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# The Demand for Military Expenditure in Authoritarian Regimes

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# The Demand for Military Expenditure in Authoritarian Regimes *

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### Abstract

We investigate how the influence of the military differs across authoritarian regimes and verify whether there are actually systematic differences in military expenditures amongst different forms of dictatorships. We argue that public choices in autocracies result from a struggle for power between the leader and the elite. Elites matter because they control the fates of dictators, since most dictators are overthrown by members of their inner circle. Both actors want to ensure their continued political influence through a favorable allocation of the government budget. Moreover, the control over the security forces gives access to troops and weaponry, and affects the ease with which elites can unseat dictators. Autocratic rulers employ different bundles of co-option and repression for staying in power, and thus differ in the extent that they are required to buy off the military. Therefore, the institutional makeup of dictatorships affects the nature of leader-elite interaction, and in turn the share of the government budget allocated to military spending. Drawing on a new data set that sorts dictatorships into 5 categories from 1960 to 2000, our empirical results suggest that while military and personalist regimes have respectively the highest and lowest level of military spending among authoritarian regimes, monarchies and single-party regimes display intermediate patterns of spending.

**Keywords**: Institutions, Military Expenditure
**JEL Classification** : H11, H56

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# 1  Introduction

Although one third of the world's countries are ruled by authoritarian regimes, the degree of variance in the behavior of heterogeneous dictatorships has never been considered in the large literature on the determinants of military spending (e.g. Goldsmith, 2003; Dunne *et al.*, 2008, 2009). Even though this literature includes the effect of regime type, this is generally identified by indices that rank countries on some scale from perfect democracy to absolute autocracy (e.g. Polity IV), thus ignoring the substantial differences between various forms of democracy and autocracy. More importantly, there are no empirical accounts of the large institutional differences between various forms of authoritarian rules on patterns of defense expenditure.

In any form of democracy, civil-military relations are relatively straightforward, characterized by what Huntington (1995) defines as "objective civilian control", even though this control my be still subject to the threat of a military coup. In contrast, civil-military relations in autocracies vary substantially according to the type of authoritarian regime. These relations are crucial, since they are shown to affect military effectiveness (Pilster & Bohmelt, 2011) and may be expected to impact on the size of the military. By unpacking the authoritarian regime category, we argue that these regimes differ in their capacity to repress the political mobilization through the army and to co-opt the elite, and that they accordingly exhibit predictable differences in the extent to which members of the elite coalition have control over the armed and security forces. Indeed, the majority of coups are executed by members of the military forces (Kebschull, 1994) and the less direct control that leaders have over such forces, the more his position is at risk. Admittedly, different regimes may require different strategies to buy-off the military. And the military budget is not the only measure of military influence in a authoritarian regime. However, military spending is the only measure that is easily comparable across time and across countries. Therefore, our primary scope is to explore how large is the military apparatus (and possibly his influence) in different forms of dictatorships.

There are several way of categorizing autocratic regimes, because autocracies come in many forms. We explore military expenditure in personalist regimes, single-party,

military regimes and monarchies. These categories are based on whether access to power is dominated by a single individual, a hegemonic party, the military or through practices of hereditary succession. Yet, dictatorships are often characterized by a level of institutional "'fluidity"' (Frantz & Ezrow, 2011), as a result of the power struggle between different actors in the system. In fact, it is common to observe various forms of dictatorships creating or co-opting a political party to support the regime and prolong their hold on power, such as the personalist reign in the Dominican Republic in 1966 or the Brazilian military junta in 1964 (Frantz & Ezrow, 2011).[1] Since some of the authoritarian regimes exhibit characteristics from more than one system - or they just do not fall neatly in one category - we acknowledge (and control for) the existence of a number of intermediate categories, or hybrid regimes. These categories are in fact excluded from the empirical analysis, as it will be explained in the empirical section.

We proceed as follows. Section 2 reviews the existing literature on defense and government spending and its relation with regime type. Section 3 bring insights from the literature on institutional variation among autocratic regimes to conceptualize the logic of political survival in autocratic regimes and to generate testable prediction on autocracies' impact on military spending. Section 4 describes our dataset, Section 5 presents the methods used in the empirical analysis and discusses the empirical evidence and Section 6 concludes the paper.

## 2    Regime type and defense spending

The primary logic behind analyzing the nature of the dictatorship is crucial: different types of dictator make different policy decisions. We believe that this is an important question since the performance of a regime in terms of public choices helps to explain the regime's effect on social and economic changes. We focus on a particular share of the government budget: military spending. Political scientists have long argued that governments can use military spending to keep their militaries from overthrowing them (Nordlinger, 1977). Military spending affects the incentives to stage a coup by increasing

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[1]However, as Frantz & Ezrow (2011) notes, this incorporation sometimes do not alter the regime's power base

the value received by the military when it refrains from staging a coup, thus reducing the expected relative value of staging one (Leon, 2010). Thus, militaries extort their governments (Collier & Hoeffler, 2006).[2] Therefore, identifying whether the military is a key actor in a dictatorship - and thus the extent these regimes are vulnerable- is very important. Yet, military spending has several additional important implications: it reduces the resources available for social welfare (Sprout & Sprout, 1968) and crowds out consumption opportunities for the public (Garfinkel, 1994); empirically, it has a clear negative effect on investment in OECD countries (Smith, 1980); and a negative effect on growth in less developed countries (Deger & Smith, 1983), thus retarding their development. More recently, Knight *et al.* (1996) point out to the negative effects of military spending on resources available for investments and a distortion in relative prices while Aizenman & Glick (2006) show that military spending reduces growth in countries facing low levels of threat. Thus, reducing the military burden can foster, in some countries, the economic growth. Therefore, a understanding how regime types affect the size of the military budget is of utmost importance.

A review of the literature on the complex nexus between government spending and regime types is beyond the scope of this paper. We thus focus on scholarship that has examined how and why military spending differ in democracies and autocracies. Overall, general agreement exists that autocracies devote more of their economic resources to military spending than do democratic systems (e.g. Hewitt, 1992; Goldsmith, 2003). However, theoretical explanations for these empirical findings tend to vary. Democratic rulers seeking re-election have more incentives to increase social spending - and reduce military budgets- than dictators. Evidence from Latin America also suggest that a transition from authoritarian to democratic regimes is accompanied by a reduction in military spending (Russett & Oneal, 2001).

