enjoyed the legitimacy that came from international recognition. Jackson and Rosberg emphasize the fact that reified juridical sovereignty has meant that few African states have "disintegrated into smaller jurisdictions or been absorbed into a larger one" despite exercising only a very weak control over their populations (Jackson and Rosberg 1982:1).

Similarly, Miguel Ángel Centeno has shown that, although Latin American countries have faced widespread violence, they have not

organized their states with the purpose of mobilizing for large-scale warfare due to both systemic and domestic factors. First, he distinguishes between total wars, the key historical events that fostered European state formation, and limited wars, which have characterized state-building projects in Latin America (Centeno 2003:21). Total wars transform society and in the process push rulers to engage in nation- and institution-building. These transformations give the state a larger extractive capacity, foster the centralization of power at the expense of regional loyalties and identities, create a sense of common belonging to a nation, and further the transition in the relationship between individuals and state institutions from being one of subjects to becoming one of citizens (Centeno 2003:22). Conversely, limited wars have very different institutional outcomes: instead of expanding the state's extractive capacity, states tend to finance limited wars by expanding public debt. Limited wars do not foster nation-building but rather alienate patriotic symbols as a result of the disenchantment produced by the war efforts and the economic downturns that they produce (Centeno 2003:23).

More recently, Nicola Gennaioli and Hans-Joachim Voth have argued that military conflicts foster state capacity as long as two antecedent conditions are present (Gennaioli and Voth 2015). In their model, the first condition refers to the financial costs of war. This is a system-level factor insofar it refers to whether a state is embedded in an international context where military success depends on the ability of rulers to mobilize large amounts of financial resources. Where the importance of money for success is low, poorer rulers have incentives to attack and thus warfare is frequent but the incentive to increase fiscal capacity is low. Conversely, where the importance of money for military success is high, poorer rulers will be less likely to engage in war-mongering. Rich states, on the other hand, will be more likely to attack and to invest in state-building to gain access to more financial resources.

# II Theory: The Conditional Effects of Military Rivalries on Taxation

At the center of Bellicist theories of political development is an argument about how military competition creates the incentives to solve domestic collective action problems related to pooling resources to produce public goods. The logic follows a three-step causal chain, where (1) military

pressures produce the need to secure external defense, which (2) generates incentives for both rulers and citizens to invest in military capabilities, and (3) these common interests facilitate the negotiation of fiscal contracts to expand tax revenues in order to meet those challenges.

Table 1. Causal logic of Bellicist theories of political development

| | | | | | | |
|---|---|---|---|---|---|---|
| Military pressures | → | Need to secure external defense | → | Need to invest in military capabilities | → | Fiscal contracts to pool resources together |

Nevertheless, as the literature discussed in the previous section has highlighted, there are several contextual factors that can potentially interrupt this causal path at each of those arrows. We focus particularly on three conditional variables that incorporate many of the insights that have been proposed in the literature but have not been articulated into a parsimonious theory of military rivalries and political development.

First, a well-established insight in International Relations that has been largely overlooked by Bellicist theories is the claim that historical changes in the international security environment transform the nature of military conflicts (Waltz 1979; Jackson and Rosberg 1982; Finnemore 2003). We should thus expect changes in the nature of conflict to affect actors' expectations about the costs of war, and consequently have an impact on how military rivalries shape political development. Two aspects of the international security environment in particular are likely to interrupt the causal chain of Bellicist arguments: (1) the extent to which international norms of territorial integrity and national sovereignty curb the costs for states of being unprepared for war, and (2) the extent to which states can outsource their defense needs to foreign allies.

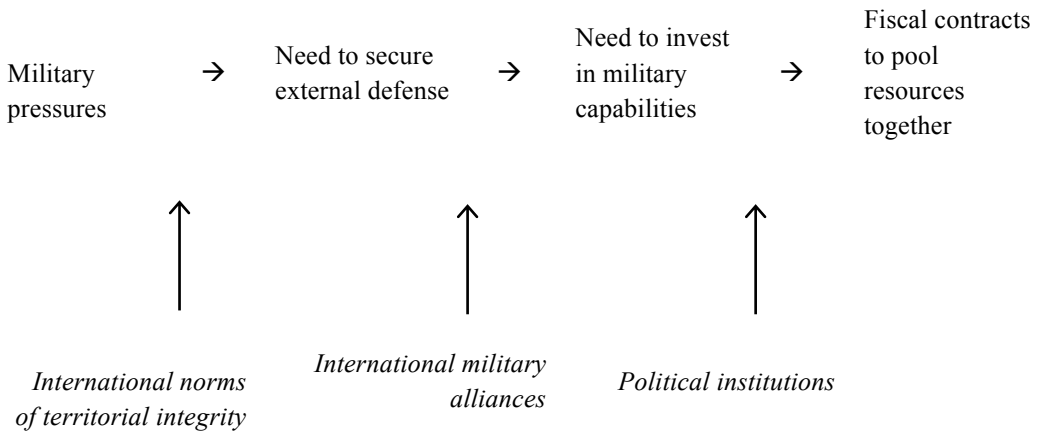
Norms of territorial integrity reduce the incentives that state actors have to invest in military capabilities in order to be prepared to fight a war, since, in the case of an attack, they can expect other international actors to step in to enforce this norm. As Jackson and Rosberg (1982) suggested, the reification of juridical sovereignty in the aftermath of WWII has allowed weak states to survive. This has reduced the incentives that rulers in weak states face to invest in military capabilities (and state capacity more broadly) and, by extension, to increase tax revenues. In other words, an international security environment where powerful actors are willing to intervene outside their borders to enforce territorial integrity and juridical

sovereignty makes military rivalries less threatening and, consequently, less likely to make external defense a priority for rulers and citizens.

Even in an international context where military rivalries create a pressing need to secure external defense, states may resort to alliances with other states rather than domestic arming to meet those challenges. Where states outsource their defense needs to more powerful foreign allies, military rivalries do not necessarily entail pressures on public finances and thus may not lead to increases in taxation.

Finally, as institutional economists have extensively argued, political institutions shape the terms of fiscal contracts (North and Weingast 1989; North 1990; Levi 1989; Besley and Persson 2009; Dincecco 2011; Dincecco 2015). Margaret Levi has shown that unconstrained rulers can extract higher levels of revenue in the short-term, but this predatory behavior affects their ability to build lasting fiscal contracts in the long-run (Levi 1989). Conversely, constrained rulers face more stringent circumstances to raise taxes in the short-term since they need to negotiate the acquiescence of other political actors. However, these very institutional constraints allow them to offer credible commitments to wealth-holders that make it possible to increase taxation in the long run. Differently put, political institutions make the temporal structure and the direction of the effect of military pressures on taxation move in opposite directions in democracies and autocracies.

Table 2. Causal logic of the conditional effects of military pressures on taxation



These three conditioning factors produce clear theoretical expectations about the effects of military rivalry on taxation in different historical periods and for different countries. Figure 1 below specifies these theoretical expectations for eight ideal-type combinations of these conditional variables.

During the 19th century and up to WWII, norms of territorial integrity remained weak. European states engaged in wars of conquest around the world, and even within Europe entire countries were frequently absorbed by other territorial units or dismembered as the result of military conflicts. Under these conditions of relative international anarchy, states with no allies continued to react to military rivalries by increasing military spending and taxation, regardless of whether they were democracies or autocracies. However, international alliances began to drive the effects of military rivalries in opposite directions in democracies and autocracies. Democracies that were able to rely on allies to protect themselves from external threats could free public resources to spend on the provision of public services other than national defense. For this to happen, however, citizens had to be able to prevent rulers from capturing those resources for their private benefit, including in the form of unnecessary military expenditures that would allow them to increase the domestic security apparatus and turn it against political adversaries. Citizens in democratic states could do this by both demanding lower taxes to keep the power of rulers in check and by deciding and monitoring the allocation of public expenditures.

On the contrary, unconstrained rulers in autocracies could use the protection of foreign allies for their private benefit. As rivalries intensified and allies were willing to step in to protect them, autocratic rulers were emboldened to extract more resources from their population and use them to enrich themselves, gain patrimonial control over the security apparatus, or redistribute rents for supporters. Therefore, these four scenarios generate a first set of theoretical expectations for the 1815-1939 period:

1. *Democracies with powerful allies in a context of weak norms of territorial integrity* should reduce taxation in the short-term, creating a window of opportunity for the re-negotiation of the fiscal contract in the long-run.
2. *Autocracies with powerful allies in a context of weak norms of territorial integrity* should maximize extraction in the short-term, hindering the possibility of building strong fiscal institutions in the long run.
3. *Democracies without allies in a context of weak norms of territorial integrity* should respond to military rivalries through increases in taxation, as

classical Bellicist theory would suggest, since they experience similar international circumstances as pre-modern Europe.

4. *Autocracies without allies in a context of weak of norms of territorial integrity* should also respond to military rivalries through short-term increases in taxation in order to finance investments in military capabilities. However, military pressures and the lack of foreign patrons will limit the ability of autocratic rulers to use those resources to prey on their populations.

After WWII, however, international norms of territorial integrity and national sovereignty consolidated. Global powers and international organizations became enforcers of this norm, allowing weak states that would otherwise not be able to face military threats to survive. This made the relationship between rivalries and taxation disappear in the case of states without allies, since military pressures became less threatening and countries could face them through various means that did not require increasing taxation or expanding military capabilities. However, for countries with strong allies, this international security environment further transformed the nature of the causal relationship between rivalries and taxation. In this international context where economic competition replaced military competition as the main driving force of international politics, democratic rulers that relied on allies for protection responded to military threats not through military investments but through economic policy, lowering tax rates to encourage economic growth while continuing to provide a wide array of social services. Conversely, unconstrained rulers in autocracies could benefit from the geopolitical interests of their foreign allies to use their support to consolidate predatory states, maximizing the amount of resources they could extract from their population in the short term (Reno 1999). Therefore, for the post-1945 period we identify four theoretical expectations:

5. *Democracies with powerful allies in a context of strong norms of territorial integrity* should reduce taxation in the short term in order to quickly boost their economies, consolidating in the process modern fiscal contracts built upon the supply of public goods other than national defense.
6. *Autocracies with powerful allies in a context of strong norms of territorial integrity* should drastically increase taxation in the short term, maximizing extraction by leveraging the protection of foreign allies.

