UNIVERSITAT DE BARCELONA

Military spending, institutional stability and fiscal capacity. Spain in comparative perspective (1850-2009)

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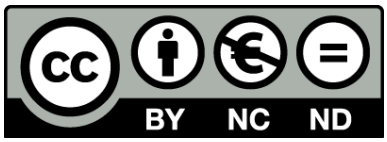

PhD in Economic History

Thesis title:

Military spending, institutional stability and fiscal capacity. Spain in comparative perspective (1850-2009)

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Introduction

i. Statement of the problems and research objectives

Public resources devoted to finance the army have been one of the most important spending items of European states budgets throughout most of the modern period. Even though intra-European wars became less frequent during the nineteenth century than before, the new military tactics involving mass mobilization and the industrialization of war demanded substantial resources to fund the armies. The rising international military tension during the last quarter of the nineteenth century and the subsequent outburst of the two World Wars increased the financial pressures to keep military spending high, and so did the Cold War, due to the permanent military tension between the two blocks (see, for instance, Kennedy, 1989; Tilly, 1990; Rogers, 2000; Levy *et al.* 2001; Black, 2006; Parker, 2010; Levy and Thompson, 2011; Gray, 2012). Thus, even if military expenditures have gradually diminished its relative weight within national budgets (mainly in favour of productive and social expenses), they have had an undeniable relevance both in absolute and in relative terms (Eloranta, 2008; Cardoso and Lains, 2010).

The importance of military spending in public budgets has drawn the attention of economic historians, economists, peace and conflict scholars, and many other social scientists. Most of their academic efforts have been devoted to understand the determinants and the economic and institutional consequences of military spending in the short and the long term. This thesis aims to contribute to these topics with new datasets and new interpretations to ongoing debates.

First of all, the thesis addresses one of the main limitations of the literature: the lack of long-term homogeneous data on military spending. Although there are several projects and institutions aimed at compiling cross-country figures on military expenditures, such as the Correlates of War Project (COW), they either provide short-term series or are based on a range of

non-homogeneous or non-specified sources. In order to contribute to make homogeneous and comparable data available, the first chapter of the thesis provides a new dataset on Spanish military spending from 1850 to 2009 based on the North Atlantic Treaty Organization (NATO)'s methodological definition of military spending. NATO provides one of the most comprehensive international definitions on military expenditures, which is used by several international institutes and organizations that compile international military spending data, such as the Stockholm International Peace Research Institute (SIPRI), the Arms Control and Disarmament Agency (ACDA, now part of the US Department of State) and the International Institute of Strategic Studies (IISS). On the basis of these precedents, my new Spanish military spending data, based on a clear criterion, aims at contributing to make historical data comparable and homogeneous across countries and time-periods.

My new dataset also includes the economic and administrative composition of military expenditure, which allows exploring in more detail the evolution of resources devoted to the army. Disaggregated figures of military expenditure are very difficult to find in international compilations, even though they might be crucial to interpret the evolution of total military spending. Previous estimates on Spanish military expenditure were either based on short-term periods or did not provide long-term homogeneous disaggregated series; thus, this new quantitative information allows for a better understanding of the military history of Spain from the mid-nineteenth century to the present.

As I intend to show in the following chapters, Spain is a very appealing case to study the interplay between military policies, military spending and institutional changes, due to their tumultuous late-modern political history. In this regard, the second research objective of the thesis is related to the political determinants of military spending in the long-term. Political scientists and International Relations scholars (among others) have tried to identify the factors conditioning the evolution of military expenditures worldwide. Most of them have highlighted the role that the international scenario and the associated external threats have played in the military-spending behaviour of governments (see, for instance, Goldsmith, 2003 and Dunne *et al*. 2003). In this regard, alliances and dyadic (or regional) arms

races between adversaries have received considerable attention when exploring the evolution of military expenditures in troubled areas (Ades and Chua, 1997; Dunne and Smith, 2007; Eloranta, 2007). Internal conflicts, economic growth, and the structure of the economy, have been also identified as key factors to explain the differences in military budgets between governments (Sprout and Sprout, 1968; Smith, 1977; Mintz and Ward, 1989; Goldsmith, 2003; Dunne *et al.* 2008).

Beside these strategic and economic factors, scholars have also highlighted the importance of domestic political variables to understand the evolution of military spending. Among them, most studies conclude that democracies tend to bear lower military burdens (military spending / GDP) than other political regimes due to the citizens' preferences for productive and social expenditures (see, for instance, Goldsmith, 2003; Fordham, 2005; Brauner, 2014). However, despite of this wide consensus, some authors suggest that democracies might bear higher military burdens than autocracies in some specific circumstances. For instance, Goldsmith (2007) argues that democratic governments spend more resources on the military in times of war due to their higher fiscal capacity and their social legitimacy to go to war.

The second chapter of the thesis aims to contribute to this debate by analysing the political determinants of the Spanish military expenditure in the long-term. Spain provides an interesting case study to carry on this research. Since the end of the Third Carlist War (1872-1876), the country has been ruled by several political regimes, including three long-lived and fairly stable ones: a restricted democracy during the Restoration (1874-1923), the dictatorship of Francisco Franco (1939-1975) and the present democratic regime (1977-nowadays). Thus, it allows analysing the military policies of different political regimes and their potential impact on military spending from a historical perspective. The disaggregated military spending series presented in the first chapter give additional information to interpret the evolution of total military burden more in depth than in previous studies.

Moreover, the Spanish case provides the opportunity to study this topic in the light of the Acemoglu *et al.*'s (2010) theoretical proposal. According to

the authors, transitional democracies may need to pay high wages to the militaries and engage them in international disputes in order to obtain their loyalty to the new democratic institutions. If this is so, transitional democracies might end up bearing higher military expenditures than other kind of regimes. In this regard, the transitional period from Franco's dictatorship to the present democracy allows studying the spending behaviour of transitional democratic governments and its consequences in terms of the military burden.

Related to the former topic, the third research objective of the thesis focuses on the impact of military spending as a coup-proofing strategy. Several authors have underlined the importance of the military's corporate interests in motivating coups and the relevance of increasing military spending as a way to overcome military disaffection (Finer, 1961; Nordlinger, 1977; Decalo, 1989). However, recent quantitative analyses have not reached conclusive results when exploring the impact of military expenditures on preventing coups (Collier and Hoeffler, 2007; Tusalem, 2010; Powell, 2012; Leon, 2014; Piplani and Talmadge, 2015). One of the main limitations of these analyses has been data availability: all the reviewed studies have approached this topic by using data on total military expenditures; even if this might be a good indicator of the governmental commitment to the army, total figures may also hide compositional changes that are potentially relevant to understand the frequency and the outcome of *coup d'états*. Thus, total military expenditure remains as a 'black box' that conceals the potential relations between public resources and coups.

Once again, Spain provides a very interesting case to open this 'black box' and to explore this topic more in depth than in previous studies. Spanish governments suffered recurrent military coups (*pronunciamientos*) since the beginning of the nineteenth century. It was not until the establishment of the Restoration regime (1874-1923) that successful coups were eradicated. Even if most of the literature has related this shift with the new political framework designed by the conservative political leader, Cánovas del Castillo, some authors have also suggested that better officers' material conditions (along with other coup-proofing strategies) contributed to gain the acquiescence of the army. In this regard, the third research objective of the thesis is to provide a new dataset on salary payments to officers from

1850 to 1915 in order to explore this hypothesis with renewed information. The analysis shows that a coup-proofing strategy based on public resources might be in place even without increases in total military spending.

Finally, the fourth chapter of the thesis focuses on the consequences of military spending. Economists and peace and conflict scholars have been concerned about the impact of military expenditures and warfare on economic growth and development. The liberal tradition has underlined the costs of warfare due to capital destruction, human causalities and trade disruption (see, for instance, Koubi, 2005; Glick and Taylor, 2010; Gates *et al.* 2012). Similarly, many scholars have studied the opportunity costs of military expenditure in terms of productive and social expenses, as well as the costs associated with investment constraints due to the distortions caused in the financial markets (see surveys of the literature in D'Agostino *et al.* 2012 and Dunne and Tian, 2013). On the other hand, the Keynesian tradition has highlighted the multiplicative effects of military spending on the economy, even though researchers have reached mixed results when estimating the exact impact (Thomas, 1983; Crafts and Mills, 2013; Fishback and Cullen, 2013). Moreover, the Marxist tradition has suggested a pivotal role of military expenditures in the economic growth of mature capitalist economies in the post-Second World War, as well as a regeneration impact of major wars on the process of capital accumulation (Baran and Sweezy, 1966; Cypher, 2007).

From another perspective, economic historians and historical sociologists (among others) have studied the relationship between warfare, military expenditures and state-building in the very long-term. Despite the distortions caused by wars and the opportunity costs of military expenditure, several scholars have seen major wars and military spending positively related to the development of new economic and social institutions in early-modern times, such as the parliamentary systems or governments' ability to tax. In this regard, the literature suggests that the changing character of warfare that took place in the European continent from the sixteenth century onwards increased the cost of wars, forcing sovereigns to pile up debts and to gradually expand the fiscal system (see, for instance, Tilly, 1990; Besley and Persson, 2009; Dincecco and Prado,

2012; Karaman and Pamuk, 2013; Gennaioli and Voth, 2015; Hoffman, 2015).

Wars and military competition have been also related to the growth of late-modern fiscal capacity. However, the empirical evidence remains inconclusive, and we still lack a historical narrative explaining how the changing character of warfare has affected the evolution of late-modern fiscal systems (see, for instance, Rasler and Thompson, 1985; Jaggers, 1992; Besley and Persson, 2009; Dincecco *et al.* 2011). The fourth chapter aims at filling this gap by analysing the effects of warfare on fiscal development in the light of the so-called 'Revolutions in Military Affairs' (RMA) that took place in Western countries since the mid-nineteenth century to the present. The RMA are usually defined as periods of innovation in which military forces develop new tactics, doctrines, procedures and technological engines. According to military historians, Western countries' warfare has experienced at least four major RMA since mid-nineteenth century: the Land Warfare and Naval Revolutions (that took place between 1850 and 1913), the Interwar Revolution (occurred in 1914-1945) and the Nuclear Revolution (since about 1945 onwards). I argue that these key processes not only transformed the character of warfare but also determined the evolution of late-modern public revenues in Western countries.

This fourth chapter addresses this topic by analysing a new dataset on public expenditures and revenues for eleven European countries plus the US and Canada from c.1850 to 1995. Public revenues are disaggregated into total and direct tax revenues, while public spending is disaggregated into military and civil expenditures. The inclusion of secondary powers – such as Spain – in the analysis allows exploring more robustly the impact of warfare when taking into account the relative military effort made by every country.

ii. Structure of the research

The thesis proceeds as follows. The first chapter provides a new dataset on Spanish military expenditure from 1850 to 2009. It firstly describes the methodological approach used to elaborate the series, as well as the

previous existing series of military expenditure in Spain. The chapter continues by discussing some of the main historical trends of the new series, and ends up with an international comparison with other Western countries. The corresponding paper has been accepted for publication at *Research in Economic History*.

The second chapter analyses the political determinants of military expenditure in Spain from the Restoration regime (1874-1923) to the present democratic period (1977-nowadays). It starts by briefly reviewing the previous literature on this topic and the main historical characteristics of the Spanish military policy throughout the period. The subsequent analysis of the Spanish military spending series (total and disaggregated figures) is based on structural break tests and regression analyses. The resulting paper has been accepted for publication at the *Revista de Historia Económica – Journal of Iberian and Latin American Economic History*.

The third chapter addresses the coup-proofing strategies based on military spending applied by the Spanish governments from 1850 to 1915; that is, during the Isabel II's reign (1833-1868), the Revolutionary period (1868-1874) and the Restoration regime (1874-1923). It firstly reviews the literature on *coup d'etats* and coup-proofing strategies in order to place the subsequent analysis within the international debates. The chapter continues by reviewing the Spanish history of *pronunciamientos* since Isabel II's reign (1833-1868) to the end of the Restoration period, as well as some of the main interpretations of its trends provided by the historiography. Then, I provide new data on salary payments for officers from 1850 to 1915 and discuss its relationship with the diminishing number (and, ultimately, the eradication) of *pronunciamientos* after 1874.

The fourth and last chapter of the thesis explores the impact of warfare-making in the process of fiscal expansion in a set of Western countries (including Spain) from c.1850 to 1995. It begins by reviewing the previous literature on the impact of warfare on fiscal capacity in modern times, as well as by describing the main 'Revolutions in Military Affairs' that took place throughout the period. After presenting the new dataset on public revenues and expenditures, the subsequent analysis is based on structural

break tests and regression analyses. The resulting paper has been recently accepted for publication in the *European Review of Economic History*.

Chapter 1. New quantitative estimates of long-term military spending in Spain (1850-2009)

Abstract

The substantial resources devoted to warfare in modern times might explain the increasing relevance that military spending has acquired in social sciences. In this regard, the so-called *defence economics* has extensively studied the main determinants of military spending and its main consequences in terms of economic performance and institutional transformations. However, one of the main problems for comparative analysis on the causes and effects of military spending is the lack of long-term homogeneous and comparable data in international panel datasets. This chapter contributes to fill in this gap by providing new military spending data on Spain from 1850 to 2009 based on the NATO methodological criterion. It provides total military spending estimates as well as economic and administrative disaggregated figures for most of the period. The data allows reliable international comparisons while also provide new quantitative evidence to better understand the military history of Spain in modern times.

1.1. Introduction

Military spending has been one of the most important public expenditures in Europe in modern times. The new kind of military mobilization and the industrialization of war that emerged in the nineteenth century demanded substantial resources to fund the armies both in times of peace and war. Even higher pressure on public funds arose during the Cold War era, when the two blocs led by the United States and the Soviet Union were trapped in a relentless armaments race. The downfall of the Soviet Union gave place to substantial reductions in the military burden during the 1990s, although recent military policies have put the world military expenditures in a growing trend once again. All in all, and although its relative weight within

national budgets has diminished in favour of productive and social expenses since the nineteenth century, military spending has remained substantial both in absolute and in relative terms.[1]

These substantial resources devoted to warfare might explain the increasing relevance that military spending has acquired in social sciences. The clearer expression of that interest is the so-called *defence economics*, born in the context of the high military burden ratios achieved during the Cold War. Its authors have addressed the consequences of military spending on economic growth and development by exploring both the multiplier effects of public consumption and its opportunity costs in terms of other public expenditures.[2] In this regard, the trade-off between military and civil spending has been analysed in several international panel datasets and case studies focusing on the potential relations between social and military expenditures.[3] Similarly, the determinants of military spending have been widely analysed in the short and long-term, paying special attention to its strategic, political and economic driving forces.[4]

Beyond this set of analyses, the economic historian Jari Eloranta argues that military spending can be helpful to understand various essential aspects of modern and ancient political and economic history, such as the burden of conflicts, the creation of nation states or the development of modern institutional systems.[5] In this regard, the theoretical and empirical analyses carried out by Aidt and Jensen (2009), Dincecco and Prado (2012), Scheve and Stasavage (2012) and others, suggest that the resources devoted to warfare were a driving force for modern fiscal innovations. Other authors such as Tilly (1990), Besley and Persson (2009) and Dincecco (2009) have also observed a close relation between the amount of resources devoted to war objectives and the development of new fiscal and parliamentary institutions during early and late modern times.

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[1] Eloranta (2008), Cardoso and Lains (2010).
[2] See, for instance, Pieroni (2009) and Dunne and Mehmet (2009).
[3] See, for instance, Narizny (2003), Whitten and Williams (2011).
[4] See, for instance, Dunne and Perlo-Freeman (2003), Fordham and Walker (2005), Goldsmith (2007).
[5] Eloranta (2008).

Provided that most of these analyses and approaches are based on international comparisons, one of their main limitations is the lack of long-term homogeneous data on military spending at the international level. Although there are several projects and institutions aimed at compiling international data, they either provide short term data or are based on a range of non-homogeneous sources. In order to contribute to make homogeneous and comparable data available, in this chapter I present new estimates on military spending in Spain from 1850 to 2009, which are based on the North Atlantic Treaty Organization (NATO) methodological criterion. This is widely used internationally, since it provides one of the most comprehensive international definitions on military spending. This new dataset allows for reliable comparisons between different historical periods, while contributing to construct an international homogeneous and comparable database on long-term military spending.

The data presented here also include the economic and administrative composition of military expenditure, which allows exploring in more detail the evolution of resources devoted to the army. Disaggregated figures of military expenditure are very difficult to find in international compilations, even though they might be relevant to interpret the evolution of total military spending. In order to provide clear and comparable figures, the economic disaggregation of my series on Spain is also based on the NATO classifications. Other specific data, such as the weight of north-African colonial expenditures during the early twentieth century or the personnel expenditures on chiefs and officers before the Spanish Civil War (1936-39), are also provided. This new quantitative information also allows for a better understanding of the military history of Spain from the mid-nineteenth century to the present, unlike previous estimates on Spanish military expenditure, which were either based on short-term periods or did not provide long-term homogeneous disaggregated series.[6]

The chapter proceeds as follows. Section 1.2 describes the main international definitions of the military spending, and section 1.3 presents

[6] Military policy in Spain remains crucial to understand not only the history of the Spanish army but also the evolution of the Spanish economic policies. Warfare has been related to severe fiscal deficits, which have ultimately affected monetary policies and economic growth. See, among others, Comín (1988, 1996, 2012) and Sabaté *et al.* (2006).

the sources and the methodological framework for the Spanish military spending dataset. Section 1.4 describes their main historical trends and compares the data with previous estimates on Spanish military expenditure, while section 1.5 presents some international comparisons. Section 1.6 concludes.

1.2. International definitions of military spending

The construction of historical series of public military spending involves several conceptual problems due to the lack of a commonly accepted definition of military spending. According to Brzoska (1995), military expenditures are "the cost of maintaining a military establishment in war and peace", accounting basically for "the aggregation of payments for soldiers and other persons concerned with the regular armed forces of a particular country, for goods purchased by the armed forces, and services bought from civilians". However, due to the unclear limits of the military functions and aims, governments and international institutions provide diverging criteria to determine which kind of expenditures should be considered as "military" and which ones should be placed within the civil field.[7]

Brzoska (1995) highlights three main standard definitions as the most widely used internationally, namely the North Atlantic Treaty Organization (NATO), the International Monetary Fund (IMF) and the United Nations (UN) definitions. Table 1.1 summarizes the main items considered by each of them. Although the three criteria share the main features, some relevant differences may be observed, such as the inclusion or not of civil defence and military pensions. NATO does not consider civil defence as a military activity, but as part of the civilian response to armed aggressions, unlike the IMF and the UN, which include it among military activities. On the other hand, military pensions are included in military spending by NATO and the UN but not by the IMF accounts (which include them in social protection accounts). Additionally, NATO includes within military spending the UN peacekeeping missions, the procurements on credit and the humanitarian and disaster reliefs carried on by the army. The IMF only includes the first two items, while the UN excludes all of them. On the other hand, the three

[7] Brzoska (1995), Sköns (2002).

definitions exclude the payments for veterans' benefits and the service of war debts.

Table 1. 1. Military spending definitions: items included

Items	*Definitions*		
	NATO	*IMF*	*UN*
Personnel expenditures			
Salaries of military forces	X	X	X
Salaries of civil personnel for support	X	X	X
Social benefits to military forces and civil personnel (including relatives)	X	X	X
Military pensions	X		X
Operational expenditures			
Operation and maintenance	X	X	X
Procurement expenditures on equipment	X	X	X
Procurement on other goods	X	X	X
Procurement on credit	X	X	
Infrastructure construction	X	X	X
Military research and development	X	X	X
Social and medical services	X	X	X
Military aid to other countries	X	X	X
Contributions to international organizations	X	X	X
UN peacekeeping missions	X	X	
Humanitarian/disaster relief	X		
Other forces			
Paramilitary forces[a]	X	X	X
Border/Customs Guards[a]	X	X	X
Civil Defence		X	X

Notes: a) when trained, equipped and available for military operations.
Sources: own elaboration based on Brzoska (1995) and Sköns (2002).

Other differences can be noticed when comparing the disaggregation provided in their datasets. The IMF obtains his data from questionnaires on general public expenditure designed on the basis of the COFOG (Classification of the Function of Governments) guidelines and sent annually to governments, while the UN (concretely the UNODA, the United Nations Office for Disarmament Affairs) and NATO send their own

specific questionnaires on military expenditure. The UN questionnaire divides expenditures in personnel, operating and maintenance expenses, procurement and construction, and research and development costs. Fairly similar, the NATO questionnaire provides information on personnel (including the military pensions), operating and maintenance expenses, equipment and infrastructure costs. The main differences between them are the treatment of the ammunition and research and development expenditures. While the UN includes ammunition expenditures in the procurement field, NATO includes it in the operation and maintenance category, leaving the equipment field (similar to the UN procurement one) just for new major equipments and research and development expenditures. On the other hand, the UN isolates research and development expenditures in a separate section.[8] Differently, the COFOG classification used by the IMF distinguishes five military expenditure sections, namely, military defence (including personnel, operational and investment expenditures), civil defence, foreign military aid, research and experimental development related to defence and administration costs.

The three definitions include only flows of resources, generally on an annual basis, and do not consider accumulated stocks. As any public expenditure, military spending must be treated as an input measure, as it does not provide information on the results of public actions, but on the resources devoted to them. Therefore, military spending cannot be considered as a reliable indicator of the military power of countries. A measure of military capability would need, among others, information on military stocks and other aspects that are not necessarily reflected in the military expenditure figures (such us the available military technology, the military strategies of the commanders, or the efficiency in the budgeting process and in training). Indirect costs, such as the use of civilian infrastructure for military purposes, the environmental impacts of military activities, and some opportunity costs, such as the costs of using conscripts instead of professional soldiers, are also excluded.

[8] Unlike the other criteria, the NATO criterion is not clearly specified by the Alliance. I thank Stein Aaslund, Head of NATO Data Analysis, for kindly providing me information about the NATO methodology.

My new series on Spanish military spending are based on the NATO methodological criterion. As CEPAL (2005) argues and may be observed in Table 1.1, it probably provides the most comprehensive definition in order to obtain a complete picture of the financial military effort made by the government. Additionally, NATO currently offers a complete dataset on military spending for all its members from 1949 to the present (the starting year depending on the entrance in the alliance of each member country); whereas the UN figures start mostly in the 1980s (although the rate of answer to the questionnaires has been historically low).[9] The NATO dataset also provides disaggregated figures for some countries since 1971 and fully disaggregated data since 1987. NATO data on Spain start in 1984, although the disaggregated figures are not available before 1987.[10]

Moreover, the NATO criterion is used by several international institutes and organizations that compile international military expenditure data, such as the Stockholm International Peace Research Institute (SIPRI), the Arms Control and Disarmament Agency (ACDA, now part of the US Department of State) and the International Institute of Strategic Studies (IISS).[11] The ACDA and the IISS data are used, in turn, in the broader database provided by the Correlates of War Project (COW). Initiated in 1963 by J. David Singer, the COW Project offers military expenditure figures for almost all countries from 1816 to the present (the majority of non-OECD countries begin their series in the 1960s), and is broadly used by researchers. However, its data should be used cautiously as its sources of information are pretty diverse and not always clearly specified (particularly for the nineteenth century).[12]

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[9] The NATO database is available in his webpage www.nato.int/ The UN database can be also found in the webpage of the UNODA http://www.un.org/disarmament/

[10] NATO also provides an aggregate figure of Spanish military expenditure for 1980, and the percentage of equipment expenditures within the total in 1984-86.

[11] CEPAL (2005). The SIPRI probably provides the broadest military spending dataset for present times, compiling military spending data for 172 countries since 1988. Its sources are diverse: data from NATO countries comes from the NATO dataset; data for some developing countries comes from the IMF; and data for other countries comes either from questionnaires sent annually to each country, from expert analyses or from other secondary sources. Its dataset is available in its webpage http://www.sipri.org/

[12] Its dataset is available in its webpage http://www.correlatesofwar.org/

1.3. Methodological discussion on the Spanish dataset

In line with the NATO criterion, the new Spanish military spending series include all public expenditures devoted to maintain the military establishment, which have been mostly carried out by the military ministries. Since the mid-nineteenth century to 1976 there have been three military ministries in Spain: the Ministry of War, the Ministry of Navy and the Ministry of Air. From 1976 onwards the three ministries were unified under the Ministry of Defence, which took all their former military duties.

The Ministry of War was in charge of the military policy of land forces, concretely, the infantry, the cavalry, the artillery, the engineers, the general staff, and all the related strategic, logistic and required training services. It also managed military auxiliary corps such as the health service, justice, ecclesiastical and administrative staff, prison system, veterinary service and musicians. After the Spanish Civil War, the new military regime changed its name to Ministry of the Army, although its functions remained unaltered.[13] On the other hand, the Ministry of Navy was in charge of the navy's military policy, and managed the naval military forces and its auxiliary corps, while assuming the strategic, logistic and training-related services. The authority of both ministries was spread to the whole Spanish peninsular territory, the Balearic Islands, the Canary Islands, the North African protectorate and the overseas colonies.

The Ministry of Air was created in 1939 after the Spanish Civil War, at a time when air forces were becoming more prominent in European military strategies (and after being widely used during the Spanish Civil War).[14] It was in charge of both the civil aviation and the military air force, holding therefore more civil competences than the other military ministries. Some of its main duties were the building and maintenance of aerodromes and airports (civilian and military), the management of air navigation (again for both purposes) and all the military tasks related with the enhancing of the air forces (in line with the Ministries of War and the Navy). Lastly, as has

[13] This name was also used from 1929 to 1931 (during the last years of Primo de Rivera's dictatorship).
[14] *Boletín Oficial del Estado* (Official State Bulletin, from now on BOE), September 5th 1939.

been said, the three military ministries were unified under the Ministry of Defence in 1977. Although the three military armies remained independent, the new ministry centralized their common strategic, logistic and administrative services; and the civil-air services were transferred to a new civilian ministry: the Ministry of Air.[15]

In accordance with the NATO accounts, the new series provide total military spending estimates as well as disaggregated figures on personnel, military investment and operational expenditures on the basis of the NATO classification. Personnel expenditures involve payments to chiefs, officers, troops and auxiliary civil and military personnel (including administrative, healthcare, ecclesiastic, and justice services provided by the army and recorded in the military ministries). Following the NATO criterion, allowances and employer's contributions to retirement funds have also been included. My series also provide disaggregated information on retirement military pensions, which are included by NATO within the personnel category. This allows identifying an expenditure item that is not aimed to enhance present military capabilities, but to sustain the military establishment itself.

The category military investment includes military equipment and infrastructure expenditures.[16] According to the NATO definition, equipment expenditures include the acquisition or production of new military equipment, such as missile systems, aircraft, artillery, combat vehicles, engineering equipment, weapons and small arms (including hand and shoulder weapons), machine guns, mortars, transport vehicles, ships and harbour craft, and electronic and communications equipment. Additionally, it includes R+D related with major equipment. Munitions and maintenance of equipment are not considered equipment but operational costs. On the other hand, infrastructure costs include fortifications, military buildings (including military hospitals) and communication infrastructure. Finally, operational expenditures cover all other expenditures in military goods and services, not included within the former three categories, such as food,

[15] BOE, July 5th 1977 (Royal Order 1558/1977) and BOE, November 5th 1977 (Royal Order 2723/1977).

[16] NATO provides disaggregated figures on equipment and infrastructure expenditures. I present an aggregated series for these two items due to the lack of disaggregated data in the original sources in the long-term.

clothes, office materials, water, maintenance services for equipment, etc., and other operational costs such as fuel, munitions, electricity, etc.

1.3.1. The data sources

The main data sources used for the period 1850-1986 are the *Presupuestos Generales del Estado* and the *Cuentas Generales del Estado*. The *Presupuestos* register the central government revenues and expenditures annually planned by the government and approved by the Parliament. On the other hand, the *Cuentas* register not only the approved national budgets but also the final accounts of the national budget execution, which takes into consideration all those budgetary changes that took place during the fiscal year. Concretely, the *Cuentas* provide information on the three fundamental tiers of all government revenue and expenditure flows: 1) budgeted revenue and expenditure, 2) recognized and settled amounts, and 3) actual payments and receipts. On the basis of the NATO criterion, and as in previous historical estimates (IEF, 1976; Comín and Díaz, 2005), I use the figures corresponding to the second stage, i.e. recognized and settled expenditure. Budgeted expenditures are not used, as they can significantly change during the fiscal year of its execution, while the final payments are also left aside as they do not reflect the moment when the expenditure was recognized by the government.