When war enters the equation, the relation is everything but clear-cut. While Fordham & Walker (2005) finds that reduced military budgets may help democratic regimes to avoid the risk of war, a number of scholars conclude that democracies devote more resources to the military during war than do autocracies, for a number of reasons: i)

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[2]Collier & Hoeffler (2006) find a non-monotonic relation between coup risk and military spending

democracies are relative wealthier, thus outspend autocracies (Lake, 1992); ii) due to a greater transparency, liberal democracies have financial advantages on the international market, allowing them to raise massive funds through debt, thus financing larger and longer war (Schultz & Weingast, 2003); and iii) democratic leaders seeking re-election have more incentives to win interstates wars than dictators do (De Mesquita *et al.*, 2004). However, the empirical literature presents also many exceptions, in which the relation between states' system of government and defense spending is completely absent (e.g. Efird *et al.*, 2003; Reiter & Stam, 2003).

As the literature points out, the impact of different regime type on the defense budget is neither theoretically convincing nor empirically verified. A recent work by Bel & Elias-Moreno (2009) explores the effects of government form, electoral rules, concentration of parliamentary parties, and ideology on military expenditure. But no attention is paid to the interaction between civil wars and military expenditure under dictatorships. And none of the above accounts explain patterns of defense spending under different forms of dictatorship. For example, given everything equal, which type of dictatorship is more likely to increase the military budget? The theoretical mechanism that we propose is based on two key actors, the leadership and the elite, and their respective control over the armed forces.

# 3 Comparative autocracy

The relationship between autocracies and military spending is not so-clear cut. Besides seeking to increase his personal consumption and establishing power over his subjects, a dictator needs to remain in office, which is the most obvious and the most difficult goal to achieve (Tullock, 2003). If the ruler wishes to continue to exercise power, and enjoy the support of the armed forces, he must thwart the effort of the generals to replace him; at the same time he has to prevent the risk of a civilian insurgency. To obtain these objectives, he relies on two instruments - loyalty and repression (Wintrobe, 2000). Loyalty is won by making the generals better off. To repress certain actions or plots by the elite, he must also invest resources on the army, police, jails and informers. Yet,

while the above discussion can be easily generalized to any form of dictatorship, we need a theoretical framework to highlight systematic differences in the weight of the military apparatus across different autocracies. This paper is a step in dissecting autocracies in the context of their impact on military expenditure. Therefore, our theoretical framework must be seen as a first attempt to ascribe a peculiar "'inclination"' for the size of the military to different types of autocracy.

We develop four hypotheses that explain military spending in authoritarian regimes as a function of the different combinations of loyalty-building and repression that leaders use to maintain power and co-opt or repress the elite. Elites play a key role in authoritarian politics. While in democracies political leaders need the support of part of the citizenship to stay in power, in dictatorships the set of individuals required to maintain the power is the elite. Elites are crucial because they control the fates of dictators, since most dictators are overthrown by members of their inner circle rather than by popular uprising - e.g. Argentina 1981, Nigeria 1975, Thailand 1977, Ghana 1978 (see Frantz & Ezrow, 2011). Svolik (2009) examines all 316 authoritarian leaders who lost power by nonconstitutional means between 1945 and 2002. Among 303 leaders, only 32 were removed by a popular uprising and another 30 stepped down under public pressure to democratize. The remaining 205 dictators, more than two-thirds, were removed by government insiders, either government members or members of the military or the security forces.[3] An overwhelming majority of authoritarian leaders lose power as a result of a successful coup rather than a popular uprising. Dictators are in permanent risk of being deposed through conspiracies that most of the time would come from officials of high rank (Tullock, 2003). Indeed, several scholars point out to the struggle for power within the dictator's ruling circle, the main risk of leadership turnover (Svolik, 2009; Gallego & Pitchik, 2004; Gandhi & Przeworski, 2006). The elite represents the small segment of the population that brought the leader into office, and that, in principal, can depose him. Maintaining the support of the elite is essential to prevent armed coups. De Mesquita *et al.* (2005) refers to this subset of society controlling the access to political power as

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[3]Twenty more leaders lost power by an assassination that was not part of a coup or a popular uprising, whereas 16 were removed by foreign intervention.

the "'selectorate"' while Haber (2006) uses the expression "'launching organizations"'. In our study, the elites are represented by the royal family (monarchy), the officer corps (military regime), high level officers in the party (single party) or a narrow network of people tied to the survival of the individual ruler (personalist).

This is not to say that the vertical accountability, the responsiveness of the dictator to the broader mass of citizens, play no role. Even though the citizens do not participate in the selection of the ruler, they can determine the prospect of his survival by mounting an insurgency and threatening the regime. Thus, the ruler needs to spend resources on social welfare to ensure citizens' approval and on the military to repress a possible civilian insurgency. We will take into account this dynamic. However, to understand authoritarian politics, and public choices, we need to examine primarily the politics among the governing authoritarian elites.

**Hypothesis 1**: Military regimes have higher levels of military spending than other types of authoritarian regimes.

In military regimes a group of officers controls the access to political office, deciding who rules, and exercises influence on policy (Geddes, 2003). According to the recent literature on civil wars and institutions, military regimes run the highest risk of civil conflict (see for example Frantz & Ezrow, 2011; Fjelde, 2010). This is because the elite - i.e. the officer corps in the armed forces [4]- has full control over the security forces, putting the leader's position at risk. If the above literature is correct, and since military expenditure is associated with positive incentives to stage a coup (Leon, 2010), we should expect higher level of military spending than in other forms of autocracies, all else equal.

