Who Pays for Defense in Democracies? Inequality, Redistribution and the Foundations of Militarism

Abstract

This paper presents a theory predicting capital-intensive defense preparation in democracies based on median voter preferences. By developing a highly capitalized military with a low probability of conscription and casualties, this median voter reduces her expected costs of conflict. Democracies with high economic inequality are likely to build heavily capitalized militaries, within the constraints posed by the prevailing technology, in reaction to perceptions of threat. These militaries generate higher taxes and suboptimal allocations of state resources for security spending. Statistical analysis of twenty developed democracies from 1949-1994 finds support for the theory. The paper concludes by exploring the theory’s implications: if a majority of voters can dampen their aversion to war by the shifting of costs onto a wealthy minority, then a democratic state with high income inequality and a highly capitalized military may more readily resort to excessive arming and an aggressive foreign policy.

September 12, 2007

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1 Introduction

At a cost of 3.7 billion dollars, the United States Army’s Future Combat System (FCS) consumes over a third of its 2007 R&D budget, the largest research program in the history of the Department of Defense. Given U.S. military preponderance, it may seem strange for the Army to risk such a large portion of its resources on a single conventional warfare system that will not be fully operational until 2017, rather than concentrate funds on the current open-ended insurgencies in Iraq and Afghanistan. The FCS promotional literature provides some insight on the logic behind this decision. The massive array of new hardware allows for impressive reductions in personnel. At least ten of its nineteen platforms will be unmanned vehicles or sensors. According to Army briefings, the amount of required logistical support will be reduced by thirty to seventy percent, and the number of actual combat troops needed to operate a battalion’s worth of fighting power cut in half. Finally, supporters claim that successful implementation of the FCS will increase “survivability” by sixty to eighty percent (Feickert 2005 142).

The FCS is the largest and latest instance of the continuing attempt to create a “new American way of war” (Hoffman 1996; Boot 2003; Ferris 2003), one that increases the speed of warmaking, widens the military power gap between the U.S. and the rest of the world, minimizes American casualties, and raises the cost of defense for the American taxpayer. In this paper I argue that such a military is developed with the median voter’s blessing in spite of—indeed because of—the hefty capital investment it requires. The FCS is but one example of the democratic tendency to shift the burden of conflict onto a wealthy electoral minority.

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1 Taken from the President's Budget Request for the 2007 Financial Year. In turn, the U.S. defense research budget is nearly four times that of the rest OECD combined (OECD 2005).
While several reasons exist to suspect a democratic inclination for highly capitalized militaries, this paper provides a parsimonious theory of military preparation derived from the synthesis of three well-established social scientific insights. Democratic exceptionalists in the field of International Relations claim that voter preferences force democracies to provide the public good of security efficiently and avoid risky foreign policies. However, a large portion of political economics shows that the costs of public goods are not spread evenly in a democracy, and that the average voter can use public gods as a tool for wealth redistribution.\(^2\) Political economists in turn generally avoid addressing defense as the paradigmatic public good, thereby failing to explore its redistributive potential. Tying these strands together, the paper shows the potential for the perverse outcome of militarism—excessive building of the military, the belief in its superiority as a tool for international politics, and a heightened willingness to employ it—inherent even in a state with a majority-rule system of rational, fully informed voters.

By linking economic inequality to military capitalization both theoretically and empirically, the paper advances a microfoundational argument that the median voter possesses the ability to reduce her costs of war. By combining the decision to build a military with a simple, venerable model of public choice, I demonstrate that the median voter can develop a military that shifts the costs of defense provision onto the rich through the substitution of military capital for labor, making conscription and casualties less likely. Given this link, economic disparities in wealthy democracies may lead to military capitalization, suboptimal defense spending, and even increased international aggressiveness as the burden of conflict is shifted to the pocketbooks of the wealthy.

After a brief review of previous approaches to democratic cost aversion and public goods provision, I present the paper’s theory and its central implications: military capitalization will

\(^2\) I will use the terms “wealth” and “income” interchangeably in this paper.
increase as the inequality in the distribution of wealth rises, democracies respond to increased threats with more capitalization, and that this redistributive process results in suboptimal defense spending. I also begin to examine theoretically the role that technology plays in enabling the substitution of capital for labor, thereby allowing or inhibiting redistribution. I then test these microfoundations statistically, and conclude by speculating on their international political implications.

2 Democratic Exceptionalism, Cost Aversion and the Provision of Security

I use the term “democratic exceptionalism” to describe the large body of research, much of it stemming from the democratic peace finding (Doyle 1986), claiming that democracies conduct their security policies differently than do all other regime types. For example democratic exceptionalists find that democracies fight shorter wars (Bennett and Stam 1998; Slantchev 2004), prefer to negotiate (Bueno de Mesquita, Smith et al. 2003; Filson and Werner 2004), and win the wars they do initiate (Siverson 1995; Bueno de Mesquita, Morrow et al. 1999; Reiter and Stam 2002). A comprehensive literature review here would only duplicate other recent, excellent efforts. This paper instead focuses on the mechanism of cost internalization underpinning much of this research program, and its role in deciding how a state pursues security through military preparation.

Cost internalization is the most common underlying causal mechanism behind the “institutionalist” branch of democratic exceptionalist theory, and has a distinguished pedigree reaching back at least to Immanuel Kant. While Kant’s formula for perpetual peace

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3 Most are favorable assessments (Ray 1998; Reiter and Stam 2003). Sebastian Rosato provides a more critical review (Rosato 2003).

4 It should be noted that the democratic peace literature has a vast number of competing causal mechanisms. Not only do I not address norms-based arguments (Maoz and Russett 1993; Dixon 1994; Owen 1994; Farnham 2003), I also do not examine other institutional arguments such as the role of democratic transparency (Schultz 1999; Schultz 2001; Lipson 2003). Nonetheless, even these arguments
incorporates several elements, much of his argument rests on the unwillingness of the electorate to pay the price of war. In a frequently cited passage, Kant enumerates the many “miseries of war” that afflict common citizens: “doing the fighting themselves, supplying the costs of war from their own resources, painfully making good the ensuing devastation, and, as the crowning evil, having to take upon themselves a burden of debt which will embitter peace itself” (Kant 1795[1991]). Many of the democratic exceptionalist findings rest on this Kantian assumption, recently restated by Fred Chernoff, “Citizens and subjects—rather than presidents and monarchs—fight in wars, die in wars, and pay taxes to finance wars. In most cases, it is not in the citizen’s self-interest for the state to go to war” (Chernoff 2004 54).

The cost internalization mechanism distinguishes democracies from other regime types in terms of international behavior. It assumes, as will I, that the regular electoral accountability of its leaders to the majority of the state’s population is the most important element of a democracy. The citizen weighs the benefits and costs of the policies pursued by her elected representatives and votes accordingly. Indeed, the most ambitious of these theories goes so far as to endogenize other crucial institutional elements of democracy—“independent judiciary, free press, civil liberties, legal constraints on leaders, norms of conduct, and reliance on law”—within a theory of leaders responding to rational voters maximizing their individual welfare (Bueno de Mesquita, Smith et al. 2003 73). Bueno de Mesquita, Morrow, Siverson and Smith includes both the costs and potential benefits of foreign policy within an elegant theory of the “selectorate,” the group of people that have a say in choosing a state’s executive, who is motivated by the desire to remain in office. Executives requiring a large “winning coalition” (the portion of the selectorate needed to remain in office) cannot rely on the bribery with private goods of a small elite in order to hold

rest on the electorate weighing the merits of the case and making its opinion known, and surely the price of war must be a crucial factor.
on to power. Because of this, as the selectorate grows in size, so does the relative importance of public goods provision. Because those holding ultimate political power also pay for these public goods, leaders in large selectorate regimes are compelled to provide these goods efficiently, leaving as much wealth as possible in the hands of the voter for consumption (Lake 1992; Bueno de Mesquita, Smith et al. 2003).  