Concerning the expenditures, both the *Cuentas* and the *Presupuestos* divide the national budget in several sections, one for each ministry (plus other sections, such as the payment of public debt interests, the *Passive Classes* – which will be described below –, the extraordinary budget or the Royal Family, etc.). The names and the contents of many sections changed frequently throughout the period, generally as a consequence of the variations in the ministerial organization chart. Although ministerial reorganizations have been recurrent in Spanish contemporary history, military ministries have remained quite stable over the period (as has been described above), which allows compiling long-term series on every military branch.

The *Cuentas* divide each of these ministerial sections in several chapters, which are additionally divided into articles. Even though the chapters and

the articles provide information on the purpose of each budgetary item, they are often insufficient to identify the nature of every item and to decide which ones should be included within the military expenditure series. Luckily, the *Presupuestos* register not only these three levels of information (sections, chapters and articles) but also an additional level of information. This fourth level is generally related to functional sub-classifications, which usually reflect the purpose of the expenditure and its economic classification. Therefore, the *Presupuestos* are used to estimate the specific composition of the expenditure even though the *Cuentas* are the basic source of information on its level (due to their reporting of recognized and settled expenditures).

The *Cuentas* are available annually almost continuously since 1850, with the only exceptions of the periods from 1873-74 to 1878-79 and from 1882-83 to 1892-93.[17] To fill these gaps, I have used the *Presupuestos* and the statistical summaries of the *Cuentas* provided by the *Instituto de Estudios Fiscales* (1976), which register the total amounts of the main sections and chapters of the *Cuentas* for the missing years. On the other hand, there is no enough information for the years of the Spanish Civil War (1936-1939), which remain blank in the series. Finally, the data from 1987 onwards is

[17] Fiscal years did not fit with natural years in the periods 1862-1899 and 1919-1926. To assign expenditures to natural years I have considered two alternative options: 1) just dividing the expenditure of every fiscal year in equal parts in order to obtain an estimation of the natural year (for instance, the 1890 budget would consist of half of the 1889-1890 budget and half of the 1890-1891 budget); and 2) assigning all the resources to the first year of the fiscal budget (for instance, the 1889-1890 budget is assigned to 1889). In the long-run the difference between both options is negligible. However, this might have little consequences in the short-run. In order to better capture the timing of military operations (particularly during the Moroccan War from 1921 to 1926) I opted for the second option. Some of the most important operations were mainly carried on during the second semesters due to better meteorological conditions (for instance, the military operations in the aftermath of the Annual Disaster took place from June 1921 to January 1922; the Primo de Rivera's military withdrawal and the associated battles and bombardments from September to December 1924; or the Alhucemas landing and the following attacks from September to October 1925). Thus, choosing the first option and just dividing the fiscal years would have involved distortions in the real timing of the operations (for instance, the expenditures associated to the military operations after the Annual Disaster would be split between 1921 and 1922 even if the main operations took place in 1921). Previous estimates on Spanish military spending, such as Comín and Díaz (2005), seem to follow the same procedure (see below for a comparison of the two series).

taken from the NATO database (as this is the first year with disaggregated NATO data on Spain).[18]

1.3.2. Some methodological notes on the Spanish series

As has been already mentioned, the bulk of the military expenditures were managed by the military ministries and assigned to their ordinary ministerial sections. However, and in line with the NATO criterion, the series also include those military expenditures that were placed outside the ordinary budget of the military ministries. Firstly, the North African section (called Spanish Action in Morocco from 1913 to 1950, and Spanish Action in Africa from 1951 to 1959) accounted for the expenditures devoted to manage the colonial enclaves in Morocco and in the Sahara region. The three military ministries were present in this budget section, being the Ministry of War the largest of them (in accordance with the nature of the colonial interventions in Morocco). Although the Spanish military operations in North Africa started well before the 1910s, the financial efforts devoted to the Spanish-Moroccan War (1909-1927) and the establishment of the Spanish Protectorate in Morocco in 1912 explain the existence of this newly budgetary section. This section was removed from the public budgets in 1959, three years after the Moroccan independence (recognized by France and Spain) and two years after the Spanish war in the Ifni region, but much earlier than the Spanish decolonization of the Ifni region and the Sahara (1969 and 1976 respectively).

Besides the military ministries and the North African section, the Presidency of the Council of Ministers and *Passive Classes* sections also include some items that should be considered military expenditures. Firstly, the Presidency of the Council of Ministers section included the expenses of the Chief General Staff during Franco's dictatorship (1939-1975).[19] Coming from the former General Staff (created in 1838 within the Ministry of War), the functions of the Chief General Staff were the coordination the three military arms, the preparation of military operations in times of war and the

[18] My estimation is fairly consistent with the NATO accounts in 1987, as none of the broad economic categories in my series differs by more than 0.1 percent of GDP from the NATO dataset.
[19] BOE, August 8th 1939.

provision of information on the military and economical capabilities of other countries. Its personnel were designated by (and directly dependent on) the head of the State. This section was restructured and integrated within the Ministry of Defence in the late 1970s, to be eventually replaced by the new General Staff Board in 1980.[20] On the other hand, and more relevant than the Presidency, the *Passive Classes* section records retirement pensions for government staff. Among them, military pensions include old-age, disability, and pensions for widows and orphans of military personnel.[21]

The series additionally include military expenditures recorded in both ordinary and extraordinary public budgets. Extraordinary public budgets were passed in 1852, 1859-66, 1874, 1876, 1883, 1926-29 and 1940-51, and included expenditures assigned to the three military ministries (particularly investment expenses). My series also includes the "overdue expenditures" from the Spanish Civil War (these "overdue expenditures" were included in the public budgets from 1940 to 1945 to pay military debts inherited from the civil conflict), and the *Obligaciones a extinguir* (expiring liabilities budget), which recorded personnel expenditures on troops and officers.

The NATO criterion excludes those expenses that do not directly enhance the military establishment and its activities (regardless of their administrative dependency). In this regard, the three Spanish military ministries (War, Navy and Air) managed several expenditures that should not be considered as military, such as non-military organizations (both cultural and scientific), civil public works, merchant navy services, civil aeronautical services, etc.[22] These non-military expenditures have been identified in most cases by using the aforementioned fourth level of information provided in the *Presupuestos* (as the *Cuentas* do not always provide the required detail in the budgetary items). For instance, the Ministry of War included the administrative expenditures of the overseas colonies from 1859 to 1862. These expenditures were placed in several

[20] BOE, June 13th 1980 (Law 26/1980).
[21] See Annex A for a methodological discussion on the military pensions.
[22] These non-military expenditures accounted for about 25 per cent of the Ministry of War in several years.

other ministries from 1850 to 1858 (according to the organic dependence of the General Direction of Overseas Government in every year, which in 1863 became a ministry with its own independent budgetary section). These expenditures were not devoted to the military but to the general government of the colonies,[23] and therefore have been considered civil expenditures.[24]

Some budgetary items, however, entail conceptual problems. According to the NATO definition, spending in paramilitary forces should be considered as military spending only if these are trained, equipped and available for government-led military operations. In the Spanish case, paramilitary forces are the *Guardia Civil* and the *Policía Armada* (created during Franco's dictatorship), which have been historically closely tied to the army.[25] Nevertheless, their major activities (and therefore their training and their equipment) have been historically associated to police functions. The *Guardia Civil* was created in 1844 to preserve security and property rights in the countryside, carrying out the repression tasks and the continuous surveillance required by the new liberal regime.[26] Additionally, in 1940 Franco's dictatorship gave the *Guardia Civil* the tasks previously assumed by the *Carabineros* (through the unification of both corps) and road traffic control (taken from the *Policía Armada*) in the 1960s.[27] On the other hand, the *Policía Armada* was active during Franco's dictatorship as responsible for police and repression tasks, and also traffic duties during the 1940s and

[23] The constitutive regulations of the new Ministry can be found in *Gazeta de Madrid*, May 21st 1863.

[24] See Annex A for a longer discussion on the excluded items.

[25] The *Guardia Civil* was even considered a specific branch of the army in the Constitutive Law of the Army of July 12th 1889 and in the Military Justice Code of 1945, and the Ministry of War managed the bulk of its expenditures from 1850 to 1876 and from 1884 to 1901. Similarly, the Police Law of 1941 and the Military Justice Code of 1945 treated the *Policía Armada* as a military corp. Even today, the *Guardia Civil* still depends on the Ministry of Defence for their promotions and their participation in military actions. See, for instance, Ballbé (1983) and López Garrido (1982).

[26] The first article of the Royal Order of October 16th 1844 indicates that "The *Guardia Civil* corps depends on the ministry of War in the issues of organization, personnel, discipline, material and salaries". However, the general regulations of this same Royal Order pose that "These corps, with different functions than the other troops of the army, except for the periods under state of siege, never will be considered as part of the cantonments where they are placed, and consequently will not do any other service than the one specifically assigned to them".

[27] The *Carabineros* were devoted to guard the national coasts and to fight against contraband. Their constitutive regulations can be found in *Gazeta de Madrid*, March 31st 1829.

the 1950s.[28] Because of these primary civil tasks (and despite their unambiguous militarization), neither the *Guardia Civil* nor the *Policía Armada* have been included in the series.

1.4. The Spanish military spending (1850-2009)

This section describes the evolution of Spanish military spending from 1850 to 2009 on the basis of the new dataset and compares it with previous Spanish military spending estimates. Before that, however, I must clarify that my series only account for the military expenditures managed by the Spanish Treasury. Provided that major overseas Spanish colonies of the nineteenth century (Cuba, Puerto Rico and Filipinas) managed their own colonial budgets (although the Spanish government had the authority over all of them), it has not been possible to include overseas colonial military expenditures in the series.[29] Therefore, external military interventions such as the military expedition to Mexico (1861-62), the war in Santo Domingo (1865), the Ten Years War in Cuba (1868-1878)[30] and the independence wars in Cuba, Puerto Rico and Filipinas (1895-1898)[31] are not reflected in the Spanish military spending figures.

1.4.1. Data on total military spending (1850-2009)

Figure 1.1 presents the evolution of Spanish military spending from 1850 to 2009 in billions pesetas of 1995. Leaving aside the short-term fluctuations and its clear slowdown since the mid-1980s, the series shows a clear long-term increasing trend, with a yearly average growth rate of 2.7 per cent.

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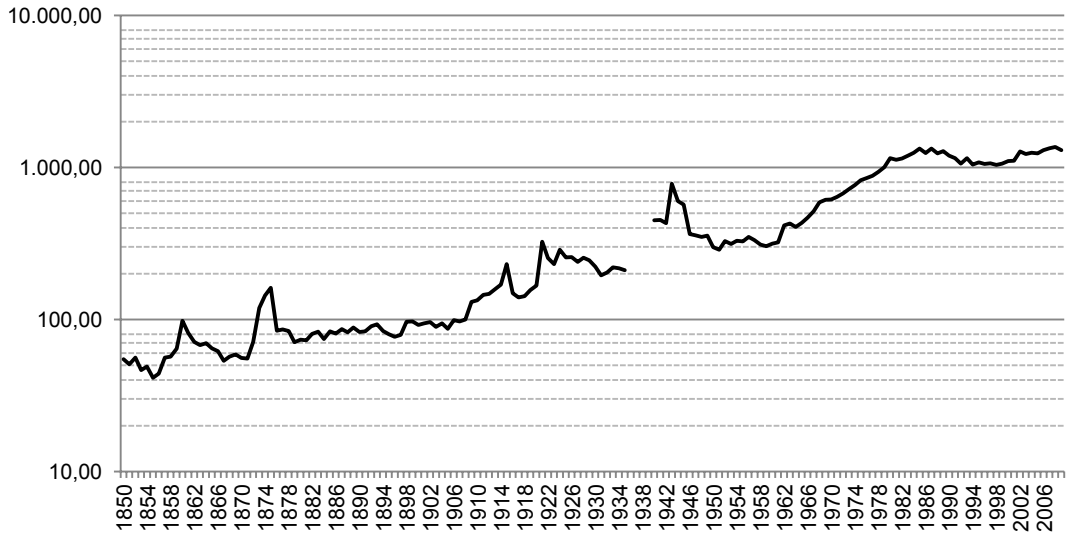
[28] López Garrido (1982).

[29] See Roldán (1997a,b) for the available figures on overseas colonial military expenditures.

[30] The Ten Years War in Cuba was almost entirely financed by the Cuban Treasury, although the increasing financial troubles in the colony obliged the Spanish government to hire debt for 15 millions of pesos (warranted by the metropolis) in order to cover the military expenditures (placed anyhow in the Cuban budget). See Roldán (1997a).

[31] The wars of independence of Cuba, Puerto Rico and Filipinas were almost entirely funded by debt issued by the peninsular Treasury (in the form of advances to the colonial Treasuries); however, war military expenditures were included in the colonial budgets (Roldán, 1997a).

Figure 1.1. Military spending in Spain, 1850-2009 (billion pesetas of 1995)

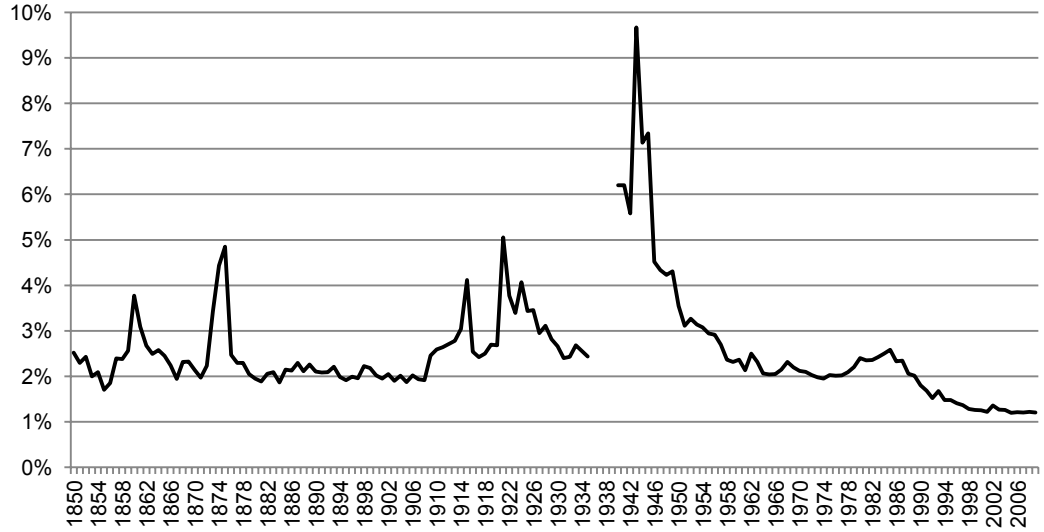


Sources: military spending from 1850 to 1986, my own data (see text); from 1987 on, NATO database.
Notes: figures on military expenditure could not be estimated for the Spanish Civil War period (1936-39) due to the lack of available data.

On the other hand, Figure 1.2 presents the evolution of Spanish military spending as a percentage of GDP (military burden). The series shows some severe fluctuations during the period before the Civil War of 1936-39, such as those of the mid-1870s and early 1920s, in which the military burden reached levels close to 5 per cent of GDP. After the war, the military burden achieved its historical maximum, near 10 per cent of GDP, which was followed by a rapid decrease during the 1950s and the 1960s. The lowest ratios of the whole time period were reached in the 1990s and the 2000s, when they stabilised at a level well below 2 per cent of GDP. Lastly, the priority of military spending within the total public budget can be seen in Figure 1.3. The series shows similar patterns than the former ones, although the decreasing path initiated in the late 1950s appear to be much more intense. It reflects the priority given to other public expenditures during the second half of the twentieth century, due to the development of the Spanish Welfare State.[32]

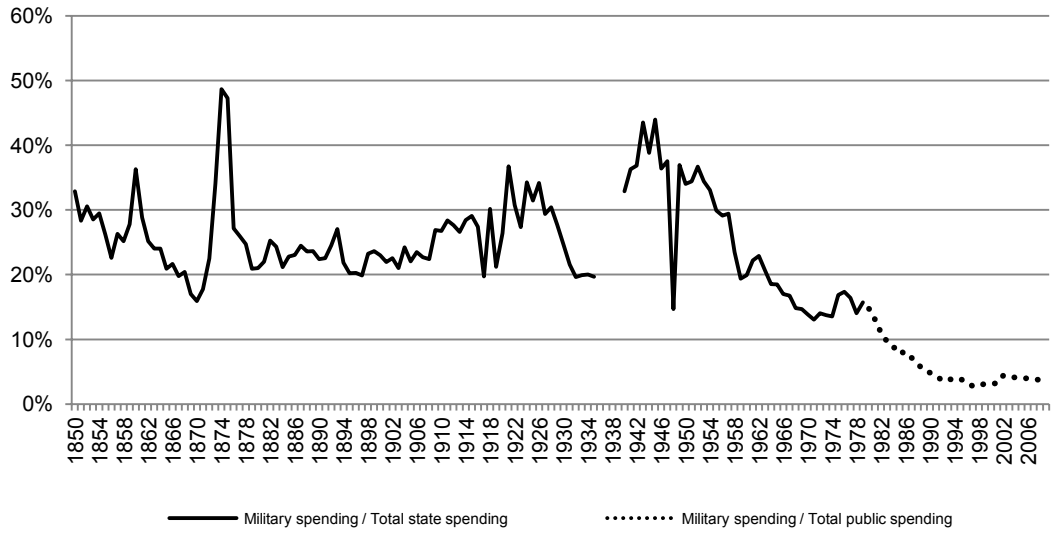
[32] In line with Figure 1.3, Comín (2004) argues that the development of the Welfare State in Spain pushed down the weight of defence spending within total public budget to its lowest levels in history. See Espuelas (2013) for a discussion on the development of social spending and the Welfare State in Spain from 1850 to 2005.

Figure 1.2. Spanish military spending/GDP (1850-2009)



Sources: see figure 1.1. GDP data for the period 1850-2000 from Prados de la Escosura (2003); for the period 2001-2009 from *Instituto Nacional de Estadística* (INE) (http://www.ine.es/).

Figure 1.3. Spanish military spending/total public spending (1850-2009)



Sources: see figure 1.1. Total State's spending from Comín and Díaz (2005), and total public spending (including autonomous regions, but excluding councils and local governments) from Comín and Díaz (2005) and from *Intervención General de la Administración del Estado* (IGAE) database (http://www.igae.pap.minhap.gob.es/). Total public spending is used instead of total State's spending from 1980 onwards, as the State started to transfer competencies to autonomous regions.

1.4.2. Previous estimates on Spanish military expenditure in late-modern times

Before describing in more detail the evolution of military spending in Spain throughout the period, this subsection presents a comparison with previous estimates on Spanish military spending in modern times. Comín and Díaz (2005) provides the most comprehensive long-term series on total military spending (although not disaggregated by spending categories), which offers an extended version of the estimates of Spanish public expenditures previously provided in *Instituto de Estudios Fiscales* (1976) and Comín (1985). Table 1.2 compares my new series with that of Comín and Díaz (2005). Despite both series show similar levels and tendencies, the ratios presented by Comín and Díaz (2005) are systematically lower than mines (except for the first half of the 1940s and the early 1990s, when their ratios are a bit higher), mostly due to their exclusion of military pensions. The main differences are found from the mid-1920s to the mid-1930s, when my estimates are eventually higher than their ratios by more than 20 per cent. These differences might be due to the extraordinary budgets passed from 1926 to 1929, which do not seem to be included in the IEF (1976) series (and therefore in the series compiled by Comín and Díaz). Additionally, the sharp growth in military pensions at the beginning of the Second Republic (1931-1939) may also affect the increasing differences of the first half of the 1930s.

As has been previously indicated, the Correlates of War Project (COW) also provides a long-term database on military spending for a large set of countries, including Spain. Table 1.2 also presents the Spanish military burden based on the latest version of the COW dataset from 1850 to 2007 (NMC v4.0). The data comes originally in pounds from 1850 to 1913 and in US dollars from 1914 to 2007. I have converted all figures to pesetas using the Measuring Worth's exchange rates, and I have divided it by GDP to obtain the usual military burden. As can be seen, the COW's data is substantially different than my data, particularly from the 1930s to the 1960s. Its figures neither fit very well with the other series reported in the table. Given that the COW sources for most part of the period are not specified, it is difficult to know which the causes of these differences are.

Table 1. 2. Alternative estimates on Spanish military burden (1850-2005) (% of GDP)

	Comín and Díaz (2005)	COW (2010)	Pérez Munielo (2009)	Olmeda (1988)	Centre Delàs (2012)	New Series
1850	2.0	2.3				2.5
1865	2.2	3.2				2.5
1880	1.7	1.8				2.0
1895	1.6	1.7				1.9
1910	2.3	2.0				2.6

1925	3.1	3.3				3.4
1926	2.7	3.2				3.5
1927	2.3	2.7				2.9
1928	2.4	3.0				3.1

1933	2.1	1.6				2.7
1934	1.9	1.7				2.6
1935	2.0	2.0				2.4

1946	4.5	1.3	3,2	5.6		4.5
1960	2.2	1.1	2,1	3.2		2.4
1975	1.6	1.8	1,6	3.0		2.0
1990	1.4	1.7	1,7			1.8
1995	1.1	1.5	1,2		2.5	1.5
2000	1.0	1.3	1,0		2.2	1.3
2005		1.2	0,8		2.0	1.2

Sources: see text. The military spending estimates provided by Comín and Díaz (2005), COW Project, Pérez Munielo (2009), Study Center for Peace J.M. Delàs (available in http://www.centredelas.org/) and my own have been divided by the GDP estimates provided by Prados de la Escosura (2003) for the period from 1850 to 2001. The GDP data from 2002 to 2005 comes from the INE database (http://www.ine.es/). Olmeda (1988) provides directly its military burden estimates for the whole period.

Olmeda (1988) and Pérez Munielo (2009) provide the two most complete available series on military spending during the Franco's dictatorship. However, none of them use the spending accounts provided by the *Cuentas*, but the *Presupuestos*, which only offer information on the excepted budget but not on the final recognized and settled expenditure. They may therefore underestimate military spending when extraordinary funds are recognized after the approval of the *Presupuestos*, and overestimating it when some items are finally cancelled. This could explain the main differences between

Pérez Munielo's estimates and my own during the 1940s and the 1950s, when the initial approved budgets were eventually surpassed by the final recognized accounts. Additionally, the authors do not use the NATO criterion but the expenditures managed and accounted by the military ministries. More specifically, Pérez Munielo (2009) does not include military pensions and does not exclude some civil expenditure of military ministries, what can also explain that his ratios are systematically lower than mine throughout the period.

By contrast, the higher ratios provided by Olmeda (1988) could be partially due to the different GDP estimates used by the author, what make comparisons difficult. Additionally, the author considers the resources devoted to the police and paramilitary forces as military, which clearly increases his estimates in comparison to the other series (he also includes military pensions within his figures). Finally, the Study Center for Peace J.M. Delàs provides data on military spending for the 1990s and the 2000s based on a more extensive military spending definition. Although the authors take the NATO methodology as a criterion for their estimates, their figures appear to be clearly higher than those provided by the Alliance. This is mainly the result of the inclusion of Spanish paramilitary forces (Guardia Civil) and the credits provided by the Ministry of Industry (both excluded in the NATO accounts).[33]

Pérez Munielo (2009) additionally provides data on the economic and administrative composition of military expenditure. As can be seen in Table 1.3, his figures on investment expenditures are generally higher than mines, while operational costs are lower. These differences are particularly noticeable during the 1980s, when investment expenditures suffered a major increase. It probably reflects the different definition of investment expenditures, as in my case (and in accordance with the NATO methodology) it only accounts for investments in major equipments and infrastructure (excluding therefore the expenditures devoted to other fields but accounted as investments in the national accounts). By contrast, Pérez Munielo's personnel expenditures estimates appear to be lower than mines during the 1950s, while higher from the early 1960s to the early 1990s. This could be due again to the different sources used in both series.

[33] See Annex A for a discussion on the credits provided by the Ministry of Industry.

Table 1.3. Economic expenditure composition/GDP (1947-2005)

	Pérez Munielo (2009)			My data		
	Personnel	Investment	Operational	Personnel	Investment	Operational
1947	1,6	0,9	1,5	1,7	0,8	1,6
1955	0,9	0,6	1,2	1,2	0,5	1,2
1965	1,0	0,2	0,4	1,0	0,2	0,6
1975	1,0	0,4	0,2	0,9	0,3	0,6
1985	1,1	0,8	0,3	1,0	0,5	0,7
1995	0,6	0,4	0,2	0,7	0,2	0,3
2005	0,5	0,2	0,1	0,4	0,3	0,3

Sources: see Table 1.2.

1.4.3. The evolution of Spanish military expenditure

The main stages of the evolution of Spanish military expenditure and their political and military context are shown in the next subsections. I also present information on military expenditure composition, in order to identify its major features. Disaggregated figures are mainly shown as a percentage of GDP, in order to capture the relative financial effort made on every military item in terms of total resources available in the economy. It is probably the measure that better captures the opportunity costs of public expenditure in terms of other economic activities.

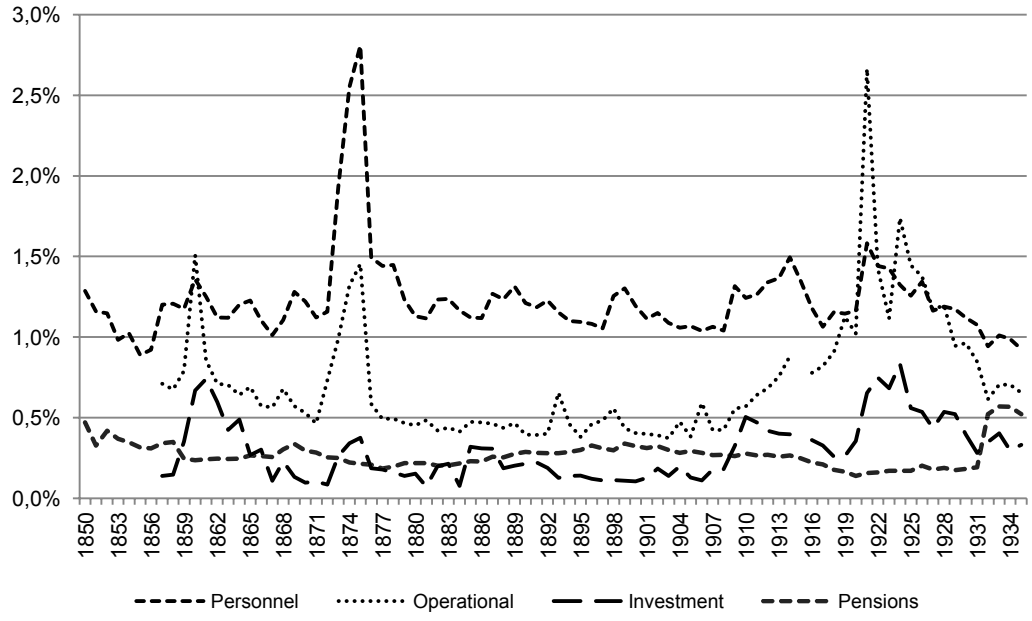
1.4.3.1. 1850-1876

As shown in figure 1.2, the period from 1850 to 1876 shows several short-term fluctuations that rose military burden close to 5 per cent of GDP. Its first peak is to be found in the late 1850s and the early 1860s, and reflects the new military policy undertaken by the Liberal Union Government (1858-1863) during the monarchy of Isabel II (1833-1868). The Liberal Union set up an expansionist policy mainly based on military interventions in Latin America, North Africa and South-east Asia. As has been stated by Vilar (2009), this contrasts with the former military policy of the so-called "moderate decade" (1844-1854), when Spanish governments kept its neutrality in major international conflicts (such as the Crimean War in 1853-1856). Provided that overseas colonial expenditures (which financed the wars in the American territories) are not accounted for in the series, this

first peak seems to be mainly due to the military intervention in Morocco (1859-1860), in which the Spanish government tried to ensure (and expand) its North African settlements. It might additionally reflect the military expedition to Southern Vietnam from 1857 to 1863, where the Spanish army (both the navy and land forces) fought together with the French armed forces against the Kingdom of Annam.