Yet, there are other important dynamics affecting this high level of military burden. Even though civilians may hold political positions, the power rests with the military elite (Bienen, 1978). The elite is in an "excellent position for gaining support, both active and passive, from the required quotient of the armed forces" (p.335 O'Kane, 1989). Moreover, military regimes stand apart from other types of authoritarian regimes because military elites may not necessarily want to maximize their stay in power (Wright, 2008). Rather,

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[4] As Frantz & Ezrow (2011) correctly points out, in these regimes it is impossible to obtain elite status without current membership in the military

the military's corporate interests typically entail securing ample military budgets; keeping civilian leaders from interfering in their internal affairs (e.g.through appointments); and guaranteeing immunity from human rights prosecutions (see Finer, 1975; Nordlinger, 1977; Geddes, 1999). Geddes (2003) models these regimes with a coordination game, where the main challenge is to solve coordination problems among officers who want to return to the barracks when political difficulties beset the regime, and those preferring to hold onto power. Officers may be more concerned about professional unity, which means that a military dictator would rather go back to barracks than risk damaging the institutional integrity of the armed forces. Therefore, we should also observe that the leader protects the corporate interests of these military commanders through heavy allocations of the government budget to the armed forces.

Moreover, unlike other types of regimes, military regimes may not even be averse to democratization if they can guarantee their corporate interests (Wright, 2008). If this is true, then the existence of a large defense budget decreases the costs of democratizing for the military, thus making them more likely to democratize, all else equal. Historically, many militaries made bargains with civilian elites which lead to democratization (Karl, 1990; Colomer, 2000).[5] Country-analyses suggest that the military also bargained with political party elites over military prerogatives in El Salvador (1982), Guatemala (1985) and Honduras (1982) (Ruhl, 1996; Williams & Walter, 1997; Schirmer, 1998).

Military regimes enjoy also high approvals among the privileged because they protect they properties and among the middle class because they are seen as a solution to political violence and instability (O'Donnell *et al.*, 1973). In fact, military governments place an high value on internal order (Stepan, 1971) and they usually have a comparative advantage in coercion (Davenport, 2007). Finally, since military dictators lack institutions for efficient co-option, such as a political party, have few alternatives but to repress the opposition through military means, thus increasing the military burden. For all these reasons, we should expect that the elite in military regimes have larger budget allocations among authoritarian regimes.

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[5]Karl (1990) lists Colombia (1958), Chile (1998), Uruguay (1984), and Venezuela (1958), as arranged transitions to democracy.

**Hypothesis 2**: Monarchies have a lower level of military spending than military regimes

The leader in monarchic regimes is usually a king or emir and he coordinates his rule through the royal family, which represents the elite or his inner circle. Monarchies lack the advantage of a mass-based political party to co-opt, and therefore are unable to support long-lasting and self-enforcing agreement to support their rule (Magaloni, 2008). However, they can acquire traditional legitimacy due to history and continuity, and thus become strongly institutionalized. In Morocco, for example, the institutions are based on a constitutional monarchy which claims legitimacy through its genealogical descendant from the Prophet Muhammad. Traditional legitimacy may lead the military to establish pledge of allegiance to the monarchy, as in Thailand in 1957 or in Nepal before 1996. Moreover, monarchies are still able to make agreements and offer long-run private benefits in exchange for political support. This is because the the constitutional practice of hereditary succession mitigate the issue of succession which is claimed to be the cause of instability in many dictatorships (Olson, 2000).

In this respect, the royal family serves as a built-in network to organize the rule of the regime and manage succession.[6] Like a dominant-party organization, the royal family has a vested interest in the survival of the regime beyond the survival of the current ruler. Moreover the monarch must confer resources to the royal family through rents and ministerial positions, including key positions in the armed forces, and the family acts as a source of constraints on the decision-making processes (Gandhi, 2008).

In this sense, we believe that the military is subordinated to the royal family but has incentives to support it because an "investment" in the ruling coalition is likely to generate pay-offs in the long-run. Since the succession is institutionalized, the future value deriving from being loyal to the royal family is more secure. Loyalty translated in benefits: the armed services are given high proportions of national budgets, thus detracting from development and social spending, in order to ensure the military's loyalty. Expensive weapons are often purchased according to military commanders' preference rather than

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[6]Some dictatorships, which are not classically defined as monarchies, may also develop a sort of hereditarian succession, where the new leader is chosen within the "'family dynasty'", such as the North Korea, but this is rare and would be usually classified as hybrid systems in the existing dataset.

on the nation's need for these specific arms or the armed forces' ability to maintain them (Rubin, 2000). The demand for high-technology weapons is important for the king's egos, national prestige, and the deterrence of external threats, yet these expensive purchases are often responses to the desires or decisions of military commanders (Rubin, 1980). Generals interfere in the budget process to ensure their demands are met. Moreover, the royal family keeps officers loyal by high pay and special privileges, such as special housing (Rubin, 1980). Clearly, such privileges inflate the military budgets.

Moreover, most of the monarchies are located in the Middle-East, and these oil-rich economies have resources to adopt policies of rent-distribution among the population, thus co-opting actors beyond the military apparatus to prevent take-overs. These revenue streams generated by natural resources can be used to alleviate the vertical pressure against the regime by funding repression through the military and broad distributive spending (Ross, 2001).[7] Monarchies, shares more institutional features with military regimes than with single-party regimes. They share the same political insulation enjoyed by military governments, and even though they are endowed with some forms of religious or historical authority, they still rule without institutions (Fjelde, 2010). The main difference with military regimes is the lack of coercive expertise that makes them more reluctant to enforce overt repressive strategies.

**Hypothesis 3**: Single party regimes have a lower level of military spending than military regimes and monarchies

The most important feature of single party regimes is their extensive patronage networks, which help to mobilize votes and supporters. Over 85% of single party regimes have legislatures (Wright, 2008), and their mass-based party organization can reach large segments of the population and penetrate the civil society at all levels. While monarchies may exert just as much centralized power over the elite and citizens as military regimes, the contention here is that single party regimes have a large distributional networks and a mass support, which translate into more effective vote mobilization and support. Single-party governments possess some of the characteristics of democracies that reduce the use

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[7]These are countries where the military overspending was one factor contributing to the regime's fall, such as the Shah's regime (Rubin, 1980)

of the military in state repression, incorporating a greater proportion of the population into the political process (Davenport, 2007). The party organization is a strong and influencing institutional infrastructure to monitor all groups in the society and demand from competing groups of power (like the military) can be discussed without challenging the foundations of the regime (Gandhi & Przeworski, 2006).