7. *Democracies without powerful allies in a context of strong norms of territorial integrity* should no longer be sensitive to military pressures, and thus rivalries should have a negligible effect on democracy.
8. *Autocracies without powerful allies in a context of strong norms of territorial integrity* should no longer be sensitive to military pressures, and thus rivalries should have a negligible effect on democracy.

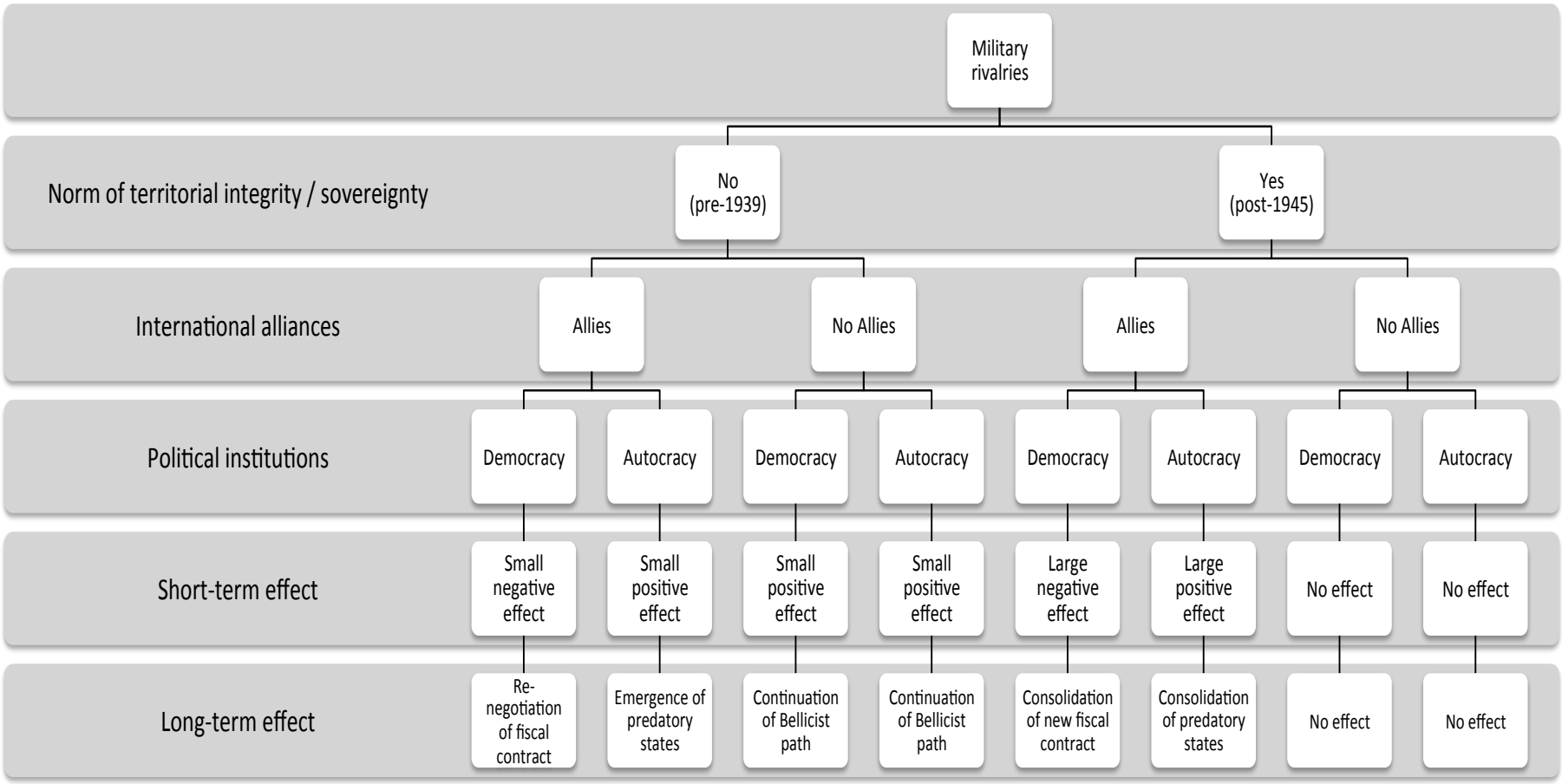



Figure 1. Short- and long-term expectations of a conditional theory of military pressures and fiscal development

# IV Data and Methods

For our main collection of tests, we estimate a series of models of taxation per capita, with predictors that describe the international security environment of the state, political institutions, and basic control variables. Our data is time series cross sectional, from 1820 to 2006. We estimate two types of linear regression models: time series cross sectional linear regression with fixed effects (year and country), and the same models including two-stage least squares estimation using instrumental variables. We use the 2SLS model to address the endogeneity of military spending with our dependent variable. We include military spending in the model so that we can distinguish between the direct effect of militarized competition on taxation from the indirect effect of militarized competition on military spending, and therefore on taxation. In other words, we use those models to help us separate between the competitive arming and its effect on fiscal policy, and military competition more generally. All of our models are estimated using the xtreg or xtivreg functions in Stata.

For each model, we present estimates for the entire time period, for before World War 2, and for after World War 2. This comparison allows us to tease out possible systemic effects  the post-WW2 era features bipolarity, followed by unipolarity, was featured very broad organizations of collective security, and more entrenched norms of sovereignty, territorial integrity.

For robustness, we provide an appendix with the same battery of tests, estimated using tax ratio as the dependent variable.

# V Data sources

*Dependent variables: fiscal expansion*

We use two different dependent variables in our models: taxes per capita converted to International GK 1990 dollars and tax ratios (tax revenues as a share of GDP). Both are taken from the dataset assembled by Julia Cagé and Lucie Gadenne (2014). This dataset combines three sources of data  Mitchell's International Historical Statistics (2007), the International Monetary Fund's (IMF) Government Finance Statistics, and Baunsgaard and Keen's compilation of information from the IMF's periodic consultations with member states (2010). The data covers yearly figures for

over 130 countries, with the earliest observations dating back to 1792. In order to avoid within-country changes caused by changes in data sources, Cagé and Gadenne only use the source with the largest number of observations for each country unless there is continuity in the series across data sources (Cagé & Gadenne 2014, p. 5).

*Tax per capita*. The main models that are reported use taxes per capita as the dependent variable. Taxes per capita are a good measure of the amount of resources that states can raise through taxation and thus should be more sensitive to changes in military pressures than other measures of taxation. The main drawback with this indicator is that it is strongly correlated with levels of economic development. Therefore, we try to address concerns about spurious correlations by including in all our models real GDP per capita in GK 1990 dollars from Angus Maddison's series. This should allow us to observe how taxes per capita vary in response to military pressures independently of economic growth.

*Tax ratios*. Tax ratios are the most commonly used measure to evaluate changes in taxation as a result of military conflicts, since they reflect the extent to which the state is able to transform private wealth into public resources (Lieberman 2002; Thies 2004; Thies 2005; Thies 2007; Soifer 2012). However, what matters for states trying to raise revenue to meet military threats is not the share of the national economy that they can capture, but rather the absolute amount of resources that they can mobilize to invest in military capabilities.

*Independent variables:*

*Military rivalries.* Our main independent variables are spatial matrices created using Klein, Goertz and Diehl's dataset on military rivalries (Klein, Goertz, and Diehl 2006). Klein, Goertz and Diehl conceptualize rivalry as a competition between states that is militarized and features linked disputes over time. They allow for asymmetry in rivalries — one state can be significantly more militarily powerful than another — and break rivalries into different degrees of severity and duration (isolated disputes, proto-rivalries, and enduring rivalries). Unlike Thompson's dataset, for example, they do require actual militarized disputes to take place, and exclude pairs of states who have experiences fewer than three militarized interstate disputes. This means that armed conflict between rivals is a real possibility. We estimate for each country the magnitude of those rivalries through two different independent variables: (1) an additive index of military spending for all the rivals of a state for any given year, and (2) an additive value of the Composite Index of National Capability (CINC) for all

the rivals of a state for any given year. The CINC is based on six capability components: total population, urban population, iron and steel production, energy consumption, military personnel, and military expenditure. Military spending and CINC values are taken from the National Material Capabilities Dataset (Singer 1987).

*Alliances*. We estimate the military capabilities of a state's allies for each year following the same procedure of our figures for rivalries. Alliance data is from the ATOP Dataset, which codes all formal military alliance treaties over our time period (Leeds et al. 2002).

*Institutions.* In order to evaluate the conditional effects of political institutions we use in our models the Polity2 index.

*Military spending.* We use the national material capabilities data set for the military spending data. In the models which include it, the instruments we use for the logged military spending of the state are the logged military spending of rival states, to control for arms races, the logged military spending of allies, to control for the substitution effect of alliances for arms, polity, the presence of international war, and a one year lag of the state's logged military spending, plus the estimators in our equation for taxation (von Hagen-Jamar 2014).

# VI Results

Table 1 presents the results of six models, two for each time period. In these models, ally capabilities and rival capabilities are interacting. In half of the models one for each time period we estimate the effect of military spending on taxation, as well as the effect of rival material capabilities. If the entire increase (or decrease) in taxation per capita as a result of increases in military spending, any effect of rival capabilities, including the conditional effect of alliances on rival capabilities, ought to dissipate.