Bueno de Mesquita et al argues that democracies thread the needle of providing the voter with both more public goods and lower taxes than do non-democracies. Security—the paradigmatic public good—is no exception. In terms of defense, democracies will not only seek to get the most bang for the buck, they will spend as few of these bucks as possible (Bueno de Mesquita, Smith et al. 2003 Ch. 6). The findings of the selectorate theory reflect a common theme in nearly every liberal theoretical approach to democracy and war: the assertion that if democracies build excessive militaries or behave aggressively, then something must be mitigating the will of the majority.  

Benjamin Fordham and Thomas Walker lay out this logic clearly:

Liberals claim that states can avoid conflict spirals and provide more resources for domestic needs by spending less on their militaries. Because democracies are guided by the needs of their citizens rather than the interests of a small elite that might benefit from war, their twin concerns should lead to less military spending by liberal, democratic states (Fordham and Walker 2005 142).

When democracies do pursue ineffective or overly aggressive foreign policies, liberal theories tend to focus on the capturing of the state by exogenous interest groups who disproportionately benefit from a policy while distributing the costs throughout society (Milner 1997; Moravcsik 1997).

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5 For the purposes of this paper I use “large selectorate” and “democracy” interchangeably. 
6 David Lake also claims that democracies will devote a “greater absolute resources” to security, although the process remains more efficient because of the relative absence of rent-seeking by democratic elites (Lake 1992).
The consensus is not limited to liberals. Challenges to democratic exceptionalism, even those made by self-described realists, avoid directly confronting this mechanism of a rational public’s cost aversion and instead rely on intervening variables. Many argue that nationalism must play a role in encouraging democracies to act aggressively (Mearsheimer 1990; Van Evera 1990; Van Evera 1999; Rosato 2003). Sebastian Rosato argues that voters are easily manipulated by the powerful, who can “drum up nationalistic fervor, shape public opinion, and suppress dissent despite the obligation to allow free and open discussion” (Rosato 2003 595; Kaufmann 2004). One of the most important realist examinations of flawed foreign policy finds democracies to be generally immune to militarism. When they contract it, it is due to the state’s capture by narrow interest groups or captivation with “myths” (Snyder 1991). Put bluntly, even for realists, responsibility for militarism and war rarely lies with the voters themselves. But what if the empowered “interest group” is a majority of the electorate?

To challenge this liberal-realist consensus, this paper examines the essential first step towards an aggressive foreign policy—building a military. Empirical evidence provides some support for the claim that democracies spend less on their military than other regimes (Fordham 2003; Goldsmith 2003; Fordham and Walker 2005 142). However, other work suggests more nuanced links between defense spending and domestic politics. Kevin Narizny views military buildups as a maneuver of leftist parties to increase the size of government (Narizny 2003). Fordham suggests that the trend towards a highly capitalized military in the Cold War United States was the result of domestic forces such as unemployment in addition to international ones such as Soviet military spending (Fordham 2004). Shifts in the locations of U.S. military bases and defense industries from the Northeast and Midwest to the “Gun Belt” in the South and West correlate closely with other changes in redistributive federal disbursements since World War II.
(Markusen 1991). Studies have found that defense spending in Israel and the United States rises prior to an election (Mintz and Ward 1989; Mayer 1992).

Of these scholars, Erik Gartzke comes closest to generating a theory of democratic defense preparation in which democracies develop militaries by allocating higher amounts of capital (weapons, technology, etc.) relative to numbers of military personnel, thereby incurring “economic burdens, perhaps for domestic political benefit” (Gartzke 2001 469). While empirical tests lead Gartzke to reject the hypothesis that democracies invest more heavily in military capital to save lives, the evidence is not clear-cut. Studies show that democracies consistently place fewer people under arms in peace and in war (Reiter and Stam 2002; Fordham and Walker 2005). Democracies tend to pursue maneuver strategies, which are far less personnel intensive (Reiter 1999; Reiter and Meek 1999). The Israeli defense budget rises in response to higher battle deaths (Mintz and Ward 1989), and Paul Vasquez provides evidence that the use of conscripted soldiers forces democracies to pursue casualty-avoiding strategies that lower casualties (Vasquez 2005). A recent, innovative study shows that defense firms in Western democracies emphasize (own) casualty reduction in weapons advertisements (Schornig and Lembcke 2006). Survey research finds that less wealthy Australians are more likely to support high levels of defense spending (Throsby and Withers 2001). Given these findings, democratic military preparation deserves closer scrutiny. This paper does so through a new theory exploring the “domestic political benefit” of a capitalized military.

3 Capitalized Militaries and Democratic Militarism

Economists have long considered defense to be perhaps the purest of public goods (Kapstein 1992), and the selectorate theory provides an essential insight by incorporating this
element in its examination of democracy. However, the selectorate theory fails to note that citizens can not only vote themselves more public goods, but can also shift the burden of these goods’ costs among its citizens, a theoretical claim known as the Meltzer-Richard hypothesis (Meltzer and Richard 1981). I remedy this oversight by tying the logic of the selectorate theory to political economic models of voter behavior and redistribution in the presence of economic inequality.

Rather than rely on exogenous factors such as interest group capture or myths of empire, rather than rely on exogenous factors such as interest group capture or myths of empire, I While these ad hoc explanations are certainly plausible, I develop a mechanism for democratic militarism that is endogenous to the rational choice framework of democratic exceptionalism, one that places the responsibility of poor foreign policy squarely on the shoulders of the average voter. To do so I choose assumptions that systematically eliminate many of the extant explanations for poor foreign policy, I create a hard theoretical case for democratic militarism. Finding the seeds of aggression within this hypothetical ideal of democracy poses a severe challenge to the optimism of the current conventional wisdom.

To do this, I take an explicitly microfoundational approach, assuming that all policy is decided through referenda by rational individuals, and that the median voter’s preferred policy is enacted by the government (Black 1948; Downs 1957). With the possible exception of norms-oriented approaches, the cost-benefit calculation of this median voter is the central, albeit often tacit, causal mechanism behind democratic exceptionalism. These assumptions generate a stylized, hypothetical regime that strips away the intervening factors of nationalism,

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7 Public goods are both nonrival, one’s use does not diminish the value for another, and nonexcludable, everyone within the state enjoys it regardless of their contribution to it (Samuelson 1954; Snidal 1979). A full discussion of the potential public goods of a successful war would require its own paper. If the continued survival of the state is a good enjoyed by the entire population, and that even status quo states may feel obliged to initiate war to ensure their continued survival, then it is safe to say that national defense and at least some victories have a public goods element to them.
manipulation of information, and logrolling interest groups traditionally blamed for militarism and aggressive international behavior by democracies. This system allows the median voter to demand policies that provide her with redistributive public goods in excess of the level maximizing the summed utility for the state’s population as a whole, my definition of suboptimality. In their discussion of wartime resource extraction, Dan Reiter and Alan Stam agree with Kant that “the public prefers not to spend on military ventures at the expense of individual consumption” (2002 121). But in the case of inequitable capital endowments and the potential to redistribute wealth, the median voter can gain a large amount of the public good of security without sacrificing much consumption. The next section develops a theory in which the median voter weighs the benefits of consumption against those of security, arguing that a capitalized military reduces the costs of arming and defense for this pivotal actor, thereby laying the foundations for democratic militarism.