A massive party apparatus allows the dictator to selectively target threatening or rival groups, and in doing so single-party regimes can effectively subordinate the military to political control (Peceny *et al.*, 2002). Indeed, in this regime the military is completely subordinated to the party and often party functionaries are embedded in the armed forces to ensure their loyalty (Frantz & Ezrow, 2011). Soldiers are duly indoctrinated in party ideology and promoted according to their loyalty to the political system. This form of massive and persuasive party propaganda within the military has been long witnessed in China under Mao (Whitson, 1969) and more recently under the People's Liberation Army (PLA) (Koh, 2000). Even more importantly, single-party regimes have large non-military intelligence organizations which ensure a wide and pervasive control of the society (Lai & Slater, 2006). The interference of the party at all levels of the military structure make it difficult for the armed forces to challenge the regime, while the single-party apparatus can easily suppress the opposition within the state apparatus itself (Slater, 2003). Power positions and government rents are predominately allocated to high officials within the party. The party is also a vehicle to advance the career in the government through a stable system of patronage (Gandhi & Przeworski, 2006). Thus, prospects of career advancement in the armed forces is dependent on the willingness of military officers to identify themselves with the party. Offers of selective benefits to reward support, combined with the credible threat that these privileges depend on individuals loyalty, serve as a strong deterrent against challenges and defections (Wintrobe, 2000).

In addition, Peceny & Butler (2004)'s suggest that single-party regimes, such as Malaysia (1957 - 1994) and Botswana (1966 - 1994), are significantly less likely to initiate disputes against many of the other types of authoritarian regimes and less likely to be targeted by other types of authoritarian regimes. This is because they have an institutional set-up that makes them resilient to challenges to their authority; political parties allow

the dictator to forcefully control and buy off the opponents (Fjelde, 2010). Given the subordination of the armed forces to the mass-based party, and since military spending is usually associated with ongoing conflicts or state repression, we should expect a lower level of military expenditure in single-party regimes when compared to monarchies and military regimes.

> **Hypothesis 4**: Personalist regimes have the lowest level of military spending among authoritarian regimes.

A good definition of personalist regimes from which to proceed is provided by Geddes (2003): the institutional feature that distinguishes personalist regimes from others is that although personalist regimes have parties and militaries, these organizations have not become sufficiently developed or autonomous to prevent the leader from taking personal control of policy decisions and selection of regime personnel. In fact, the personalization is the "concentration of decision-making and coercive power in the hands of one person, unfettered by a party central committee or institutionalized military decision-making process" (Geddes, 2004, p.13). While in other types of authoritarian regimes the dictators build support through the provision of targeted public goods (single party regimes) or govern by repression (military regimes), in personalist regimes he exchanges some material rewards, private goods, to a narrow group of regime insiders in return for mobilizing political support (Bratton & Van de Walle, 1994). Moreover, he has full control over the selection of the inner circle without the constraints of party or military guidelines (Frantz & Ezrow, 2011). As a consequence, the elite often comprises associates, friends and family members, such as in the Philippines under Ferdinand Marcos or the Dominican Republic under Rafael Trujillo. Personalist dictators may also create paramilitary forces to counterbalance any threat from within the armed forces, as did Duvalier in Haiti for example (Ferguson, 1988).

Personalist dictators are even likely to initiate a war with democracies because they are institutionally unconstrained and therefore unlikely to lose power in case of an unsuccessful war (Reiter & Stam, 2003).[8] Generally, all dictators seek a form of personalization

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[8]Their list of personalist dictatorships fighting wars includes the following: North Korea, Korean

of their power, but the extent they maximize their power depends on the organizational strength of the launching organizations (Haber, 2006). Here we argue that because elite institutions, particularly the military, are typically weak and dependent on the dictator in personalistic regimes, they are less likely to influence the distribution of power and the allocation of the government rent. Indeed, the empirical evidence suggests that elites in personalist dictatorships have the greatest difficulty ousting dictators, and therefore personalistic dictators face the lowest risk of being overthrown in any given year (Frantz & Ezrow, 2011). In Chad, for example, effort to topple Idriss Deby failed due to lack of elite unity. Lukashenko in Belarus and Antonio Salazar in Portugal represent similar situations (Frantz & Ezrow, 2011). Moreover, personalist dictators ensure that no individuals become too powerful through frequent rotations, and often purges, to maintain a situation of uncertainty and vulnerability. Examples are abundant, such as in Iraq under Saddham Hussein, the Central African Republic under Jean-Bédel Bokassa or in Zaire under Mobutu (Frantz & Ezrow, 2011). These regimes are characterized by the narrowest network of elites, whose destiny is tied to the survival of the individual ruler. Indeed, personalist regimes are more likely to collapse following the removal of the dictator than in single-party or military regimes (Geddes, 2003). Exclusion from the ruling coalition cuts the elite's access to the distribution of resources while in case of a regime collapse the elite ends up out of power. Finally, the level of accountability is so low that the dictator can spend fewer resources to maintain his power. Therefore, it is difficult to ascribe particular economic policies to the category of personalist rulers. Since power rests in the hands of the dictator, policies are subject to his personal preferences to a greater extent than in other regime types.[9] Elites in personalist dictatorships do not belong to a unifying institution, and the military has a low bargaining power relative to this elite. Therefore, personalist rulers have weaker incentives to disperse resources in the military apparatus. Table 1 provides a summary of our theoretical framework and helps to associate to each

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War; Egypt, 1956 Suez War; Pakistan, 1965 Second Kashmir War; Egypt, Six Day War; Syria, Six Day War; Egypt, 1969 War of Attrition; Pakistan, 1971 Bangladesh War; Iraq, Yom Kippur War; Egypt, Yom Kippur War; Syria, 1973 Yom Kippur War; Cambodia, 1975 Vietnam-Cambodian War; Uganda, Tanzania-Uganda War; Libya, Tanzania-Uganda War; Iraq, Iraq-Iran War; Syria, 1982 Lebanon War; and Iraq, Gulf War.

[9]Brooker (2000) illustrates these differences by comparing the socialist preferences of Nyerre of Tanzania to the adoption of neoclassical economic policies by Pinochet of Chile.

regime a relative level of military spending.