Before turning to the figures illustrating the effect of rival capabilities, conditional on ally capabilities, there are several things to note from Table 1. Estimates on several variables of interest vary across time periods. The taxation increasing effect of war exists in the estimates using the full dataset and the post-1945 estimates, but not in the pre-1939 data. Pre-1939, the presence of interstate war does not appear to predict higher taxation per capita. A similar pattern emerges for two other important variables, polity and military spending. Increases in military spending correlate with higher taxation in the pre-1939 era, but lower tax per capita in the post-

1945 time period. Similarly, in the pre-1939 era, higher scores on the polity scale correlate with greater levels of taxation, while in the post 1945 era, they correlate with lower levels.

Table 1

| *Tax Per Capita* | **Model 1** *FE* | **Model 2** *FE & 2SLS* | **Model 3** *FE* *Pre1939* | **Model 4** *FE & 2SLS pre1939* | **Model 5** *FE* *Post1945* | **Model 6** *FE & 2SLS post1945* |
|---|---|---|---|---|---|---|
| *polity2* | -13.44*** | -15.81*** | 4.942*** | 7.155*** | -17.92*** | -18.96*** |
| | (2.366) | (2.377) | (1.344) | (1.400) | (2.781) | (2.806) |
| *GDP pc* | 0.400*** | 0.410*** | -0.0203 | -0.0375*** | 0.419*** | 0.427*** |
| | (0.00459) | (0.00469) | (0.0140) | (0.0142) | (0.00539) | (0.00547) |
| *Rival Cinc* | 125.3 | 479.7** | 325.3*** | 318.2*** | 2228.8*** | 2557.4*** |
| | (227.4) | (228.8) | (76.71) | (76.04) | (437.8) | (440.9) |
| *Ally Cinc* | -127.7 | -81.02 | 517.5*** | 560.4*** | -313.7*** | -248.9** |
| | (94.59) | (94.87) | (75.84) | (75.70) | (119.3) | (119.8) |
| *Rival Cinc X Ally Cinc* | -5884.5*** | -5638.9*** | -808.1** | -988.4*** | -7104.2*** | -8156.8*** |
| | (686.4) | (684.2) | (347.3) | (345.7) | (1109.2) | (1117.8) |
| *War* | 165.6*** | 251.9*** | 14.50 | -10.44 | 224.7*** | 244.1*** |
| | (48.44) | (49.24) | (20.11) | (20.85) | (62.73) | (63.05) |
| *PR(lmilex)* | | -208.8*** | | 66.85*** | | -211.8*** |
| | | (20.18) | | (12.84) | | (27.80) |
| *Constant* | 813.6 | 1528.5** | 60.05 | -337.4** | -434.0*** | 1804.4*** |
| | (612.0) | (611.5) | (123.5) | (144.2) | (138.7) | (325.4) |
| N | 4900 | 4845 | 850 | 845 | 3946 | 3899 |

Figures 2 and 3 present the marginal effects charts for rival capabilities over alliance capabilities (Brambor, Clark, and Golder 2006). Figure 2 presents them for the models without logged military spending, while figure 3 presents the marginal effects for models with logged military spending.

Figure 2: Average Marginal Effects of Rival Cinc with 95% CIs

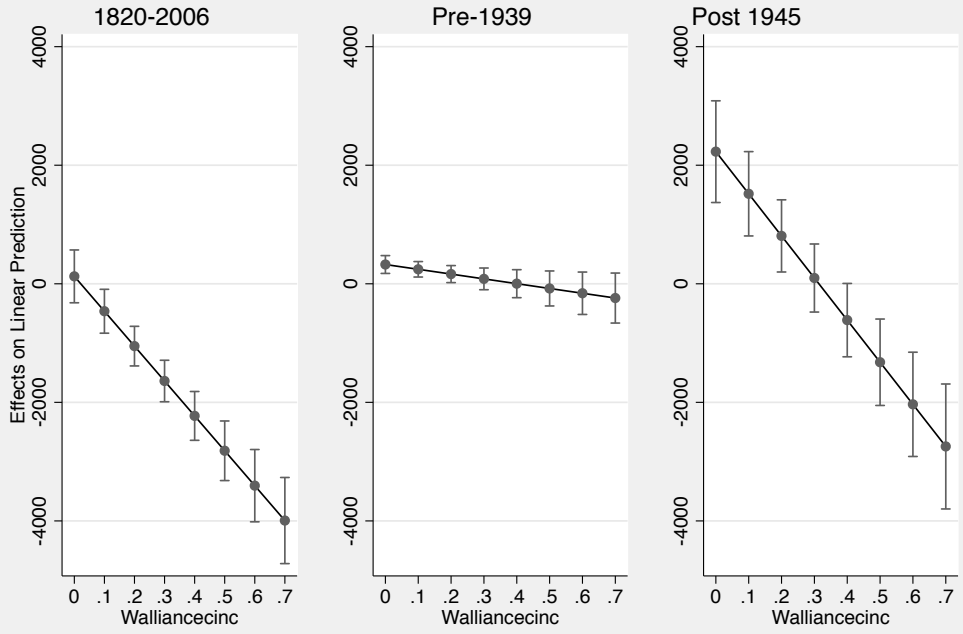
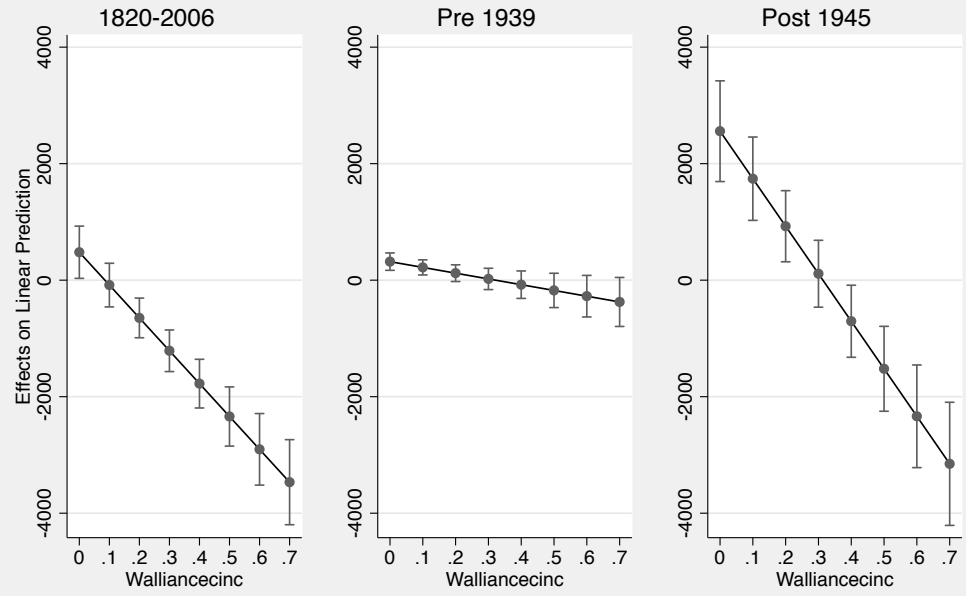



Figure 3: Average Marginal Effects of Rival Cinc with 95% CIs
including military spending




The pattern in each is very similar. Once again, the period before 1939 seems markedly different than the post 1945 era. Rival capabilities has little effect on taxation prior to 1939. Post 1945, and consequently in the full sample, it has a decreasing effect as alliances increase. In the full sample, this nets to zero effect when alliances are absent, or allies are very weak, but becomes a substantial negative effect as ally strength increases. In the

post-1945 era, the pattern is a closer match to the bellicist story, with strong rivals leading to higher levels of taxation, but that effect decreases as ally strength increases. When allies are very powerful, the effect on taxation of having powerful rivals is negative. There is no evidence that the inclusion of military spending in our models changes these patterns.