As can be seen in Figure 1.4, this peak was led by operational and investment expenditures, which fits with the international nature of those military interventions. Investment expenditures were mainly financed through extraordinary budgets from 1859 to 1866, and were mostly aimed to construct and arm new warships. Therefore, those historically high ratios achieved during wartime reflect the financial efforts made by the Liberal Union Government to endow the army with better equipment for its military expansionist policy. As is shown in the next subsection, this clearly contrasts with the lower resources devoted to military endowments during the following decades.

Figure 1.4. Spanish economic expenditure composition/GDP (1850-1935)

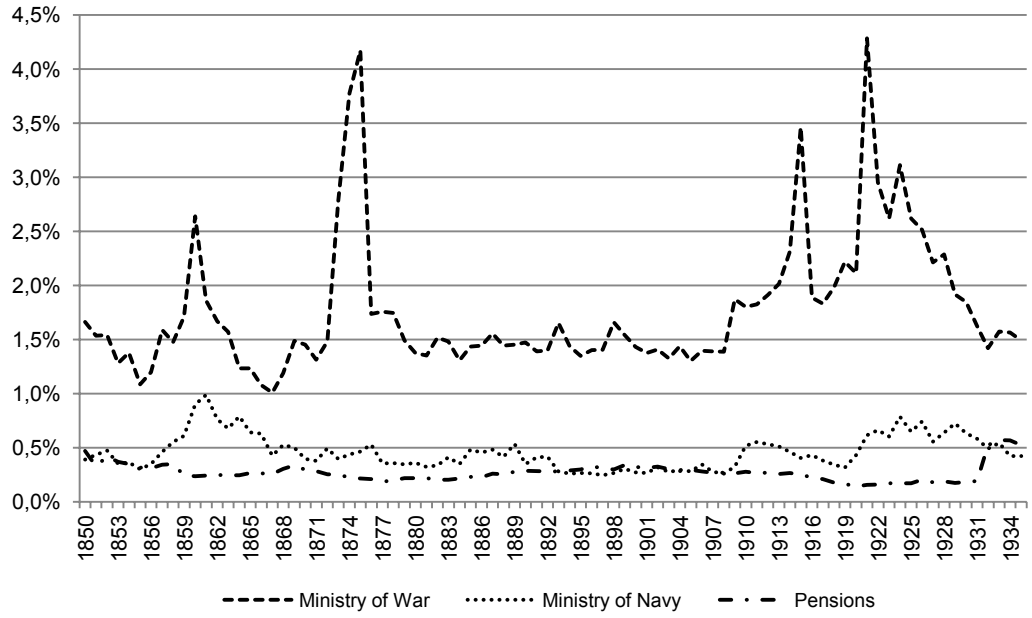


Sources: my own data (see text).
Notes: figures on military expenditure composition (except for personnel and pensions) could not be estimated for the period 1850-56 due to the lack of disaggregated

information in the original sources. Figures on investment and operational expenditures for 1915 could not be estimated for the same reason.

The second major peak of the series is found in the mid-1870s, and is associated to the increasing resources demanded by the *Third Carlist War* (1872-76) initiated during the latest year of the Revolutionary Period (1868-1874). Unlike the former peak, in this case personnel and operational expenditures accounted for most of the increase in spending. This probably reflects the domestic nature of the war, which required more personnel resources than new military equipment. Additionally, as can be seen in Figure 1.5, the war was entirely financed by the Ministry of War (which was in charge of land forces), while the navy resources were not significantly altered.

Figure 1.5. Spanish organic expenditure composition/GDP (1850-1935)



Sources: my own data (see text).

1.4.3.2. 1877-1907

The period from 1877 to 1907 changed the former pattern of military expenditure. Total military expenditure as a percentage of both GDP and total public spending shows a stable path near 2 per cent and 20-25 per cent

respectively. This clearly reflects the newly military policy set up by the Restoration (1874-1923), which gave place to a military withdrawal from the main international conflicts, based on policy of neutrality.[34] The only external military interventions during the first decades of the Restoration were aimed at the defence of North African possessions and overseas colonies.[35] According to military historians, this policy consolidated a very nationalist army devoted essentially to grant domestic public order.[36]

The domestic orientation of the Restoration's military policy can also be seen in Figure 1.5, where expenditures by the Ministry of War stayed high, while those of the Ministry of Navy decreased relative to the previous period. According to Olmeda (1988), such prevalence of land forces in a peninsular country can only be explained by the priority given to domestic threats over international affairs.[37] Similarly, Figure 1.4 shows the prevalence of personnel expenditures in comparison to operational and investment costs. Investment expenditures only increased slightly during the late 1880s, mostly driven by the early plans to reconstruct the squadron that were approved by the Spanish Parliament in 1887. Rodríguez González (2009) argues that these attempts were set up due to the Spanish agreements with the Triple Alliance, although both the investment plans and the agreements were going to fail soon. According to this author, several management errors and the Spanish industrial backwardness (in a context of increasing economic protectionism) limited the scope of the plan.

Table 1.4 presents the economic composition of the expenditure of both the Ministry of War and the Ministry of Navy. As has been indicated, the increase in investment expenditures during the late 1880s was led by the Ministry of Navy (although it would remain much lower than the

[34] This was only partially altered by the agreement with Germany in 1877 and the Mediterranean Agreement in 1887 (linked to the Triple Alliance).
[35] As has been indicated, the Ten Years War in Cuba (1868-1878) and the independence wars in Cuba, Puerto Rico and Filipinas (1895-1898) do not appear in the series.
[36] López Garrido (1982), Ballbé (1983), Cardona (1983), Lleixà (1986), González Calleja (1998), Puell de la Villa (2000).
[37] This prevalence of land forces contrast with the important role of naval forces in several wartime episodes of the eighteen century. According to the estimations made by Jurado-Sánchez (2007), the navy's expenses even surpassed those of the land forces during the War of the Austrian Succession (1740-48) and the early phases of the French Revolutionary Wars (1793-1815).

investment efforts of the 1860s or the 1910s and 1920s). The data also shows the structural differences among the Ministry of War and the Ministry of Navy, and the much higher importance that personnel expenditures reached in the former. In the case of investment, both ministries present fairly similar figures despite the difference in the total expenditure, what clearly reflects the difference in their capital intensity. As has been argued by military historians, the domestic orientation of land forces (in contrast with the international orientation of the navy) implied low equipment endowments and higher personnel resources.[38]

Table 1.4. Military expenditure composition of every military ministry/GDP (1850-1935) (%)

	Ministry of War			Ministry of Navy		
	Personnel	Operational	Investment	Personnel	Operational	Investment
1850-59a	0.92	0.49	0.06	0.18	0.23	0.04
1860-69	0.92	0.55	0.09	0.26	0.20	0.11
1870-79	1.40	0.61	0.08	0.24	0.14	0.02
1880-89	0.98	0.35	0.05	0.22	0.10	0.05
1890-99	0.98	0.38	0.05	0.18	0.08	0.02
1900-09	0.95	0.36	0.06	0.17	0.08	0.02
1910-19	1.12	0.69	0.09	0.14	0.12	0.09
1920-29	1.13	1.24	0.16	0.18	0.19	0.13
1930-36	0.84	0.60	0.07	0.17	0.15	0.06
Mean	1.02	0.58	0.08	0.19	0.14	0.06
Stn. Dev.	0.17	0.27	0.03	0.04	0.05	0.04

Sources: my own data (see text).

Notes: a) Data for operational and investment expenditures is only available from 1856 to 1859.

Lastly, Table 1.5 shows the percentage that chiefs and officers' pay accounted for within personnel expenditures in both the Ministry of War and the Ministry of Navy from 1861 to 1926. As has been suggested by military historians, the excess of chiefs and officers could have limited the scope of the military budget by diverting resources to personnel expenditure rather than to operational and investment endowments.[39] Table 1.3 shows that chiefs and officers accounted for more than half of personnel expenditures within the Ministry of War, and it increased its weight from

[38] See, among others, Cardona (1983) and Puell de la Villa (2000).
[39] See, for instance, Cardona (1983) and Puell de la Villa (2000).

50.2 to 70.7 per cent during the period 1861-1900. Provided that personnel expenditures accounted for 70.3 per cent of Ministry of War's military expenditures in 1900, payments to chiefs and officers were absorbing about 49.7 per cent of total Ministry of War's budget in the turning point of the century. These results are consistent with the widely accepted descriptions of the modern Spanish army made by military historians, according to whom land forces were mainly devoted to domestic affairs and closely related to political power.

Table 1.5. Chiefs and officers in military personnel expenditures from 1861 to 1926 (% of total personnel expenditures)

	Ministry of War		Ministry of Navy	
	Chiefs and Officers	Troops and Employees	Chiefs and Officers	Troops and Employees
1861	50.2	49.8	40.5	59.5
1870	57.2	42.8	39.0	61.0
1880	66.9	33.1	57.5	42.5
1893	64.1	35.9	55.3	44.7
1900	70.7	29.3	56.5	43.5
1915[a]	52.7	47.3	48.1	51.9
1915[b]	66.4	33.6	50.8	49.2
1926[a]	46.9	53.1	43.8	56.2
1926[b]	60.9	39.1	44.4	55.6
Total[a]	58.4	41.6	48.7	51.3

Sources: my own data (see text). The disaggregation between "chiefs and officers" and "troops and employees" has been done on the basis of the classification provided in the *Presupuestos* and in the *Guías Oficiales de España* (Official Guides of Spain).
Notes: a) It includes data on African expenditures; b) It does not include data on African expenditures.

Chiefs and Officers' pay accounted for lower shares of the budgets of the Ministry of Navy throughout the period. This would fit with a more professionalized navy, which was more focused on international threats than on domestic affairs. This might also have fostered a rationalization of the expenditure structure, devoting more resources to equipment than to personnel). Despite these differences between both ministries, the percentage of chiefs and officers expenditures within the budget of the Ministry of Navy also increased substantially during the latest decades of

the nineteenth century, surpassing 50 per cent of personnel expenditures since the 1880s.

All in all, when accounting for the payments to chiefs and officers in the two ministries in 1900, they represented about 48 per cent of total military expenditure (excluding military pensions). This clearly points out the high opportunity cost of the military model in terms of equipment and material, which were necessary to have a more competitive army in international terms.

1.4.3.3. 1908-1935

The period from 1908 to 1935 shows a new pattern on total military spending. Unlike the former stability, several fluctuations rose again total military burden up to 5 per cent of GDP. According to Torre del Río (2003), the defeat in the war of 1898 against the US (that implied the loss of the last overseas colonies in America and the Pacific, and the destruction of the Spanish navy) and the increasingly aggressive French policy in Morocco gave place to a new expansionist Spanish policy in North Africa. In addition, the Spanish government strengthened ties with the Entente (and later on with Germany), breaking the former conservative and defensive external policy. This expansionist policy was also in line with the growth in domestic social conflict (mainly led by the workers' movement and peripheral nationalist claims) during the interwar period, and the beginning of the corporatist interventions by the army (clearly seen in the so-called *Juntas de Defensa*). All in all, the early twentieth century saw an increasing militarism and a more prominent role of the army in the social and the political agenda, which ended in 1923 with the establishment of Primo de Rivera's military dictatorship (1923-1930).[40]

Figure 1.4 shows that increases in total military expenditure were led by operational and investment costs, mainly due to the military operations in the Moroccan War (1909-1927). Table 1.6 reinforces this conclusion by showing the yearly growth rates of African and non-African military

[40] Cardona (1983), Puell de la Villa (2001).

expenditures.[41] As can be clearly seen in the table, the higher increases are to be found in African military expenditures, mainly in operational and investment costs during the period 1919-21 (when military operations were reinforced due to the Annual battle against the Moroccan insurgency). Additionally, the standard deviation reveals much higher volatility in African than in non-African expenditures, which also reflects the increasing (and extraordinary) resources needed to finance the war.

Table 1.6. African colonial military expenditures and non-African military expenditures from 1914 to 1927 (% of yearly growth)

	Non-African military expenditures				African military expenditures			
	Pers.	Oper.	Invest.	Total	Pers.	Oper.	Invest.	Total
1913-15	0,6			30,6	-1,6	22,0	0,0	9,6
1915-17[a]	-6,4			-20,3	-21,8	-16,8	-49,0	-21,6
1917-19	6,5	24,5	-9,9	7,5	-4,5	3,8	2,8	-0,7
1919-21	15,1	17,0	56,3	17,3	31,9	211,4	230,7	131,7
1921-23	-9,4	-20,4	1,6	-8,9	6,7	-44,5	42,8	-30,3
1923-25	-4,6	7,2	-7,6	-2,5	-8,9	39,0	35,2	13,6
1925-27	-6,2	-10,8	-7,7	-5,8	4,3	-6,0	0,0	-9,2
Total	-0,6	4,2	4,1	2,6	0,9	29,8	37,5	13,3
Stn. Dev.	12,4	24,2	28,9	24,5	20,1	118,2	125,3	72,0

Sources: my own data (see text).

Notes: a) no disaggregated data are available for 1915 on investment and operational expenditures.

Beyond the Moroccan war, Table 1.6 also shows some increases in non-African investment expenditures in certain periods, particularly in 1919-21. This would reflect the modernization policies initiated by the Ministry of the Navy José Ferrándiz in 1907 to modernize the navy yards, to construct new warships and to acquire new weapons and equipments (although the spending figures devoted to non-African investments prior to the 1917-19 benchmark cannot be directly observed). The acquisition of military airplanes during the late 1910s and the 1920s[42] and the Royal Order passed in 1926 (on extraordinary works and services on infrastructure, equipment and general material costs for both the Ministry of War and the Ministry of

[41] The data starts in 1914 due to the lack of previous disaggregated information in the original sources. However, the increase in the total military burden started in 1909, most probably driven also by colonial military expenditures.

[42] San Román (1999).

Navy) extended the modernization effort. So did the first biennium of the Second Republic (1931-39), when the government tried to reinforce the military endowments and to promote national military production by establishing a consortium of military industries (also reflected in Figure 1.5 by the relatively high investment ratios sustained during the 1920s and the early 1930s).[43] All these figures fit with Velarde's (2000) suggestions, according to which the interwar period was characterized by a gradual implementation of the German model based on the encouragement of a national military industry and rearmament.

Lastly, as can be seen in Table 1.5, the percentage that chiefs and officers' pay accounted for within personnel expenditures decreased as a share of total personnel expenditures from 1900 to 1926. It reached ratios closer to pre-Restoration figures, especially if African expenditures are included, most likely due to the needs for war operations (which were mainly based on native paid troops). Therefore, the Moroccan military interventions and the prevailing modernization policies went along with the reduction of the chiefs and officers' payment weight, which might be reflecting some trade off between an overweighed officer's body and active international armed forces.

1.4.3.4. 1939-1975

The period from 1939 to 1975 coincides with the dictatorial regime established by General Francisco Franco after the military uprising against the Republican government in 1936 and the subsequent Civil War (1936-39). As can be seen in Figure 1.2, the first post-war decade accounts for the highest military burden ratios of the whole historical series, reaching in 1943 almost 10 per cent of GDP. This would be related with the Spanish early attempts to become involved in the Second World War together with the Axis powers (that ended up with the participation in the East front in 1941-1943 and the economic and military agreements with the Nazi Germany), as well as the subsequent threats of an invasion from both the

[43] The consortium was established in 1932 and finally abolished in 1934 after the riots in Asturias. See Cardona (1983).

Allies and the Axis powers.[44] Additionally, part of these high military spending ratios might be explained by the repression of the anti-Francoist guerrilla in some mountainous regions (especially until 1947) and the militarization of the dictatorial political system itself.[45]

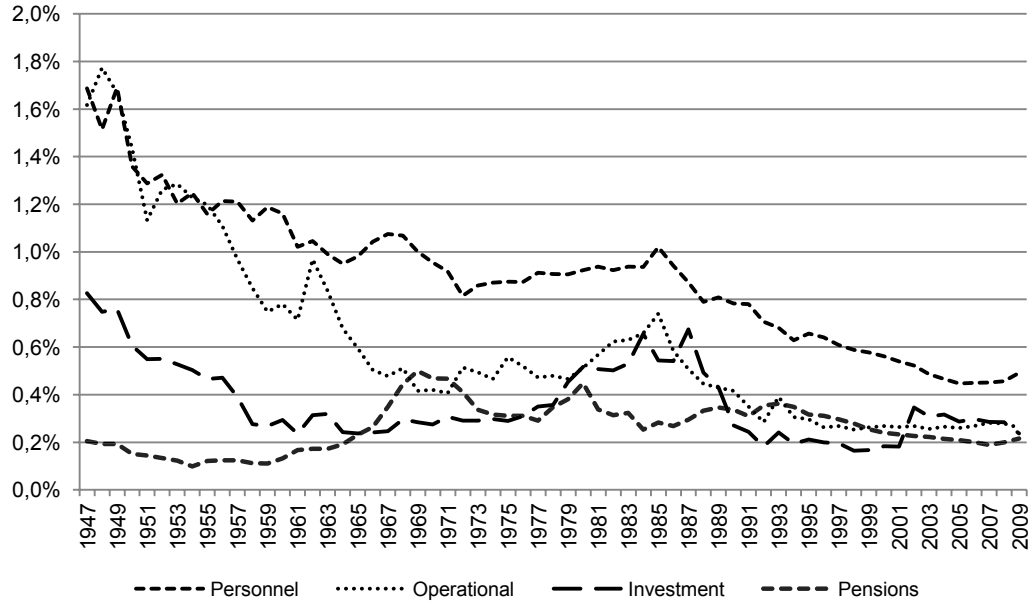
As can be seen in Figure 1.6, during the late 1940s and early 1950s operational and investment ratios were relatively high in comparison to personnel expenditures (although the later also reached some of the highest levels in modern history).[46] As has been argued by Blanco Nuñez (2010), the period from 1940 to 1953 was used by the navy to modernize the old Spanish squadron (although the management problems and the unbearable required resources delayed the contracts and lessened the expected military effectiveness). Similarly, Sempere Doménech (2010) underlines the early modernizing efforts carried out by the air forces during this period (although in both cases the most important modernizations were to come later). By contrast, Puell de la Villa (2010) highlights the low equipment investment undertaken by land forces during the early years of dictatorship, which reflects the domestic orientation of the army and the burden of the high number of soldiers and officers inherited from the civil war.

Although all series decreased in the late 1940s, their reduction slowed down or was even shortly reversed during the early 1950s (especially in the case of operational costs). The non recognition of the regime by the United Nations in 1946 and the subsequent international isolation during the early post-World War years may explain both the relatively high military spending ratios and the relative importance of material expenditures within the total budget.[47] Additionally, these ratios may be also related with the autarkic orientation of the early dictatorship, aimed at the promotion of

[44] For a description of the Spanish participation in the Second World War, see Viñas (2005), Cardona (2008) and Huget (2009).
[45] Concerning the guerrilla's repression, see Viñas (2005) and Cardona (2008). The mentioned "overdue expenditures" designed to account for military debts inherited from the civil conflict also pushed military expenditures up during this period.
[46] Unfortunately, there is not enough disaggregated data to provide the economic composition of military expenditure from 1940 to 1946.
[47] According to Morcillo Sánchez (2010), the main perceived international threats were the potential republican assaults (coming from the French frontier) and, since the late 1940s, a large scale soviet invasion.

national industry through rearmament, which would have kept the military burden high in comparison with previous decades.[48]

Figure 1.6. Spanish economic expenditure composition/GDP (1947-2009)



Sources: my own data (see text).

During the late 1950s the reduction in investment and (particularly) operational expenditures was resumed, while personnel costs remained more stable (although also diminishing slightly). As a result, the percentage of personnel expenditures in comparison to material items increased, which was clearly noticeable during the late 1960s. This might be related to the new scenario set up by the military agreements established in 1953 with the US government (and renewed periodically thereafter), which granted technical assistance and military and economic aid to Spain in exchange for the establishment of several US military bases in the Iberian Peninsula.[49] It provided the Spanish army with modern military equipment (although it all came from second-hand models), probably reducing the need to invest its

[48] See San Román (1999) for a detailed description of the importance of the military in the early autarkic industrial projects.
[49] According to the NATO criterion, the US aid accounts as US military expenditure but not as Spanish military expenditure.

own resources.[50] Additionally, as has been suggested by Viñas (2010), this bilateral agreement not only strengthened the regime stability but also granted (to some extent) the external security of Spain.[51] The data suggest that this kind of international insurance could also allow the regime to reduce military spending on material items and to focus on domestic repression without being exposed to severe international threats.

During the late 1960s and (particularly) the early 1970s, the decrease in the ratios stopped and was slightly reversed. As can be seen in Figure 1.6, both personnel and material costs experienced a tiny increase during the last years of dictatorship. In the case of investment and operational items, this might be related with the preliminary efforts done by the government to modernise the army. According to Gómez Castañeda (1985), the dictatorship passed in 1965 its first legislation to programme the acquisition and construction of new military equipment (Law 85/1965), although it was not until 1971 that it designed an eight year plan for investments, maintenance and reposition of material and major equipment (Law 32/1971). As can be seen in Table 1.7, the (tiny) increase in investment expenditures was led by the Ministry of Navy. By contrast, the expenditure by the other two ministries was not enough to go beyond the former ratios.

[50] According to Pérez Munielo (2009), the total US military aid from 1954 to 1984 accounted for 1,106,078 million of 1995 constant pesetas. The bulk of the aid was received in 1954-1956, when 672,208 millions of constant pesetas were received, a clearly higher amount than the 161,720 millions of constant pesetas spent on military investment by the Spanish government during the same period. The amounts received from 1957 to 1971, when US aid gradually became residual, accounted for 46.8 per cent of Spanish settled investments, while it was about 1.6 per cent in the period 1972-1984. Therefore, and although military investment decreased during the 1950s, the Spanish army undertook then its major modernization since the outburst of the Spanish Civil War. US equipment cessions included 8,330 transport vehicles, 451 tanks, 1,250 cannons, 432 military aircrafts, an aircraft carrier and more than 40 military and transport warships, most of them coming from the Second World War (1939-45) and the Korean War (1950-53).

[51] In line with these pacts, Spain joined the United Nations in 1955, the International Labour Organization in 1956 and several international institutions (such as the International Monetary Fund, the World Bank and the Organization for European Economic Cooperation) in 1958. According to Huget (2009), this international détente was the result of the geostrategic position of Spain within the Mediterranean region in the context of the Cold War era.

Table 1.7 also shows the prominence of the Ministry of the Army (formerly called Ministry of War) throughout the period, which is consistent with the domestic orientation of the army (in line with previous periods) and the containment strategy against perceived international threats. By contrast, the other two military ministries followed a more stable evolution throughout the period. As in previous periods, the two ministries had similar investment expenditures to the Ministry of the Army (except for the 1940s) even though their total burden was clearly lower.[52]

Table 1.7. Military expenditure composition of every military ministry/GDP (1940-1975) (%)

	1940-49[a]	1950-59	1960-69	1970-75	Mean	Stn.Dev.
Ministry of the Army						
Personnel	2.18	0.94	0.74	0.57	1.11	0.73
Operational	4.48	2.21	1.71	1.47	2.47	1.38
Investment	0.28	0.08	0.05	0.05	0.11	0.11
Ministry of Navy						
Personnel	0.17	0.13	0.14	0.15	0.15	0.02
Operational	0.32	0.28	0.16	0.09	0.21	0.10
Investment	0.13	0.08	0.04	0.06	0.08	0.04
Ministry of Air						
Personnel	0.22	0.16	0.17	0.16	0.18	0.03
Operational	0.27	0.16	0.12	0.11	0.16	0.08
Investment	0.12	0.08	0.04	0.04	0.07	0.03

Sources: my own data (see text).
Notes: a) Data from 1947 to 1949

1.4.3.5. 1976-2009

The democratic period initiated in 1977 brought relevant changes in military policies and military spending. After an early increase during the late 1970s and the 1980s, military burden decreased to the lowest levels of the whole historical series, mainly led by personnel expenditures. According to Puell de la Villa (2001), the General Plan for Modernization

[52] The high investment levels of the Ministry of Army during the 1940s were mainly led by infrastructure investment and not by new equipment. Although the sources do not provide enough information on the composition of investment, it can be estimated that military equipment accounted for about 40 per cent of investment expenditures during the 1940s.

of the Land Forces (META) passed in 1983 set up an ambitious reform of the military structure by reducing territorial military governments and by planning a 50 per cent decrease of the whole contingent. It was reinforced by the subsequent laws of 1984 and 1986, which significantly reduced the number of chiefs and officers within the three armys' branches (although it mostly focused on land forces). The Plan for the Reorganization of the Land Forces (RETO) in 1991 aimed to continue the reorganization of military forces by strengthening the Rapid Action Forces, while the Plan for the New Organization of Land Forces (NORTE) reduced the regional commandments and reinforced again the most flexible and operative forces. These reforms were closely related to the reduction of military recruitment, which was finally suspended in 1999 by the Law 17/1999.

The reduction on military personnel was initially accompanied by increasing investment efforts. The former Law 32/1971 on new investments was extended by the Real Order 5/1977 until 1982, when the new Law 44/1982 (passed by Alberto Oliart, the first civilian in charge of the Ministry of Defence since the Spanish Civil War) ensured eight years of increasing resources in military endowments (renewed afterwards by the Laws 44/1982, 6/1987 and 9/1990). These plans would explain the initial increase in equipment and operational expenditures that can be seen in Figure 1.6 from the mid-1970s to the late 1980s (while the failure to execute the plans since the late 1980s would explain the decreasing ratios during the 1990s).[53] As can be seen in Table 1.8, the current democratic period has achieved some of the highest ratios of investment expenditures as a percentage of total military spending (even higher than in former wartimes).

This modernization process went along with a reorientation of military policy from domestic threats to external missions and with the reinforcement of military agreements with western countries. It was mainly based on Spain's membership in NATO since 1982 (although the incorporation to its military structure had to wait until the end of the 1990s) and in the Western European Union (WEU) in 1984 (and as a full right

[53] See Ortega Martín (2008) and Pérez Munielo (2009) for a description of the aforementioned laws on investment endowment and its under-execution during the 1990s.

member in 1990).[54] In contrast with the former neutrality in most international military operations, the Spanish armed forces started participating in international missions in 1989 with the UN intervention in Angola. Since then to 2012, more than 100,000 Spanish soldiers have been mobilized in about 67 missions under the structure of international organizations such as the UN, the EU, NATO, the WEU, the OSCE, or specific international coalitions.[55] According to Puell de la Villa (2001), this shift constitutes one of the main changes in Spanish military policy since the first half of the nineteenth century.

Table 1.8. Economic composition of military spending (1850-2009) (% of total military expenditure)

	Personnel	Operational	Investment	Pensions
1850-59[a]	49.4	29.7	8.8	15.6
1860-69	45.5	28.9	15.3	10.2
1870-79	58.3	26.6	6.9	8.1
1880-89	57.4	21.7	9.8	11.1
1890-99	56.2	22.3	7.1	14.4
1900-09	55.2	22.0	8.4	14.4
1910-19[b]	44.9	30.1	14.1	8.4
1920-29	37.4	40.8	16.8	5.0
1930-39[c]	39.7	30.0	13.5	16.8
1940-49[d]	43.1	35.3	17.8	3.8
1950-59	42.4	37.9	15.4	4.3
1960-69	46.7	28.0	12.3	13.0
1970-79	43.2	23.5	15.9	17.4
1980-89	38.9	24.2	23.1	13.7
1990-99	44.5	20.6	13.8	21.2
2000-09	38.4	21.6	22.0	18.0
Total	46.3	27.7	13.8	12.2

Sources: my own data (see text).

Notes: a) Data on operational and investment expenditures from 1857 to 1859, b) Data on operational and investment expenditures from 1910 to 1914 and from 1916 to 1919, c) Data for all items from 1930 to 1935, d) Data on operational and investment expenditures from 1947 to 1949.

[54] Lemus and Pereira (2009), García Pérez (2009).
[55] Melero Alonso (2012).

1.5. International comparisons (1870-2009)

This section presents a long-term comparison of Spanish military burden with that of other countries for which similar information is available, in order to provide international reference terms to the priority given to military spending by successive Spanish governments. The analysis has been divided in three periods, which are determined by the availability of data.