# 4  Data

## 4.1  Military expenditure

The arguably best data on military expenditures is supplied by SIPRI. Unfortunately, SIPRI does not provide data before 1988. However, years before then are interesting for this research, as they yield so many more examples of dictatorships. The COW National Material Capabilities database supplies data on military expenditures from 1960 onwards. Unfortunately, these data are not of the best quality because they are compiled from different sources without precise attention to the compatibility of these sources, which may have varying definitions of military expenditures (e.g. they include/exclude paramilitary spending, pensions, spending on R&D, etc). We use COW data from 1960 to 1987 and SIPRI data from 1988 to 2000. COW data are in current USD. We transform them into constant USD using the US CPI with 2005 as the base year. SIPRI data are in constant 2008 USD. We transform all data into percentages of GDP using GDP figures (in constant 2000 USD) from the World Bank - World Development Indicators - to get a measure of military burden.

Combining different sources is problematic. To get a picture of the compatibility of SIPRI and COW data, we examine their ratio in 1988 and subsequent years in which a reasonable amount of overlapping data is available. Table 3 summarizes this information. The mean ratio is close to one. One would not expect a ratio exactly equal to one because of SIPRI and COW use different base years. Furthermore, from the histogram (Figure 1) we can see that the distribution of the SIPRI/COW ratio in 1988 is affected by outliers. A closer examination of these outliers gives interesting insights into the compatibility of the two sources. For example, Brazil, Columbia, Lebanon, Poland and Turkey all have SIPRI/COW ratios greater than 3 in 1988. However, in subsequent years, these ratios decrease and roughly converge to one. We suspect that this is because after 1988 data collection improves, and data generally become more accessible, thus reducing discrepancies between sources that are the result of inaccuracies. Furthermore, after 1988

COW actually collects data from, amongst others, SIPRI itself, so there is a direct overlap in some instances.

However, a major inconsistency between SIPRI and COW data becomes obvious when examining the minimum value, which is 0. This is an unusual number to arrive at when taking ratios. This figure corresponds to Costa Rica, which SIPRI sites as having zero military expenditure, while COW estimates Costa Rica's military expenditure as being in the ten thousand range. This divergence may be the result of varying definitions which include/exclude paramilitary spending, pensions, spending on R&D, etc. To account for such discrepancies, we include a dummy which equals 1 when the source is SIPRI and zero when the source is COW to capture the effect of using the different sources. This dummy must be interpreted carefully. In addition to picking up differences in the sources, it will pick up a "Cold War effect" because the SIPRI data corresponds with the post Cold War era.

More generally, it must be noted that data on military spending are notoriously inaccurate. There are three major problems: reliability, comparability, and validity. Problems with the reliability of data occur because official sources do not always disclose information accurately. By its very nature, military expenditure is an item that governments may prefer to conceal. In many countries the official data only cover a part of total military expenditure. Important items can be hidden under non-military budget headings or can even be financed entirely outside the government budget. Furthermore, comparisons between the data of different countries are complicated by the fact that countries have varying definitions of what comprises military spending, and these definitions may even vary over time. Finally, the problem of validity arises because military expenditure does not necessarily reflect military strength or capability. While military expenditure undoubtedly impacts on military capability, other factors, such as the balance between personnel and equipment, the technological level of military equipment, and the state of maintenance and repair play an important role too (Stålenheim *et al.*, 2008). Given all the above considerations, our results must be interpreted with caution.

## 4.2   Regime types

Many studies of countries' political institutions and their effect on wars or public choices make use of the Polity IV dataset, for example, studies on the relationship between democracy and civil wars (e.g. Fearon & Laitin, 2003) or works on electoral rules and military spending (Bel & Elias-Moreno, 2009). However, using a single scale may not be appropriate when differences between regimes are not measurable by their degree of democratization. These data must be used critically, principally because "'vastly different temporal, spatial, and social contexts support the same autocracy scale values"' (Gleditsch & Ward, 1997, p.380). Put differently, autocracies with the same scale score are not equivalent and may have very different institutional architectures. Notwithstanding this problem, there are only few disaggregated analysis of authoritarian regimes, in relation to their attitude towards civil wars (Fjelde, 2010) and state repression (Davenport, 2007).

To the best of our knowledge, there exist three alternative datasets which dissect autocracies into different categories. The first, constructed by Gandhi & Przeworski (2006), distinguishes among autocratic regimes according to the dictator's personal characteristics - i.e. whether he is a civilian or a member of the military. This method is straightforward and does not require the researcher to make any subjective judgment calls. However, it tells us nothing about the institutional framework that underpins the regime. Dictators classified univocally as civilian may have very different selectorates keeping them in power. To fulfill the purpose of our paper, we require a dataset that captures differences among launching organizations.

The second dataset was put together by Hadenius & Teorell (2007). However, they do not identify personalist regimes, and therefore do not distinguish between regimes where rulers represent the professionalized military institution and regimes where the dictator retains a military rank as well as some military prerogatives but has dissolved the military council. Our fourth hypothesis speaks directly to the importance of different forms and degrees of personalization in shaping the public policies, including the allocation of resources and power to the military.

For the above reasons, we use the third dataset provided by Frantz & Ezrow (2011),

who update Geddes (1999)'s dataset with the information on monarchies. They sort dictatorships into single party states, military regimes, personal rule, monarchies and four mixed regime types. However, their dataset only contains observations on dictatorships, while non-autocratic countries are missing. Countries which have transitioned to democracy or are experiencing a spell of democracy between years of dictatorship are not observed in those particular years. In the majority of cases these missing observations correspond to positive values in the Polity IV dataset.[10] Thus, we allow Frantz & Ezrow (2011)'s dummies to equal 0 when Polity is greater than or equal to 1. As a result the dataset covers a panel of democracies and varied dictatorships.

Figure 2 shows the number of countries that fall into each regime type by year. Single party states are the most prevalent form of autocracy through the whole period, followed by the other pure form autocracies - personal dictatorships, military regimes and monarchies, respectively. There are fewer cases of mixed regime types than pure form autocracies. It is also noteworthy that military regimes are amongst the most frequent regime type throughout the 1970's, but begin to disappear in the 80s and are among the least frequent regime type in 2000. Thus, a pre-1990s sample has a different balance of regime types than a post-1990s sample.