3.1 Redistributive Defense Spending

The median voter favors the development of capital-intensive armed forces as a means of redistributing the burden of providing the public good of security. Thus economic inequality—the difference between the median voter’s wealth and the state’s per capita wealth—determines the expected benefits from redistributive policy, the intuition behind the Meltzer-Richard hypothesis (Romer 1975; Roberts 1977; Meltzer and Richard 1981; Persson and Tabellini 2000). The median voter evaluates these redistributive benefits when deciding how much of the public good of defense to produce. I introduce a neoclassical production function for defense based on

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8 While median voter theory demands rather heroic assumptions, its usefulness as a simple, intuitive model for deciding policies within a democracy makes it an appropriate theoretical tool. Formally, the median voter theory requires the assumption of a two candidate, winner-take-all election with an odd number of voters. The candidates are assumed to be able to commit to their policies in advance of their election. Both candidates will converge on the median voter’s preferred policy along a single issue dimension as long as the electorate’s preference is single-peaked (Downs 1957).
the capital and personnel invested in the military. With this I argue that, in the face of a threat, the median voter can and will shift the costs of defense provision onto the rich by choosing an advantageous military Capital-to-Personnel Ratio (CPR). As a result of this shift, a democracy will spend more money to produce a given amount of military capability in order to reduce the likelihood of casualties and of a draft.

I assume that a state with a closed economy consists of individual citizens with the same preferences for a mix of private consumption and for a single public good: defense. The value of and thus the demand for this public good is not constant. In times of low threat, the median voter will prefer to consume her own wealth or use taxation to redistribute through other public goods such as roads and schools. However, I assume that the basic need for security has a privileged position in the hierarchy of issues, and as the level of threat rises, other issues will become less salient. Therefore, rather than assume multiple public goods, I will subsume for simplicity’s sake “peaceful” public goods as part of the individual’s consumption.  

Defense, like most economic production functions, can be stylized to consist of a combination of capital (tanks, planes and even training) and labor (soldiers, sailors, etc). To a large degree these two factors of production are substitutes; a heavily capitalized military can make up for a small population and thus fewer potential soldiers, such as in Taiwan and Israel. However, capital and labor are not perfect substitutes; in economics terms the two factors have a declining marginal rate of technical substitution, which is a function of technology. Until it is possible to build a military made entirely of robots, defense requires some of both factors.

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9 Evidence of a guns and butter tradeoff remains decidedly mixed. For example, a recent investigation of Turkish defense spending (which also contains a thorough review of the empirical literature) finds that defense and welfare spending are considered as separate issues by the state (Yildirim and Sezgin 2002).  
10 Gartzke also uses this two-factor approach (Gartzke 2001). For another innovative use of factor endowments and prices in the role of defense provision see the work of David Rowe (Rowe 1999; Rowe, Bearce et al. 2002; Rowe 2005).
Defense is paid for through a common tax rate on wealth, and the individual consumes any wealth not spent on defense.\textsuperscript{11}

I make the empirically well-founded assumption that within every state wealth is unevenly distributed (i.e. skewed to the right along an axis of citizens ordered by the wealth they possess), and therefore any given state population’s median wealth is less than that of the mean.\textsuperscript{12} I assume that this wealth endowment is the only difference between these hypothetical voters; every individual values her life equally and can produce the same amount of military labor.

Economists have made the case that in a closed economy with an uneven distribution of wealth the median voter will prefer a heavier tax on capital, rather than labor, resulting in redistribution (Persson and Tabellini 2000 117-22).\textsuperscript{13} As the median voter derives more relative income from labor, she will support a heavier tax on capital. Conscription is a form of labor taxation. Assuming the possibility of a draft, even if the odds of being called up are equally distributed among all citizens, suggests that the median voter will demand that a larger amount of the military budget go towards the purchase of capital to reduce the risk of conscription.

Since I am assuming that the median voter sets all policies within the democracy, one must ask why the voter does not simply refuse to support conscription. In times of high threat, conscription may be the most effective way of providing the large amounts of labor needed to

\textsuperscript{11} A common tax rate is a hard case for the theory. If progressive taxation is possible, then any redistribution effects are likely to be higher.

\textsuperscript{12} Defense economics scholars have used median voter models before but have not made this assumption, and thus do not address the redistributive effects of the defense public good (Dudley and Montmarquette 1981; Smith 1989; Murdoch, Sandler et al. 1991; Throsby and Withers 2001). On the other hand I exclude the spillover effects of defense spending by allies, which has traditionally been a central concern of the field (Olson and Zeckhauser 1966; Sandler and Hartley 1995).

\textsuperscript{13} The mobility of capital is obviously a concern here in determining the level of capital taxation (Boix 2003). Nonetheless, even if capital can be shifted across borders, the equilibrium outcome is for a higher tax on capital than labor.
provide the public good of security, and the voter will weigh this gain against her chances of being drafted. Furthermore, from the French Revolution on, in democracies the lower classes have often demanded conscription in response to the perception that the rich and elite were not bearing their fair share of the burden of war (Levi 1997). Thus a fair draft can actually redistribute the costs of war away from the median voter.\footnote{\text{\textsuperscript{14}} Nothing in my theory prevents the median voter from incorporating normative criteria such as “fairness” into her evaluation of policy choices.} However, even in this case, using revenue from taxes on the wealthy to protect conscripts (Vasquez 2005) and to minimize the extent of the draft remains a valuable public good, as will be shown formally in the next section.

In cases where the level of threat does not currently justify resorting to conscription, the level of capitalization of the current military will still to a large degree determine a draft’s future likelihood. Margaret Levi usefully distinguishes between small and large demand military scenarios, concluding that in the former, the public will prefer an all-volunteer military, whereas in the latter the public will prefer conscription without elite exemptions (Levi 1997 36-7). I argue that a capitalized military results in more scenarios meeting the small demand category, as well as reduces the risks to the median voter in a large demand scenario. Additionally, poorer people are more likely to be drafted, are more likely to join an all-volunteer force, may gain jobs from domestic weapons manufacturing, and often regard military service as a means of acquiring human capital. It should not surprise therefore that democracies would build highly capitalized militaries in both peace and in war, since such militaries redistribute money and skills through jobs and training as well as reduce the risk for combatants.\footnote{\text{\textsuperscript{15}} Buying military capital apparently creates more jobs than hiring more soldiers. A now outdated study claims that $1 billion dollars in U.S. government spending would create 98,000 public service jobs, 53,000 civilian production jobs, or 45,800 military jobs (Nincic and Cusack 1979). Given the U.S. pursuit of the “Revolution in Military Affairs,” the disparity is likely to be much larger now. Thus military capital is also a superior form of pork barrel spending than increasing the number of soldiers; therefore my theory conservatively underestimates how much the median voter may favor capital.} The median voter normally will be
happy with an expensive, all-volunteer military; but once the level of threat creates a demand for labor that reaches into the middle class, the voter will demand a military staffed through a fair draft whose conscripts are protected by large amounts of capital.

In either case a capitalized military not only results in the median voter doing less of the fighting herself, but also will generally allow someone else’s resources to fund the costs of war. This process leads to suboptimal military preparation at the state level. Suboptimal military preparation occurs when the state develops a military that does not produce the most capability for the amount of money invested in it. The resulting military does not maximize the benefits and minimize the costs of security in a utilitarian sense for the state as a whole, but rather for the median voter (Persson and Tabellini 2000 49).

While I theorize that democracies prefer capitalized militaries, this does not mean that the state’s capital and labor endowments do not play a crucial role in determining military structure and success. Instead I argue that democracies and non-democracies convert their population and wealth into military effort in different ways. This conversion ability often plays a larger role in determining a war’s outcome than the stark balance of power (Mearsheimer 2001 55-7). Much of the median voter’s ability to create a favorable, cost-reducing military will be a function of the state’s labor and capital endowments as well as the technology that affects how productive each factor will be. Democracies with large amounts of capital relative to their populations are therefore likely to have an advantage building militaries in which the costs of conflict are relatively low for the median voter. Wealthy democracies will also have the resources to devote towards developing military technology allowing for easy substitution of capital for labor, which reduces the costs of defense both for the median voter and the state as a whole.