Table 2

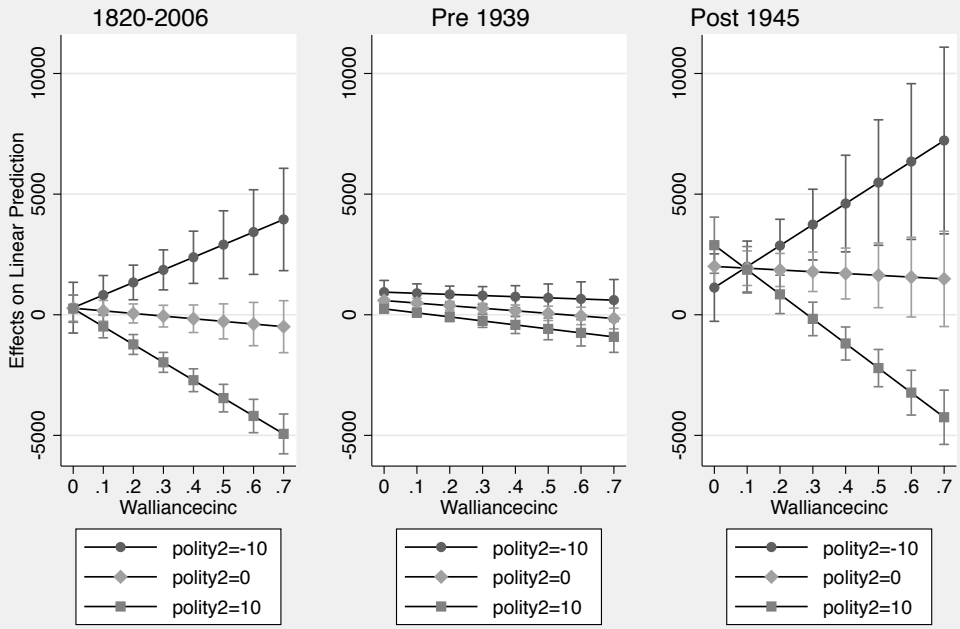
| Tax per capita | Model 7<br>Full Period | Model 8<br>Pre 1939 | Model 9<br>Post 1945 |
|---|---|---|---|
| Military Spending | -207.7*** | 73.16*** | -204.4*** |
| | (20.03) | (12.49) | (27.78) |
| War | 230.9*** | -1.032 | 270.8*** |
| | (49.08) | (20.31) | (62.85) |
| GDP per capita | 0.415*** | -0.0435*** | 0.425*** |
| | (0.00472) | (0.0140) | (0.00545) |
| polity2 | -9.766*** | 5.302*** | -10.25** |
| | (3.143) | (1.533) | (4.017) |
| Rival cinc2 | 272.8 | 590.0*** | 2004.5*** |
| | (276.3) | (122.2) | (455.6) |
| polity2 X Rival Cinc | -2.135 | -34.68** | 87.91* |
| | (32.98) | (13.93) | (47.24) |
| Ally Cinc | -246.6** | 481.9*** | -177.0 |
| | (121.8) | (79.42) | (172.0) |
| polity2 X Ally Cinc | 5.249 | 52.41*** | -26.37 |
| | (12.30) | (8.762) | (16.86) |
| RivalCinc X AllyCinc | -1096.2 | -1065.6*** | -740.5 |
| | (1002.2) | (396.1) | (1777.4) |
| polity2 X Rival Cinc X Ally Cinc | -631.8*** | -59.35 | -944.9*** |
| | (116.3) | (55.48) | (189.4) |
| Constant | 1411.8** | -364.8*** | 1656.2*** |
| | (606.6) | (139.7) | (324.4) |
| Observations | 4845 | 845 | 3899 |

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

Table two presents the estimates for three models that include all the variables as the models above, but additionally interacts polity with rival and ally capabilities. This allows us to test the degree to which the effect of rival and ally capabilities is contingent on political institutions, as we hypothesize. As in table 1, the coefficients on military spending and polity for the pre-1939 era are opposite those in the overall and post-45 time period, and the coefficient on interstate war is insignificant pre-1939 (and negative). Figure 4 illustrates the relationship between rival capabilities and taxation, conditional on political institutions and ally capabilities. Three lines are present in each graph, one for very democratic states (polity=10), one of very autocratic states (polity=-10), and one middle category (polity=0). A clear pattern emerges, with a negative and decreasing significant effect of rival capabilities over ally capabilities for very democratic states, and a positive and increasing effect of rival capabilities over ally capabilities for very autocratic states in the post-1945 era, and very little difference between the type of states in the Pre 1939 era. In the post-45 era, and overall, there is little difference in how states react to rival capabilities in the absence of alliances, but a significant difference in how they react when strong allies are present.

Figure 4: Avg Marginal Effect of Rival Military Capabilities




Differently put, before WWII, rivalries tend to have a positive (albeit small) effect on taxation for all regimes. This effect declines gradually in all cases

if countries have powerful allies, down to negative levels for democracies. After WWII, the effect of rivalries for countries with no allies is close to zero. However, rivalries have strong, positive and significant effects on levels of taxation in autocracies with powerful allies. Conversely, rivalries have strong, negative and significant effects on taxation in democracies with powerful allies.

The results reported above come with an important caveat: while the coefficients are relatively robust, the standard errors around them are not, and vary widely with different assumptions and specifications. For ease of interpretation, those we have presented are on the narrow side of the collection of models we used as robustness checks. Our interpretation of this is that the model is currently misspecified, which accounts for the difference between various approaches to clustered and robust standard errors (King and Roberts 2014). We hope to rectify that in the future. In the meantime, while we are relatively confident about the direction of the effects, and the nature of the conditionality of those effects, we are uncertain about the degree of uncertainty around the estimates. Accordingly, all results presented here should be taken as preliminary and uncertain.

What do these differences in the short-term reactions to military pressures tell us about long-term trajectories of fiscal and political development? At this point, we do not provide additional empirical evidence to support these claims, but we can, in a tentative fashion, recognize in the results of these models three distinct trajectories of political development shaped by the timing of the interaction between democratization and international alliances.

First, early democracies that began to meet their needs for national defense through international alliances in the 19th century inadvertently created the opportunity to transform their fiscal contracts in the long run. Cognizant of the efficiencies that these alliances created for public expenditures, citizens (and especially) elites in those countries rejected increases in taxation in the face of increasing military pressures. For instance, the fiscal history of France during the first half of the Third Republic (1870-1914) offers some evidence that this was the case (Delalande 2009; Delalande 2011; Goenaga Orrego 2015). However, despite this short-term anti-fiscal attitudes, the financial efficiencies generated by alliances freed resources for those democracies to invest in other types of public goods, such as public education and infrastructure, which were increasingly demanded by the population. As states gradually shifted the bulk of public expenditures from military investments to other policy

areas, the terms of the fiscal contract between rulers and citizens changed. During the 20th century, when popular mobilization began to demand a wider and more costly array of public services in the form of public education, healthcare and welfare states, many small democracies were able to meet those demands only because they could outsource military expenditures to international allies. Taxation rapidly grew in parallel to the expansion of these social states, but this was only possible because those states did not have to also spend extensively in military capabilities. In other words, the economies of scale built by international military alliances had short-term anti-fiscal effects for democracies, but had the long-term unintended consequence of making possible the emergence of strong social states with high levels of taxation.

Second, non-democracies that entered the global geopolitical struggles of the late 19th and 20th centuries could also benefit from the economies scale built by the internationalization of national defense through military alliances. However, the predatory appetites of unconstrained rulers captured those efficiencies and turned them into sources of rents for themselves and their supporters. Moreover, the protection of foreign allies allowed these autocratic rulers to secure their power by building up armed forces designed to repress domestic opponents. Even if this meant drastic increases in taxation in the short-term, in the long run these states developed rent-based economies and weak fiscal institutions that were highly incapable of raising taxes without the quasi-voluntary compliance of the population.

Finally, we can see a third trajectory among those democracies and non-democracies that remained at the margins of the geopolitical struggles of the 19th and 20th centuries, who only had indirect access to the economies of scale produced by the internationalization of national defense. These states continued to spend most of their public resources on their military forces during the 19th century, while also facing the mounting demands from their populations for other state-supplied public goods. It would be only with the reification of juridical sovereignty after WWII that military spending began to represent a smaller share of their total public expenditures, and political institutions began to play a role on how public monies were raised and allocated pushing these countries in either of the two other trajectories.

# VII Conclusion and further steps

In this paper we attempt to integrate the insights of the Bellicist literature into a parsimonious, fine-grained theory about the conditional effects of military rivalries on taxation from 1815 to the present. We argue that changes in the international security environment and in domestic political institutions interacted in ways that transformed how states reacted to military threats. In the long run, these changes inadvertently created distinct, long-term, path-dependent trajectories of political development.

More specifically, we claim that the consolidation of international norms of territorial integrity and the fiscal efficiencies created by the internationalization of national defense through stable military alliances opened new opportunities for rulers in democracies and autocracies alike. However, institutional constraints determined how different states made use of these efficiencies, either re-negotiating fiscal contracts that made possible the expansion of social states, or transforming them into rents that nurtured predatory states.

At this point, our empirical analyses have focused on explaining the conditional effects of military rivalries on taxation in the short term. As noted before, we are still encountering some problems of misspecification, as highlighted by the disparities in our models when we use clustered and robust standard errors. Addressing this issue represents the most immediate next step.

Second, we need to expand our empirical analysis of the long-term effects of taxation. We anticipate that this will involve, first, an additional set of 2SLS models where we estimate changes in overall social spending, in order to observe whether the transition from military to social expenditures is consistent with our theoretical expectations. Moreover, we expect to carry out more in-depth small-n process-tracing analyses. In particular, we will evaluate whether case studies provide qualitative evidence about the different ways in which rulers and citizens made use of the efficiencies created by military alliances in different institutional systems.

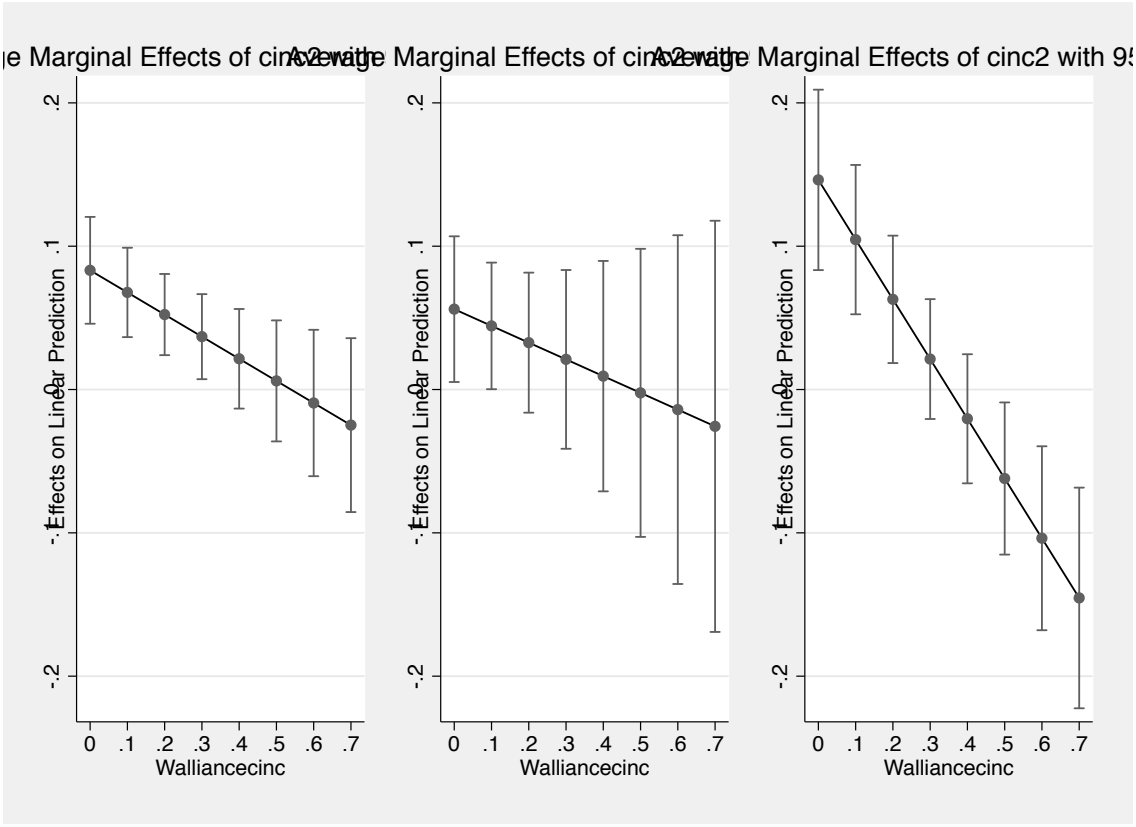
# VIII Appendix

Estimates with Tax Ratio:

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Model 1:FE | Model 2: FE & 2SLS | Model 3:FE pre39 | Model 4: FE & 2SLS pre39 | Model 5: FE post45 | Model 6: FE and 2SLS post45 |
| GDP per capita in 1990 international GK dollars, Maddison | 0.00000825*** | 0.00000824*** | -0.0000235** | -0.0000305*** | 0.00000889*** | 0.00000916*** |
| | (0.00000267) | (0.00000390) | (0.00000967) | (0.00000486) | (0.00000392) | (0.00000399) |
| polity2 | -0.000612 | -0.000597*** | 0.000597 | 0.00149*** | -0.000387* | -0.000386* |
| | (0.000567) | (0.000198) | (0.000512) | (0.000477) | (0.000202) | (0.000204) |
| (sum) cinc2 | 0.0844 | 0.0832*** | 0.0591 | 0.0561** | 0.133*** | 0.146*** |
| | (0.0893) | (0.0190) | (0.0902) | (0.0259) | (0.0318) | (0.0321) |
| Wallancecinc | 0.0289 | 0.0263*** | 0.110*** | 0.127*** | 0.00930 | 0.0106 |
| | (0.0248) | (0.00789) | (0.0355) | (0.0258) | (0.00867) | (0.00873) |
| (sum) cinc2 # Wallancecinc | -0.152 | -0.154*** | -0.0440 | -0.117 | -0.372*** | -0.417*** |
| | (0.184) | (0.0569) | (0.169) | (0.118) | (0.0806) | (0.0814) |
| waryes | 0.0118 | 0.0128*** | 0.00170 | -0.00891 | 0.00132 | 0.00294 |
| | (0.00917) | (0.00409) | (0.00658) | (0.00711) | (0.00456) | (0.00459) |
| lmilex | | 0.000974 | | 0.0272*** | | -0.00714*** |
| | | (0.00168) | | (0.00438) | | (0.00202) |
| Constant | 0.0818*** | 0.0782 | 0.0758*** | -0.0859* | 0.115*** | 0.192*** |
| | (0.0178) | (0.0508) | (0.00768) | (0.0492) | (0.0101) | (0.0237) |
| Observations | 4900 | 4845 | 850 | 845 | 3946 | 3899 |

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01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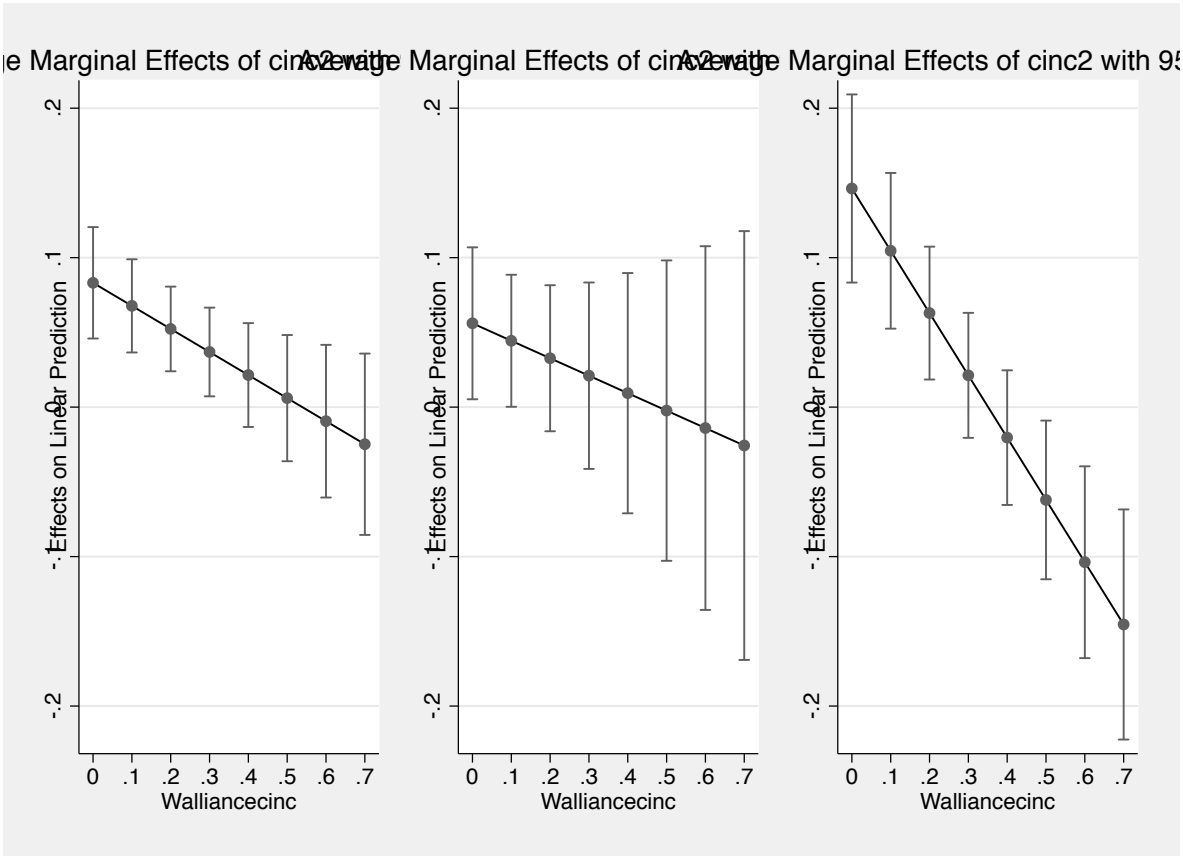
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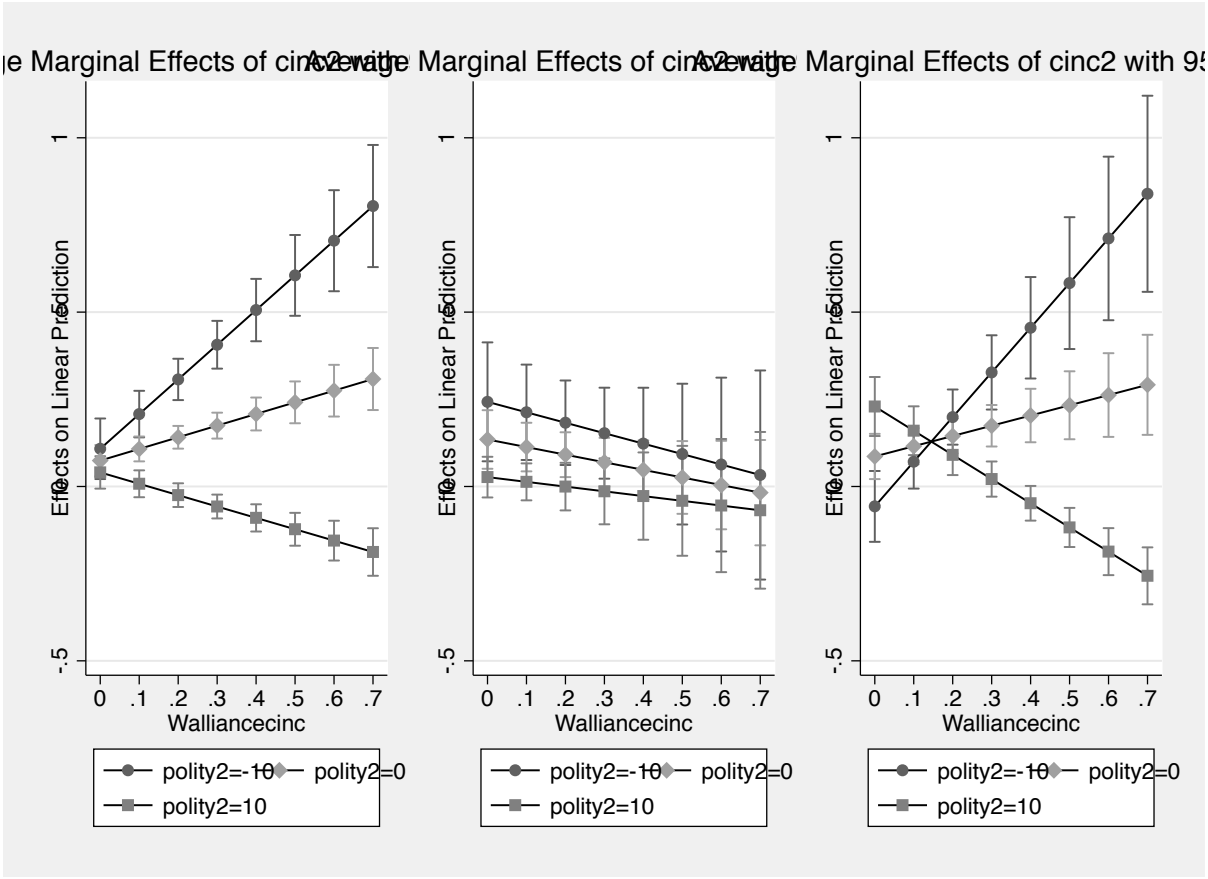
Walliancecinc