In addition to the frequency and percentage of total observation, Table 2 summarizes the mean military expenditure and the mean Polity IV score for each regime type. These summary statistics do not reveal all that much about the relationship between military expenditures and regime type. Although it appears that regimes facing a triple threat (from a personalist dictator, the military and a single party) have the highest average military expenditure, there is also substantial variation within this category, as indicated by the large standard deviation. The same applies to the first and second runners up, monarchies and single party states, respectively.

But there are a number of examples in which countries are coded as dictatorships by Frantz & Ezrow (2011), but score positively in Polity IV. For example, Malaysia in coded as a single party state, while scoring around 4 in Polity IV throughout the entire period.

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[10]For example, Argentina is coded as a military regime from 1966-73; unobserved in 1974 and 1975; military regime from 1976-83; and unobserved after 1984. In 1974 and 1975, Argentina scored 6, compared with -9 in 1966-73; from 1984 onwards, it scores 8, compared with -9 in 1987-83.

This highlights the difficulties involved in categorizing countries. Including Polity IV as a covariate allows the data to decide which variable has the stronger effect.

The Polity Score (Marshall & Jaggers, 2002) measures the level of democracy in a country and is a 21-point scale ranging from -10 (fully institutionalized autocracy) to +10 (consolidated democracy). It consists of six component measures that record key qualities of executive recruitment, constraints on executive authority, and political competition. As we said, this is measuring something different from the regime type dummies. Differences between regimes are separate from their degree of democratization: different regime types can have the same Polity score. (For example, Albania, single party state, Brazil - a military regime, and Jordan, a monarchy, all score -9 in certain years.) We include Polity IV because it has been shown to be an important determinant of military spending (see introduction), not as a measure of regime type.

## 4.3   Other data

Dummy variables on wars - internal and external - are from the Correlates of War Project. COW defines war as sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related deaths (Sarkees, 2011). Intra-state (civil) wars refer to those that predominantly take place within the recognized territory of a state. Inter-state wars refer to thoise that take place between states.

Finally, we collected data on GDP (in 2000 constant US Dollars) and total population from the World Bank World Development Indicators; and data on openness, defined as exports plus imports divided by GDP (in 2005 constant US Dollars) from the Penn World Table. Table 4 outlines the summary statistics for these variables.

## 5   Econometric model and empirical results

Following the standard literature on the determinants of military expenditures (see for example Dunne *et al.*, 2008, 2009), a fixed effects model is specified as:

$$y_{it} = x'_{it}\beta + f_i + \epsilon_{it} \quad i = 1, ..., N; \ t = 1, ...T \tag{1}$$

where $y_{it}$ is the log of military burden; $x$ is a vector of strictly exogenous observed explanatory variables and $\beta$ is the associated coefficient vector; $f_i$ is the time invariant country-specific effects and $\epsilon_{it}$ is the error term. The covariates vector $x$ includes information on regime type, Polity IV , intra-state war, inter-state war, (log) GDP per capita, (log) population and (log) openness. GDP per capita is a measure of wealth, while population is a measure of size. Openness is a proxy for economic integration. The rationale behind the inclusion of this variable is that the more open a country is, the more peaceful will be its relationships with other countries, and therefore the less need it has for defense spending. However, the opposite has been argued for developing countries: the level of economic integration may, in fact, be the source of discontent, as dependence on the world market render their economies more vulnerable to fluctuations in world prices. In addition, the benefits of trade only accrue to certain groups (i.e. the elites). In anticipation of resulting internal dissent developing countries may become more militarized (Rosh, 1988). Internal and external war pick up immediate threats. A country engaged in war will not only give greater priority to military spending as a matter of urgency, but will also need to restock arms and ammunition used in fighting. We do not include political factors, such as alliance memberships and political processes, as done, for example, by Palmer (1990), but rather focus on economic and strategic factors, according to the mainstream economic literature on the topic, even though we recognize the importance of competing determinants of military spending.

We transform population, GDP per capita and trade into logs to scale down the variance and reduce the effect of outliers. We control for group-wise heteroscedasticity and serial correlation - the presence of which is confirmed by the appropriate diagnostic tests - by reporting robust standard errors.

We restrict regime type to include only the pure-form autocracies, i.e. personalist dictatorships, one-party states, monarchies and military regimes. The frequency of hybrid regime type is low, and the relationship between the leader and the military in mixed regime types is too case-specific to make reasonable predictions about it.

In addition, we examine whether the determinants of military expenditure behave differently in autocracies as compared to democracies. To this purpose we first estimate

the model on the subsample of autocracies, which are defined by a negative polity score. Second, we estimate this model (excluding regime type) on the subsample of democracies, loosely defined by a positive polity score. Next, we test for structural differences in the explanatory variables across the two subgroups using a Chow test. Finally, we estimate the fixed effects model on the full sample of autocracies and democracies, allowing for structural differences between the two subsamples where necessary.

The first column in Table 5 summarizes the results for pure-form autocracies. Military regimes do, in fact, spend the most on the military, closely followed by monarchies, and these results are both significant at the 1% level. The coefficient on single-party states is quite a bit smaller than that on monarchies, but is insignificant. The positive sign on all three dummies implies that personalist regimes spend the least on the military. While the differences in the coefficients on military regimes and monarchies is statistically neg-ligble, the difference between each of these regimes and single-party states is statistically significant at the 1% level . These results are in keeping with our prediction. In particular they suggest that the four regime types can be grouped into those with higher predicted military spending, i.e. military regimes and monarchies, and relatively lower miltiary spending, i.e. one party states and personalist regimes. Our theory suggests that this is explained by the fact that one-party states and personalist dictators have alternative ways of checking the military and need not buy the support of the military to the extent that military regimes and monarchies do.

As expected, Polity IV has a significant negative effect on military expenditures: the more democratic/the less autocratic a regime is overall, the less it spends on the military. Intra-state war and inter-state war have a positive effect on the military burden, even though the former is insignificant. The log of openness has a positive effect on military burden: in particular a 10% increase in trade corresponds with a 1.2% increase in military expenditure. This to be expected when examining a sample comprised of autocracies, i.e. a category dominated by developing countries, and confirms Rosh's hypothesis that trade may be a source of discontent for these countries. However, this result is not statistically significant. Log GDP per capita has a negative yet insignificant effect, while log population has a positive and highly significant effect on military expenditure: a

10% increase in a country's population corresponds with an 8.5% increase in military expenditure. The existing literature is inconclusive on the effect of population on military expenditure. This result is in keeping with the argument that larger countries require larger defence forces, perhaps because large countries tend to be major regional or global military powers (Hewitt, 1992). However, it runs contrary to the public goods argument put forward by Dunne & Perlo-Freeman (2003), for example.