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16 Indeed, separating the effects of wealth from those of democracy is a large empirical challenge, as the two correlate closely (Desch 2002).
This section developed a theory predicting that democracies will redistribute wealth in the form of a public good, security, by developing a capitalized military. By this logic, democratic states with high economic inequality should develop more capitalized militaries, since the rich pay a larger percentage of the taxes required to supply the good. The median voter’s desire to invest heavily in military capital will also result in an increase in the state’s cost of producing a given unit of military power due to a declining marginal rate of substitution between capital and labor. As inequality rises and capitalization increases, the costs to the median voter and to the state overall will diverge. The next section formalizes these claims in order to generate testable hypotheses.

3.2 Formalization of the Theory: Capitalized Militaries and Inequality

For this paper, the use of formal models delivers important advantages. First it allows me to compare succinctly the effects of several independent variables upon a succession of related dependent variables: military capitalization, costs to the median voter, and costs for the state. Second, I can specify transparently an appropriate standard to evaluate the suboptimality of military spending: the difference between the median voter’s cost and that for the state in general. Finally, the formal models provide guidance for specifying appropriate statistical models to allow hypothesis testing.\(^\text{17}\)

I start with a utility function for a median voter consisting of three components: the voter’s private consumption \(c_m\), the public good of security \(S\), and the public bad of a draft \(D\). Let \(\tau\) be the flat tax rate and \(y_m\) the wealth of the median voter (\(y\) is the state’s average, or per capita, wealth):

\[
  c_m = (1 - \tau)y_m
\]  

\(^{17}\) Since my goal is to derive a testable theory, I assume a specific functional form. For a more general version of the median voter’s preference for defense spending see Dudley and Montmarquette (1981).
With the total revenue from taxation ($\tau Ny$, with $N$ being the state’s population), the state can only purchase military capital $K$ (the numeraire good in dollars) and military labor $L$ (in people at an exogenously determined cost of $\omega$ dollars each).\textsuperscript{18} The government budget $G$ is described as:

$$G = \tau Ny = K + \omega L \quad (2)$$

Let $\theta$ be an expression of inequality, which is the ratio of the state’s average wealth $y$ over that of the median voter $y_m$ (and therefore $\theta \geq 1$). Substituting Eq. (2) into Eq. (1):

$$c_m = \left(1 - \frac{K}{Ny} - \frac{\omega L}{Ny}\right) y_m = \left(y_m - \frac{K}{N\theta} - \frac{\omega L}{N\theta}\right) \quad (3)$$

The means of providing the public good of security is by developing military capability, represented as a neoclassical production function in Cobb-Douglas form:\textsuperscript{19}

$$M = K^\alpha L^{1-\alpha} \quad (4)$$

The technological parameter $\alpha$ determines the substitutability of labor and capital ($0 \leq \alpha \leq 1$). The public good of security $S$ is derived from this military capability, and has little value in the absence of potential threats. Therefore the value of $M$ for the voter is expressed as a proportion of the combined military capability of her state and that of potential enemies $E$ (i.e. the likelihood that the voter’s state would prevail in a conflict), multiplied by a salience parameter $\beta$ that can incorporate such diverse mitigating factors as perception of threat, geographic separation, etc. Alexander Wendt’s epigram that “five hundred British nuclear weapons are less threatening to the U.S. than five North Korean ones” (Wendt 1999 255) helps distinguish

\textsuperscript{18} Gartzke does not account for this cost of labor in his empirical work, and this may have led to misleading results (Gartzke 2001). Without factoring in the relative costs of labor and capital, any empirical investigation suffers from omitted variable bias. In my empirical section, values for a state’s capital stock include the rental price of capital.

\textsuperscript{19} Modeling production as a Cobb-Douglas function ($K^\alpha L^{1-\alpha}$), with a constant factor share, represented by $\alpha$, is a common practice in economics. I use this functional form for simplicity; the model can be made more generalizable with no impact on the theoretical outcomes, so long as the factors are neither perfect substitutes or complements.
between the two parameters. The capability term $E$ addresses the weapons, while salience $\beta$ captures the other factors contributing to a sense of threat. Importantly, if either $E$ or $\beta$ has a value of zero then the public good value for defense spending is also zero.\footnote{Offensive realists would argue that neither of these variables is ever zero, but this is beyond the scope of the paper (Mearsheimer 2001 30-1).} There is no need to defend against a state that is either completely disarmed or poses no conceivable threat. In this case the median voter is better off consuming all her income or demanding other public goods.

The resulting expression for the public good of security is:\footnote{Technically, if $E=0$ then there is still some public good value to defense spending. However, one only needs to produce a trivial amount of $M$ to get the full value of $\beta$. For simplicity I assume that there are no economies of scale and no spillover effects from allies’ defense spending. This paper is focusing on the costs of military preparation and brackets questions regarding demand. Thus Eq (5) does not play a direct role in the model; I include the term to suggest a framework for future research to analyze both the demand for $M$ as well as the costs of providing it.}

\[
S = \frac{\beta M}{M + E} = \frac{\beta K^\alpha L^{1-\alpha}}{K^\alpha L^{1-\alpha} + E} \tag{5}
\]

Finally, conscription or at least its possibility exists. The risk of being drafted is the same for every member of the population and therefore a public “bad,” and is proportional to the amount of labor used in the military over the size of the population.\footnote{This is of course a highly conservative assumption, as conscription is rarely equitable across income.} The expected value of a draft also incorporates a measurement of threat, becoming more negative as the danger posed by an opponent’s military rises:

\[
D_m = -\frac{EL}{N} \tag{6}
\]

The median voter’s utility function is the sum of Eqs. (3), (5), and (6).\footnote{I have chosen to express the utility of the voter in an additive form in order to separate the components (and because it is the convention of the defense economics literature). Multiplying the consumption, defense, and draft terms does not change the theoretical outcome. Also, I assume there are no deadweight losses from the taxation. Adding deadweight losses will not change the theoretical conclusions, although it will dampen any incentive by the median voter to redistribute.}
\[ U_m = \left( y_m - \frac{K}{N\theta} - \frac{\omega L}{N\theta} \right) + \frac{\beta K^\alpha L^{1-\alpha}}{(K^\alpha L^{1-\alpha} + E)} - \frac{EL}{N} \]  

(7)

The median voter makes two policy decisions: the amount of money to spend on military capital and on military labor. Put differently, the voter picks a tax rate, and then the percentage of the revenue to be spent on capital (the remainder to be spent on labor). As a simple means of keeping the Downsian assumption of over a single policy dimension voting (and thus ensuring the existence of a Nash equilibrium), I conceive of the policy process as a game of two sequential votes. All citizens first vote on the tax rate, and then subsequently vote on how to distribute the revenue among the two factors of production.\textsuperscript{24}

This game can be solved by backwards induction. By unique subgame perfect Nash equilibrium, the median voter will choose allocations of military capital and labor that minimize her costs for the production of a given level of military capability \( M \), expressed as a cost minimization problem using Eq. (7) constrained by the production function in Eq. (4):\textsuperscript{25}

\[ \min_{K,L} = \frac{K}{N\theta} + \frac{\omega L}{N\theta} + \frac{EL}{N} \text{ subject to } M = K^\alpha L^{1-\alpha} \]

This can be transformed into a Lagrangian function:

\[ L = \frac{K}{N\theta} + \frac{\omega L}{N\theta} + \frac{EL}{N} + \lambda \left[ M - K^\alpha L^{1-\alpha} \right] \]

Solving for the first order conditions:

\[ \lambda^* = \frac{1}{N\theta \alpha} \left[ \frac{\alpha}{1-\alpha} (\omega + E \theta) \right]^{1-\alpha} \]  

(8)