1.5.1. 1870-1913

The data on military spending for the period 1870-1913 comes mainly from Hobson (1993), who provides information on military spending for France, Germany, Italy, Japan, United Kingdom and United States.[56] He takes his data from specific secondary sources for each country and, when available, from national statistical directories. Despite the criterion he used to compile his information is the same as mine, the diversity of the sources jeopardise the homogeneity of the data. Therefore, as this author admits, his data must be interpreted cautiously. I have also gathered data from secondary sources on Portugal, Sweden and Switzerland in order to complete a broader international dataset.[57] Moreover, data on Norway for the period 1870-1904 comes from Banks (1976), and from the Correlates of War project dataset for the period 1905-1913 (see next section for a discussion on the Correlates of War dataset).

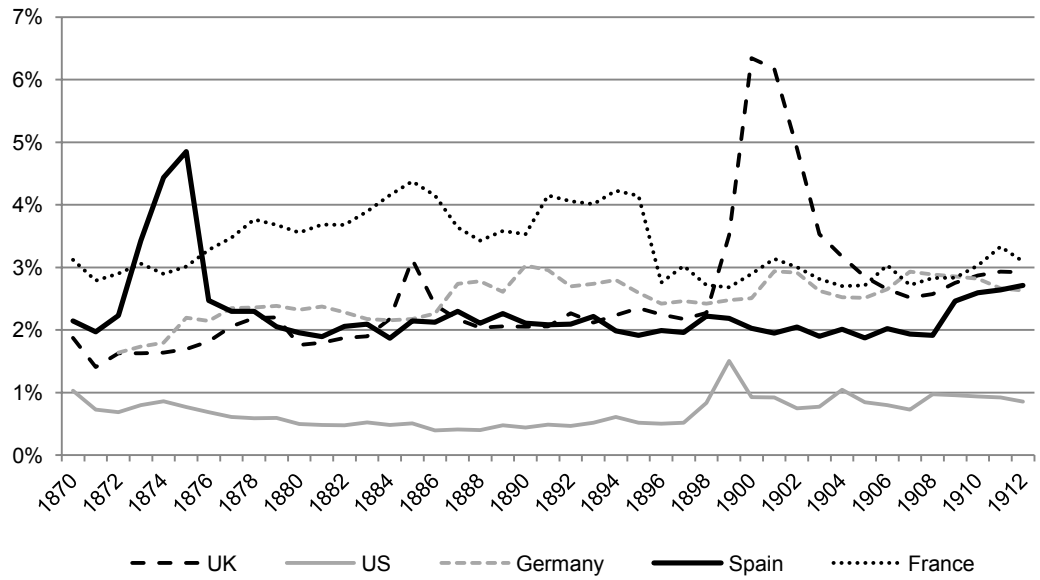
Figure 1.7 compares the Spanish military burden ratios with those of a core sample of major powers for the period 1870-1913. Aside from the sharp fluctuations in the series presented in the graphs, which are associated with specific historical events, Spanish military expenditure stands out in comparative terms by its relatively high levels. During the entire period between 1870-1913, and despite the fact that it did not participate in major conflicts, the percentage of GDP set aside by Spain for military spending was very similar to that of the Great Britain and Germany and slightly less

[56] Despite this author offers data for some other countries, I only present the ones for which I can show information also for the subsequent periods, in order to ensure a coherent historical description.

[57] Data for Portugal comes from Valério (2001); data for Sweden from Schön and Krantz (2012); and data for Switzerland from Ritzmman (1996).

than that of France, all of which were involved in a process of rearmament at the end of the 19th century and the early 20th century. Spanish military expenditure was much higher than that of the United States, which bore very little ratios compared to major European powers.

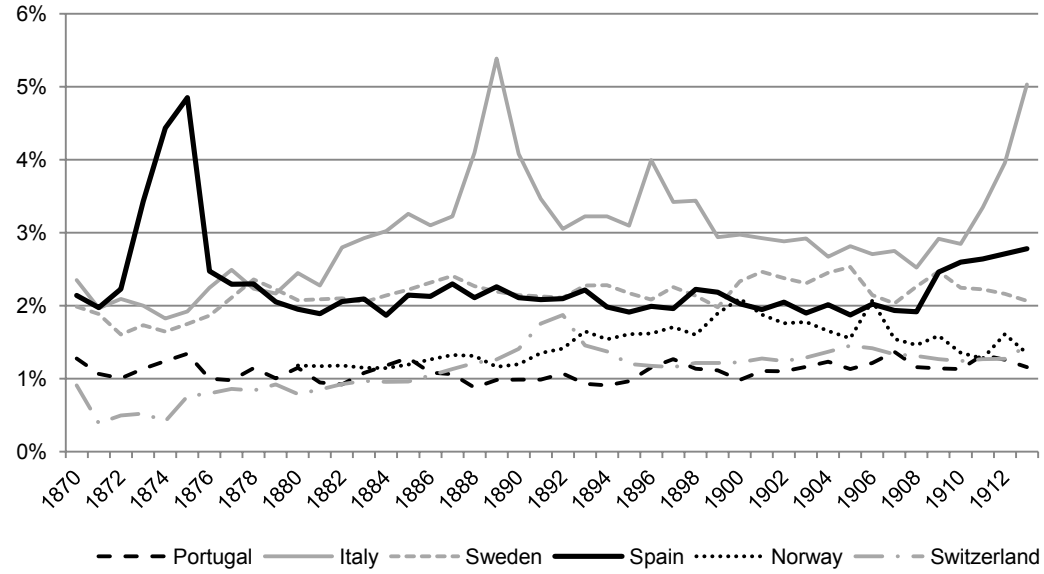
Figure 1.7. Military burden in a set of major powers and Spain (1870-1913)



Sources: for military spending, see text. The figures on nominal GDP and exchange rates for the period 1870-1948 come from the databases of Global Finance (http://eh.net/databases/Finance/), Historical National Accounts (http://www.ggdc.net/databases/hna.htm), Measuring Worth (http://www.measuringworth.com/) and Jones-Obstfeld (http://www.nber.org/databases/jones-obstfeld/).

Figure 1.8 shows the military burden ratios for a core sample of peripheral and Southern European countries. As can be seen in the graph, Spanish military expenditure was also much higher than in most countries in the sample, which, like Spain, had little participation in the major conflicts of the period. Only Italy shows clearly higher military burden ratios. In this context, the high level of Spanish military expenditure might be explained by factors such as the extensive use of the military apparatus for public order, or the inflated number of senior officers in the military forces (already discussed in the former section).

Figure 1.8. Military burden in a set of non-major powers and Spain (1870-1913)



Sources: see text and sources to Figure 1.7.

1.5.2. 1919-1938

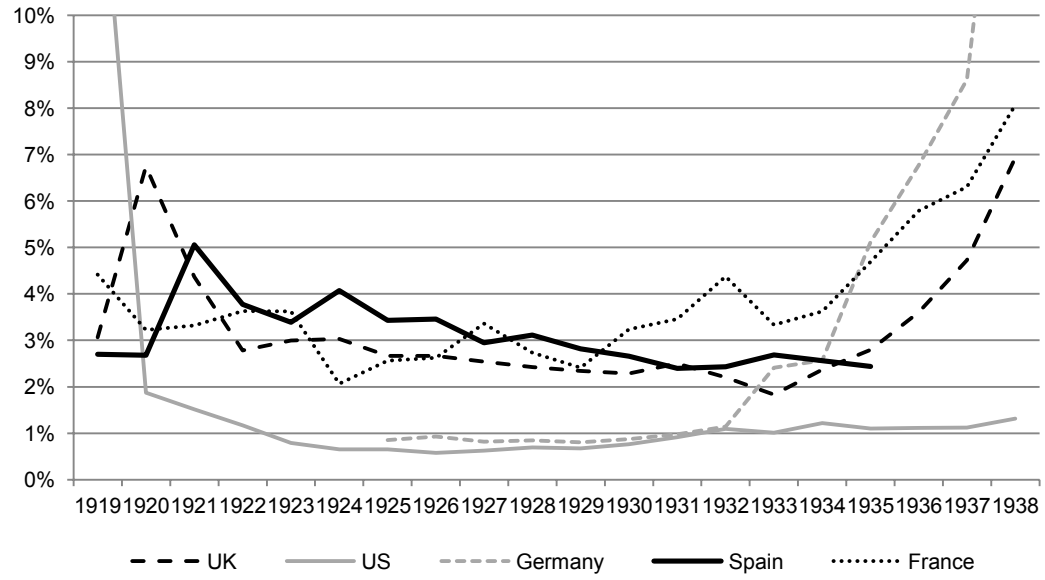
The data for the inter-war period comes mainly from the Correlates of War (COW) project database.[58] As has been indicated, the COW Project provides military expenditures for almost all countries from 1816 to the present (although the majority of non-OECD countries begin their series in the 1960s), being a broadly used dataset in academic research. However, this data should be used cautiously due to the diversity of information sources. Therefore, other available sources have been used when possible. In order to keep methodological coherence with the former period, data on military spending for Portugal, Sweden and Switzerland have also been taken from the same statistical publications.

Figures 1.9 and 1.10 show that Spanish military burden ratios were higher than in other countries (both major and non-major powers), specially during the 1920s, probably due to the extraordinary resources demanded by the Moroccan war. This fact can be also related to the demobilisation process of former major combatants in other countries and the associated international

[58] Singer *et al.* (1972).

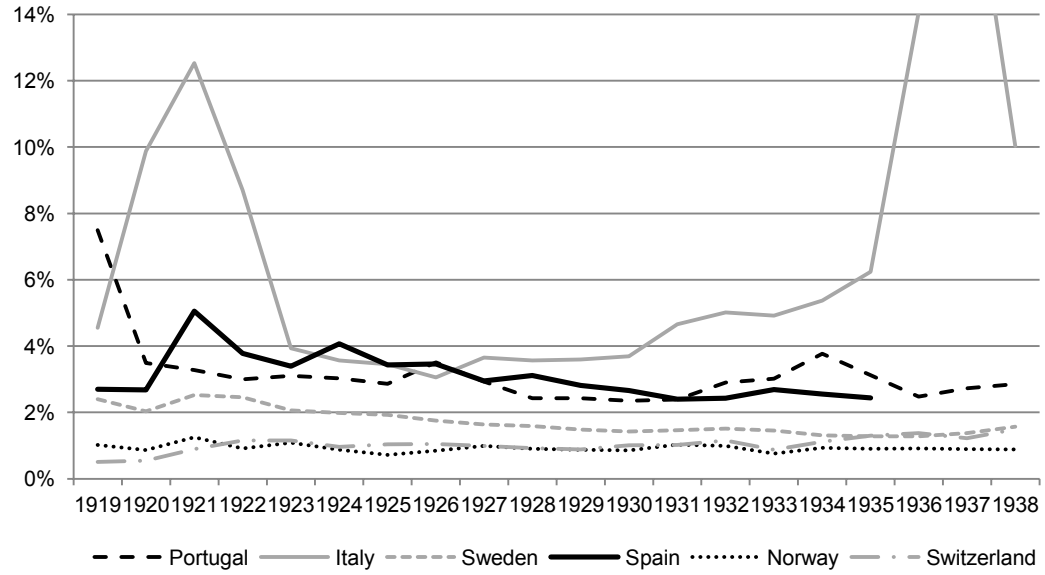
peace initiatives such as the creation of the League of Nations in 1919 and the ill-fated Kellogg-Briand Pact in 1928.

Figure 1.9. Military burden in a set of major powers and Spain (1913-1938)



Sources: for Spain, my own data (see text); for other countries, see text and figure 1.7.

Figure 1.10. Military burden in a set of non-major powers and Spain (1913-1938)



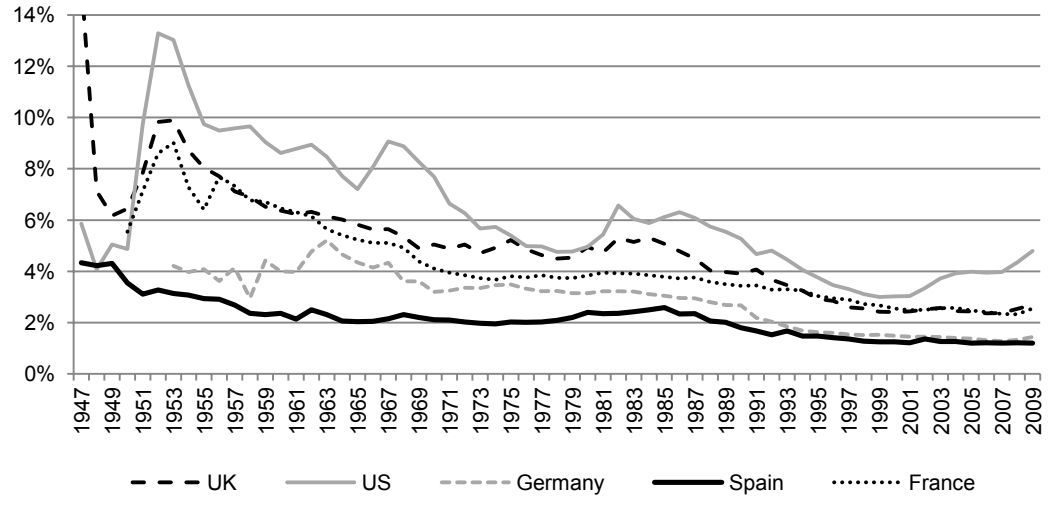
Sources: for Spain, my own data (see text); for other countries, see text and figure 1.7.

By contrast, during the 1930s the military burden ratios of the major powers clearly increased, reflecting the growing military tension during the period prior to the Second World War. Despite Spain did not react in the same way (in line with the neutrality policy sustained by the Republican governments), Figure 1.10 shows that it kept higher ratios than thoses achieved by other non-major powers (except for Italy and, to a lesser extent, Portugal).

1.5.3. 1947-2009

The data for the period 1947-2009 has been mainly taken from the NATO database, which offers reliable information on military spending for thirteen European and North-American countries for the whole period after the Second World War.[59] By contrast to the former periods, since 1947 the Spanish military burden ratios have remained lower than in most of the countries of the sample. As can be seen in Figures 1.11 and 1.12, this is particularly evident during the Cold War era, when military spending was much higher in all major powers.

Figure 1.11. Military burden in a set of major powers and Spain (1947-2009)

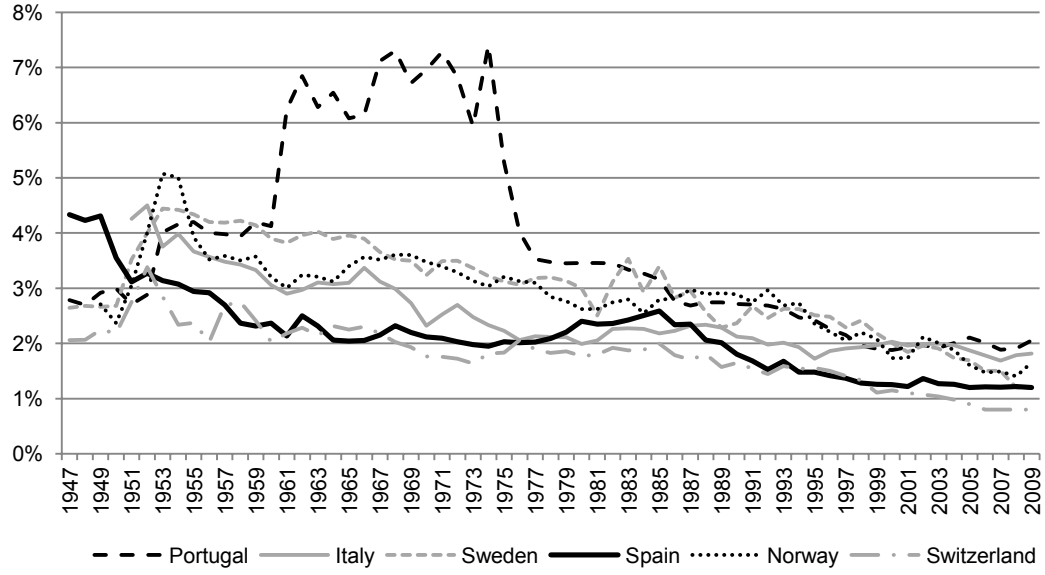


Sources: for Spain, my own data (see text); for the other countries, see text.

[59] Data on military spending for Sweden and Switzerland have been taken from the same statistical publications as before.

On the other hand, the crisis of the Eastern Bloc in the late 1980s gave place to a considerable reduction in the military burdens worldwide; it brought the military burden levels of the main powers closer to the Spanish ones, which did not go down as much as the others. Similarly, Spanish military burden remained lower than that of the sample of non-major powers throughout most the period, probably due to its domestic orientation of the military (and therefore less influenced by the international military dynamics of the Cold War).

Figure 1.12. Military burden in a set of non-major powers and Spain (1947-2009)



Sources: for Spain, my own data (see text); for the other countries, see text.

The NATO dataset also offers the possibility to explore the economic composition of Spanish military expenditure in comparison with other NATO countries from 1970 to 2009. As can be seen in Table 1.9, Spain bore higher percentage of personnel expenditures than the sample of North and Central European countries and the United States, even though the ratio for 2000-09 was fairly close to the North and Central European ones. On the other hand, the percentage of investment expenditures was lower in Spain for the period 1970-1999, while the ratio achieved in 2000-09 was very similar to the ratio reached by North and Central European countries. This highlights both the relative Spanish backwardness in terms of military

modernization as well as the convergence process undertaken during the last four decades. In line with the former section, this might be also reflecting the domestic orientation of military policies during the Franco's dictatorship and the shift to international military missions in the present democracy.

Table 1.9. Military expenditure composition in a sample of NATO countries, from 1970 to 2009 (%)

	1970-79	1980-89	1990-99	2000-09
Personnel expenditures				
United States		39.5	39.2	36.6
North and Central Europe[a]	51.2	45.8	51.8	51.7
South Europe[b]	61.0	58.9	67.8	73.7
East Europe[c]				55.1
Spain	60.6	52.6	65.6	56.4
Investment expenditures[d]				
United States	21.2	25.5	27.6	26.1
North and Central Europe[a]	21.4	26.0	21.9	22.6
South Europe[b]	16.1	20.2	16.5	12.5
East Europe[c]				19.3
Spain	15.9	23.1	13.8	22.0
Operational expenditures				
United States		35.0	33.1	37.0
North and Central Europe[a]	27.3	28.1	25.9	25.4
South Europe[b]	22.5	20.7	15.5	13.2
East Europe[c]				24.7
Spain	23.5	24.2	20.6	21.6

Sources: for Spain, my own data (see text) from 1970 to 1986, and the NATO database from 1987 to 2009; for the other NATO countries, the NATO database.

Notes: a) Belgium, Denmark, Germany, Netherlands, Norway and United Kingdom, b) Greece, Italy and Portugal, c) Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia, d) the data on investment expenditures correspond to the figures on equipment and infrastructure investments in the NATO dataset.

By contrast, Spain devoted fewer resources to personnel expenditures than the sample of South European countries, while holding higher operational and investment shares in recent periods. This is particularly noticeable in 2000-09, when the expenditure pattern of southern European countries was farther away from that of the major power, probably due to their relatively numerous armed forces (similar to France or the United States in terms of

labour force, but with lower military spending effort). In this regard, the higher ratios of military personnel in the sample of South Europe countries than in Spain (4.9, 1.8 and 1.5 per cent of labour force in Greece, Italy and Portugal respectively, compared to 1.1 per cent in Spain in 2000), while bearing equivalent shares of military burden, might explain the lower personnel costs assumed by Spain.[60]

1.6. Conclusions

Military spending has been one of the most important European public expenditures in modern times. Despite the increasing relevance that it has acquired in social science, there is a lack of long-term homogeneous and comparable data in international panel datasets. This chapter wants to contribute to fill in this gap by providing new estimates on total military spending in Spain from 1850 to 2009 (as well as economic and administrative disaggregated figures). The dataset has been elaborated on the basis of the NATO methodological criterion, which is considered as one of the most comprehensive definitions on military spending. This criterion is used by several international institutes and organizations that compile international military expenditure data (generally from the late 1980s onwards), such as the Stockholm International Peace Research Institute (SIPRI), the Arms Control and Disarmament Agency (ACDA, now part of the US Department of State) and the International Institute of Strategic Studies (IISS).

The description of the main trends on Spanish military spending allows concluding that the resources devoted to the military have increased in real terms throughout most of the period. The only exceptions appear to be the years immediately after the wars (which always show diminishing levels in comparison to peak wartimes) and the late 1980s onwards, when military spending remained fairly stable. Concerning the efforts done by Spanish governments as a percentage of GDP (military burden), the series shows several periods with sharp increases, generally related to wartimes. The most remarkable one is the first decade of Franco's dictatorship, when military burden reached the highest ratios of the whole period. By contrast,

[60] See data on the NATO military personnel in the "NATO-Russian compendium of financial and economic data relating to defence" issued annually by the NATO.

the lowest historical ratios (as well as the lowest ratios of military spending as a percentage of total public spending) were achieved in the 1990s and the 2000s.

The data on economic and administrative composition of military expenditure show an army mainly based on land forces and personnel expenditures. The periods 1910-1949 and 1980-2009 seem to be the ones with highest shares of investment expenditures within total military spending, most likely due to the military modernization efforts of both periods. When comparing the Spanish military burden with a sample of European countries and the US, Spain appears to bear relatively high ratios during the period before the Spanish Civil War (1936-39), and relatively low ratios during the Cold War era (particularly compared with the major powers). During the post-Cold War period, the Spanish ratios remain generally lower but closer to those of the other countries. In terms of expenditure composition, Spain had a similar pattern to other Southern European countries, although the share of investment expenditures increased in the 2000s to levels close to those of the Central and North European countries.

Annex A

This annex provides a complementary discussion about the elaboration of the Spanish military spending series in accordance with the NATO methodological criterion. It firstly presents the main budgetary items of the Spanish military ministries that have not been included in my series (the main items included in the series have been already mentioned in the text), and continues by discussing the economic disaggregation of the series.

A.1. Main budgetary items excluded from the military accounts

A.1.1. Ministry of War

As has been said in the text, the new estimates are based on the North Atlantic Treaty Organization (NATO) methodological criterion, as it is one of the most comprehensive standards on military spending and it has been widely used in an international level. The NATO criterion excludes those

expenses that do not directly enhance the military establishment and its activities (regardless they organic dependency). Thus, even if the military ministries (the Ministry of War, the Ministry of Navy, the Ministry of Air and the Ministry of Defence) manage the bulk of military expenditures, not all their expenses should be considered as military.

Regarding the Ministry of War, several expenditures should be excluded in order to fit the NATO criterion as much as possible. Firstly, the ministry managed the majority of the expenses of the *Guardia Civil* from 1850 to 1876 and from 1884 to 1901 (also bearing minor expenditures from 1877 to 1883, from 1902 to the mid-1910s and some years during the 1940s). As has been discussed in the text, these expenditures have not been considered as military as the *Guardia Civil* mostly carried out civil activities. Similarly, expenditures of the *Carabineros* were also included in the ministry budget from 1893 to 1903. Provided that it was a corps devoted to guard the national coasts and to fight against contraband, these expenditures have also been excluded from the military accounts.

Secondly, as has been already mentioned in the main text, the Ministry of War included the administrative expenditures of the overseas colonies from 1859 to 1862 (as has also been said, the military expenditures of the overseas colonies were mostly covered by the colonial Treasuries). These expenditures were placed in several other ministries from 1850 to 1858 (until the General Direction of Overseas Government became a ministry with its own independent budgetary section in 1863). These expenditures were not devoted to the military but to the general government of the colonies,[61] and should be considered as civil expenditures.

Thirdly, the Ministry of War also managed some subsidies to several cultural and social organizations throughout the twentieth century. The decision to include or exclude them from the military accounts has been made according to these organizations' aims and main activities. The *Sociedad del Tiro Nacional* (National Shooting Society) represents a relevant example of a non-military organization that was subsidized by the Ministry of War (actually, it is the first subsidized external organization

[61] The constitutive regulations of the new Ministry can be found in *Gazeta de Madrid*, May 21st 1863.

explicitly included in this budgetary section). Established in 1900, this society aimed at encouraging the shooting practice in Spain as a way to "enhance the country" and to prepare the population to defend it when needed. As it shared undeniable military values, its creation was largely encouraged in the journal *La Nación Militar* (The Military Nation) and rapidly supported by the ministry of war (who finally funded it through annual subsidies). Despite this military support, it was opened to all population (not only to the military) and their activities were not organized according to the current military needs.[62] Therefore, although it was historically subsidized by a military ministry, it has not been considered as military expenditure. Other institutions and organizations funded by this ministry that have been also excluded from the military accounting are the *Real Aéreo Club* (Air Royal Club), the *Jockey Club de Jerez de la Frontera*, the *Real Sociedad Colombófila* (Royal Pigeon Breeder Society), the *Junta Mixta de Urbanización de Barcelona* (Urbanization Board of Barcelona), the *Cruz Roja* (Red Cross), the *Sociedad de Fomento Pecuario* (Society for the Support of Livestock) and the *Hipódromo de Barcelona* (Hippodrome of Barcelona), among others. Additionally, the ministry of war also subsidised several activities that should be considered as civil (even if they were somehow useful for the military), such as the Spanish and international equestrian competitions or the meteorological service. In contrast to all these expenses, other cultural subsidies have been included instead, such as the subsidies devoted to military museums and military cultural centres.[63]

The military ministries also paid subsidies to scientific institutions, which generally had both civilian and military aims. In the case of the Ministry of War, it subsidized the *Patronato Juan de la Cierva*, one of the major scientific institutions created in the 1940s in order to enhance Spanish research (being part of the Superior Council of Scientific Research,

[62] Ruiz Vicente (2006). See also *La Nación Militar*, April 1st 1900.

[63] Pérez Munielo (2009) suggests excluding military museums on the basis of the NATO criterion. Provided that these expenditures help to bring the military closer to the society (which is in turn a relevant activity in terms of social support to the army), I have decided to include them in the series. That author also advocates leaving out the horse raising activities. Again, these have been included in the military accounts as they represented an undeniable service for the cavalry during the nineteenth and part of the twentieth century.

CSIC).[64] The *Patronato* was established to carry out scientific and technical research on industrial projects, mainly in accordance to the guidelines drawn up by the CSIC and the INI (Industrial National Institute). Its main research areas during the 1940s were fuels, mineralogy and metallurgy, chemical forestry, industrial uses of land and sea products, fertilizers, oils, industrial organization, applied physics and experimental mechanics. These areas were complemented in the 1950s with others such as textile production, scientific materials, applied chemistry, wind power and wine production.[65] These research areas were related to both civil and military industries; according to the second article of its constitutive law, the *Patronato* was designed to found out "new production possibilities required by the defence or by the national economy".[66] Accordingly, its funds came partially from the three military ministries and from the ministries of National Education and Public Works. Although there is no evidence to assess whether the resources from the military ministries were devoted only to military projects, they have been included into the military accounts (as other funds came also from civil ministries).

Fourthly, the Ministry of War funded from 1937 to 1944 the *FET y de las JONS*, the official, single political party during Franco's dictatorship.[67] These expenditures have obviously been excluded from the military accounts, as they are not directly related with the military establishment. Similarly, the ministry funded from 1937 to 1959 the national militia, born in 1937 through the unification of the militias of the *Falange Española* and the *Requetés*.[68] As it was not a military corps, it has also been excluded from the estimates.

Several other expenditures that should be excluded according to the NATO criterion cannot be removed from the general figures due to insufficient disaggregation in the *Cuentas* and the *Presupuestos*; thus, it has not been

[64] BOE, March 26th 1940.
[65] López García (1995).
[66] BOE, March 7th 1941. According to San Román (1999), the INI was mostly inspired by the military industrial projects that were born in Europe (especially in Germany and Italy) during the interwar period; as the INI established the priorities of the *Patronato*, its technical research lines were largely related with the current military needs.
[67] BOE, April 20th 1937
[68] BOE, April 20th 1937

possible to leave them out. These expenses are mainly related with the Military Engineer Corps, the military social protection system and the Air Force. The Military Engineer Corps was created at the beginning of the eighteenth century in order to manage the technical aspects of parade grounds and fortifications, roads, bridges, public buildings and canals. Initially the military engineers were also in charge of public civil infrastructure, namely civil roads, bridges, buildings, and navigation canals. Although their civil works deeply decreased since 1803 (when a current bylaw established the prominence of civil engineers in this kind of works)[69] some civil interventions may have been included in the military budget.