| | (1) | (2) | (3) |
|---|---|---|---|
| | Model 7:Full Period | Model 8: Pre 1939 | Model 9: Post 1945 |
| lmilex | 0.000806 | 0.0278*** | -0.00645*** |
| | (0.00165) | (0.00438) | (0.00202) |
| GDP per capita in 1990 international GK dollars, Maddison | 0.00000863*** | -0.0000323*** | 0.00000903*** |
| | (0.000000389) | (0.00000490) | (0.000000396) |
| polity2 | -0.000407 | 0.00152*** | -0.0000631 |
| | (0.000260) | (0.000538) | (0.000292) |
| (sum) cinc2 | 0.0742*** | 0.135*** | 0.0861*** |
| | (0.0228) | (0.0429) | (0.0331) |
| polity2 # (sum) cinc2 | -0.00339 | -0.0108** | 0.0143*** |
| | (0.00272) | (0.00489) | (0.00343) |
| Walliancecinc | -0.0111 | 0.129*** | 0.00396 |
| | (0.0101) | (0.0279) | (0.0125) |
| polity2 # Walliancecinc | 0.00385*** | 0.00556* | -0.000318 |
| | (0.00102) | (0.00307) | (0.00123) |
| (sum) cinc2 # Walliancecinc | 0.334*** | -0.218 | 0.294** |
| | (0.0828) | (0.139) | (0.129) |
| polity2 # (sum) cinc2 # Walliancecinc | -0.0660*** | 0.00819 | -0.0987*** |
| | (0.00961) | (0.0195) | (0.0138) |
| waryes | 0.00949** | -0.00828 | 0.00473 |
| | (0.00405) | (0.00713) | (0.00457) |
| Constant | 0.0682 | -0.0914* | 0.182*** |
| | (0.0501) | (0.0490) | (0.0236) |
| Observations | 4845 | 845 | 3899 |

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01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Walliancecinc
polity2=-10
polity2=0
polity2=10

Estimates with Clustered Standard Errors by Country:

| *Tax Per Capita* | **Model 1** *FE* | **Model 2** *FE & 2SLS* | **Model 3** *FE* *Pre1939* | **Model 4** *FE & 2SLS pre1939* | **Model 5** *FE* *Post1945* | **Model 6** *FE & 2SLS post1945* |
|---|---|---|---|---|---|---|
| *polity2* | -13.44** | -15.81** | 4.942* | 7.155*** | -17.92*** | -18.96*** |
| | (6.124) | (6.422) | (2.490) | (2.695) | (6.115) | (6.262) |
| *GDP pc* | 0.400*** | 0.410*** | -0.0203 | -0.0375 | 0.419*** | 0.427*** |
| | (0.0336) | (0.0329) | (0.0378) | (0.0413) | (0.0351) | (0.0348) |
| *Rival Cinc* | 125.3 | 479.7 | 325.3 | 318.2* | 2228.8 | 2557.4* |
| | (596.2) | (561.5) | (198.6) | (178.7) | (1431.9) | (1336.1) |
| *Ally Cinc* | -127.7 | -81.02 | 517.5*** | 560.4** | -313.7 | -248.9 |
| | (306.0) | (297.8) | (179.4) | (218.2) | (387.8) | (387.8) |
| *Rival Cinc X Ally Cinc* | -5884.5** | -5638.9** | -808.1 | -988.4 | -7104.2** | -8156.8*** |
| | (2544.5) | (2371.3) | (676.1) | (811.2) | (3000.8) | (2910.6) |
| *War* | 165.6** | 251.9*** | 14.50 | -10.44 | 224.7** | 244.1*** |
| | (74.70) | (70.59) | (26.82) | (12.93) | (91.79) | (85.53) |
| *PR(lmilex)* | | -208.8*** | | 66.85** | | -211.8** |
| | | (59.42) | | (26.02) | | (83.36) |
| *Constant* | 813.6*** | 1528.5*** | 60.05** | -337.4* | -434.0*** | 1804.4** |
| | (212.8) | (253.3) | (21.87) | (173.6) | (142.6) | (848.3) |
| N | 4900 | 4845 | 850 | 845 | 3946 | 3899 |

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

| Tax per capita | Model 7<br>Full Period | Model 8<br>Pre 1939 | Model 9<br>Post 1945 |
|---|---|---|---|
| Military Spending | -207.7*** | 73.16*** | -204.4** |
| | (58.29) | (27.41) | (80.13) |
| War | 230.9*** | -1.032 | 270.8*** |
| | (69.57) | (16.36) | (84.08) |
| GDP per capita | 0.415*** | -0.0435 | 0.425*** |
| | (0.0324) | (0.0403) | (0.0344) |
| polity2 | -9.766 | 5.302** | -10.25* |
| | (6.455) | (2.667) | (5.972) |
| Rival cinc2 | 272.8 | 590.0* | 2004.5* |
| | (468.3) | (309.2) | (1115.8) |
| polity2 X Rival Cinc | -2.135 | -34.68 | 87.91 |
| | (65.15) | (26.91) | (127.2) |
| Ally Cinc | -246.6 | 481.9*** | -177.0 |
| | (243.0) | (110.7) | (352.2) |
| polity2 X Ally Cinc | 5.249 | 52.41** | -26.37 |
| | (29.02) | (21.50) | (27.04) |
| RivalCinc X AllyCinc | -1096.2 | -1065.6** | -740.5 |
| | (2376.0) | (482.7) | (2684.1) |
| polity2 X Rival Cinc X Ally Cinc | -631.8* | -59.35 | -944.9*** |
| | (356.8) | (119.9) | (351.1) |
| Constant | 1411.8*** | -364.8** | 1656.2** |
| | (248.3) | (171.2) | (808.8) |
| Observations | 4845 | 845 | 3899 |

Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

| *Tax Ratio* | **Model 1r** *FE* | **Model 2r** *FE & 2SLS* | **Model 3r** *FE* *Pre1939* | **Model 4r** *FE & 2SLS pre1939* | **Model 5r** *FE* *Post1945* | **Model 6r** *FE & 2SLS post1945* |
|---|---|---|---|---|---|---|
| *polity2* | -0.000612 | -0.000597 | 0.000597 | 0.0015*** | -0.000387 | -0.000386 |
| | (0.00057) | (0.00058) | (0.00051) | (0.00050) | (0.00053) | (0.00055) |
| *GDP pc* | 0.00000825*** | 0.00000824*** | -0.0000235** | -0.0000305*** | 0.00000889*** | 0.00000916*** |
| | (0.00000267) | (0.00000275) | (0.00000967) | (0.00001114) | (0.00000223) | (0.00000219) |
| *Rival Cinc* | 0.0844 | 0.0832 | 0.0591 | 0.0561 | 0.133 | 0.146* |
| | (0.0893) | (0.0868) | (0.0902) | (0.0786) | (0.0942) | (0.0885) |
| *Ally Cinc* | 0.0289 | 0.0263 | 0.110*** | 0.127*** | 0.00930 | 0.0106 |
| | (0.0248) | (0.0249) | (0.0355) | (0.0437) | (0.0232) | (0.0238) |
| *Rival Cinc X Ally Cinc* | -0.152 | -0.154 | -0.0440 | -0.117 | -0.372 | -0.417* |
| | (0.184) | (0.182) | (0.169) | (0.149) | (0.254) | (0.241) |
| *PR(lmilex)* | | 0.000974 | | 0.0272** | | -0.00714 |
| | | (0.00458) | | (0.0118) | | (0.00635) |
| *War* | 0.0118 | 0.0128 | 0.00170 | -0.00891 | 0.00132 | 0.00294 |
| | (0.00917) | (0.00879) | (0.00658) | (0.00716) | (0.00801) | (0.00763) |
| *Constant* | 0.0818*** | 0.0782*** | 0.0758*** | -0.0859 | 0.115*** | 0.192*** |
| | (0.0178) | (0.0247) | (0.00768) | (0.0752) | (0.0167) | (0.0680) |
| N | 4900 | 4845 | 850 | 845 | 3946 | 3899 |