\textsuperscript{24} This is not a wholly unrealistic assumption; the United States votes on taxes and on defense appropriations separately for example. Alternative means of dealing with multiple policy dimensions would be allowing for probabilistic voting for representatives or by assuming that politicians cannot credibly commit to policies in advance. For reviews of these various approaches see (Persson and Tabellini 2000; Acemoglu and Robinson 2005)

\textsuperscript{25} In economics, this is known as a Hicksian demand function.
\[ K^* = M \left[ \frac{\alpha}{1 - \alpha} (\omega + E\theta) \right]^{1 - \alpha} \]  \hspace{1cm} (9)

\[ L^* = M \left[ \frac{\alpha}{1 - \alpha} (\omega + E\theta) \right]^{\alpha} \]  \hspace{1cm} (10)

The ratio of Eqs. (9) and (10) provides the median voter’s preferred Capital-to-Personnel Ratio (CPR):

\[ \left( \frac{K^*}{L^*} \right) = \frac{\alpha}{1 - \alpha} (\omega + E\theta) \]  \hspace{1cm} (11)

Not surprisingly, as the cost of military labor \( \omega \) rises, the median voter will favor a more capitalized military. More interesting, as inequality \( \theta \) (or \( y/y_m \)) rises (wealth distribution becomes more skewed), the ratio of capital to labor desired by the median voter also increases in order to reduce the risks of conscription and casualties. As the potential threat \( E \) rises, the median voter’s preference for capital intensifies; a high threat environment produces a rise in capital intensity even with no economic inequality (\( \theta = 1 \)), since the risk of the draft adds an additional “price” to military labor. If the central difference between democracies and non-democracies is the fact that the poorer median voter gets to pick the policies of the state, we can also generalize that democracies will build more capitalized militaries compared to non-democracies.

The role of technology deserves special attention, as its effect is both important and contains theoretically interesting nuances. From Eq. (11), as technology becomes more capital augmenting (\( \alpha \) becomes larger), the median voter will vote to invest in more capital-intensive militaries. Eq. (9) shows that under most circumstances, as it becomes easier to substitute capital
for labor the amount of money that must be spent on both capital and labor to produce a unit of $M$ will decline.26

### 3.3 Formalization of the Theory: Suboptimal Defense Spending

In addition to generating novel propositions on military capitalization, the theory undermines a central claim of democratic exceptionalism: the efficiency of democracies in public goods provision. Granted, with the right technology or in specific types of military conflicts, a capitalized military may be both highly capable and cost-effective, but this is not always the case. Distinguishing theoretically and empirically between effective and redistributive military preparation, while challenging, is therefore essential. I do this in two moves. I have already shown that inequality will affect military investment, something that cannot be explained by a “biggest bang for the buck” argument. In this section, I show that increases in inequality lead to a growing divergence between the costs of defense for the median voter and for the state, implying that the median voter prefers suboptimal military preparation.

To show this, return to Eq. (8). The solution to the Lagrange multiplier $\lambda^*$ represents the increased cost to the median voter of providing an extra unit of $M$. Taking its derivative with respect to $\theta$ confirms that as inequality increases, the costs paid by the median voter to gain a given amount of $M$ decline for all feasible values of $\theta$. As inequality rises, defense becomes cheaper for the median voter. Importantly, this is true regardless of the level of $E$; in the absence of a draft, the median voter still pays less for defense as she becomes relatively poorer (as predicted by the Meltzer-Richard hypothesis). A rise in threat and thus a lower expected value for conscription will make military preparation more costly, as the voter favors increasing the

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26 In Eq. (9), the maximum cost point with respect to $\alpha$ is very close to zero except in cases where $(\omega + E\theta)$ is unrealistically low.
level of capitalization. Technology plays a role in the median voter’s costs; capital-favoring
technology (a high $\alpha$) lowers her costs for military preparation in almost all cases.27

Since the median voter sets all policy, her preferences for military preparation also
determine the size of the government’s budget. Eqs. (2), (9) and (10) produce an expression for
the per unit cost of military capability paid by the government from its tax revenues. The total
amount of defense expenditure $G$ divided by the amount of military capability produced $M$ is a
measure of cost-effectiveness in defense provision (lower cost being better):

$$\frac{G}{M} = \frac{\tau N y}{M} = \frac{1}{M} (K^* + \omega L^*)$$

$$\left(\frac{G}{M}\right)^* = \left[\frac{\alpha}{1-\alpha} (\omega + \theta)\right]^{-\alpha} + \omega \left[\frac{\alpha}{1-\alpha} (\omega + E\theta)\right]^{-\alpha} \quad (12)$$

The derivative of $(G/M)^*$ with respect to $\theta$ is positive for all possible values of $\theta$, precisely the
opposite effect of $\theta$ on the median voter’s marginal costs in Eq. (8). A democracy therefore will
set a higher tax rate to provide the same level of military capability compared to a benevolent
central planner maximizing the social benefit of the public good, and this effect is exacerbated by
inequality.28 Democracies will provide, quite literally, less bang for the buck in response to the
median voters’ wishes, challenging the efficiency hypothesis of the selectorate and other
democratic exceptionalist theories. Consequently, limits exist to how much harder democracies
will try in a conflict; they may spend a great deal of wealth but not produce a correspondingly
large amount of capability.

27 The global maximum for Eq. (8) with respect to $\alpha$ is $\alpha = (1 + \omega + E\theta)^{1/\alpha}$, which is likely to be very low.
28 One objection to my model is the fact that I have introduced two policy dimensions (how much $K$ and $L$
to purchase, or choosing both the tax rate and the $K/L$ ratio), which normally removes any chance of
equilibrium around the median voter’s preferences. However, since the voters only differ along one
dimension ($y/y_m$), I collapse the policy dimensions into a single one.
The potential for suboptimal military preparation is best illustrated by examining the difference between per capita defense expenditure and the median voter’s costs. Dividing $G/M$ in Eq. (12) by population $N$ and then taking the difference between this and Eq. (8) provides an expression comparing the effects of various parameters on the difference in marginal costs for a unit of defense between the government as a whole and the median voter:

$$
\left( \frac{g}{M} \right)^* \hat{\lambda}^* = \left( \frac{1}{N} - \frac{1}{N \theta \alpha} \right) \left( \frac{\alpha}{1 - \alpha} \right) (\omega + E \theta)^{\nu - \alpha} + \frac{\omega}{N} \left( \frac{\alpha}{1 - \alpha} \right) (\omega + E \theta)^{\nu - \alpha}
$$

Again as inequality rises, the gap between what the median voter pays (and therefore demands) and per capita state expenditure widens. As $\theta$ rises, not only does the median voter pay less of the cost of military preparation (and of conflict), she prefers spending tax money in an increasingly inefficient manner from a cost-effectiveness standpoint. Higher military wages $\omega$ also result in a larger difference between the costs. However, a capital-augmenting substitution technology $\alpha$ contains the potential to lower the costs of defense for the median voter and for the state. Table 1 summarizes the theoretical relationships between the four independent and three dependent variables.