The social protection system is more problematic. Throughout the period, the government has provided healthcare and retirement protection to military personnel (and civilians devoted to military ministries). The healthcare system has mainly been based on a network of military hospitals and medical corps that provide medical assistance to military personnel and their relatives (their families have been under military healthcare provision since 1905, when they obtained full access to the military hospitals).[70] This raises two main problems. Firstly, the *Guardia Civil* (that has been excluded from the military spending figures) was included in the military medical provision since 1892 as they were considered a militarized corps.[71] However, neither the *Cuentas* nor the *Presupuestos* differentiate between the treatments received by the military and by the *Guardia Civil* personnel; so the latter's medical service remains in the accounts and introduce an upward bias in the final figures. Secondly, the civil personnel in military ministries were historically covered by the civil healthcare system, which entails an underestimation of military spending until the mid-1970s. They were not under the military health service until 1975, when they were included within the recently created ISFAS (Social Institute of the Army).[72] The subsequent 4/1990 39/1992 Laws gave them the possibility to

[69] *Gazeta de Madrid*, August 3rd 1892. The prominence of civil engineers was reinforced with the creation of the Official Academy of Road Engineers Corps. See Cantera Montenegro (2012).
[70] Puell de la Villa (2008).
[71] Additionally, the relatives from the *Carabineros* and *Guardia Civil* personnel acquired also the right to receive medical assistance in military hospitals since 1908 and 1926 respectively. See Puell de la Vila (2008).
[72] Actually, the ISFAS became operative only in 1978. See López Lorenzo (2007).

voluntarily change their affiliation from the ISFAS to the MUFACE social protection (General Mutual Society for Civil Public Servants); thus, nowadays the civil personnel in military departments are distributed among these two institutes.[73]

The *Cuerpo de Inválidos* also poses some difficulties to estimate military spending. The *Cuerpo* was formally created in 1835 during the Isabel II's reign, although the first battalions of disabled officers and troops existed since 1717. It was designed to host the military personnel of all armies that were severely injured in war and service actions. The entrance in the corps was voluntary (under the required approval), and it implied the suspension of any other pension or award that the beneficiary could be previously receiving.[74] Also in this case, the new regulation passed in 1926 by Primo de Rivera included in this corps the disabled personnel from the *Guardia Civil*, the *Carabineros* and the Security Corps (police force), and it is not possible to identify them in the accounts.[75] Additionally, Perez Munielo (2009) argues that the NATO criterion requires the exclusion of the corps itself, as veterans' benefits are not considered military spending. However, it has not been excluded from the Spanish series as there is not enough disaggregated data in the national accounts to isolate it (particularly during the Franco's dictatorship period).[76]

Finally, the air force also raises some data concerns. Before the creation of the Ministry of Air (in 1939), the firsts attempts to build up a Spanish military air force were carried out by the Ministry of War. After the preliminary studies made by the Engineers Corps of the Army, the Ministry of War created in 1913 the first Spanish aeronautical service (the Military

[73] López Lorenzo (2007). The legal changes in the 1990s affect only the period with the available NATO dataset.
[74] The only exception was the so called *Cruces Pensionadas*. See *Gazeta de Madrid*, October 22nd 1835.
[75] Puell de la Villa (2008).
[76] In any case, the Disabled Corps accounted just for about the 0.5 and 1.5 per cent of the personnel expenditures before the Civil War (when these expenditures are conveniently disaggregated). The relative weight of this chapter could be certainly more relevant in the aftermath of the Civil War; however, most of this financial burden was transferred to city councils and private companies, as they were forced to hire those war-related wounded soldiers that were able to work (which were the majority of the injured). See Puell de la Villa (2008).

Aeronautic Service) in order to develop its own aeronautic policy.[77] Although a separate civil aviation budgetary section was created within the Ministry of Public Works in 1919, the Ministry of War was in charge of some civil aeronautical activities throughout the period. Firstly, its military aeronautical academy trained civil students since 1917 in accordance with the requirements of the International Aeronautic Federation. Secondly, the first postal air lines from the Peninsula to the Moroccan protectorate were ascribed to the Ministry of War, because the army was their major user and promoter. Furthermore, during the dictatorship of Primo de Rivera (1923-1929) the Ministry of War was in charge of public works in military and civilian aerodromes.[78]. Later on, in 1929, several military aerodromes were even opened to commercial air transport, as the authorities considered that there were not enough civilian airports to cover the current demand.[79] As in previous cases, it has not been possible to exclude all these civil expenditures from the military spending estimates, as they were not disaggregated in the national budgets.

By contrast, some aeronautical military expenses were included in the budget of the *Presidencia del Consejo de Ministros* (Presidency of the Government). The Ministry of War participated in the beginning of the 1920s in an inter-ministerial commission to study a further unification of the military and civilian aviation; although it was not initially successful, it was finally set up in 1933 under the Second Republic when the majority of the aeronautical services were regrouped in the *Dirección General de Aeronáutica* (General Aeronautic Direction) within the *Presidencia*. As the military services of the *Dirección* were conveniently specified, they have been included in the military spending figures.[80]

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[77] *Gazeta de Madrid*, March 1st 1913.

[78] The works on the airports were initially done by local boards or councils, further unified under a central airport board.

[79] AENA (1996).

[80] In October 1935 the *Dirección* was ascribed to the Ministry of War, although this had no incidence in the accounting due to the Spanish Civil War outburst in the mid 1936. See *Gazeta de Madrid*, October 3rd 1935.

A.1.2. Ministry of Navy

Several scientific, economic and social subsidies need to be excluded from the military accounts of the Ministry of Navy. Firstly, the *Instituto Español de Oceanografía* (Spanish Institute of Oceanography) and their related coastal laboratories have been excluded from the estimates, as their main purposes and activities were civil. The *Instituto* was created in 1914 as a result of the merger of the *Estación Marítima de Zoología y Botánica Experimental de Santander* (Maritime Station of Zoology and Experimental Botanic in Santander), the *Laboratorio Biológico Marino de Baleares* (Marine Biological Laboratory in Baleares) and the *Estación Biológica-Marina de Málaga* (Biological-Marine Station in Malaga). Its main mission was doing research on the physical, chemical and biological conditions of the sea, and their applicability on fishing activities.[81] Actually, the *Instituto* depended on several ministries throughout its history, only belonging to the Ministry of Navy from 1932 to 1962. Therefore, it has been considered as a plainly civil budgetary item. Other subsidies given to scientific institutions and projects, such as the *Instituto de Ingenieros Civiles* (Civil Engineering Institute), the *Premios Virgen del Carmen* (awards to spread the naval culture) and the grants provided to optical studies, have also been excluded for the same reason.

In contrast, other scientific institutions have been included in the military accounting despite providing some services of a civil character. The main ones are the *Observatorio Astronómico San Fernando* (San Fernando Astronomical Observatory), the *Instituto Hidrográfico de la Marina* (Hydrographical Institute of the Navy) and the *Canal de Experiencias Hidrodinámicas El Pardo* (hydrographical research institute). The function of all three institutions was to support the navy's activities, although their research was also useful in terms of merchant fleets. The *Observatorio* was established in 1753 to train the navy officers on astronomy and to provide support to the international military expeditions. Over time it gained additional civilian tasks, such as the analysis of position astronomy and astronomical mechanics or the posting of physical and astronomical time; however, it still keeps a military orientation as its research is partially decided by the Major Staff of the Navy, and it still participates in the

[81] BOE, April 18th 1914.

training of navy officers and provides and maintains the related equipment to the navy.[82] The *Instituto* was created in 1943 in Cadiz, coming from the *Dirección de Hidrografía* (Hydrographical Office) and the more recently established *Servicio Hidrográfico de la Armada* (Hydrographical Service of the Navy). It has been in charge of nautical cartography and the hydrographical explorations for military and civilian purposes. Although its civilian tasks have become more and more important over time (its predecessors were mostly devoted to military aims), its research programs are still partially settled by the navy.[83] Finally, the *Canal de Experiencias* was established in 1928 by the navy to carry out research on military and civilian shipbuilding.[84] Given the predominantly military orientation of these three institutions, they have been included in the military spending figures.[85]

Other economic and social subsidies have also been excluded from the estimates. Firstly, I have excluded the expenditures on the civil and merchant navy (which were especially relevant from 1927 to 1935, when several subsidies to shipping companies were financed by the Ministry of Navy). On the other hand, several social institutions were subsidized through the ministry, although they clearly belonged to the civil sphere, such us the *Flechas Navales* (official youth organization during the dictatorship of Francisco Franco), the *Centro Obrero San Fernando* (working class association), the *Centro Católico del Sagrado Corazón de Cádiz* (catholic center), and the *Clubs de Regatas* (Regattas Clubs).

A.1.3. Ministry of Air

As has been said before, the Ministry of Air (which was created in 1939 after the Spanish Civil War) was in charge of military and civilian aeronautical duties. Unfortunately, although the main departments within the Ministry are conveniently differentiated in the national budgets throughout the whole time-period, they had generally mixed competences

[82] González González (1992).
[83] Law December 30th 1943 (see BOE, January 1st 1944).
[84] See its constitutive regulations in *Gazeta de Madrid*, February 23rd 1933.
[85] I do not follow here Cosidó (1994) and Pérez Munielo (2009), who have suggested their exclusion.

on civil and military aviation that make the identification of civilian expenditures difficult.

Since its creation in 1939, the *Subsecretaría del Aire* (Sub-secretary of Air) was the main administrative organ within the Ministry. Three relevant departments within the *Subsecretaría* were the *Dirección General de Infraestructura* (General Office on Infrastructure), the *Dirección General de Aviación Civil* (General Office on Civil Aviation) and – since 1942 – the *Dirección General de Protección de Vuelo* (General Office of Flight Protection). The *Dirección de Aviación Civil*, which was in charge of the administrative and logistic tasks of the commercial airports, has been totally excluded from the military spending figures. Later on, in 1963, the Ministry of Air created the *Subsecretaría de Aviación Civil* (Sub-secretariat of Civil Aviation), which replaced the former offices of instruction, civil aviation, airports and flight protection. It was formed by the *Secretaría General y Técnica de Aviación Civil y del Transporte Aéreo* (General and Technical Office of Civil Aviation and Air Transport), the *Dirección General de Navegación Aérea* (General Office of Air Navigation) and the *Dirección General de Infraestructura* (General Office of Infrastructure). As for the previous period, the *Subsecretaría de Aviación Civil* has been excluded from the estimates.

On the other hand, the *Dirección General de Protección de Vuelo* (General Office of Flight Protection) was in charge of maintaining the equipment needed to grant air navigation safety (meteorological service, radio-electrical service, etc.).[86] As with the *Aviación Civil* office, the *Dirección de Protección de Vuelo* has been also left aside because its competences were mainly civil (even though the army also benefited from them). Lastly, the *Dirección de Infraestructura/Aeropuertos* was more involved in military affairs, as it was in charge of public works in airports, routes and aerial traffic.[87] As there is no information on the specific military expenses of this office before 1966, I have estimated them, from 1939 to 1965, by using the average percentage of the military works within the total works of the Ministry from 1966 to 1968 (when this information started to be available). In this regard, since 1966 the national budgets specify the works on military

[86] BOE, September 15th 1942.
[87] BOE, September 5th 1939.

infrastructure in a separate budgetary item (*Servicio de Obras Militares*, Military Works Service). Therefore, the *Servicio* has been accounted as military expenditure, while the rest of the *Dirección* has been considered as civil expenditure. This departmental structure went on without relevant changes until 1977, when the Ministry of Air was merged with the other two military ministries in the new Ministry of Defence.

As in other military ministries, several economic, scientific and social subsidies of the Ministry of Air have been excluded from the military spending estimates. Most economic and scientific subsidies of the Ministry were addressed to the civil aviation sector, such as the subsidies to commercial lines, to the *Federación Aeronáutica Española* (Spanish Aeronautical Federation), and the Spanish contributions to the International Commission for Air Navigation, the International Technical Committee of Experts on Air Law, the International Meteorological Organization, the International Civil Aviation Organization and the European Space Research Organization. Some of the excluded social subsidies were those funding academies for pilots, the *Federación Nacional de Ingenieros Aeronáuticos* (National Federation of Aeronautical Engineers) and the *Federación del Tiro Nacional*.

Some authors also point out the convenience to exclude the funds channeled to the *Instituto Nacional de Técnica Aeroespacial* (INTA, National Institute of Aerospace Technique). The INTA was created in 1942 by the Ministry of Air as a technical centre and advisory office on aeronautics. It was firstly focused on air navigation technique and airplanes design, but expanded its field of research in the 1960s by participating on international space projects (which are nowadays the main activity of the institute).[88] The majority of its public resources came from the Ministry of Air (the Ministry of Defence since 1977), even though its projects have both civil and military applicability. As its main current research lines are focused on general aeronautical and aero-spatial techniques, it has been excluded from the military figures (even if the military industry also takes profit from its research). Actually, despite its unambiguous military origin, the national budgets (*Presupuestos*) of 1972 defined the INTA as part of the civil expenditure managed by the Ministry of Air.

[88] BOE, May 21st 1942.

Finally, some civil expenditures have not been excluded due to the lack of enough disaggregated data in the national budgets, such as the spending associated to the civil functions of the *Servicio contra la Defensa Química y contra Incendios* (Service for Chemical Defence and Fire Protection).

A.1.4. Ministry of Defence

As have been already mentioned, the three military ministries were merged in the Ministry of Defence in 1977. Although the three military armies kept its independence, the new ministry centralized their common strategic, logistic and administrative services. Together with these changes, the new ministry lost some of the civil competences of the former ministries, particularly the civil aeronautical services of the Ministry of Air. The *Subsecretaría de Aviación Civil* and its respective departments were transferred to the Ministry of Transport and Communications, while the Ministry of Defence kept just the competences on the air forces and its aeronautical services (even though both ministries had to commonly deal with several decisions on aeronautics aspects, such as the planning of new airports or the establishment of navigation networks). In line with this centralization, the General Staff of the army was moved from the Presidency of the Council of Ministers to the Ministry of Defence in 1981. Until the mid-1990s, when some military expenses began to be spread to several civil ministries, the Ministry of Defence concentrated virtually all public military expenditures.[89]

A.2. Economic disaggregation of military expenditure

The new military spending series have been disaggregated into personnel, pensions, investment (equipment and infrastructure) and operational expenditures. This division has been done on the basis of the NATO classification, which is available for its members since 1971 (in the case of Spain, since 1987).[90] Given that the national accounts classified its

[89] For a detailed review of the expenditures accounted in non military ministries in the late 1990s and the 2000s, see Oliveres and Ortega (2007) and Ortega and Bohigas (2011).
[90] The NATO disaggregates the investment expenditures between equipment and infrastructure, but the historical Spanish national accounts do not provide enough

expenditures in a different way (and changed their criteria recurrently) this section aims at describing the procedure to get a homogenous and reliable series on expenditure composition.

A.2.1. Personnel

Personnel expenditures involve the payment to chiefs, officers, troops and auxiliary civil and military personnel. Among others, it includes the administrative, healthcare, ecclesiastic, justice and technical personnel in the three military ministries. Additionally, and in accordance with the NATO criterion, allowances and employer's contributions to retirement funds are also included. However, there are several problems to estimate precise figures. Firstly, personnel compensation (especially in the case of military officers and troops) generally included some payments in kind, such as food and clothes. Since the national accounts treat the bulk of food and clothes expenditures as material acquisitions (and its accounting criteria changed recurrently), these payments in kind have been left out of personnel and considered as operational expenditures.

Secondly, some civilian personnel have not been included in the personnel category due to the lack of disaggregated information. In the case of healthcare employees, the national accounts only disaggregate the payments to inspectors, doctors, pharmacists and the main assistants, while nurses and other assistants are included in services expenditures (together with other material expenses). Therefore, these last payments are not accounted in the series as personnel costs but as operational expenses. In the case of workers on public works, the national accounts do not generally provide detailed information. Payments to infrastructure construction workers are usually included in services budgetary items. Similarly, the payments to workers of public weapons production companies are only disaggregated in the national accounts in the first 1850s. Since then, their payments are also included in more general items (together with other material expenses).

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information to do so. On the other hand, the NATO provides a single budgetary item for personnel and pensions, while I provide one budgetary item for each of them.

These payments have been included in investment or operational costs depending on the kind of good or service to which they were related.[91]

A.2.2. Military pensions

The series of military pensions include age and disability retirement pensions and the benefits paid by the *Montepíos Militares,* both placed within the *Clases Pasivas* budget section.[92] However, two main difficulties must be noted. Firstly, the *Guardia Civil* and the *Carabineros* Corps were also included within the military pensions throughout the period since 1844 and 1829 respectively.[93] These rights were confirmed in the *Estatuto de Clases Pasivas* (Statute on Passive Classes) of 1926, which aimed to rationalize and unify the complex former pensions system. The *Estatuto* established that military pensions would be regulated by the Constitutive Law of the Army of July 12th 1889, where the *Guardia Civil* and the *Carabineros* were considered military corps. The subsequent Law 112/1966, of December 28th 1966 and Law 14/1985, of December 27th 1985, as well as the legislative order 670/1987, maintained this administrative dependency. Still nowadays, according to the Law 42/99, the annuities to the Guardia Civil are included within the military pensions' category.[94]

However, neither the *Cuentas* nor the *Presupuestos* provide enough disaggregated information to exclude the *Guardia Civil* and *Carabineros* pensions from the military spending series. In order to minimize this bias in the figures, I have estimated the pensions of the military personnel by using

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[91] These public companies were more relevant during the nineteenth century than after, particularly before the creation of the *Sociedad Española de Construcciones Navales* (Spanish Society for Naval Construction) in 1909. See Comín (1996).

[92] Old-age and disability pensions had their roots in the Spanish Succession War (1701-1713), when Felipe V announced its compromise to pay an annuity pension to the elderly and severely injured professional troops. According to Puell de la Vila (2008), this compromise was formerly settled in 1828 when Fernando VII established the inalienable right of military personnel to receive a retirement pension without any kind of corresponding military duty. As for death benefits, they were firstly recognized in 1762 when the monarchy established a Montepío Militar in order to pay an annuity to widows and orphans (and mothers of single soldiers) of chief officers (later extended to the rest of the officers and troops).

[93] Royal Order of October 16th 1844 and Royal Order of April 14th 1829.

[94] López Lorenzo (2007).

the statistics on the number of the *Guardia Civil, Carabineros* and military personnel throughout the period. Jordana and Ramió (2005) provide yearly data of the *Guardia Civil* and *Carabineros* personnel for the whole period (although with several lags) and data for several benchmarks of the personnel that received a regular remuneration (salary) from the military ministries. Regarding the period 1850-1931, I have used the lagged ratio of the military ministries' personnel as a share of the sum of the *Guardia Civil, Carabineros* and military ministries' personnel in order to estimate the percentage of total pensions devoted to the military.[95]

The II Republic requires a specific amendment to this procedure. According to Cardona (1983) and Busquets (1984), in 1931 the Minister of War (and subsequent Prime Minister) Manuel Azaña issued a regulation aimed at diminishing the hypertrophic officer corps.[96] The new rule established that officers could freely apply for a voluntary retirement keeping their complete salary. Due to these facilities, the army's officer corps diminished from around 17,121 chiefs and officers in 1931 to 9,863 in 1932.[97] The direct consequence of this policy was an important increase in the military *Classes Passivas* expenses. Military pensions (as they appear in the national budgets) grew by 54.2 percent in real terms between 1931 and 1932. In contrast, the average yearly growth ratio was just about 2.7 per cent in 1928-1931 and 0.6 per cent in 1933-35. The 1932 increase has been considered here as fully military and, therefore, the ratio applied to the

[95] The ratio is lagged thirty years in order to approach the military pensions in accordance with the personnel composition of thirty years ago. This lagged time assumption is above the minimum twenty years of service required to the officers to receive voluntary retirement pension according to the Royal Order Februrary 22nd 1859, and under the forty years of service required to receive their maximum pension (*Gazeta de Madrid*, March 8th 1859). It also represents approximately the mean of the retirement years for sergeants and corporals (between twenty and forty years and between twenty-five and thirty-five years respectively). Other lagged time assumptions produce very similar results: if the lagged time is fixed on twenty years, the resulting ratios of military ministries' personnel as a share of the sum of *Guardia Civil*, *Carabineros* and military ministries' personnel are less than 4,4 percentage points above the used ratios (as a mean). If the lagged time is fixed on forty years, the resulting ratios are less than 4 percentage points below the used ratios.

[96] *Gazeta de Madrid*, May 13th 1931 and June 28th 1931.

[97] Instead, the number of *Guardia Civil* and *Carabineros*' personnel remained fairly the same: from about 1,985 officers and chiefs in 1931 (45,128 accounting also for troops) to 1,972 in 1932 (45,112). Data from Jordana and Ramió (2005).

pension figures between 1932 and 1935 has been the same than before plus the 1932 growth in absolute terms.

The period from 1939 to 1986 has been adjusted in a fairly different way. Given that the Spanish Civil War (1936-1939) caused a major distortion in the military institution, it had no sense to use the figures of the lagged share of the military personnel to estimate the post-war military pensions. According to the figures provided by Jordana and Ramió (2005), the personnel of the three military ministries represented 57.4 per cent of the total military and *Guardia Civil* personnel on average between 1945 and 1975 with a very low variation among the different benchmark years (around 1.9 per cent as average). Thus, I have applied this average as a constant ratio for the period from 1940 to 1986 on the total military pensions figures provided in the national accounts.

Lastly, the NATO dataset (initiated in 1987) does not provide disaggregated data for personnel and military pensions but just an aggregate measure for both budgetary items. Thus, in order to enlarge the data for these two disaggregated budgetary expenses from 1987 to the present, I have estimated the yearly personnel payments by using the *Cuentas* and the *Presupuestos Generales del Estado* (as done in the former periods). This data has been subtracted from the NATO's aggregate measure in order to obtain the yearly military pensions.[98]

On the other hand, the military ministries' personnel devoted to non-fighting tasks pose an additional methodological problem. The Constitutive Law of the Army of July 12th 1889 considered the auxiliary and the politico-military corps (namely, the juridical corps, the administrative personnel, the health personnel, the military clergy, the veterinarians and the musicians) as part of the army. Therefore, their pensions should be included within the military pensions in the budget (as explicitly mentioned by the *Estatuto de Clases Pasivas* of 1926). However, the Law 104/1966 December 28th 1966 established a specific regulation for these public

[98] When comparing the 1987 data for military pensions obtained by this method and by the method used for the period 1940-1986, the results are very similar (0.295 and 0.287 as a share of GDP respectively). Nevertheless, I prefer to use this new method in order to take advantage of the NATO figures (which are presumably more precise than my estimates).

employees and the subsequent order 1120/1966 April 21st included them within the framework of the civil personnel. The national budgets do not provide enough disaggregated data to control for these expenditures, so that the series do not account for this methodological change. Nevertheless, the series does not show any significant drop in 1966 and 1967, which suggests that the change was not very relevant in quantitative terms. Instead, the military pensions in constant values increased some 22.4 per cent from 1965 to 1966 and 39.5 per cent from 1966 to 1967, which are similar to other years with very high increases.

A.2.3. Investment

Investment costs include equipment and infrastructure expenditures. According to the NATO definition, equipment expenditures account for the acquisition or production of new military equipment. It mainly involves major equipment such as missile systems, aircraft, artillery, combat vehicles, engineering equipment, weapons and small arms (including hand and shoulder weapons), machine guns, mortars, transport vehicles, ships and harbour craft, and electronic and communications equipment. Additionally, it includes the R+D devoted to major equipment. Munitions and maintenance of equipment are not considered equipment but operational costs. On the other hand, infrastructure costs include fortifications, military buildings (including military hospitals) and communication infrastructures.

Since the national accounts do not always disaggregate these concepts, several estimations have been followed in order to isolate every kind of expenditure. During the period from 1850 to 1935 the expenditures on land forces equipment were mostly included within the artillery and engineers sections, while the navy equipment was mainly military shipbuilding. On the other hand, infrastructure expenditures were placed within the engineers' corps or directly accounted as works on military buildings and fortifications. Given that munitions and maintenance expenditures were generally accounted together with new acquisitions (for both the land forces and the navy), the distribution of expenditures has been done on the basis of the percentages of those closer years that effectively differentiated these concepts. Similar procedures have been followed for the period 1940-1967,

when equipment expenses of land forces were accounted as "war material" and the shipbuilding reparation and modernization were accounted as "development of naval programs" (or similar budgetary items).[99]

Since 1968, the national accounts disaggregate expenditures into personnel, procurements of goods and services, transfers, real investments, capital transfers and variation in financial assets. This clearly facilitates the disaggregation of military expenditures on the basis of the NATO criterion. Equipment expenditures are mainly included within real investments, which actually account for the bulk of the item. Capital transfers also concern equipment expenditures whenever they are aimed at financing private investments on military systems. Infrastructure expenditures are also accounted in the real investment section, although some public works on military buildings are also placed within the procurement of goods and services. Some remarkable exceptions of this general rule can be found, for instance, in the item "war material" included in the *Dirección de Industria y Material* of the land forces (Industry and Material section) from 1968 to 1973. Even though it is accounted as investment costs, the 1974 *Pressupuesto* shows that it also includes expenses on munitions. Therefore, I have applied the 1974 disaggregation ratio to the previous years. By contrast, several specific items included within the 'procurement of goods and services' have been considered investment expenditures (as the description of the items found out in the *Pressupuestos* confirm that they are war material acquisitions).

An additional specific investment item that entails accounting difficulties is the recent *Programas Especiales de Armanento* (Special Programs for Weaponry, PEA in the Spanish acronym). The Spanish Ministry of Industry agreed with the Ministry of Defence to grant credits to the Spanish military industry in order to set up new production programs on military equipment. These credits, granted without interests since 1997 to nowadays, should be returned to the Ministry of Industry once the Ministry of Defence had bought the new equipment to the producers. This mechanism ensured the

[99] In the case of the Ministry of Air, before 1968 equipment expenditures were accounted as "extraordinary expenditures" (since 1958 called "investments") within the *Dirección General de Industria y Material* (General Direction on Industry and Material) and the *Servicio de Transmisiones* (Transmission Services).

implementation of several weapon programs without increasing immediately the resources managed by the Ministry of Defence. According to the data managed by the NATO, the Alliance does not seem to account these credits as military spending. These credits are only computed as military spending when the Ministry of Defence pays the procurements to the producers. Provided that most of these credits have not been returned by now, these public resources aimed at strengthening military endowments do not appear in the current military spending series.[100]

A.2.4. Operational expenditures

Operational expenses cover all other goods and services not accounted for by the three former items. They mainly include items such as food, clothes, office materials, water, maintenance service for equipment, etc., and other operational costs such as fuel, munitions, electricity, etc. As has been said before, some of these items are occasionally mixed with other personnel and equipment expenditures; the procedure to isolate them has been already described in the previous paragraphs.

Annex B. Dataset

This annex provides five tables with the complete dataset on military spending in Spain from 1850 to 2009. Table B.1 contains the total military expenditure and its economic and administrative disaggregation in millions of current pesetas. Tables B.2 and B.3 provide the same estimates in millions of constant pesetas of 1995 and in percentage of GDP respectively. Finally, Tables B.4 and B.5 provide the economic disaggregation for every military ministry from 1857 to 1976 in millions of current pesetas and in millions of constant pesetas of 1995 respectively.

[100] See, for a longer discussion, Valiño Castro (2001), Oliveres and Ortega (2007), García Alonso (2007).