As noted above, in addition to exploring differences in military expenditure amongst different types of autocracies, we examine whether there are structural differences in the standard determinants of military expenditure across the autocracies and democracies. The results are summarized in columns 2-4 in Table 5. Column 2 shows the results of the model estimated on the subsample of democracies (excluding regime type). Column 3 outlines the Chow test which checks for structural differences in the explanatory variables across the autocracies and democracies. In particular, the standard variables can be interpreted as the effect of each variable in autocracies, and the variables labeled "dif" indicate the difference in effect between autocracies and democracies. Log openness dif and source dif are significant, suggesting that these variables behave differently in autocracies and democracies. Log openness might be expected to behave differently in the two subsamples because the democracies will be dominated by developed countries, whereas the autocracies will be comprised mostly of developing countries. Source might be expected to vary because of differences in quality of data - data on democracies being more reliable. The fourth column summaries the results for the pooled regression, in which log open and source are allowed to vary between autocracies (log openness, source) and democracies (log openness 2, source 2).

The results from our first regression do not hold up in this expanded model. This is to be expected, as it looks at a much larger sample that includes democracies, as well as autocracies, and the effect of each regime is weakened. Interestingly, monarchies spend the most on the military, and this result is significant. Personalist dictators still spend the least. However, the coefficient on military regimes has dropped substantially, and is now lower than that on single-party states though both coefficients are insignificant. We can use the results in this equation to gauge the effect on military spending of a

transition from one regime type to another by plugging in values for individual countries. For example, if Thailand were to follow the example of Nepal and reinstall its monarchy (all hypothetically, of course), our model predicts an 8.58% increase in military spending. If the Turkish military were to launch a coup and establish a military regime, our model predicts military spending to increase by 4.75%. These figures are substantial.

# 6    Conclusions

Our paper explores whether there are systematic differences in military expenditures across different types of autocracies. It countributes not only to a deeper understanding of what determines military expenditures, in particular the role of regime type, but also contributes to our understanding of autocracies. Autocracies vary substantially in terms of who rules and how they rule, a fact that is often ignored by the literature that frequently treats autocracies as a single category. We unpack this category, arguing that the nature of the elite, be it a royal family, a political party or a military establishment, affects elite-dictator relationships, and in particular the role of the military in keeping these elite in check. We generate a number of hypotheses to explain why there may be systematic differences in military expenditures between military regime, monarchies, one-party states and personalist dictatorships. We derive a logic of authoritarianism that generates a typology of sorts - four different institutional arrangements - each with its own implications for the role and influence of the armed forces.

The empirical results confirm a degree of variance in the behavior of authoritarian regimes in allocating money to the armed forces. We find that whether dictatorships are governed by a military organization, a monarch, a single-party or a personalistic ruler has important implications for the allocation of the government budget to military expenditure. In particulr, we find that the four regime types can be grouped into those with higher predicted military spending, i.e. military regimes and monarchies, and relatively lower miltiary spending, i.e. one party states and personalist regimes. This is in keeping with our theory, which suggests that one-party states and personalist dictators have alternative ways of checking the military and need not buy the support of the military to

the extent that military regimes and monarchies do.

There is still much to learn in order to understand the how autocracies function internally. While our paper focuses on how dictators' allocation of resources to the military, it may be interesting to contrast this with social spending. In particular, it has been argued that repression is a less efficient tool for staying in power. History yields a number of cases of dictators legitimizing their rule not necessarily by force but by providing public goods, for example Brunei, Turkmenistan and several countries in the Middle East. The ability to do this may often depends on the availability of funds, typically natural resource revenues. Hence, the effect of autocracy on military expenditures may be less clear cut than hypothesized. Yet, a study of military spending in different forms of autocracy yield some interesting insights. The analysis presented in this paper demonstrates that studies of the impact of regime type on military spending must work from a more sophisticated conception of authoritarianism.

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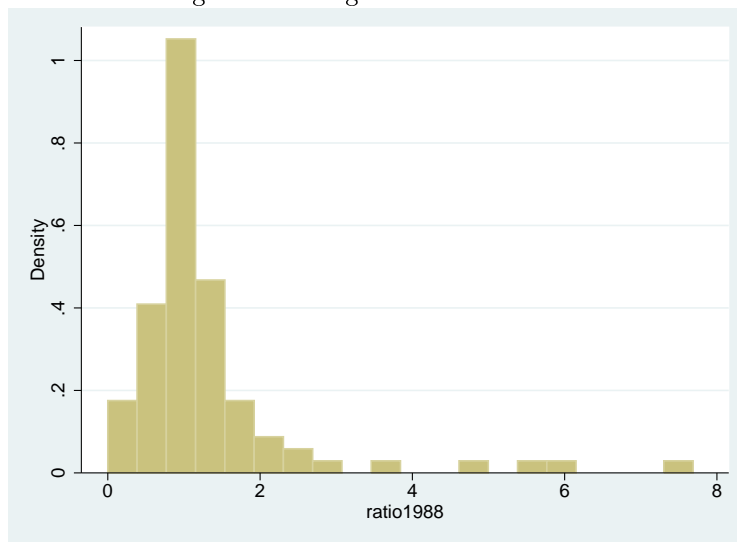
Figure 1: Histogram for Ratio 1988