Table 1 about here

4 Testing the Microfoundations

The theory presented in this paper generates propositions on the Capital to Personnel Ratio $K/L$ (or CPR), the marginal cost for the median voter $\lambda$ and for the state $G/M$. However, the empirical section focuses only on the first of these dependent variables for a number of reasons. First, the theoretically derived functions for marginal cost are complex, and specify non-monotonic relationships between independent and dependent variables. Measuring the dependent variables of marginal cost requires some measurement of military capability $M$, a
notoriously difficult concept to turn into a quantitative index. On the other hand the CPR
equation found in Eq. (11) possesses the virtue of being simple to test, with little room for
strategic behavior, and being sufficiently general to work for any size of threat, population,
wealth, etc. Thus operationalizing Eq. (11) provides the best statistical test of the theory,
providing two hypotheses:

\( H_1: \text{As the military threat to a state increases, a democracy will develop a more capitalized}
\text{military.} \)

\( H_2: \text{As wealth inequality increases, a democracy will develop a more capitalized military in}
\text{reaction to a military threat.} \)

Because of its ability to reduce the costs of military preparation for both the median voter and the
state, substitution technology \( \alpha \) merits special attention. However, testing the effects of capital-
augmenting technology is vastly more challenging relative to the theory’s other independent
variables. Technology is difficult to turn into an index allowing for comparison across time and
between countries. However, because the theory (as well as current events) suggest that
technology plays an essential role in democratic militarism, I develop a test that while indirect,
will support the plausibility of the theory’s approach to technology

The immeasurable technology variable \( \alpha \) has the ability to reduce the costs of military
preparation for both the median voter and the state. If we assume that technology cannot be
instantaneously changed, but that states can invest in technology and benefit from its effects only
over the long term, then from Eq. (9):
H₃: As wealth inequality or threat increases, democracies will invest in capital-favoring technology, resulting in increased military capitalization but lower capital expenditure over the long term.

4.1 Description of the Data

The unit of analysis is the state-year and the data set consists of the same democratic, industrialized states for the years 1949-1994 examined by Robert Franzese’s work on macroeconomic policy (Franzese 2002). While limiting the empirical investigation to these states sacrifices breadth, the advantages outweigh the costs. First, the data set suffers from few missing observations for my theory’s explanatory variables. Second, by focusing on well-established democracies with highly developed economies, the states in the data set represent the “easy cases” for democratic exceptionalist claims (Mansfield and Snyder 2005), allowing for a strenuous test of my competing hypotheses.30

Most importantly, the Franzese data set contains an index of wealth inequality, an essential explanatory variable, appropriate for cross-sectional and longitudinal analysis. Other measures of inequality such as the Gini coefficient tend to be difficult to compare across states. Franzese incorporates a new measurement, Relative Wage Inequality (RWI) to capture the skewed distribution of wealth within states, by indexing the relative wage position of manufacturing workers (the ratio of manufacturing wages and GDP per capita) relative to the

29 The countries in the data set are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, (West) Germany, Greece, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, the U.K., and the U.S. Franzese also includes Switzerland but data on its military capital spending is unavailable. Note that these states have relatively low barriers to capital flight, and therefore represent a hard test for the theory, which assumes a closed economy.

30 Spain and Portugal are excluded from the data set until two years following the demise of their dictatorships. I also excluded the United States from some regressions to see if it was an outlier in terms of capital spending; the results, which are not reported here, did not change significantly.
U.S. in 1986, which is coded as one. A $RWI$ value greater than one reflects a larger disparity in wages than that of the U.S. in 1986.\footnote{For a full description see the web appendix for Franzese (2001) at http://www-personal.umich.edu/~franzese/Publications.html, accessed August 12, 2006.}

My second explanatory variable is the threat posed by the rivals’ military capability (hereafter called Threat), without which the value of defense is largely zero. I use Benjamin Fordham and Thomas Walker’s data (Fordham and Walker 2005) which incorporate the sum of the Correlates of War’s (COW) composite index of national capabilities (CINC) scores for the “strategic rivals” of any given state-year taken from William Thompson (Singer 1987; Thompson 2001).\footnote{The CINC score combines six measures (military spending, military personnel, iron and steel production, energy consumption and total and urban population) expressed as percentage of the total in the international system for that year. The rivals’ capability includes that of states not in the data set.} Using diplomatic history, Thompson codes a state as a strategic rival for a given country if that country’s leaders considered the other state to be a potential enemy—and the two states were sufficiently comparable in power to make a lopsided conflict unlikely. Given that my theory suggests that defense’s public good value also varies with the perception of threat (i.e. $\beta$), the Thompson index is the most appropriate measure of threat. In the data six out of twenty countries have at least one rival at some point in time for an average rivalry time span of thirty-four years (for a total of 216 of 1,032 observations).

Since my theoretical model specifies that inequality and threat are jointly linked to the dependent variable, all regressions reported here contain an interaction term between inequality and threat (as well as the constituent variables themselves), the essential test of the theory. I will refer to this crucial variable as $RWI \times \text{Threat}$. 

To test the hypotheses I develop a new measurement for my dependent variable, the military capital-to-personnel ratio (CPR). $Military \ Capital \ Stock \ Per \ Soldier$ measures the ratio of military materiel to military personnel. To calculate an estimate of military capital stock, I
take Erik Gartzke’s data on capital spending as a percentage of total military budget for a given year (Gartzke 2001) and multiply it by the COW estimate of military expenditure (Singer 1987). Given this annual military capital spending data and using the same depreciation method as Fordham (2004) and Wolf et al (Wolf Jr., Hildebrandt et al. 1989), I develop a value for a state’s military capital stock for each year in 1995 U.S. dollars.\(^33\) Dividing by the number of people in the military for each year provides an estimate of military CPR. As an additional measure of capital intensiveness, I also test capital spending as a percentage of the defense budget, or Capital Percentage, from Gartzke.

The key control variable is \(\omega\), the price of military labor relative to the numeraire good of military capital, which should reflect the underlying factor endowments of the state and thereby control for wealth as well. I use the *Industrial Wage Rate* as an approximation of \(\omega\) (Rama and Artecona 2002).\(^34\) This variable correlates quite closely to other possible measurements of wealth such as the per capita capital stock and real GDP per capita (minimum correlation between the three is 0.85). I choose the wage rate as my principal control variable because it most closely conforms to the theoretical price of military labor. Additionally, by limiting my empirical investigation to a subset of wealthy democracies, I focus only on states with similarly high endowments of capital per worker, making the regression model simpler and the results more “believable” (Achen 2005 337-8).

While the first model I test is explicitly based on the theoretically derived model in Eq. (11), in subsequent versions I introduce a select number of variables likely to affect either the

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\(^33\) Like Fordham, I assume an initial capital stock of double the capital investment of the first year in which data are available. I also revert to this estimate when there are gaps in the data. Capital depreciates over 10 years.

\(^34\) Rama and Arcona report the industrial wage averaged over five year periods. In order to increase the observations I used the average wage for each year within that period. There are few observations before 1960.
value of the public good or the relative price of military labor ($\omega$). Conscription, expressed as a dummy variable, is likely to drive down the costs of military labor (Ng and Mulligan 2004). An aging population will require a more capitalized military; I therefore include the Population Percentage over 65, taken from the World Bank (World Bank 2006). A strong ally may reduce the state’s insecurity as well as allow it to specialize in its abundant factor (analogous to the predictions of international trade theories of comparative advantage); I incorporate Defensive Allies’ Capabilities, based on the CINC scores taken from the COW alliance dataset (Gibler and Sarkees 2004). Finally, I include a Major Power dummy variable (COW) since major powers have higher capital needs (warships, aerial refueling, etc) in order to project power at longer distances.

All of the statistical models are analyzed using an OLS Error Correction Model (ECM), with country fixed effects and panel-corrected standard errors. Discussions of ECMs and other methodological choices are included in the Appendix. In this paper’s case, the ECM, required as a technical necessity due to the nonstationary nature of the data, also possesses a theoretical virtue due to its separation of short- and long-term effects via each variable’s first differences and level coefficient respectively. While the data set contains no direct measurement of $\alpha$, if one assumes that technology’s effects are only realized in the long run, we can begin to parse out the role of technology, at least indirectly, through comparing the long- and short-term portions of the ECM when applied to defense spending rather than capital-to-personnel ratios. If democracies invest in capital-augmenting technology, I expect to see a long-term increase in CPR and Capital Percentage but a decrease in Defense Expenditure, while the short-term effects of RWI and Threat should be positive for all of these dependent variables. For my modes I use the Defsne

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35 I assume that the public goods value of defense spending has no effect on that of allies, an obvious simplification (Sandler and Hartley 1995).
36 The major powers are France, the U.K., the U.S., and Germany after 1991.
Burden, which is total defense spending as a percentage of GDP as my dependent variable to test the final hypothesis $H_3$.