Table B 1. Military expenditure in Spain, 1850-2009 (millions of current pesetas)

		Economic disaggregation				Administrative disaggregation		
	Total Military Spending	Personnel	Operations	Investment	Pensions	Ministry of War	Ministry of Navy	Ministry of Air
1850	107,2				20,0	70,7	16,6	
1851	99,7				14,2	66,7	18,8	
1852	106,3				18,3	67,4	20,6	
1853	103,3				19,0	66,1	18,2	
1854	111,6				18,5	73,6	19,4	
1855	96,4				17,8	61,5	17,1	
1856	103,9				17,4	67,1	19,4	
1857	129,0	64,8	38,3	7,5	18,4	85,7	24,9	
1858	125,0	63,4	35,5	7,7	18,4	77,6	29,0	
1859	143,6	65,8	44,3	19,7	13,7	95,8	34,1	
1860	224,8	80,9	89,9	39,9	14,1	157,2	53,5	
1861	188,1	76,2	52,1	45,0	14,8	113,3	60,0	
1862	167,4	70,2	44,5	37,4	15,4	104,4	47,6	
1863	164,0	73,6	46,3	27,9	16,1	103,3	44,6	
1864	169,3	79,0	42,2	32,1	16,1	101,3	51,9	
1865	151,6	75,9	42,8	16,5	16,5	95,4	39,7	
1866	148,2	73,0	37,9	19,9	17,3	89,2	41,7	
1867	137,1	71,5	39,8	7,7	18,0	89,1	29,9	
1868	138,3	66,0	40,6	13,6	18,2	88,8	31,4	
1869	127,8	70,5	31,4	7,3	18,6	81,8	27,5	
1870	127,9	72,9	31,6	5,8	17,7	86,7	23,5	
1871	126,4	71,9	29,8	6,6	18,2	84,1	24,1	
1872	163,7	85,1	53,8	6,2	18,7	108,7	36,3	

1873	268,7	151,1	77,6	20,5	19,6	218,1	31,1
1874	345,1	198,4	102,7	26,6	17,4	293,8	34,0
1875	373,6	216,2	111,9	28,9	16,6	321,2	35,8
1876	198,0	119,5	46,8	15,0	16,7	138,9	42,4
1877	202,5	127,0	43,4	15,7	16,3	154,9	31,3
1878	200,5	126,3	43,1	13,9	17,1	152,2	31,2
1879	174,4	104,5	39,5	11,7	18,6	126,6	29,2
1880	176,1	101,8	40,7	13,8	19,7	123,8	32,6
1881	178,9	105,4	45,8	6,9	20,7	127,7	30,5
1882	205,6	123,4	42,0	19,9	20,3	151,7	33,6
1883	212,6	125,7	44,5	21,7	20,7	150,4	41,5
1884	182,3	113,6	40,2	7,5	21,0	127,4	33,9
1885	206,9	108,3	45,7	30,8	22,1	138,2	46,5
1886	208,7	109,8	46,2	30,4	22,3	141,8	44,6
1887	206,7	114,1	41,6	27,7	23,3	140,0	43,4
1888	198,6	116,2	41,0	17,5	23,9	135,7	39,0
1889	197,0	114,6	40,7	17,7	24,0	126,5	46,5
1890	186,3	107,1	34,9	18,9	25,4	130,0	30,9
1891	187,7	106,8	35,4	20,1	25,4	125,4	37,0
1892	187,2	109,6	35,8	16,8	25,1	125,0	37,1
1893	192,7	100,3	57,0	11,1	24,4	143,9	24,4
1894	168,9	93,6	39,1	11,7	24,5	122,3	22,1
1895	164,4	94,0	32,7	12,0	25,7	115,9	22,8
1896	163,8	89,0	37,9	10,0	26,9	115,4	21,5
1897	174,6	94,0	42,9	10,0	27,6	125,1	21,8
1898	212,7	120,2	53,3	10,7	28,5	158,9	25,3
1899	212,3	126,6	42,2	10,5	33,0	149,9	29,5
1900	207,7	122,4	41,6	10,7	33,1	146,8	27,8
1901	210,3	120,1	43,0	13,6	33,6	148,2	28,5
1902	213,6	119,8	40,8	19,3	33,7	146,8	33,1

1903	211,8	121,3	41,7	15,4	33,4	147,6	30,7
1904	236,8	124,4	55,9	23,3	33,2	169,0	34,6
1905	212,3	121,0	43,4	14,6	33,3	147,4	31,6
1906	234,0	120,2	68,5	12,8	32,5	161,5	40,0
1907	232,8	128,2	51,0	21,4	32,3	167,2	33,3
1908	229,0	124,3	50,8	21,6	32,2	165,7	31,1
1909	300,4	160,7	67,9	39,7	32,0	228,7	39,7
1910	303,2	145,3	66,7	58,8	32,4	210,4	60,4
1911	333,3	159,7	80,9	59,3	33,5	230,3	69,6
1912	348,2	172,2	87,7	53,7	34,6	245,5	68,1
1913	383,7	188,5	104,4	55,3	35,5	277,6	70,6
1914	417,4	205,2	121,1	54,6	36,5	317,7	63,3
1915	622,3	203,9			37,6	523,7	61,0
1916	442,9	205,7	135,6	62,9	38,8	329,1	75,1
1917	459,7	202,1	155,7	62,1	39,9	347,6	72,2
1918	575,3	266,1	209,2	59,5	40,5	456,2	78,6
1919	669,8	284,4	279,2	65,1	41,1	550,4	78,3
1920	788,0	341,6	300,7	104,6	41,1	620,3	126,6
1921	1.368,7	428,1	721,5	176,9	42,2	1.159,9	166,5
1922	1.037,6	396,1	391,7	205,9	43,9	811,5	182,1
1923	933,3	392,0	306,8	187,8	46,7	720,7	165,9
1924	1.226,4	399,0	524,2	251,5	51,7	938,2	236,5
1925	1.098,1	402,2	462,1	179,3	54,5	837,0	206,5
1926	1.079,3	419,4	429,4	167,0	63,4	784,7	231,2
1927	987,0	389,3	392,5	145,5	59,7	740,9	186,4
1928	1.018,0	389,2	391,4	175,5	61,8	747,5	208,6
1929	990,8	412,8	332,8	183,7	61,4	674,7	254,6
1930	937,4	394,5	339,4	138,8	64,6	650,5	222,3
1931	829,5	372,0	293,3	97,7	66,5	561,7	201,2
1932	841,6	326,4	213,2	121,1	180,9	490,8	169,9

1933	886,9	333,5	232,3	132,7	188,3	519,4	179,1	
1934	931,1	359,8	256,7	108,0	206,7	571,2	153,2	
1935	915,4	348,1	246,6	124,6	196,2	560,3	159,0	
1936								
1937								
1938								
1939								
1940	3.229,2				108,2	2.348,6	344,5	427,9
1941	3.566,7				125,1	2.606,2	402,5	432,9
1942	3.870,3				145,7	2.812,2	476,2	436,2
1943	7.216,7				187,1	5.782,9	615,2	631,5
1944	6.153,1				204,9	4.125,7	1.010,7	811,9
1945	6.278,0				245,9	4.687,3	778,0	566,7
1946	4.885,8				252,3	3.410,5	643,0	580,0
1947	5.447,7	2.120,9	2.031,8	1.038,2	256,9	3.450,1	800,9	939,8
1948	5.736,3	2.055,1	2.405,1	1.014,3	261,9	3.676,1	883,6	914,8
1949	6.266,2	2.457,3	2.425,4	1.103,8	279,7	3.944,2	1.052,1	990,2
1950	6.370,2	2.438,3	2.573,2	1.087,9	270,8	3.917,4	1.146,9	1.035,1
1951	7.112,6	2.940,2	2.587,5	1.254,0	330,9	4.222,6	1.482,1	1.077,0
1952	8.214,2	3.325,6	3.171,3	1.381,2	336,1	5.058,2	1.508,0	1.311,9
1953	8.522,1	3.264,6	3.490,0	1.433,9	333,6	5.250,2	1.584,2	1.354,1
1954	9.662,9	3.918,8	3.855,9	1.579,5	308,7	5.857,5	1.887,0	1.609,6
1955	9.984,0	3.929,5	4.064,1	1.580,1	410,3	5.934,2	1.931,0	1.708,6
1956	12.243,7	5.091,9	4.656,2	1.976,9	518,7	7.163,6	2.580,3	1.981,1
1957	13.200,4	5.928,4	4.747,6	1.913,4	611,0	7.917,2	2.494,7	2.177,5
1958	13.773,8	6.580,6	4.929,6	1.608,7	654,9	8.406,5	2.529,2	2.183,2
1959	14.106,6	7.240,8	4.561,4	1.629,9	674,5	8.587,4	2.571,9	2.272,8
1960	14.989,2	7.354,4	4.943,2	1.855,9	835,6	9.010,7	2.598,3	2.544,5
1961	15.578,5	7.440,8	5.203,9	1.718,3	1.215,7	9.189,0	2.685,6	2.488,2
1962	21.289,7	8.898,9	8.247,0	2.672,5	1.471,3	12.695,6	3.716,4	3.406,4

1963	23.510,5	10.041,5	8.479,6	3.242,8	1.746,6	13.599,9	4.422,2	3.741,7
1964	23.861,6	10.994,6	7.851,3	2.806,2	2.209,5	13.173,9	4.368,3	4.109,8
1965	27.781,7	13.333,9	8.075,6	3.227,4	3.144,8	14.818,7	4.939,6	4.878,6
1966	32.150,1	16.341,3	7.899,0	3.778,5	4.131,3	17.309,1	5.342,7	5.366,9
1967	37.709,6	18.863,4	8.388,1	4.335,1	6.123,0	17.711,2	6.802,4	7.073,0
1968	45.247,9	20.845,0	9.979,8	5.766,9	8.656,3	22.568,7	6.940,2	7.082,8
1969	48.737,3	22.173,6	9.212,6	6.285,1	11.066,0	21.924,0	7.673,2	8.074,0
1970	52.180,2	23.534,1	10.349,4	6.754,7	11.542,1	23.408,3	8.511,8	8.718,0
1971	58.704,8	25.685,2	11.365,6	8.587,9	13.066,0	26.088,4	9.617,1	9.933,2
1972	66.768,9	26.822,0	16.883,2	9.578,1	13.485,6	30.561,4	11.758,7	10.963,1
1973	79.198,6	34.342,0	19.740,3	11.631,7	13.484,6	37.870,7	13.986,2	13.857,1
1974	96.548,9	43.108,8	23.037,0	14.761,5	15.641,7	46.193,9	17.319,4	17.394,0
1975	119.244,7	51.294,2	32.675,4	17.000,2	18.274,9	56.674,7	21.310,6	22.984,5
1976	142.708,0	61.907,7	36.812,5	21.984,3	22.003,4	68.692,8	25.007,3	27.004,4
1977	182.502,4	82.228,0	42.549,8	31.519,9	26.204,7			
1978	231.647,8	100.527,6	53.088,5	39.556,8	38.474,9			
1979	286.058,8	117.457,1	60.351,8	58.770,2	49.479,6			
1980	365.091,4	140.424,3	78.008,9	78.527,8	68.130,3			
1981	400.645,3	159.903,5	96.873,6	86.374,2	57.494,1			
1982	465.902,6	182.110,4	122.961,5	99.061,2	61.769,6			
1983	545.693,6	211.282,9	142.024,6	119.431,9	72.954,2			
1984	638.807,3	239.036,9	167.920,7	167.357,8	64.491,9			
1985	729.415,6	287.522,4	208.751,7	153.358,0	79.783,5			
1986	754.696,0	304.415,9	188.773,4	175.015,3	86.491,3			
1987	852.767,0	316.497,7	184.197,7	244.744,1	107.327,5			
1988	835.353,0	320.477,9	180.436,2	199.649,4	134.789,5			
1989	920.381,0	371.015,0	196.041,2	196.961,5	156.362,8			
1990	922.808,0	399.989,7	212.245,8	138.421,2	172.151,2			
1991	947.173,0	438.991,5	197.012,0	137.340,1	173.829,4			
1992	927.852,0	429.689,0	172.580,5	110.414,4	215.168,2			

1993	1.054.902,0	429.270,4	245.792,2	151.905,9	227.933,6
1994	994.689,0	423.290,3	205.900,6	130.304,3	235.193,8
1995	1.078.805,0	478.051,5	215.761,0	154.269,1	230.723,4
1996	1.091.432,0	494.320,5	203.006,4	153.891,9	240.213,3
1997	1.123.045,0	499.291,9	220.116,8	160.595,4	243.040,9
1998	1.124.054,0	514.725,3	221.438,6	143.878,9	244.011,1
1999	1.180.075,0	540.577,0	245.455,6	156.950,0	238.272,5
2000	1.264.299,0	566.486,0	270.560,0	184.587,7	241.401,1
2001	1.326.373,0	587.535,2	287.822,9	197.629,6	253.385,3
2002	1.590.650,2	609.736,2	313.358,1	404.025,1	263.530,7
2003	1.593.478,7	608.586,2	320.289,2	387.215,3	278.981,4
2004	1.696.638,0	625.989,8	356.294,0	425.856,1	288.498,1
2005	1.746.553,8	650.342,9	377.255,6	417.426,4	303.275,5
2006	1.914.437,3	708.592,6	421.176,2	469.037,1	315.631,4
2007	2.033.070,5	760.155,7	473.705,4	481.837,7	317.371,7
2008	2.122.419,8	794.119,3	486.034,1	494.523,8	347.742,6
2009	2.029.243,7	827.579,9	440.345,9	399.761,0	363.586,2

Notes: Inaccuracies might be due to rounded values.

Table B 2. Military expenditure in Spain, 1857-1976 (millions of constant pesetas of 1995)

		Economic disaggregation				Administrative disaggregation		
	Total Military Spending	Personnel	Operations	Investment	Pensions	Ministry of War	Ministry of Navy	Ministry of Air
1850	54.795,3				10.226,3	36.110,5	8.458,5	
1851	50.598,1				7.214,4	33.825,4	9.558,4	
1852	56.160,4				9.665,5	35.608,9	10.885,9	
1853	46.422,0				8.545,1	29.706,2	8.170,7	
1854	49.047,7				8.152,6	32.350,3	8.544,9	
1855	41.419,7				7.660,0	26.418,7	7.340,9	
1856	43.962,9				7.347,3	28.388,8	8.226,7	
1857	56.186,9	28.218,3	16.698,0	3.252,1	8.018,6	37.314,8	10.853,6	
1858	57.002,4	28.930,2	16.182,0	3.519,6	8.370,7	35.397,2	13.234,5	
1859	64.400,7	29.530,2	19.867,8	8.840,0	6.162,6	42.950,6	15.287,5	
1860	98.179,4	35.355,5	39.250,1	17.422,1	6.151,7	68.664,3	23.363,3	
1861	81.582,5	33.041,6	22.608,4	19.525,5	6.406,9	49.136,3	26.039,2	
1862	71.078,8	29.801,1	18.872,3	15.866,0	6.539,4	44.329,0	20.210,3	
1863	67.637,3	30.382,7	19.102,6	11.520,3	6.631,6	42.603,0	18.402,6	
1864	69.931,9	32.616,3	17.417,8	13.245,0	6.652,7	41.860,6	21.418,6	
1865	64.547,5	32.299,5	18.202,7	7.028,6	7.016,8	40.617,5	16.913,3	
1866	61.914,8	30.509,9	15.853,3	8.329,3	7.222,4	37.269,4	17.423,1	
1867	53.501,1	27.901,0	15.550,5	3.011,8	7.037,8	34.779,4	11.683,9	
1868	56.999,1	27.196,6	16.718,8	5.591,3	7.492,3	36.582,6	12.924,2	
1869	58.892,4	32.471,0	14.479,4	3.382,5	8.559,5	37.678,5	12.654,4	
1870	55.750,8	31.768,0	13.771,2	2.510,0	7.701,6	37.791,9	10.257,3	
1871	55.340,1	31.463,4	13.021,6	2.887,3	7.967,8	36.813,0	10.559,4	
1872	71.071,1	36.924,6	23.342,7	2.696,5	8.107,2	47.198,9	15.764,9	

1873	118.964,2	66.873,5	34.332,5	9.091,1	8.666,9	96.532,2	13.765,0
1874	143.535,7	82.537,0	42.723,8	11.056,5	7.218,4	122.189,1	14.128,2
1875	161.116,1	93.232,5	48.253,9	12.482,6	7.147,1	138.530,6	15.438,4
1876	84.163,0	50.779,0	19.900,8	6.370,5	7.112,7	59.045,6	18.004,8
1877	85.968,7	53.927,6	18.433,6	6.678,9	6.928,6	65.748,9	13.291,2
1878	83.798,1	52.804,7	18.022,4	5.831,1	7.140,0	63.613,5	13.044,6
1879	70.950,0	42.519,3	16.090,4	4.772,8	7.567,5	51.493,4	11.889,1
1880	73.454,4	42.466,8	16.993,2	5.764,8	8.229,6	51.642,4	13.582,3
1881	72.817,8	42.929,9	18.657,1	2.816,3	8.414,4	51.980,8	12.422,6
1882	80.183,9	48.119,9	16.377,0	7.758,3	7.928,7	59.156,3	13.099,0
1883	83.187,0	49.173,1	17.427,6	8.505,1	8.081,2	58.853,7	16.252,1
1884	74.510,2	46.402,5	16.438,5	3.069,1	8.600,1	52.069,1	13.841,0
1885	83.370,0	43.630,5	18.418,0	12.399,6	8.922,0	55.695,1	18.752,9
1886	80.897,0	42.556,3	17.914,4	11.764,8	8.661,4	54.940,5	17.295,1
1887	86.365,7	47.665,3	17.388,4	11.589,4	9.722,6	58.494,8	18.148,3
1888	82.225,0	48.105,7	16.973,1	7.233,5	9.912,7	56.188,5	16.123,9
1889	88.472,6	51.452,5	18.286,1	7.938,2	10.795,9	56.800,8	20.876,0
1890	82.814,5	47.581,3	15.533,2	8.412,6	11.287,3	57.800,4	13.726,7
1891	83.540,7	47.535,5	15.766,1	8.933,4	11.305,8	55.785,9	16.449,1
1892	90.130,5	52.764,1	17.237,5	8.065,6	12.063,3	60.187,7	17.879,5
1893	92.873,7	48.339,1	27.472,3	5.326,0	11.736,3	69.362,3	11.775,1
1894	83.858,5	46.455,3	19.402,7	5.825,0	12.175,5	60.727,6	10.955,4
1895	80.108,3	45.773,2	15.940,3	5.869,1	12.525,7	56.490,6	11.092,0
1896	76.899,3	41.786,9	17.800,9	4.679,9	12.631,6	54.180,6	10.087,1
1897	79.016,1	42.557,9	19.431,4	4.511,3	12.515,5	56.622,0	9.878,7
1898	96.479,6	54.503,9	24.176,9	4.872,8	12.926,0	72.070,3	11.483,3
1899	97.141,5	57.923,0	19.304,7	4.823,9	15.089,9	68.563,4	13.488,2
1900	91.865,9	54.121,7	18.387,2	4.723,5	14.633,6	64.949,6	12.282,7
1901	94.369,5	53.902,0	19.279,4	6.111,7	15.076,3	66.514,4	12.778,7
1902	96.207,5	53.949,6	18.383,8	8.699,4	15.174,7	66.108,8	14.923,9

1903	89.515,6	51.258,8	17.616,1	6.504,8	14.135,9	62.397,6	12.982,2
1904	94.382,7	49.598,4	22.261,2	9.275,3	13.247,8	67.347,0	13.787,9
1905	86.682,3	49.397,3	17.711,4	5.970,1	13.603,5	60.177,6	12.901,1
1906	98.787,1	50.730,2	28.917,3	5.401,9	13.737,7	68.170,6	16.878,7
1907	97.137,5	53.478,3	21.281,5	8.920,4	13.457,4	69.786,9	13.893,2
1908	99.790,9	54.191,0	22.157,9	9.418,7	14.023,3	72.231,5	13.536,2
1909	130.409,4	69.767,5	29.494,0	17.234,3	13.913,7	99.277,2	17.218,5
1910	133.559,5	64.012,8	29.360,0	25.903,4	14.283,3	92.674,0	26.602,1
1911	144.893,0	69.413,8	35.166,2	25.766,4	14.546,5	100.100,2	30.246,3
1912	147.317,5	72.844,8	37.112,6	22.713,2	14.646,9	103.868,2	28.802,4
1913	158.292,3	77.752,1	43.081,0	22.796,7	14.662,4	114.521,2	29.108,7
1914	169.539,9	83.348,3	49.186,9	22.179,0	14.825,7	129.014,7	25.699,5
1915	230.862,0	75.624,0			13.960,7	194.280,9	22.620,4
1916	148.652,7	69.033,3	45.495,2	21.106,8	13.017,4	110.438,2	25.197,1
1917	139.777,9	61.438,9	47.330,8	18.878,4	12.129,9	105.706,9	21.941,1
1918	142.636,5	65.980,1	51.871,3	14.754,8	10.030,2	113.111,9	19.494,3
1919	155.750,9	66.144,1	64.919,4	15.137,8	9.549,6	127.996,5	18.204,8
1920	166.727,2	72.288,9	63.615,6	22.131,0	8.691,7	131.247,2	26.788,3
1921	324.513,0	101.507,3	171.059,6	41.932,4	10.013,7	275.015,3	39.483,9
1922	252.951,1	96.556,2	95.492,5	50.196,2	10.706,2	197.841,2	44.403,7
1923	231.256,4	97.139,3	76.012,6	46.530,2	11.574,2	178.570,4	41.111,8
1924	287.168,2	93.432,3	122.745,0	58.889,1	12.101,8	219.691,6	55.374,8
1925	256.387,5	93.908,0	107.896,3	41.857,1	12.726,1	195.438,4	48.223,0
1926	257.563,7	100.078,9	102.480,1	39.864,3	15.140,5	187.257,2	55.166,1
1927	238.672,5	94.146,8	94.906,9	35.185,0	14.433,9	179.162,5	45.076,1
1928	254.450,3	97.274,8	97.839,4	43.877,9	15.458,3	186.850,4	52.141,6
1929	245.045,2	102.106,7	82.320,4	45.422,6	15.195,5	166.868,9	62.980,8
1930	222.729,4	93.742,2	80.654,0	32.977,5	15.355,7	154.562,0	52.811,7
1931	195.437,9	87.640,8	69.106,9	23.016,5	15.673,7	132.356,3	47.407,9
1932	203.472,7	78.915,8	51.535,5	29.281,9	43.739,6	118.658,4	41.074,8

1933	220.090,7	82.750,8	57.656,7	32.942,0	46.741,3	128.897,5	44.452,0	
1934	217.166,3	83.916,4	59.864,4	25.179,5	48.206,1	133.227,5	35.732,8	
1935	211.187,7	80.295,3	56.882,0	28.748,4	45.261,9	129.254,6	36.671,2	
1936								
1937								
1938								
1939								
1940	448.597,4				15.028,4	326.266,1	47.853,0	59.449,9
1941	450.627,4				15.809,4	329.273,4	50.855,1	54.689,5
1942	430.203,8				16.199,1	312.590,4	52.931,1	48.483,1
1943	779.716,2				20.213,8	624.805,1	66.470,4	68.226,9
1944	599.427,7				19.960,8	401.917,2	98.457,6	79.092,2
1945	569.694,8				22.313,4	425.353,1	70.601,2	51.427,0
1946	365.018,0				18.850,9	254.796,8	48.040,0	43.330,3
1947	357.215,8	139.069,0	133.227,4	68.074,4	16.845,1	226.231,7	52.514,1	61.625,0
1948	349.461,8	125.199,8	146.518,2	61.790,9	15.952,8	223.949,1	53.831,3	55.728,5
1949	356.047,1	139.622,3	137.813,1	62.716,9	15.894,7	224.110,7	59.780,9	56.260,8
1950	299.367,1	114.586,4	120.927,2	51.125,9	12.727,5	184.097,4	53.898,9	48.643,3
1951	286.777,6	118.546,6	104.328,7	50.561,9	13.340,5	170.253,0	59.758,8	43.425,3
1952	327.007,2	132.392,8	126.247,8	54.985,4	13.381,2	201.365,5	60.035,1	52.225,4
1953	313.783,0	120.201,9	128.502,3	52.794,2	12.284,7	193.310,4	58.330,5	49.857,4
1954	329.402,5	133.591,1	131.443,8	53.842,6	10.525,0	199.678,7	64.327,6	54.871,1
1955	325.526,7	128.121,0	132.509,9	51.518,3	13.377,5	193.484,1	62.958,2	55.706,9
1956	349.051,2	145.162,8	132.741,3	56.359,2	14.787,9	204.224,4	73.559,7	56.479,2
1957	333.069,9	149.583,9	119.791,2	48.277,8	15.417,1	199.765,6	62.944,8	54.942,4
1958	310.956,3	148.563,7	111.289,5	36.317,9	14.785,1	189.783,9	57.099,4	49.287,8
1959	302.453,0	155.247,6	97.798,2	34.945,1	14.462,1	184.118,1	55.143,6	48.729,1
1960	314.401,8	154.261,2	103.685,7	38.928,0	17.526,9	189.002,2	54.500,6	53.372,1
1961	320.892,4	153.267,5	107.190,8	35.393,2	25.040,9	189.279,1	55.319,2	51.253,3
1962	416.045,0	173.903,3	161.162,3	52.226,7	28.752,7	248.097,4	72.626,0	66.568,9

1963	426.641,4	182.222,4	153.877,5	58.845,8	31.695,7	246.795,8	80.249,2	67.900,7
1964	404.749,7	186.494,5	133.176,7	47.599,4	37.479,1	223.461,3	74.097,2	69.712,1
1965	432.486,2	207.572,5	125.715,7	50.241,2	48.956,7	230.687,5	76.896,0	75.945,9
1966	466.353,8	237.039,9	114.578,8	54.808,6	59.926,5	251.078,4	77.498,8	77.850,2
1967	514.979,8	257.607,4	114.551,5	59.202,6	83.618,3	241.872,6	92.897,3	96.591,6
1968	588.795,6	271.248,7	129.863,2	75.042,6	112.641,1	293.678,1	90.310,2	92.166,2
1969	613.023,5	278.902,3	115.877,3	79.054,1	139.189,7	275.762,8	96.515,0	101.555,9
1970	615.849,6	277.757,2	122.146,8	79.721,8	136.223,8	276.273,1	100.459,6	102.893,1
1971	640.887,9	280.409,0	124.079,7	93.755,5	142.643,7	284.811,0	104.991,4	108.441,9
1972	675.539,9	271.374,1	170.817,2	96.906,8	136.441,8	309.207,7	118.970,0	110.920,4
1973	718.153,3	311.404,8	179.000,5	105.473,3	122.274,7	343.402,2	126.823,6	125.652,9
1974	765.336,6	341.720,4	182.612,8	117.013,0	123.990,4	366.175,6	137.289,9	137.880,7
1975	821.785,3	353.498,5	225.185,6	117.158,3	125.943,0	390.578,8	146.864,0	158.399,5
1976	850.864,9	369.111,0	219.486,7	131.076,8	131.190,5	409.565,9	149.100,5	161.008,1
1977	882.413,3	397.578,7	205.731,8	152.401,0	126.701,7			
1978	932.701,3	404.761,9	213.754,5	159.270,5	154.914,4			
1979	1.001.159,4	411.080,8	211.221,6	205.686,2	173.170,7			
1980	1.150.566,5	442.539,9	245.841,1	247.476,4	214.709,2			
1981	1.119.938,1	446.983,8	270.794,1	241.444,9	160.715,3			
1982	1.142.365,7	446.523,8	301.494,2	242.892,2	151.455,4			
1983	1.193.542,0	462.118,4	310.636,5	261.221,6	159.565,5			
1984	1.247.172,4	466.682,5	327.839,1	326.740,2	125.910,5			
1985	1.326.394,7	522.840,8	379.601,3	278.871,6	145.081,1			
1986	1.239.512,4	499.972,6	310.041,4	287.445,0	142.053,3			
1987	1.329.074,7	493.275,5	287.080,1	381.444,4	167.274,6			
1988	1.235.287,9	473.910,3	266.822,2	295.233,8	199.321,6			
1989	1.278.261,6	515.281,1	272.269,7	273.548,0	217.162,8			
1990	1.196.560,5	518.647,3	275.208,9	179.484,1	223.220,2			
1991	1.149.689,6	532.853,0	239.135,4	166.705,0	210.996,2			
1992	1.056.590,5	489.307,9	196.525,8	125.734,3	245.022,5			

1993	1.147.854,4	467.095,4	267.450,1	165.291,0	248.017,9
1994	1.040.800,6	442.913,1	215.445,7	136.344,9	246.096,9
1995	1.078.805,0	478.051,5	215.761,0	154.269,1	230.723,4
1996	1.054.301,1	477.503,5	196.100,0	148.656,5	232.041,1
1997	1.061.416,7	471.892,7	208.037,7	151.782,6	229.703,8
1998	1.038.792,2	475.682,4	204.642,1	132.965,4	225.502,4
1999	1.059.980,2	485.563,1	220.475,9	140.977,4	214.023,8
2000	1.097.704,1	491.840,9	234.908,7	160.264,8	209.592,0
2001	1.105.203,4	489.565,1	239.829,1	164.675,3	211.133,9
2002	1.270.664,7	487.077,7	250.320,9	322.748,8	210.517,2
2003	1.222.288,8	466.820,3	245.680,0	297.016,2	213.994,6
2004	1.251.072,1	461.594,3	262.725,1	314.019,1	212.733,6
2005	1.234.946,4	459.841,9	266.748,4	295.152,2	214.438,8
2006	1.300.057,2	481.191,5	286.012,6	318.514,0	214.339,2
2007	1.335.968,7	499.512,6	311.280,7	316.624,6	208.550,9
2008	1.361.961,8	509.588,2	311.889,3	317.337,1	223.147,2
2009	1.294.391,4	527.887,4	280.882,9	254.995,1	231.920,3

Notes: Inaccuracies might be due to rounded values.