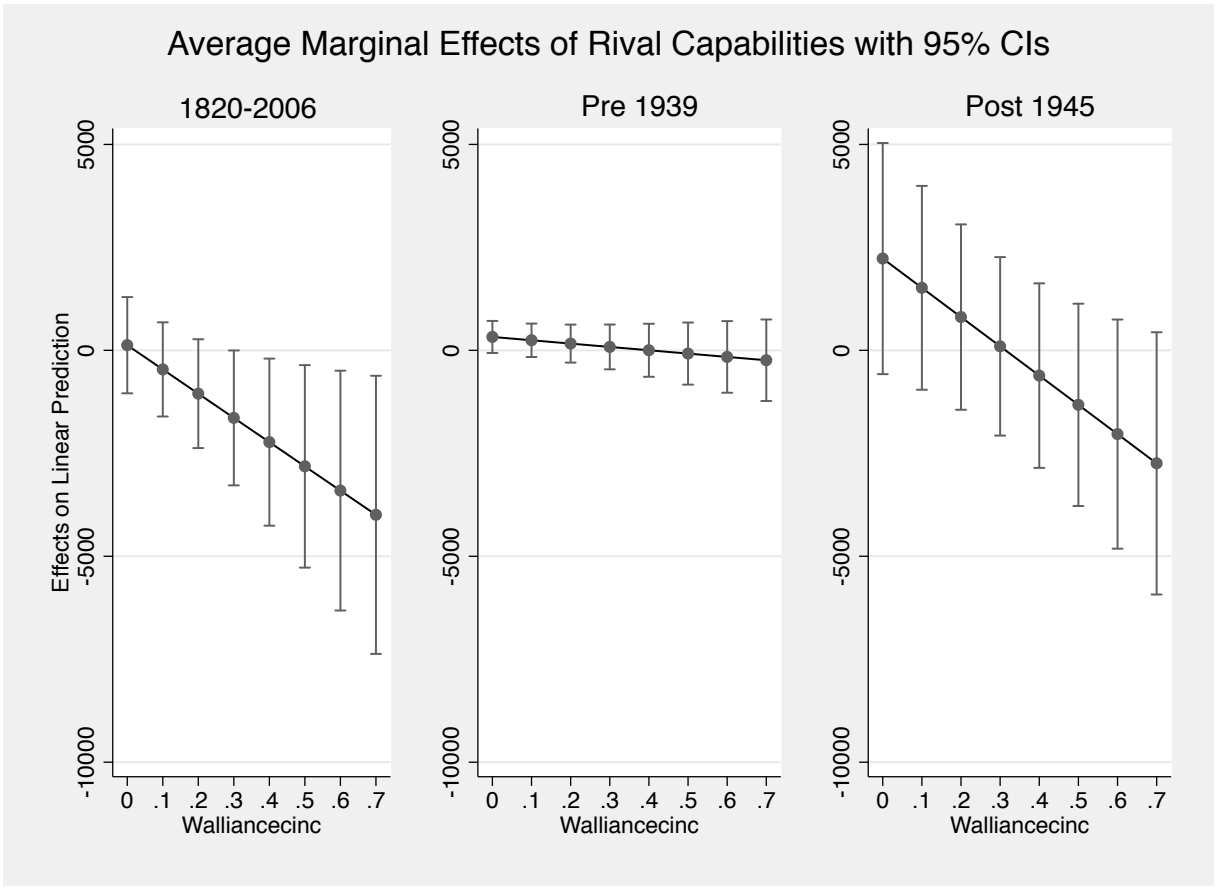
Standard errors in parentheses

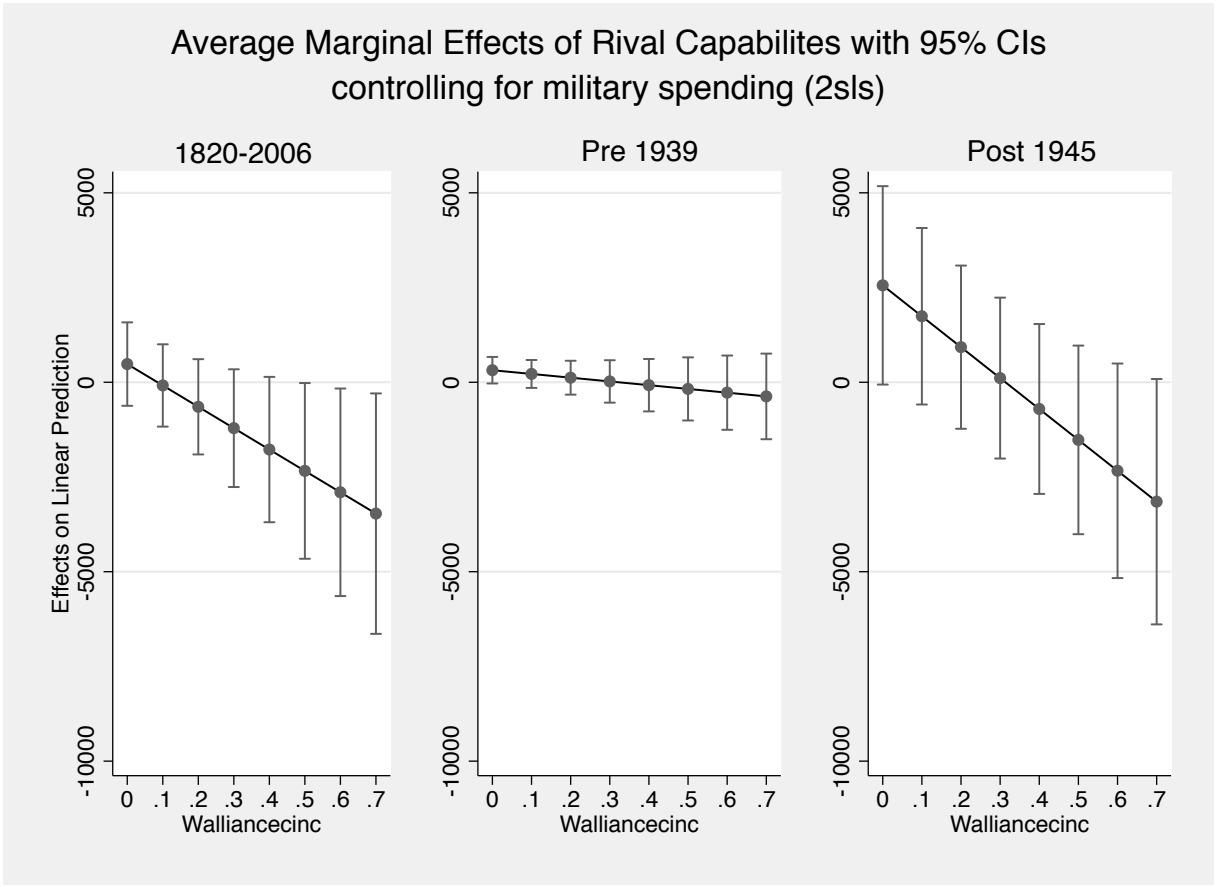
* p < 0.1, ** p < 0.05, *** p < 0.01

| Tax Ratio | Model 7r<br>Full Period | Model 8r<br>Pre 1939 | Model 9r<br>Post 1945 |
|---|---|---|---|
| polity2 X pr_lmilex | 0.000556*** | 0.000382 | 0.00107*** |
| | (0.000139) | (0.000701) | (0.000136) |
| Predicted Lmilex | 0.00811*** | -0.00901 | 0.0125*** |
| | (0.00162) | (0.00833) | (0.00162) |
| GDP per capita | 0.00000708*** | -0.0000263*** | 0.00000607*** |
| | (0.000000403) | (0.00000491) | (0.000000406) |
| polity2 | -0.000407 | 0.00152*** | -0.0000631 |
| | (0.000656) | (0.000580) | (0.000625) |
| Rival cinc2 | 0.0742 | 0.135 | 0.0861 |
| | (0.0960) | (0.109) | (0.0867) |
| polity2 X Rival Cinc | -0.00339 | -0.0108 | 0.0143* |
| | (0.00742) | (0.00857) | (0.00855) |
| Ally Cinc | -0.0111 | 0.129*** | 0.00396 |
| | (0.0300) | (0.0438) | (0.0279) |
| polity2 X Ally Cinc | 0.00385 | 0.00556 | -0.000318 |
| | (0.00341) | (0.00471) | (0.00251) |
| RivalCinc X AllyCinc | 0.334 | -0.218* | 0.294 |
| | (0.397) | (0.119) | (0.479) |
| polity2 X Rival Cinc X Ally Cinc | -0.0660 | 0.00819 | -0.0987** |
| | (0.0479) | (0.0393) | (0.0475) |
| Constant | 0.0682*** | -0.0914 | 0.182*** |
| | (0.0253) | (0.0785) | (0.0667) |
| Observations | 4845 | 845 | 3899 |