5 Empirical Results

The statistical results shown in Table 2 support the hypotheses of redistribution through military capitalization. Within the highly developed democracies of the data set, military capitalization correlates with rises in Threat and Inequality in tandem with their interaction term. In Models 1-2, which test CPR, and Model 3, which tests the percentage of the defense budget invested in capital, both the long-term level effect and the short-term first differences effect of the interaction term are positive and significant. Joint hypothesis tests reject the null with $p<0.05$ that the coefficients for the constitutive and interactive variables are simultaneously zero for both long- and short-term effects.

Interaction terms and their individual components are difficult to interpret in table format. A graph provides an intuitive means of presenting the results. Figure 1 presents the long-term effects of Threat and RWI on capitalization from Model 2 in a format suggested by Bear Braumoeller (2004). The “y axis” shows the regression coefficient for Threat after factoring in the effects of RWI, whose value increases along the “x axis.” The graph depicts a rising value for the marginal effect of threat (with 95% confidence intervals) as inequality grows from its minimum to its maximum value. For very low levels of inequality, an increase in Threat results in a more labor intensive military, but once inequality is equal to or greater than the median, an increase in threat results in heavier capitalization. Democracies with high economic inequality react to significant threats by more heavily capitalizing their military than do those with lower inequality, providing support for the microfoundational theory.
All of the control variables’ coefficients in Table 2 are in the theoretically predicted direction. While *Conscription* has a negative coefficient as expected, its effect cannot be distinguished from zero. On the other hand, democracies that are either major powers or have aging populations rely significantly more heavily on military capitalization. Finally, the presence of capable allies reduces military capitalization, possibly due to the reduction in threat.

Model 4 (in Table 2) shows the effects of threat and inequality on the *Defense Burden*, which I use as a means of testing indirectly the effect of military technology for *H₃*. As expected, a rise in Inequality or Threat results in increased short-term spending on military capital. However, in the long term their effects become insignificant, or in the case of Model 11, significant and *negative*. We are left with the strange finding that democracies in the long term may actually *reduce* their capital expenditure in response to a rise in RWI×Threat. Coupled with the strong empirical support for the hypotheses that democracies sharply increase their CPR in response to threat and to economic inequality found in Tables 2 and 4, these results suggest that democracies can both increase their level of military capital in the long term while reducing its price. An increase in the technology parameter α (the one theoretical variable not operationalized in the empirical section) can cause this effect. While the ECM is a blunt instrument for this task, it does help us begin to indirectly examine the latent effects of technology. Subsequent research should look at democratic investments in defense R&D and technology’s effect on the median voter’s assessment of the costs of conflict.
6. Conclusion: Offensive Liberalism?

These tests support the microfoundational theory that defense can have redistributive effects, and that the median voter can reduce the marginal costs she pays for the production of military capability. If democracies can shift the defense burden away from the median voter by developing a certain type of military, one cannot assume that the costs of defense (and ultimately of war) are evenly distributed across society, a crucial assumption of democratic exceptionalism.

By showing theoretically that the marginal costs of military production for the state and the median voter diverge, I call into question the superior efficiency of democratic militaries, as well as the willingness of the median voter to “try harder” in the event of war, two important findings of the selectorate theory. Future research should take this paper’s insights on cost minimization and investigate the median voter’s demand for defense, which this paper addresses only indirectly.

To date the field of International Relations has not focused on democracy’s redistributive function. By relaxing the selectorate theory’s assumption that all citizens are identical (Bueno de Mesquita, Smith et al. 2003), this paper takes a first step beyond the observation that democracies are “sensitive to costs” (Filson and Werner 2004), and begins to delineate what these costs may be and who pays them. More sophisticated institutional models (proportional representation vs. majoritarian) with multiple issue areas (guns and butter) will improve our understanding of how the burden of war is spread within a democracy. Nonetheless, the paper demonstrates that not only can inequality lead to less effective use of resources in democracies, but also that in so doing the poor (or at least the middle class) exploit the rich rather than vice versa. Such a counterintuitive finding helps hone our understanding of when democracies possess the potential for militaristic behavior.
Military technology can have distributive implications, and allows the median voter to shift the burden of conflict away from themselves and simultaneously reduce the state’s overall marginal costs for defense. Given the continuing acceleration of the capital-intensive “Revolution in Military Affairs,” this effect requires increased attention. This interaction of regime and technology presents a twist on offense-defense theory (Jervis 1978; Glaser and Kaufmann 1998; Lieber 2005). Rather than a given military technology favoring offensive operations, a capital-augmenting technology may favor military action by democracies. In addition, the value for $\alpha$ can be conflict-specific; different types of warfare may have different implications for the substitutability of capital and labor. The median voter can be expected to prefer capital-intensive strategic bombing campaigns to labor-intensive counterinsurgencies.

The paper also holds implications for grand theory. In examining the foreign policy effects of “domestic coalition politics,” Jack Snyder describes the “pathologies” that lead to aggressive foreign policies (Snyder 1991). According to Snyder, democracies tend to experience fewer of these pathologies because the government reflects a broader social interest. This paper takes the easy case for liberal theory—rational, well informed and cost-sensitive voters aggregated in a mass electorate—and shows how such an assumption can still lead to Snyder’s “imperial temptations.” Snyder’s logic remains sound: militarism is more likely when the burden of conflict is shifted away from the politically powerful, but in this case the “interest group” favoring arming and aggression may be a majority of the voters.

This paper contradicts the structural realist tenet that regime type should not affect how a state prepares for war. However, the theory suggests that the role played by democracy is more complex than simple cost aversion. From the perspective of a democratic government, developing the correct military structure gives the executive wide latitude for action by
insulating its foreign policy from popular pressure, becoming more like a unitary actor. Military capitalization may provide a liberal path to neorealist behavior. More disturbingly, a median voter who successfully transfers the burden of war onto a minority may be just as susceptible to the temptation of imperial overstretch as any other type of political elite. Thus regime type may contribute to the aggressiveness of states, but in ways unanticipated by democratic peace theory. If the expected public good value for war is large, or if the burden of providing it can be shifted sufficiently, voters may be non-realists in the “wrong” direction, aggressively pursuing their own interests at the state’s expense.

The paper’s theory challenges some of the findings of rationalist models of war when they are applied to democracies (Fearon 1995). Demonstrating that the median voter can shift the costs of war elsewhere suggests that a capitalized military can alter the calculus underpinning the democratic decision to initiate war. Lowering the costs of war to the median voter does not by itself mean that democracies will start more wars per se (another element such as information asymmetry or a commitment problem is still required), but democracies with highly capitalized militaries will initiate more status quo revisions (Powell 1999) and be less likely to negotiate settlements to crises (Filson and Werner 2004).

The effect is exacerbated by economic inequality. While scholars have speculated that economic inequality can be a source of internal instability in weak states (Boix 2003; Fearon and Laitin 2003), this paper’s findings suggest that inequality can also lead to international instability instigated by mature, developed democracies. Democracies with a particularly unequal distribution of wealth, a highly capitalized military or both (the United States and United Kingdom being two examples) will find the costs of any conflict more bearable, particularly as military technology increasingly favors capital. While this paper concurs that rich democracies
probably work differently than poor democracies or rich nondemocracies, it questions the conclusion that “to advance further the cause of peace, we must encourage increased trade and development along with democratic institutions” (Mousseau, Hegre et al. 2003 277). Such conventional wisdom has become one of the fundamental tenets of American foreign policy. The Clinton National Security Strategy asserted that “the trend toward democracy and free markets throughout the world advances American interests” and this is echoed in the current Bush Administration’s policy that “America will encourage the advancement of democracy and economic openness…because these are the best foundations for domestic stability and international order” (Clinton 1997; Bush 2002). The strategic benefits of promoting economic growth and democracy may be less apparent in the absence of concern for the distribution of economic benefits within society. The most startling potential conclusion is therefore a highly relevant one. Wealthy but inequitable democracies with ready access to capital and military technology may be as willing (perhaps even more so) to build large militaries and initiate disputes as authoritarian states, because arming and war are, in the minds of the voters, cheap.