Table B 3. Military expenditure in Spain, 1850-2009 (% GDP)

		Economic disaggregation				Administrative disaggregation		
	Total Military Spending	Personnel	Operations	Investment	Pensions	Ministry of War	Ministry of Navy	Ministry of Air
1850	2,52				0,47	1,66	0,39	
1851	2,30				0,33	1,53	0,43	
1852	2,43				0,42	1,54	0,47	
1853	2,00				0,37	1,28	0,35	
1854	2,09				0,35	1,38	0,36	
1855	1,70				0,31	1,09	0,30	
1856	1,86				0,31	1,20	0,35	
1857	2,39	1,20	0,71	0,14	0,34	1,59	0,46	
1858	2,38	1,21	0,68	0,15	0,35	1,48	0,55	
1859	2,56	1,18	0,79	0,35	0,25	1,71	0,61	
1860	3,77	1,36	1,51	0,67	0,24	2,64	0,90	
1861	3,09	1,25	0,86	0,74	0,24	1,86	0,99	
1862	2,68	1,12	0,71	0,60	0,25	1,67	0,76	
1863	2,49	1,12	0,70	0,42	0,24	1,57	0,68	
1864	2,58	1,20	0,64	0,49	0,25	1,54	0,79	
1865	2,45	1,23	0,69	0,27	0,27	1,54	0,64	
1866	2,24	1,10	0,57	0,30	0,26	1,35	0,63	
1867	1,94	1,01	0,56	0,11	0,26	1,26	0,42	
1868	2,32	1,11	0,68	0,23	0,30	1,49	0,53	
1869	2,32	1,28	0,57	0,13	0,34	1,49	0,50	
1870	2,14	1,22	0,53	0,10	0,30	1,45	0,39	
1871	1,97	1,12	0,46	0,10	0,28	1,31	0,38	
1872	2,23	1,16	0,73	0,08	0,25	1,48	0,49	

1873	3,43	1,93	0,99	0,26	0,25	2,78	0,40
1874	4,44	2,55	1,32	0,34	0,22	3,78	0,44
1875	4,85	2,81	1,45	0,38	0,22	4,17	0,46
1876	2,47	1,49	0,59	0,19	0,21	1,74	0,53
1877	2,30	1,44	0,49	0,18	0,19	1,76	0,36
1878	2,30	1,45	0,49	0,16	0,20	1,74	0,36
1879	2,05	1,23	0,47	0,14	0,22	1,49	0,34
1880	1,95	1,13	0,45	0,15	0,22	1,37	0,36
1881	1,89	1,12	0,48	0,07	0,22	1,35	0,32
1882	2,06	1,23	0,42	0,20	0,20	1,52	0,34
1883	2,09	1,24	0,44	0,21	0,20	1,48	0,41
1884	1,87	1,16	0,41	0,08	0,22	1,31	0,35
1885	2,15	1,12	0,47	0,32	0,23	1,43	0,48
1886	2,13	1,12	0,47	0,31	0,23	1,44	0,45
1887	2,30	1,27	0,46	0,31	0,26	1,56	0,48
1888	2,11	1,24	0,44	0,19	0,25	1,44	0,41
1889	2,26	1,31	0,47	0,20	0,28	1,45	0,53
1890	2,11	1,21	0,40	0,21	0,29	1,47	0,35
1891	2,08	1,19	0,39	0,22	0,28	1,39	0,41
1892	2,10	1,23	0,40	0,19	0,28	1,40	0,42
1893	2,21	1,15	0,66	0,13	0,28	1,65	0,28
1894	1,98	1,10	0,46	0,14	0,29	1,44	0,26
1895	1,91	1,09	0,38	0,14	0,30	1,35	0,26
1896	1,99	1,08	0,46	0,12	0,33	1,40	0,26
1897	1,96	1,06	0,48	0,11	0,31	1,40	0,24
1898	2,22	1,26	0,56	0,11	0,30	1,66	0,26
1899	2,19	1,30	0,43	0,11	0,34	1,54	0,30
1900	2,02	1,19	0,41	0,10	0,32	1,43	0,27
1901	1,95	1,11	0,40	0,13	0,31	1,37	0,26
1902	2,05	1,15	0,39	0,19	0,32	1,41	0,32

1903	1,90	1,09	0,37	0,14	0,30	1,32	0,28
1904	2,01	1,06	0,48	0,20	0,28	1,44	0,29
1905	1,87	1,07	0,38	0,13	0,29	1,30	0,28
1906	2,02	1,04	0,59	0,11	0,28	1,40	0,35
1907	1,93	1,06	0,42	0,18	0,27	1,39	0,28
1908	1,92	1,04	0,43	0,18	0,27	1,39	0,26
1909	2,46	1,32	0,56	0,33	0,26	1,87	0,32
1910	2,59	1,24	0,57	0,50	0,28	1,80	0,52
1911	2,64	1,27	0,64	0,47	0,27	1,82	0,55
1912	2,71	1,34	0,68	0,42	0,27	1,91	0,53
1913	2,78	1,37	0,76	0,40	0,26	2,01	0,51
1914	3,04	1,49	0,88	0,40	0,27	2,31	0,46
1915	4,12	1,35			0,25	3,46	0,40
1916	2,54	1,18	0,78	0,36	0,22	1,89	0,43
1917	2,42	1,06	0,82	0,33	0,21	1,83	0,38
1918	2,50	1,16	0,91	0,26	0,18	1,98	0,34
1919	2,70	1,15	1,12	0,26	0,17	2,22	0,32
1920	2,68	1,16	1,02	0,36	0,14	2,11	0,43
1921	5,06	1,58	2,67	0,65	0,16	4,28	0,62
1922	3,78	1,44	1,43	0,75	0,16	2,95	0,66
1923	3,39	1,42	1,11	0,68	0,17	2,62	0,60
1924	4,07	1,32	1,74	0,83	0,17	3,11	0,78
1925	3,43	1,26	1,44	0,56	0,17	2,62	0,65
1926	3,46	1,34	1,38	0,54	0,20	2,51	0,74
1927	2,95	1,16	1,17	0,43	0,18	2,21	0,56
1928	3,11	1,19	1,20	0,54	0,19	2,29	0,64
1929	2,81	1,17	0,95	0,52	0,17	1,92	0,72
1930	2,66	1,12	0,96	0,39	0,18	1,85	0,63
1931	2,40	1,08	0,85	0,28	0,19	1,62	0,58
1932	2,43	0,94	0,62	0,35	0,52	1,42	0,49

1933	2,69	1,01	0,70	0,40	0,57	1,57	0,54	
1934	2,56	0,99	0,71	0,30	0,57	1,57	0,42	
1935	2,43	0,93	0,66	0,33	0,52	1,49	0,42	
1936								
1937								
1938								
1939								
1940	6,20				0,21	4,51	0,66	0,82
1941	6,20				0,22	4,53	0,70	0,75
1942	5,58				0,21	4,06	0,69	0,63
1943	9,67				0,25	7,75	0,82	0,85
1944	7,14				0,24	4,79	1,17	0,94
1945	7,34				0,29	5,48	0,91	0,66
1946	4,52				0,23	3,15	0,59	0,54
1947	4,33	1,69	1,62	0,83	0,20	2,74	0,64	0,75
1948	4,23	1,51	1,77	0,75	0,19	2,71	0,65	0,67
1949	4,31	1,69	1,67	0,76	0,19	2,71	0,72	0,68
1950	3,55	1,36	1,43	0,61	0,15	2,18	0,64	0,58
1951	3,11	1,29	1,13	0,55	0,14	1,85	0,65	0,47
1952	3,27	1,32	1,26	0,55	0,13	2,01	0,60	0,52
1953	3,14	1,20	1,29	0,53	0,12	1,93	0,58	0,50
1954	3,08	1,25	1,23	0,50	0,10	1,86	0,60	0,51
1955	2,94	1,16	1,20	0,47	0,12	1,75	0,57	0,50
1956	2,92	1,21	1,11	0,47	0,12	1,71	0,61	0,47
1957	2,69	1,21	0,97	0,39	0,12	1,62	0,51	0,44
1958	2,37	1,13	0,85	0,28	0,11	1,44	0,43	0,38
1959	2,31	1,19	0,75	0,27	0,11	1,41	0,42	0,37
1960	2,37	1,16	0,78	0,29	0,13	1,42	0,41	0,40
1961	2,14	1,02	0,71	0,24	0,17	1,26	0,37	0,34
1962	2,50	1,05	0,97	0,31	0,17	1,49	0,44	0,40

1963	2,32	0,99	0,84	0,32	0,17	1,34	0,44	0,37
1964	2,06	0,95	0,68	0,24	0,19	1,14	0,38	0,36
1965	2,04	0,98	0,59	0,24	0,23	1,09	0,36	0,36
1966	2,05	1,04	0,50	0,24	0,26	1,10	0,34	0,34
1967	2,15	1,08	0,48	0,25	0,35	1,01	0,39	0,40
1968	2,32	1,07	0,51	0,30	0,44	1,16	0,36	0,36
1969	2,20	1,00	0,42	0,28	0,50	0,99	0,35	0,36
1970	2,12	0,96	0,42	0,27	0,47	0,95	0,35	0,35
1971	2,10	0,92	0,41	0,31	0,47	0,93	0,34	0,35
1972	2,03	0,82	0,51	0,29	0,41	0,93	0,36	0,33
1973	1,98	0,86	0,49	0,29	0,34	0,95	0,35	0,35
1974	1,95	0,87	0,47	0,30	0,32	0,93	0,35	0,35
1975	2,03	0,87	0,56	0,29	0,31	0,97	0,36	0,39
1976	2,01	0,87	0,52	0,31	0,31	0,97	0,35	0,38
1977	2,02	0,91	0,47	0,35	0,29			
1978	2,09	0,91	0,48	0,36	0,35			
1979	2,20	0,91	0,47	0,45	0,38			
1980	2,40	0,92	0,51	0,52	0,45			
1981	2,35	0,94	0,57	0,51	0,34			
1982	2,36	0,92	0,62	0,50	0,31			
1983	2,42	0,94	0,63	0,53	0,32			
1984	2,50	0,94	0,66	0,66	0,25			
1985	2,59	1,02	0,74	0,54	0,28			
1986	2,33	0,94	0,58	0,54	0,27			
1987	2,35	0,87	0,51	0,67	0,30			
1988	2,06	0,79	0,45	0,49	0,33			
1989	2,01	0,81	0,43	0,43	0,34			
1990	1,81	0,78	0,42	0,27	0,34			
1991	1,68	0,78	0,35	0,24	0,31			
1992	1,53	0,71	0,28	0,18	0,35			

1993	1,67	0,68	0,39	0,24	0,36
1994	1,48	0,63	0,31	0,19	0,35
1995	1,48	0,66	0,30	0,21	0,32
1996	1,41	0,64	0,26	0,20	0,31
1997	1,37	0,61	0,27	0,20	0,30
1998	1,28	0,59	0,25	0,16	0,28
1999	1,26	0,58	0,26	0,17	0,25
2000	1,25	0,56	0,27	0,18	0,24
2001	1,22	0,54	0,26	0,18	0,23
2002	1,36	0,52	0,27	0,35	0,23
2003	1,27	0,49	0,26	0,31	0,22
2004	1,26	0,47	0,26	0,32	0,21
2005	1,20	0,45	0,26	0,29	0,21
2006	1,22	0,45	0,27	0,30	0,20
2007	1,21	0,45	0,28	0,29	0,19
2008	1,22	0,46	0,28	0,28	0,20
2009	1,20	0,49	0,26	0,24	0,22

Notes: Inaccuracies might be due to rounded values.

Table B 4. Military expenditure in Spain, 1857-1976 (millions of current pesetas)

	Ministry of War			Ministry of Navy			Ministry of Air		
	Personnel	Operations	Investment	Personnel	Operations	Investment	Personnel	Operations	Investment
1857	53,6	27,6	4,4	11,2	10,7	3,0			
1858	50,6	22,6	4,5	12,9	12,9	3,3			
1859	53,7	30,3	11,7	12,1	14,0	8,0			
1860	62,7	76,0	18,5	18,2	13,9	21,4			
1861	55,6	37,5	20,2	20,6	14,7	24,8			
1862	55,0	32,9	16,5	15,2	11,6	20,8			
1863	58,1	34,3	10,9	15,6	12,0	17,0			
1864	62,7	30,0	8,7	16,3	12,2	23,3			
1865	59,1	28,0	8,3	16,8	14,8	8,2			
1866	57,4	25,6	6,2	15,6	12,3	13,8			
1867	56,0	28,2	4,9	15,5	11,6	2,8			
1868	51,1	28,4	9,3	14,9	12,2	4,2			
1869	55,2	21,6	4,9	15,2	9,8	2,4			
1870	58,3	23,4	5,0	14,6	8,2	0,7			
1871	55,9	22,5	5,7	16,0	7,3	0,9			
1872	70,0	33,7	5,1	15,1	20,1	1,1			
1873	132,4	68,2	17,4	18,7	9,3	3,1			
1874	178,3	91,9	23,5	20,1	10,8	3,1			
1875	195,0	100,5	25,7	21,2	11,4	3,2			
1876	95,7	34,1	9,0	23,7	12,7	5,9			
1877	109,3	35,6	10,0	17,8	7,8	5,8			
1878	107,7	34,6	9,9	18,6	8,5	4,0			
1879	86,7	29,2	10,7	17,8	10,4	1,0			

1880	86,6	28,6	8,6	15,2	12,1	5,2
1881	89,3	33,8	4,6	16,1	12,1	2,3
1882	103,9	35,1	12,6	19,5	6,9	7,2
1883	101,4	36,0	13,0	24,2	8,6	8,7
1884	91,8	32,5	3,1	21,8	7,7	4,4
1885	89,6	35,9	12,7	18,7	9,8	18,0
1886	91,9	36,8	13,1	17,9	9,4	17,3
1887	94,3	34,1	11,6	19,8	7,5	16,1
1888	92,2	31,4	12,1	24,0	9,6	5,3
1889	85,9	29,3	11,3	28,7	11,5	6,4
1890	91,5	27,5	11,1	15,6	7,5	7,9
1891	88,2	26,5	10,7	18,6	8,9	9,4
1892	89,7	28,8	6,5	19,9	7,0	10,2
1893	85,5	47,8	10,6	14,8	9,2	0,4
1894	79,1	32,0	11,2	14,5	7,0	0,5
1895	79,5	26,4	10,1	14,5	6,3	2,0
1896	75,1	31,1	9,2	13,9	6,8	0,8
1897	80,8	35,2	9,1	13,2	7,7	0,9
1898	104,1	45,6	9,2	16,1	7,7	1,5
1899	105,1	35,7	9,1	21,5	6,5	1,4
1900	103,3	35,2	8,3	19,1	6,3	2,3
1901	102,6	34,0	11,7	17,5	9,0	1,9
1902	101,4	35,1	10,2	18,3	5,7	9,1
1903	101,2	35,7	10,8	20,1	6,0	4,6
1904	104,9	45,8	18,2	19,5	10,0	5,0
1905	101,7	34,2	11,6	19,3	9,2	3,0
1906	101,7	50,5	9,2	18,4	18,0	3,5
1907	109,0	40,1	18,1	19,1	10,9	3,3
1908	106,2	40,7	18,8	18,1	10,1	2,8
1909	143,0	59,4	26,2	17,7	8,5	13,5

1910	127,6	56,9	25,9	17,7	9,8	32,9
1911	139,6	68,2	22,5	20,1	12,7	36,8
1912	151,9	74,9	18,6	20,2	12,8	35,0
1913	167,3	88,7	21,5	21,1	15,7	33,7
1914	183,0	105,2	29,5	22,2	15,9	25,1
1915	181,3			22,5	15,1	23,3
1916	182,6	114,9	31,5	23,1	20,6	31,3
1917	180,1	127,2	40,4	22,0	28,5	21,7
1918	240,6	174,5	41,1	25,5	34,7	18,4
1919	254,3	247,9	48,2	30,1	31,3	16,9
1920	300,6	254,7	65,0	41,1	45,9	39,6
1921	383,3	662,0	114,7	44,9	59,5	62,2
1922	340,3	349,0	122,2	55,8	42,7	83,7
1923	335,9	276,9	107,9	56,1	29,9	79,9
1924	342,5	438,2	157,5	56,5	86,0	94,0
1925	345,0	373,7	118,4	57,2	88,5	60,9
1926	361,5	345,6	77,6	57,9	83,8	89,4
1927	331,4	348,9	60,6	58,0	43,5	84,9
1928	330,8	341,5	75,2	58,4	50,0	100,3
1929	357,2	268,6	48,9	55,7	64,3	134,7
1930	335,3	279,9	35,3	59,2	59,5	103,5
1931	313,8	218,1	29,8	58,2	75,2	67,8
1932	273,5	164,4	52,9	52,9	48,7	68,2
1933	274,4	185,3	59,7	59,0	47,0	73,1
1934	289,5	215,2	66,5	70,3	41,4	41,5
1935	296,0	202,0	62,2	52,0	44,5	62,4
1936						
1937						
1938						
1939						

1940									
1941									
1942									
1943									
1944									
1945									
1946									
1947	1.683,2	1.436,0	331,0	215,5	321,1	264,3	222,2	274,7	442,9
1948	1.662,1	1.639,1	375,0	199,4	435,0	249,3	193,7	331,0	390,1
1949	1.956,7	1.580,4	407,1	250,8	512,1	289,2	249,8	332,8	407,5
1950	1.936,8	1.581,9	398,7	200,9	659,3	286,7	300,6	332,0	402,5
1951	2.326,8	1.524,6	371,3	258,2	720,5	503,4	355,2	342,5	379,3
1952	2.586,2	2.002,1	469,9	364,7	703,7	439,6	374,7	465,5	471,7
1953	2.489,1	2.278,3	482,8	375,6	767,0	441,6	399,9	444,7	509,5
1954	2.927,9	2.345,6	583,9	472,7	942,8	471,6	518,2	567,5	523,9
1955	2.911,7	2.466,5	556,0	488,3	961,8	480,9	529,5	635,8	543,2
1956	3.780,2	2.750,0	633,5	600,3	1.246,4	733,6	711,4	659,8	609,8
1957	4.376,6	2.843,6	697,0	683,8	1.136,4	674,5	868,0	767,6	541,8
1958	4.895,8	2.966,0	544,7	715,8	1.271,1	542,3	969,0	692,5	521,8
1959	5.472,7	2.597,4	517,3	758,9	1.250,0	563,0	1.009,2	714,0	549,6
1960	5.488,4	2.834,8	687,5	886,5	1.205,9	505,9	979,5	902,6	662,5
1961	5.508,9	2.940,9	739,2	822,6	1.364,0	499,0	1.109,2	898,9	480,1
1962	6.664,6	4.639,3	1.391,7	972,5	2.102,7	641,1	1.261,8	1.505,0	639,7
1963	7.491,1	4.792,3	1.316,6	1.083,3	2.494,4	844,5	1.467,1	1.192,9	1.081,7
1964	7.931,9	4.069,5	1.172,5	1.269,7	2.300,6	798,1	1.793,0	1.481,2	835,6
1965	9.482,3	4.194,7	1.141,7	1.730,5	2.288,6	920,5	2.121,1	1.592,3	1.165,2
1966	11.335,7	4.404,3	1.569,1	2.341,6	2.009,7	991,4	2.664,1	1.485,0	1.217,9
1967	12.163,7	4.129,6	1.417,9	3.109,6	2.466,3	1.226,5	3.590,1	1.792,1	1.690,7
1968	13.670,1	6.455,6	2.442,9	3.323,5	1.676,1	1.940,6	3.851,4	1.848,1	1.383,4
1969	14.475,2	5.885,0	1.563,8	3.560,4	1.686,7	2.426,1	4.138,0	1.640,9	2.295,2

1970	15.163,3	6.252,9	1.992,1	3.835,8	2.143,4	2.532,6	4.534,9	1.953,1	2.230,0
1971	16.485,0	6.920,3	2.683,1	4.201,5	2.409,4	3.006,1	4.998,7	2.035,9	2.898,7
1972	17.558,3	10.003,6	2.999,5	4.624,0	3.372,8	3.761,9	4.639,8	3.506,8	2.816,6
1973	22.163,6	11.924,2	3.782,9	6.105,3	3.258,8	4.622,1	6.073,1	4.557,3	3.226,7
1974	28.032,1	13.055,3	5.106,5	7.485,2	4.156,5	5.677,7	7.591,5	5.825,3	3.977,2
1975	33.488,3	17.692,3	5.494,1	8.799,1	5.949,6	6.561,9	9.006,8	9.033,6	4.944,2
1976	40.328,2	20.223,1	8.141,5	10.754,5	6.801,0	7.451,7	10.824,9	9.788,4	6.391,1

Notes: Inaccuracies might be due to rounded values.

Table B 5. Military expenditure in Spain, 1857-1976 (million of constant pesetas of 1995)

	Ministry of War			Ministry of Navy			Ministry of Air		
	Personnel	Operations	Investment	Personnel	Operations	Investment	Personnel	Operations	Investment
1857	23.348,6	12.030,6	1.935,5	4.869,7	4.667,4	1.316,5			
1858	23.060,3	10.304,8	2.032,2	5.869,9	5.877,2	1.487,4			
1859	24.100,9	13.580,3	5.269,4	5.429,4	6.287,6	3.570,6			
1860	27.388,0	33.189,7	8.086,6	7.967,4	6.060,5	9.335,4			
1861	24.125,4	16.244,8	8.766,1	8.916,2	6.363,6	10.759,4			
1862	23.343,7	13.962,7	7.022,7	6.457,4	4.909,6	8.843,3			
1863	23.952,0	14.153,6	4.497,4	6.430,7	4.949,0	7.022,9			
1864	25.882,7	12.373,0	3.604,9	6.733,7	5.044,9	9.640,1			
1865	25.159,7	11.919,4	3.538,3	7.139,7	6.283,3	3.490,3			
1866	23.990,7	10.708,3	2.570,4	6.519,2	5.145,0	5.758,9			
1867	21.838,4	11.010,7	1.930,3	6.062,6	4.539,8	1.081,5			
1868	21.049,0	11.691,5	3.842,1	6.147,6	5.027,3	1.749,3			
1869	25.452,5	9.963,3	2.262,7	7.018,5	4.516,0	1.119,8			
1870	25.392,3	10.208,3	2.191,3	6.375,7	3.562,8	318,7			
1871	24.467,4	9.836,5	2.509,1	6.996,0	3.185,2	378,2			
1872	30.379,3	14.618,4	2.201,2	6.545,4	8.724,3	495,3			
1873	58.597,7	30.212,1	7.722,5	8.275,9	4.120,4	1.368,7			
1874	74.172,1	38.242,0	9.775,0	8.364,9	4.481,8	1.281,5			
1875	84.091,8	43.356,5	11.082,3	9.140,7	4.897,4	1.400,3			
1876	40.701,5	14.501,1	3.842,9	10.077,5	5.399,7	2.527,6			
1877	46.383,6	15.133,3	4.231,9	7.544,0	3.300,3	2.447,0			
1878	45.016,4	14.450,5	4.146,5	7.788,2	3.571,9	1.684,5			
1879	35.261,5	11.871,2	4.360,7	7.257,7	4.219,2	412,2			

1880	36.116,3	11.931,8	3.594,3	6.350,5	5.061,4	2.170,5
1881	36.360,4	13.743,5	1.876,9	6.569,5	4.913,6	939,5
1882	40.521,3	13.702,9	4.932,1	7.598,7	2.674,1	2.826,2
1883	39.690,3	14.070,0	5.093,4	9.482,8	3.357,6	3.411,6
1884	37.511,9	13.297,7	1.259,5	8.890,6	3.140,8	1.809,6
1885	36.106,1	14.460,9	5.128,1	7.524,3	3.957,1	7.271,5
1886	35.616,9	14.265,0	5.058,6	6.939,4	3.649,5	6.706,2
1887	39.393,3	14.256,9	4.844,6	8.272,0	3.131,5	6.744,8
1888	38.161,2	12.998,7	5.028,6	9.944,6	3.974,4	2.204,9
1889	38.577,0	13.140,4	5.083,4	12.875,5	5.145,8	2.854,8
1890	40.665,8	12.212,8	4.921,8	6.915,6	3.320,4	3.490,8
1891	39.248,4	11.787,2	4.750,3	8.287,1	3.978,9	4.183,1
1892	43.167,9	13.876,9	3.142,9	9.596,2	3.360,5	4.922,7
1893	41.210,3	23.020,7	5.131,3	7.128,8	4.451,6	194,7
1894	39.267,7	15.905,6	5.554,4	7.187,7	3.497,0	270,7
1895	38.725,9	12.861,9	4.902,8	7.047,3	3.078,4	966,3
1896	35.252,1	14.624,8	4.303,8	6.534,9	3.176,1	376,1
1897	36.572,1	15.939,4	4.110,5	5.985,8	3.492,0	400,8
1898	47.211,2	20.688,4	4.170,7	7.292,7	3.488,5	702,1
1899	48.074,2	16.325,5	4.163,6	9.848,7	2.979,2	660,3
1900	45.681,8	15.579,5	3.688,4	8.439,9	2.807,7	1.035,1
1901	46.036,7	15.234,7	5.243,1	7.865,4	4.044,7	868,6
1902	45.687,1	15.823,3	4.598,4	8.262,5	2.560,4	4.101,0
1903	42.773,3	15.072,7	4.551,5	8.485,5	2.543,4	1.953,2
1904	41.821,1	18.255,9	7.270,0	7.777,3	4.005,3	2.005,3
1905	41.501,7	13.942,8	4.733,1	7.895,5	3.768,6	1.237,0
1906	42.953,6	21.312,0	3.905,1	7.776,6	7.605,3	1.496,8
1907	45.494,2	16.732,2	7.560,6	7.984,1	4.549,3	1.359,8
1908	46.285,0	17.750,1	8.196,3	7.906,1	4.407,8	1.222,3
1909	62.096,8	25.786,3	11.394,2	7.670,7	3.707,7	5.840,1