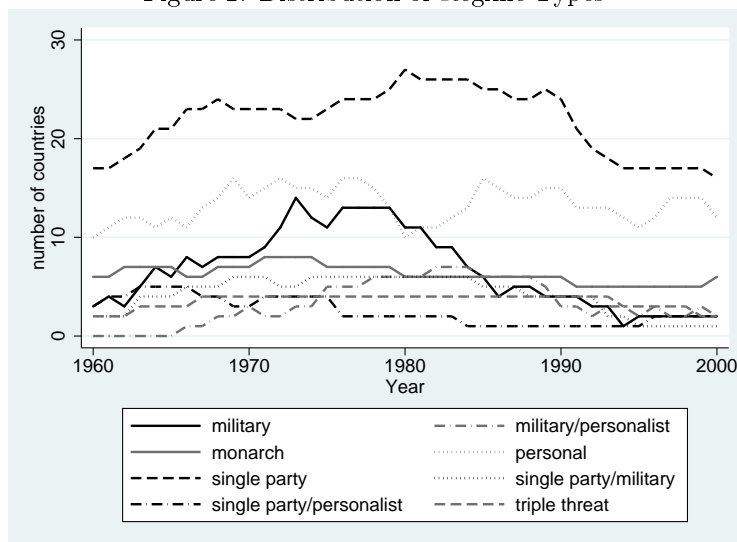Figure 2: Distribution of Regime Types

Table 1: Autocratic Infrastructure and Military Influence

| Autocracy | Leader | Elite | Military Influence | Examples |
|---|---|---|---|---|
| Personalist | A single individual has monopolized control over policy and recruitment | Narrow group of regime insiders. Not bounded by a unifying institution | Very Low. Dictator has full control of the elite without the constraints of military guidelines. Military is weak and dependent on the dictator. Sometimes presence of paramilitary forces (e.g. Lybia, Haiti) | Mobutu Sese Seko in Zaire/Congo 1965-97; Ferdinand Marcos in the Philippines 1972-86; Augusto Pinochet in Chile 1973-89; Jean Claude Duvalier in Haiti 1976-86; Saddam Hussein in Iraq 1979-2003 |
| Single Party | Elected by the party and heavily dependent on it. | High-level party officials | Low. Completely subordinated to the party | Soviet Union 1917-91; Nicaragua 1979-90; China 1949-present |
| Monarchy | King or Emir | Royal Family | High. Armed services are given high proportions of national budgets to ensure the military's loyalty | Ethiopia 1930-74; Iran 1953-79; Jordan 1946-present; Saudi Arabia 1932-present |
| Military | A member of the institutionalized military | High-level members of the military | Very High. Armed forces and security apparatus controlled by members of the elite coalition | Yemen 1962-78; Thailand 1976-88; Nigeria 1983-1993; General Micombero in Burundi 1965 |

Table 2: Distribution of Regime Types

| Variable | N | % of total N | Mean milex (Std Dev) | Mean Polity (Std Dev) |
|---|---|---|---|---|
| Single party | 894 | 35.39 | 10.01 (19.01) | -4.02 (4.94) |
| Miltiary | 274 | 10.85 | 3.86 (2.33) | -4.35 (4.16) |
| Personalist | 545 | 21.58 | 4.65 (4.29) | -5.16 (3.65) |
| Monarchy | 257 | 10.17 | 12.36 (12.7) | -8.19 (2.97) |
| Triple threat | 145 | 5.74 | 14.76 (17.20) | -7.1 (2.4) |
| Military/personalist | 136 | 5.38 | 5.98 (5.58) | -5.51 (3.6) |
| Single party/personalist | 103 | 4.08 | 4.85 (2.87) | -6.72 (3.02) |
| Single party/military | 172 | 6.81 | 4.04 (2.76) | -6.28 (3.27) |

Table 3: Summary statistics

| Variable | Mean | Std. Dev. | N |
|---|---|---|---|
| ratio1988 | 1.322 | 1.187 | 89 |
| ratio1989 | 1.188 | 0.648 | 95 |
| ratio1990 | 1.287 | 0.895 | 98 |
| ratio1991 | 1.18 | 0.598 | 99 |
| ratio1992 | 1.148 | 0.643 | 93 |

Table 4: Summary statistics

| Variable | Mean | Std. Dev. | N |
|---|---|---|---|
| military burden | 5.685 | 10.235 | 3366 |
| GDPpc | 6173.256 | 11815.558 | 3422 |
| pop | 3.29e+07 | 1.15e+08 | 3711 |
| open | 60.122 | 44.654 | 3608 |
| intra war | 0.074 | 0.262 | 3709 |
| inter war | 0.022 | 0.146 | 3709 |

Table 5: Panel estimation of the demand for military spending

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| single-party state | 0.140 | | 0.219 | 0.230 |
| | (0.50) | | (1.05) | (1.07) |
| military regime | 0.691** | | 0.233 | 0.136 |
| | (3.09) | | (1.87) | (0.96) |
| monarchy | 0.669* | | 0.403 | 0.456* |
| | (2.11) | | (1.80) | (2.36) |
| Polity IV | -0.0296* | -0.0259 | -0.0408* | -0.0185 |
| | (-2.07) | (-0.98) | (-2.60) | (-1.30) |
| Intra-state war | 0.477*** | 0.228* | 0.467** | 0.394*** |
| | (4.49) | (2.44) | (3.29) | (4.14) |
| Inter-state war | 0.165 | 0.154 | 0.153 | 0.166 |
| | (0.59) | (1.87) | (0.50) | (1.13) |
| log GDP per capita | -0.484 | 0.337* | -0.140 | -0.0840 |
| | (-0.98) | (2.28) | (-0.48) | (-0.31) |
| log population | 0.851*** | -0.0481 | 0.437** | 0.398* |
| | (4.35) | (-0.24) | (2.69) | (2.62) |
| log openness | 0.127 | -0.0958 | 0.232* | 0.166 |
| | (1.11) | (-0.63) | (2.10) | (1.49) |
| source | -0.694*** | 0.0429 | -0.535*** | -0.0566 |
| | (-5.20) | (0.56) | (-4.20) | (-0.52) |
| PolityIV dif | | | 0.0178 | |
| | | | (0.60) | |
| intra-state war dif | | | -0.163 | |
| | | | (-0.96) | |
| inter-state war dif | | | -0.0140 | |
| | | | (-0.05) | |
| log GDP per capita dif | | | 0.119 | |
| | | | (1.63) | |
| log population dif | | | 0.00237 | |
| | | | (0.06) | |
| log openness dif | | | -0.187 | |
| | | | (-1.90) | |
| source dif | | | 0.481** | |
| | | | (2.68) | |
| log openenss 2 | | | | 0.184 |
| | | | | (1.70) |
| source 2 | | | | -0.548*** |
| | | | | (-4.32) |
| $N$ | 1381 | 1889 | 3270 | 3270 |