37 Future research should examine the interaction of capital mobility and military capitalization. The threat of capital flight may constrain the median voter’s ability to tax the rich and build a highly capitalized military (Boix 2003).
Appendix

The problems inherent in the analysis of time series, cross-sectional data (TSCS) have frustrated political science for over a decade. While no panacea exists to correct every problem inherent in TSCS, when in doubt I have chosen to err on the side of conservatism, risking Type II errors, or failing to reject the null hypothesis when I should. Any consistently significant and substantive results from the analysis therefore provide strong support for the theory.

Heterogeneity within states and omitted state-specific bias can produce spurious results, and Wald tests confirm the presence of unit-specific heterogeneity. Inserting country-specific fixed effects is a crude means of addressing the problem. On the other hand, the damage fixed effects can do to our ability to test hypotheses is potentially large, as independent variables that change slowly will suffer from inflated standard errors (exacerbated by lagged dependent variables). I therefore analyzed each model with and without country-specific fixed effects. Finding similar results for both, I report only the fixed effects results here. This provides an especially rigorous test as country fixed effects often “wash out” the theoretically interesting effects of slowly changing variables such as major power, inequality and rivals’ capability (Beck and Katz 2001; Green, Kim et al. 2001).

A nonstationary dependent variable, one exhibiting a non-random, time-related trend, makes TSCS particularly onerous. Tests confirm that for most states in the data set a strong trend exists in the residual errors. However, differences between the dependent variables and their one-year lags have no unit root. Moreover, augmented Dickey Fuller tests suggest that a linear combination of all the independent variables in my model produce residuals that are stationary (i.e. trend-free), and the coefficient for the lagged dependent variable is sufficiently negative with a large t statistic, indicating that the continued use of OLS is appropriate (Beck
1993; Franzese 2002; Beck and Katz 2004). An Error Correction Model (ECM) takes advantage of the cointegration between independent and dependent variables to address the nonstationarity found in most panels, while doing no harm to panels that are stationary (Beck 1993; Keele and De Boef 2004). Indeed, even when dealing with stationary data, ECMs provide easily interpretable values for both the short term (i.e. the immediate effects of a change in an independent variable) and the long term (the effects on an eventual equilibrium based on the new level of the independent variable).

Finally, I also employ Panel Corrected Standard Errors (PCSE) which help control for heteroskedasticity across units, and have become the standard means of analysis in democratic exceptionalism (Beck and Katz 1995).
Table 1: Theoretical Predictions

<table>
<thead>
<tr>
<th>Predictive Factor</th>
<th>Military Capital to Labor Ratio ($K/L$)</th>
<th>Median Voter Marginal Cost ($\lambda$)</th>
<th>State’s Marginal Cost ($G/M$)</th>
<th>Marginal Cost Difference ($g/M-\lambda$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Military Labor Cost ($\omega$)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Military Threat ($E$)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+/-</td>
</tr>
<tr>
<td>Economic Inequality ($\theta$)</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Substitution Technology ($\alpha$)</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+/-</td>
</tr>
</tbody>
</table>
Table 2: Effects of Threat and Inequality on Military Capitalization and the Defense Burden

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>∆ Capital Stock</td>
<td>-0.194***</td>
<td>-0.571***</td>
<td>-0.223***</td>
<td>-0.159***</td>
</tr>
<tr>
<td>per Soldier (ln)</td>
<td>(0.032)</td>
<td>(0.020)</td>
<td>(0.045)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Threat Capability t-1</td>
<td>-0.226</td>
<td>-0.828*</td>
<td>-0.294**</td>
<td>0.0634**</td>
</tr>
<tr>
<td></td>
<td>(0.420)</td>
<td>(0.50)</td>
<td>(0.14)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Relative Wage Inequality t-1</td>
<td>0.120*</td>
<td>-0.154*</td>
<td>-0.0336**</td>
<td>0.00683*</td>
</tr>
<tr>
<td></td>
<td>(0.064)</td>
<td>(0.090)</td>
<td>(0.017)</td>
<td>(0.0037)</td>
</tr>
<tr>
<td>RWI×Threat t-1</td>
<td>0.341</td>
<td>1.490**</td>
<td>0.404***</td>
<td>-0.0698**</td>
</tr>
<tr>
<td></td>
<td>(0.513)</td>
<td>(0.63)</td>
<td>(0.16)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>∆ Relative Wage Inequality</td>
<td>-1.745</td>
<td>2.615</td>
<td>-0.899**</td>
<td>0.0289</td>
</tr>
<tr>
<td></td>
<td>(1.183)</td>
<td>(1.70)</td>
<td>(0.42)</td>
<td>(0.089)</td>
</tr>
<tr>
<td>∆ RWI×Threat</td>
<td>-0.536***</td>
<td>0.0280</td>
<td>0.0311</td>
<td>-0.0225**</td>
</tr>
<tr>
<td></td>
<td>(0.193)</td>
<td>(0.26)</td>
<td>(0.045)</td>
<td>(0.010)</td>
</tr>
<tr>
<td>∆ Conscription</td>
<td>1.993</td>
<td>-3.080</td>
<td>0.980**</td>
<td>-0.0474</td>
</tr>
<tr>
<td>t-1</td>
<td>(1.332)</td>
<td>(2.10)</td>
<td>(0.48)</td>
<td>(0.10)</td>
</tr>
<tr>
<td>% Population Ages &gt; 65 t-1</td>
<td>-0.0657***</td>
<td>-0.00766</td>
<td>-0.00184*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.016)</td>
<td>(0.0011)</td>
<td></td>
</tr>
<tr>
<td>Allies’ Capability t-1</td>
<td>4.790***</td>
<td>0.319*</td>
<td>-0.0271</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.90)</td>
<td>(0.18)</td>
<td>(0.025)</td>
<td></td>
</tr>
<tr>
<td>Major Power t-1</td>
<td>-0.545***</td>
<td>-0.164**</td>
<td>-0.00955</td>
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<tr>
<td></td>
<td>(0.12)</td>
<td>(0.044)</td>
<td>(0.0071)</td>
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</tr>
<tr>
<td>Industrial Wage t-1 (ln)</td>
<td>-0.203</td>
<td>-0.0730***</td>
<td>-0.00290</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.016)</td>
<td>(0.0048)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.054)</td>
<td>(0.0033)</td>
<td>(0.0057)</td>
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<tr>
<td>Industrial Wage (ln)</td>
<td>0.050</td>
<td>-0.612**</td>
<td>-0.00374</td>
<td>0.00189</td>
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<td></td>
<td>(0.036)</td>
<td>(0.27)</td>
<td>(0.0069)</td>
<td>(0.0023)</td>
</tr>
<tr>
<td>Observations</td>
<td>620</td>
<td>796</td>
<td>620</td>
<td>624</td>
</tr>
<tr>
<td>Number of States</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.18</td>
<td>0.19</td>
<td>0.14</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Note: Boldfaced coefficients’ joint hypothesis test rejects the null Threat×RWI=Threat×RWI=0 with p<0.05. Coefficients for country-specific fixed effects not reported. Panel-corrected standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Figure 1: Joint Effects of Threat and Inequality on Capitalization

Figure 2: Joint Effects of Threat and Inequality on Defense Spending
References