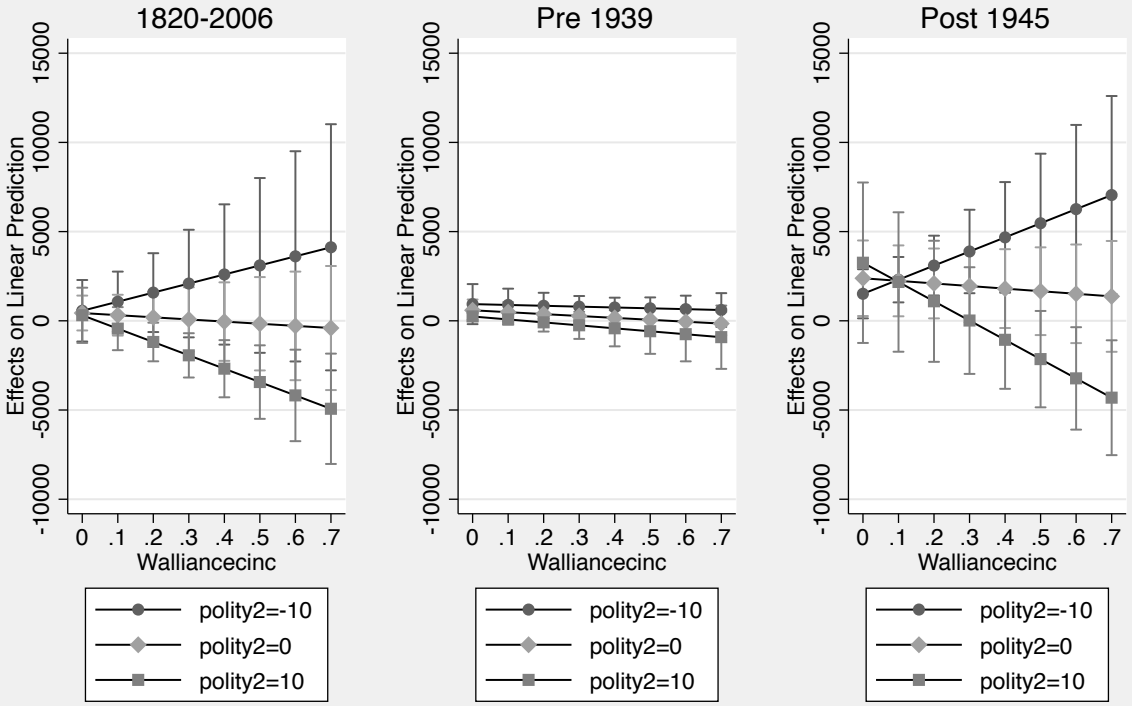
Standard errors in parentheses

* p < 0.1, ** p < 0.05, *** p < 0.01

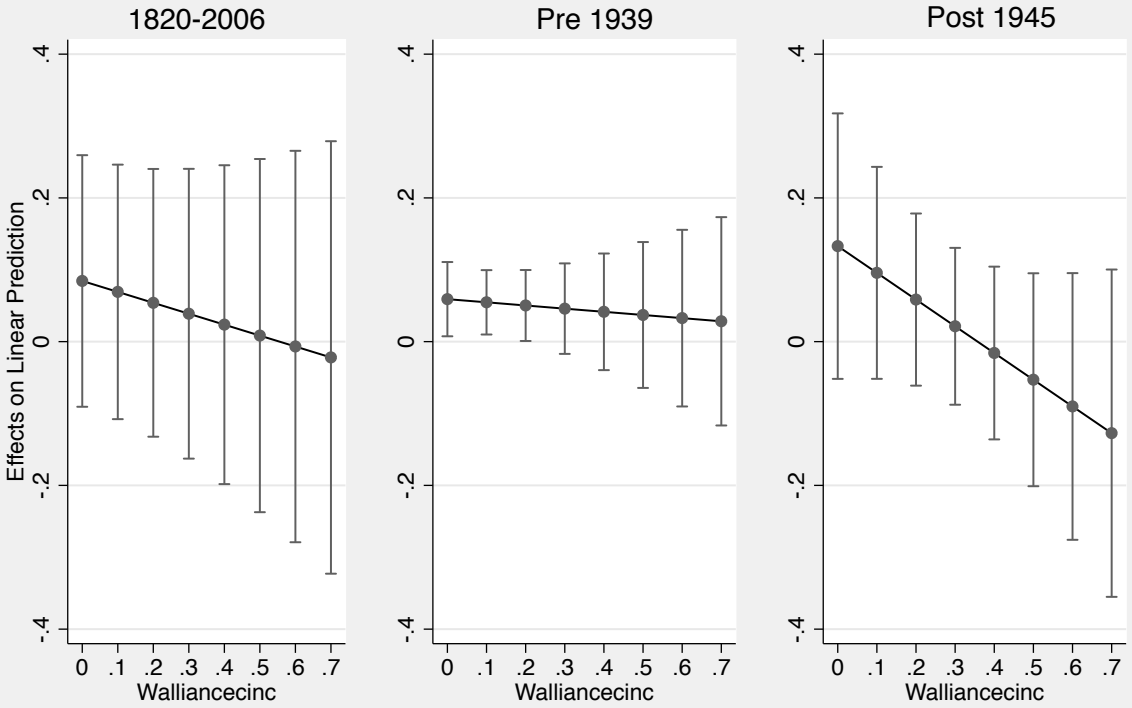

Average Marginal Effects of Rival Capabilities with 95% CIs
1820-2006
Pre 1939
Post 1945
Effects on Linear Prediction
5000
0
-5000
-10000
0 .1 .2 .3 .4 .5 .6 .7
Walliancecinc


Average Marginal Effects of Rival Capabilites with 95% CIs
controlling for military spending (2sls)
1820-2006
Pre 1939
Post 1945
Effects on Linear Prediction
5000
0
-5000
-10000
0 .1 .2 .3 .4 .5 .6 .7
Walliancecinc

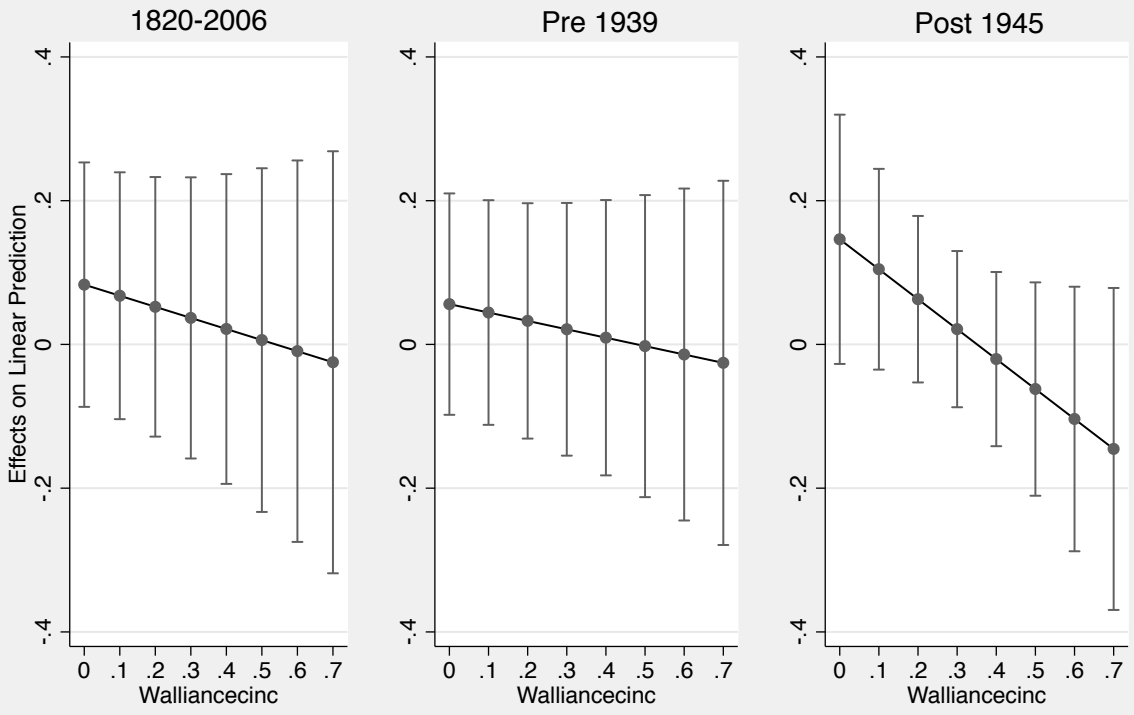
Average Marginal Effects of Rival Capabilities with 95% CIs
over polity and ally capabilities, controlling for military spending



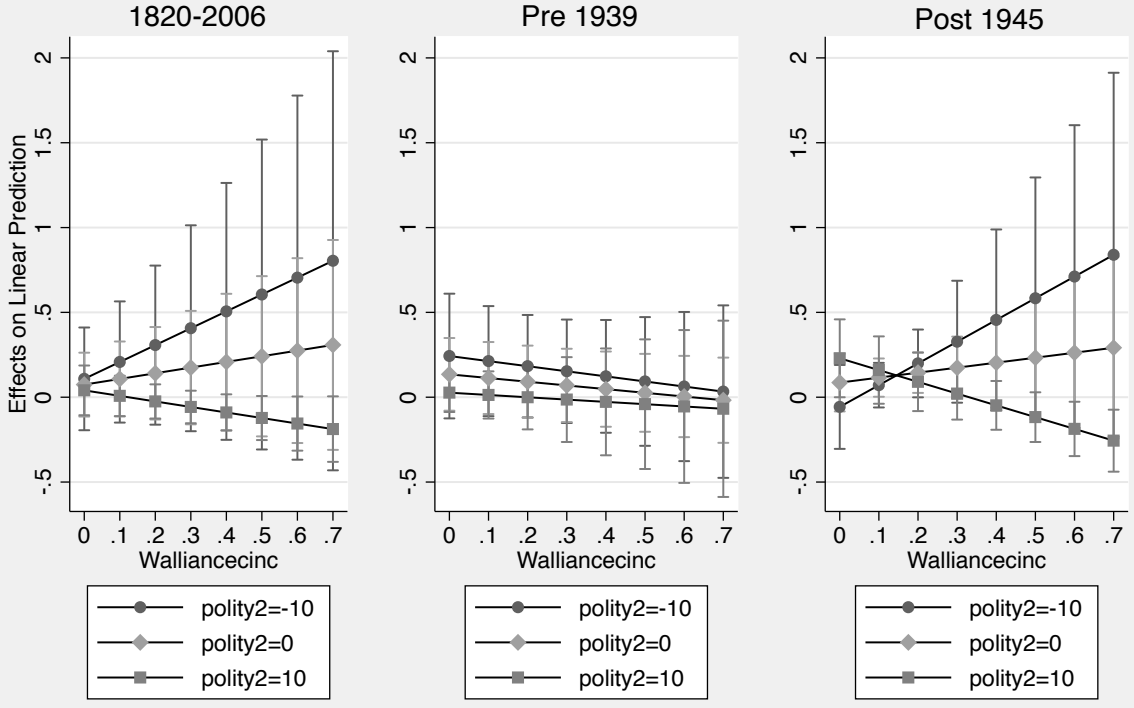

Tax Ratio: Average Marginal Effects of Rival Capabilities with 95% CIs
over Ally Capabilites



Ratio: Average Marginal Effects of Rival Capabilities with 95% CIs controlling for military spending




Tax Ratio: Average Marginal Effects of Rival Capabilities with 95% CIs over ally capabilities and polity, controlling fo rmilitary spending



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