1910	56.199,7	25.056,5	11.417,8	7.813,1	4.303,5	14.485,6
1911	60.690,2	29.632,7	9.777,3	8.723,6	5.533,6	15.989,2
1912	64.279,9	31.700,6	7.887,7	8.564,9	5.412,0	14.825,5
1913	69.038,8	36.594,2	8.888,2	8.713,3	6.486,8	13.908,5
1914	74.312,4	42.733,9	11.968,4	9.035,9	6.453,0	10.210,6
1915	67.268,4			8.355,7	5.616,3	8.648,4
1916	61.278,2	38.574,1	10.586,0	7.755,1	6.921,2	10.520,8
1917	54.759,0	38.673,3	12.274,6	6.679,8	8.657,6	6.603,7
1918	59.648,2	43.275,6	10.188,2	6.332,0	8.595,7	4.566,7
1919	59.136,4	57.642,1	11.218,1	7.007,8	7.277,3	3.919,8
1920	63.599,0	53.901,1	13.747,2	8.689,9	9.714,5	8.383,9
1921	90.868,9	156.958,2	27.188,3	10.638,4	14.101,4	14.744,2
1922	82.956,3	85.084,7	29.800,2	13.599,9	10.407,8	20.396,0
1923	83.227,0	68.616,1	26.727,2	13.912,3	7.396,5	19.803,0
1924	80.205,4	102.616,4	36.869,7	13.226,9	20.128,6	22.019,4
1925	80.555,6	87.242,4	27.640,4	13.352,4	20.654,0	14.216,7
1926	86.264,8	82.472,3	18.520,1	13.814,1	20.007,8	21.344,2
1927	80.131,3	84.378,1	14.653,1	14.015,5	10.528,8	20.531,8
1928	82.689,3	85.353,2	18.808,0	14.585,5	12.486,2	25.069,9
1929	88.341,1	66.427,3	12.100,5	13.765,6	15.893,1	33.322,1
1930	79.675,3	66.507,6	8.379,2	14.066,9	14.146,4	24.598,4
1931	73.930,7	51.395,0	7.030,5	13.710,1	17.711,8	15.986,0
1932	66.116,9	39.750,4	12.791,1	12.798,9	11.785,1	16.490,8
1933	68.098,1	45.987,1	14.812,4	14.652,7	11.669,7	18.129,6
1934	67.515,0	50.201,4	15.511,1	16.401,5	9.662,9	9.668,4
1935	68.294,5	46.612,1	14.348,0	12.000,8	10.270,0	14.400,5
1936						
1937						
1938						
1939						

1940									
1941									
1942									
1943									
1944									
1945									
1946									
1947	110.368,9	94.158,9	21.703,9	14.128,4	21.057,1	17.328,5	14.571,7	18.011,4	29.042,0
1948	101.254,0	99.852,5	22.842,6	12.148,3	26.498,3	15.184,7	11.797,4	20.167,4	23.763,6
1949	111.176,9	89.800,6	23.133,2	14.250,1	29.100,2	16.430,6	14.195,3	18.912,3	23.153,2
1950	91.019,0	74.341,1	18.737,2	9.441,9	30.982,1	13.475,0	14.125,5	15.604,0	18.913,8
1951	93.814,9	61.469,2	14.969,0	10.409,1	29.051,7	20.298,0	14.322,6	13.807,8	15.294,9
1952	102.957,7	79.703,0	18.704,8	14.519,4	28.013,5	17.502,2	14.915,6	18.531,4	18.778,3
1953	91.647,7	83.887,6	17.775,1	13.830,9	28.239,7	16.260,0	14.723,3	16.375,0	18.759,1
1954	99.811,5	79.961,5	19.905,8	16.112,8	32.138,0	16.076,8	17.666,8	19.344,3	17.860,0
1955	94.936,0	80.420,6	18.127,6	15.921,6	31.357,6	15.679,0	17.263,4	20.731,7	17.711,8
1956	107.767,8	78.397,6	18.059,0	17.112,7	35.532,5	20.914,5	20.282,4	18.811,2	17.385,7
1957	110.428,8	71.749,9	17.586,9	17.252,8	28.672,8	17.019,2	21.902,3	19.368,5	13.671,6
1958	110.528,1	66.959,4	12.296,3	16.160,2	28.696,8	12.242,4	21.875,4	15.633,2	11.779,2
1959	117.338,4	55.689,1	11.090,6	16.271,2	26.800,7	12.071,8	21.638,1	15.308,3	11.782,7
1960	115.121,4	59.459,8	14.421,0	18.594,3	25.294,7	10.611,6	20.545,5	18.931,3	13.895,4
1961	113.475,0	60.578,7	15.225,4	16.943,9	28.096,2	10.279,1	22.848,6	18.515,9	9.888,8
1962	130.239,6	90.660,7	27.197,1	19.005,5	41.091,7	12.528,8	24.658,2	29.409,8	12.500,8
1963	135.940,0	86.964,4	23.891,3	19.658,9	45.265,3	15.325,0	26.623,5	21.647,7	19.629,5
1964	134.544,7	69.028,8	19.887,8	21.536,5	39.023,3	13.537,4	30.413,3	25.124,5	14.174,2
1965	147.613,5	65.300,5	17.773,6	26.939,8	35.626,9	14.329,3	33.019,2	24.788,4	18.138,3
1966	164.429,9	63.887,4	22.761,0	33.966,4	29.151,3	14.381,1	38.643,6	21.540,0	17.666,5
1967	166.113,1	56.395,9	19.363,6	42.466,1	33.681,4	16.749,8	49.028,1	24.474,2	23.089,2
1968	177.884,3	84.004,7	31.789,1	43.248,0	21.810,2	25.252,0	50.116,4	24.048,3	18.001,5
1969	182.071,1	74.022,3	19.669,4	44.783,3	21.215,7	30.516,0	52.047,9	20.639,3	28.868,7

1970	178.963,0	73.798,4	23.511,7	45.271,8	25.297,3	29.890,5	53.522,3	23.051,2	26.319,6
1971	179.969,2	75.549,6	29.292,2	45.868,8	26.304,2	32.818,4	54.571,0	22.225,9	31.645,0
1972	177.647,3	101.212,3	30.348,1	46.783,7	34.124,5	38.061,8	46.943,1	35.480,3	28.497,0
1973	200.974,2	108.126,0	34.302,0	55.361,3	29.549,9	41.912,3	55.069,4	41.324,6	29.258,9
1974	222.208,3	103.488,1	40.479,3	59.334,8	32.948,2	45.006,9	60.177,3	46.176,5	31.526,9
1975	230.787,7	121.928,0	37.863,2	60.640,0	41.002,0	45.222,0	62.070,8	62.255,6	34.073,1
1976	240.448,2	120.575,8	48.541,8	64.121,6	40.549,7	44.429,2	64.541,2	58.361,1	38.105,8

Notes: Inaccuracies might be due to rounded values.

Chapter 2. Do democracies spend less on the military? Spain as a long-term case study (1876-2009)

Abstract

This chapter analyses the influence of political regimes on the level and economic composition of military expenditure in Spain over the long run. In contrast with the widely accepted negative relation between democracy and military spending, this chapter suggests that democratic governments established in the late 1970s and early 1980s after Franco's dictatorship had a positive influence on the military burden due to the efforts to reorient the army towards international threats and to involve the armed forces with the newly democratic institutions. Additionally, the analysis of military expenditure allows us to conclude that the international orientation of democratic military policies took place along with financial efforts to obtain a capital-intensive army to confront international military threats.

2.1. Introduction

Public resources devoted to enhancing military capacity have been one of the main spending items of European state budgets throughout most of the modern period. Although intra-European wars became less frequent during the nineteenth century than before, the new kind of military mobilization and the industrialization of war that emerged in that period demanded substantial resources to fund the armies both in times of peace and war. The rising international tension during the last quarter of the 19th century and the subsequent outbreak of the two World Wars increased the financial pressures to keep military spending high. The Cold War, due to the permanent military tension between both blocks, also had a similar effect.[101] Therefore, even though the relative weight of military spending within national budgets has diminished throughout the modern period

[101] For a description of modern military policies, see for instance Rogers (2000).

(mainly in favour of productive and social expenses), it has remained substantial both in absolute and relative terms.[102]

The importance of military spending has been widely recognized by the defence economics literature. Born in the context of the high military expenditure ratios achieved in most western countries during the early Cold War decades, defence economics has analysed the evolution of historical and present military spending figures and their potential determinants in depth. One of its main areas of study has been the effect of political regimes on military spending, in which most studies have found a negative relation between democracies and the military burden (defined as military spending as a share of GDP). This result might be explained by the traditional liberal claims: citizens, when free to choose, prefer educational and social expenditures rather than military spending. Furthermore, the cost of war (both in terms of resources and in terms of human loss) would constrain their wish to get involved in violent conflicts. Consequently, democratic leaders would be concerned about the potential effects of arms races on warfare dynamics. All in all, democracies would constrain their military burden in comparison with non-democratic regimes.

For instance, Sprout and Sprout (1968) point out that the extension of suffrage and increased political participation in Great Britain after the First World War pushed down military spending as a percentage of the total public budget. Other authors, such as Goldsmith (2003) and Fordham and Walker (2005), find similar results when analysing the relationship between democracy and the military burden in large international panel datasets from 1886 to 1989 and from 1816 to 1997 respectively. Interestingly, Fordham and Walker (2005) find more significant results when they analyse only the major powers than when they consider all countries. Similarly, Dunne *et al.* (2003), Dunne and Perlo-Freeman (2003) and Dunne *et al.* (2008) present the same results for different samples of developing countries during the second half of the twentieth century, while Lebovic (2001) observes the same relation between both variables in a

[102] The significant weight of military expenditures within national public budgets has inspired several works about their potential impact on institutional transformations (see, for instance, Dincecco, Federico and Vindigni, 2011) and on economic performance (see, for instance, Pieroni, 2009).

sample of several Latin American countries from 1974 to 1995. Finally, Töngür *et al.* (2013) and Brauner (2014) also obtain the same results when analysing large country samples during the last four decades of the 20th century.

The intensity of democracy has been also discussed in Rota (2011), who analyses the effects of the democratization wave and the subsequent return towards totalitarianism during the period 1880-1938 in a sample of several OECD countries. According to his results, restricted democracies (non-full democracies in Rota's words, in which political participation was based on census suffrage) tended to spend more resources on the military than democracies and autocracies. This is explained in terms of the equilibrium between the high fiscal capacity and low regulatory constraints prevailing in restricted democracies, in contrast with the other two types of political regimes (which do not share both features at the same time). Similarly, in their analysis on dyadic militarized disputes, Baliga, Lucca and Sjöström (2011) argue that limited democracies are more aggressive than other regimes (particularly during the period prior to the Second World War), while dyads (pairs of countries in conflict) consisting of two democracies are the least conflict-ridden ones.

Despite widespread consensus on the negative relation between democracy and military spending, some authors have recently questioned this. For instance, Goldsmith (2007) analyses the spending behaviour of political regimes in times of war and peace in an international panel dataset from 1885 to 1997. The author concludes that democracies bear a lower military burden than other political regimes in times of peace due to the social preferences of voters, and a higher military burden in times of war, due to their higher fiscal capacity and their social legitimacy to go to war. This would be mainly explained by the executive constraints of democratic governments and their willingness to ensure victory in a context of political competition. These results are also in line with Schultz and Weingast (2003), who argue that democratic governments would be more able to borrow more money in times of war than other kinds of governments due to their financial reputation. Therefore, the expected negative relation between democracy and the military burden might be altered by the international military scenario.

From a theoretical perspective, Acemoglu, Ticchi and Vindigni (2010) suggest that non-consolidated democracies may have greater incentives than other oligarchic regimes to make concessions to the military in order to ensure their loyalty. According to these authors, given that transitional democracies cannot commit to not reform the military (as a large army devoted to repression is not needed anymore), they may pay higher wages to the military than oligarchic regimes, in order to avoid *coups d'état*. Additionally, the involvement in international disputes during transitional periods (when the army becomes necessary for national defence) may help democratic institutions to maintain a strong military structure while facilitating the democratic transition. As a consequence, democracies may even sustain higher military expenditures than autocratic regimes during transitional periods.[103]

This chapter aims to contribute to this debate by analyzing Spanish military spending from 1876 to 2009. Spain provides an interesting case to study the political determinants of military spending from a historical perspective. Since the end of the Third Carlist War (1872-1876), Spain has been ruled by several political regimes, including three long-lasting and fairly stable ones: a restricted democracy during the Restoration (1874-1923), the dictatorship of Francisco Franco (1939-1975) and the present democratic regime (1977-nowadays). It therefore provides an interesting scenario to study the military policies of different political regimes and their potential impact on military spending. The dictatorship of Primo de Rivera (1923-1930) and the democratic Second Republic (1931-1939) may also allow us to study the effect of short-lived political regimes on military spending policies.

To this purpose, this chapter analyses a new long-run military expenditure database for Spain that has been estimated according to NATO's methodological criterion. In line with the Alliance's statistics, the new

[103] The core argument used by the authors can also be found in Thompson (1980), according to whom the military-governmental disagreements about what levels of budgetary and material support are necessary for military operations constitute one of the most important sources of tension in civil-military relations. Some authors have analysed the effectiveness of increasing military spending in avoiding *coups d'état* (Powell, 2012; Tusalem, 2014), even though the results remain inconclusive.

dataset provides total military spending estimates, as well as disaggregated figures on military personnel, pensions, investment (military equipment and infrastructure), and operational expenditures. Disaggregated data provide relevant information to understand the evolution of total military expenditure. However, given that most quantitative analyses are based on international panel datasets, which generally only offer aggregate figures, little attention has been paid to the political determinants of military expenditure composition so far. The chapter tries to fill this gap by providing a long-term analysis of the evolution of both aggregate and disaggregated data on military expenditures in Spain.[104]

Despite the relevance of military spending within the Spanish public budget in modern times, long-term analyses of its evolution and main determinants are extremely scarce. To my knowledge, only Gadea and Montañés (2001) have studied this topic from a long-run approach, although they do not provide an analysis of the composition of expenditure.[105] These authors analyse the political and strategic determinants of the total Spanish military spending for the period 1850-1995 through a cointegration analysis.[106] According to them, neither political regimes nor the international military scenario have significantly affected the evolution of military spending since the mid-nineteenth century; by contrast, they consider GDP (once wartimes and other outliers are controlled for) as its main driving force. In this context, this chapter aims to address specifically the effects of political regimes on the evolution of the Spanish military burden by applying a more

[104] Analyses of the distribution of other categories of public expenditure, such as social spending, are common in the literature. See, for instance, Lindert (2004) and Espuelas (2012). For short-term analyses of the determinants of military expenditure composition, see Batchelor *et al.* (2002) and Bove and Cavatorta (2012).

[105] From another point of view, Comín (2004) describes the historical pattern of military spending in comparison with the pattern of civil expenditure. The author argues that fundamental political changes (mainly the shift from an absolute monarchy to a liberal state in the first half of the nineteenth century) and the development of the Welfare State (throughout the twentieth century, and particularly since the mid 1960s) affected the weight of military spending within total public expenditure. However, the author neither analyzes the military burden (which constitutes the object of study of this paper, as in most of the international literature) nor carries out a systematic quantitative analysis.

[106] Their data on military spending come from Comín (1985), which is also used in Comín (2004) and further reviewed in Comín and Díaz (2005).

comprehensive methodological approach on the basis of new disaggregated data.[107]

The chapter proceeds as follows. Sections 2.2 and 2.3 describe the main features of Spanish military policies from the mid-nineteenth century to the present, and the new military spending data that are used in the analysis. Section 2.4 analyses the incidence of political factors on the level and composition of the Spanish military burden, and Section 2.5 concludes.

2.2. Military policies in late-modern Spain

According to the military historian Puell de la Villa (2001), military policy in Spain has experienced two major changes in modern times. The first began with the military reforms initiated in 1844 by Nárvaez, president of the government during the liberal monarchy of Isabel II (1833-1868). The military structure was redefined in order to use the army exclusively to protect the national territory, to defend the external prestige of the monarchy and to guard the state's internal constitution, while the fight against banditry and customs surveillance were transferred entirely to the police and paramilitary corps. The second major shift in the nature of the army did not arrive until the democratic period initiated in the second half of the 1970s. The new defence policy reoriented the army to external missions, while the jurisdiction on internal control was transferred to the police corps. This shift implied a profound restructuring of military forces (including personnel, infrastructure and equipment endowments), in which democratic governments tried to achieve a smaller but better equipped army.

In between these two major transformations, the Spanish army and military policy experienced several other significant (although less fundamental) changes. For instance, the Restoration Regime initiated in 1874, which re-established the Bourbons' monarchy after the Revolutionary Period (1868-1874), led to a military withdrawal based on a neutral policy in the main

[107] In contrast with the lack of long-term analyses, several authors have described the evolution of Spanish military expenditure throughout the recent democratic decades (although without studying its political determinants). See, for instance, Valiño Castro (2001).

international conflicts.[108] It was not until the defeat in the 1898 war against the US (which implied the loss of the last overseas colonies in America and the Pacific, and the destruction of the Spanish navy) that a new expansionist Spanish policy in North Africa took place.[109] The 1909 war in Melilla started a period of discontinuous military interventions that lasted until 1927 with the defeat of the Moroccan insurgency by the Spanish and French armies. This expansionist policy went along with the growth in domestic social conflict (mainly led by the workers' movement and peripheral nationalist claims) during the interwar period, and the beginning of the corporatist interventions by the army (clearly seen in the so-called *Juntas de Defensa*), which ended in 1923 with the establishment of Primo de Rivera's military dictatorship.[110]

In line with these shifts in external policy, the first decades of the twentieth century were also characterized by an encouragement of the national military industry.[111] It was mostly based on the modernization plan implemented by the Minister of the Navy, José Ferrándiz, in 1907 (designed to modernize the navy yards, construct new warships and acquire new weapons and equipments), the Royal Order passed in 1926 (on extraordinary works and services on infrastructure, equipment and general material costs for the three armies) and the acquisition of military airplanes during the late 1910s and the 1920s (San Román, 1999). This industrial policy would be reinforced in the 1940s and the 1950s during the autarkic period of Franco's dictatorship (1939-1975).

The Second Republic (1931-1939) established after Primo de Rivera's dictatorship (1923-1930) tried to change the former military policies by reducing the presence of the military in domestic conflicts and establishing a new neutral and pacifist international policy (especially during the first two years of left-wing governments). Its major success was the Spanish participation in the International Conference for Disarmament and the creation of the Group of Eight in 1932. The first governments of the Republic also tried to transform the military budget in favour of better

[108] López Garrido (1982), Ballbé (1983), Cardona (1983). The list of wars fought by Spain from 1876 to 2009 is provided in Annex C.
[109] Torre del Río (2003).
[110] Cardona (1983), Puell de la Villa (2001).
[111] Velarde (2000).

military equipment and endowments (a consortium of military industries was even established in 1932 in order to promote national military production)[112], while maintaining the most ambitious plan to reduce the number of chiefs and officers.[113] However, the conservative governments established after the 1934 election reversed most of these new policies in favour of the former military model.[114]

The establishment of the dictatorship of Francisco Franco after the military uprising against the Republican government (and the subsequent Civil War of 1936-1939) gave way again to an army mainly focused on internal threats, except for the early attempts to become involved in the Second World War together with the Axis powers.[115] However, despite this continuity in the army's domestic orientation, the dictatorship changed the character of the military policy. Firstly, the army handed over the majority of domestic control functions to the police and paramilitary corps, keeping only the last resort actions (such as fighting the guerrillas in the mountains, especially until 1947) and military trials on public order turmoil.[116] Secondly, the military agreement with the United States in 1953 (renewed periodically thereafter) granted technical assistance and military and economic aid to Spain in exchange for the establishment of several US military bases in the Iberian Peninsula (due to the geostrategic position of Spain in the Mediterranean Sea in the context of the Cold War). Therefore, the domestic orientation of the army has since then been associated with the security provided by the United States.[117]

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[112] The consortium was finally abolished in 1934 after the riots in Asturias. See Cardona (1983).

[113] According to Jordana and Ramió's (2005) data, the number of chiefs and officers was reduced from 17,121 in 1931 to 9,863 in 1932. As described by Cardona (1983), the plan was designed to encourage the voluntary retirement of military chiefs and officers by guaranteeing their complete salary during their retirement period. Although this reform significantly reduced the officer corps, it also increased the public duties on military pensions.

[114] Cardona (1983), Puell de la Villa (2000), Pereira (2003).

[115] Olmeda (1988), Cardona (2008).

[116] According to Cardona (2008), this shift aimed to reduce the *de facto* power of the army and to avoid the appearance of any alternative military leadership.

[117] In line with these pacts, Spain joined the United Nations in 1955, the International Labour Organization in 1956 and several international institutions (such as the International Monetary Fund, the World Bank and the Organization for European Economic Cooperation) in 1958. See Pereira (2003) and Viñas (2010).

As has been said before, the democratic transition of the second half of the 1970s involved a profound transformation of the military policy. The new democratic governments reoriented the army to external missions and reinforced the military agreement with western countries, mainly through Spain's membership of the North Atlantic Treaty Organization (NATO) in 1982 (although incorporation to its military structure had to wait until the end of the 1990s) and in the Western European Union (WEU) in 1984 (and as a full right member in 1990).[118] This recent international orientation went along with the acquisition of new military equipment and the modernization of military forces. In this regard, although some preliminary efforts to modernise the army had already been undertaken in the late 1960s, it was the new democratic regime which provided the major impulse to these reforms. According to Gómez Castañeda (1985), it was not until 1965 when the dictatorship passed the first legislation to programme the acquisition and construction of new military equipment (Law 85/1965), and it was only in 1971 that an eight-year plan for investments, maintenance and reposition of material and major equipment (Law 32/1971) was designed.[119] However, due to the high inflation rates of the mid-1970s (which reduced the purchasing power of the 1971 program), major investments in new equipment had to be supported by Royal Order 5/1977 and several subsequent laws during the early democratic period.[120]

These military policies were accompanied by several plans aimed at reorganizing the military structure and reducing military personnel (particularly in the land forces), such as Law 20/1981, which reduced the number of officers, the General Plan for the Modernization of the Army (META, Spanish acronym) in 1983, the Plan for the Reorganization of the

[118] Puell de la Villa (2001), Pereira (2003). The Spanish army started participating in international military missions in 1989 with the UN intervention in Angola. Since then, more than 100,000 Spanish soldiers have been mobilized in about 67 missions under the structure of international organizations such as the UN, the EU, NATO, the WEU, the OSCE, or specific international coalitions. See Melero Alonso (2012).

[119] Before this period, most new equipment arrived via international aid from the United States thanks to the pacts signed in 1953 by both countries.

[120] Puell de la Villa (2001), García Alonso (2007). According to Pérez Munielo (2009), the plans on new military equipment that were included in those laws were fairly accomplished until 1990; since then, final investments were much lower than the planned ones.

Army (RETO) in 1990, the Plan for the New Organization of the Army (NORTE) in 1994, and more recently, the reorganization of the army set out in Royal Order 416/2006. This reorganization took place in line with the objective of professionalization of the army; in this regard, Law 17/1999 suspended the mandatory military service leading, in 2002, to an army fully composed by professional soldiers. These plans were initially accompanied by increases in voluntary recruitment (in order to compensate for the reduction in the number of conscription months) and growing retributions to military personnel, which finally led to Royal Order 359/89 to put military retributions at the same level as civil ones.[121]

According to Narcís Serra, Minister of Defence from 1982 to 1991, these modernization policies (including the new investments in military equipment and the external reorientation of the army) and the aforementioned increases in military retributions were both part of a "military transition to democracy" and the subsequent military democratic consolidation. These processes would have taken place from 1975 to 1989[122] and were aimed at more competitive armed forces and involving them with the newly democratic institutions, in order to avoid military attempts to restore the former dictatorial regime (Serra, 2008). In this regard, Agüero (1995) argues that the army's professional decay during Franco's regime gave civil elites the opportunity to link military modernization with political democratization. Similarly, Puell de la Villa (2012) argues that political reform was seen as a precondition for a substantial military change (particularly after the failed attempts to reform the army in the late 1960s and early 1970s) by those high-ranking officers that aimed to transform the armed forces in the same direction than those of the other Western countries.[123]

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[121] Puell de la Villa (2000), Pérez Munielo (2009).

[122] The "military transition" itself would have taken place from 1975 to 1982, while the process of military democratic consolidation would unfold from 1982 to 1989. See Barrios Ramos (2006) and Serra (2008).

[123] Many other officers, however, took hostile attitudes towards the political reform. According to Puell de la Villa (2012), those 10.000 generals, chiefs and officers that had fought with Franco in the Spanish Civil War and still remained in the army (from a total of 25.000 officers with capacity to command of troops) shared a loyal and unwavering support to the *Caudillo*.

2.3. The Spanish military burden (1876-2009)

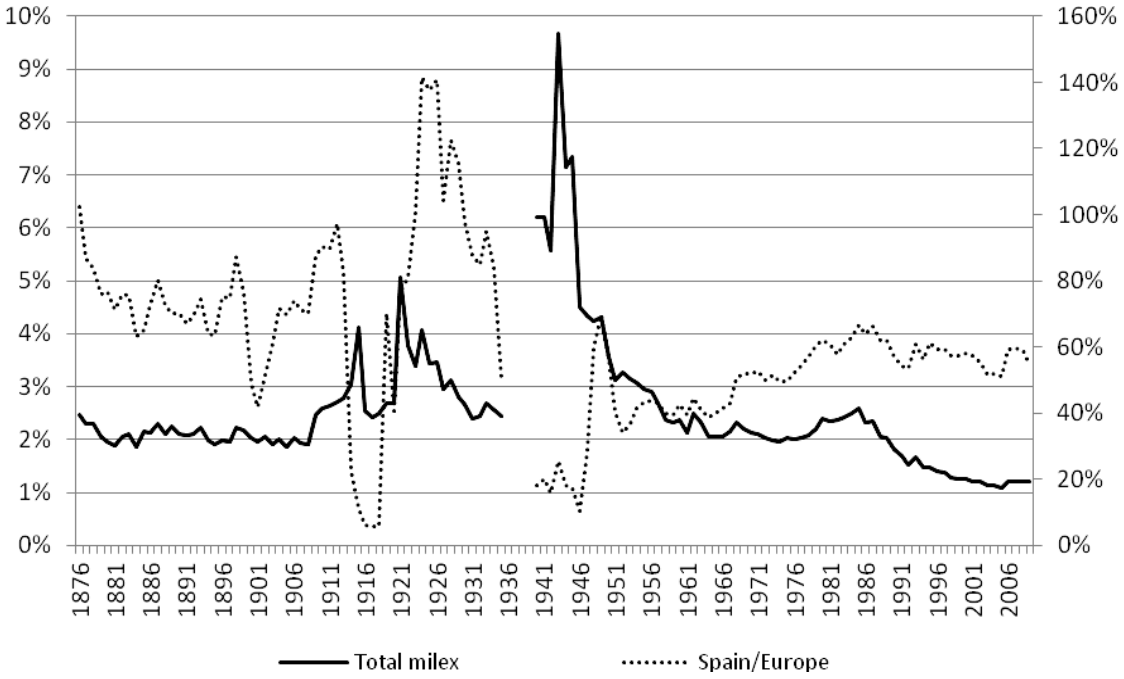
The analyses of the political determinants of the military burden from 1876 to 2009 that are presented in the next section are based on the new dataset on military spending in Spain presented in chapter 1. As has been said, the series have been elaborated following NATO's methodological criterion, which accounts for those payments made by a national government specifically to meet the needs of its armed forces or those of allies. The analysis starts with the establishment of the Restoration regime (1874-1923), although it excludes its two first years, as they were extraordinarily distorted by the end of the formerly ongoing Third Carlist War (1872-1876). Although data on Spanish military spending for some previous decades are available, homogeneous data on European military expenditure based on the same methodological criterion as mine (which is needed for the analysis) does not start until the 1870s in Hobson (1993).

Figure 2.1 presents the evolution of Spanish military spending as a percentage of GDP (military burden) from 1876 to 2009 (solid line). As has been mentioned in the previous chapter, the series shows some severe fluctuations during the period before the Civil War of 1936-39, such as those of the early 1910s and 1920s, in which the military burden reached levels close to 5 per cent of GDP. After the war, the military burden reached its historical maximum near 10 per cent of GDP, which was followed by a rapid decrease during the 1950s and the 1960s. The lowest ratios of the whole period were reached in the 1990s and the 2000s, when they stabilised at a level well below 2 per cent of GDP.

The figure additionally shows the Spanish military burden compared with the average burden in a sample of European countries (France, Germany, Italy, Portugal and United Kingdom). As can be seen in the graph, the two world wars were associated with very sharp decreases in the Spanish relative effort, reaching less than 20 per cent of the European average. By contrast, the 1920s appear to be the only period with higher ratios in Spain than in the sample of European countries (except for the higher ratio also achieved in 1876). Finally, a process of convergence of Spain with the European average started in 1950 (mainly due to the gradual reduction of the military burden in the European countries), although it was interrupted

in the late 1980s, when the Spanish military burden was ca. 75 per cent of the European average.

Figure 2.1. Spanish military spending/GDP (left axis) and Spanish military burden/European average military burden (right axis) (1876-2009)

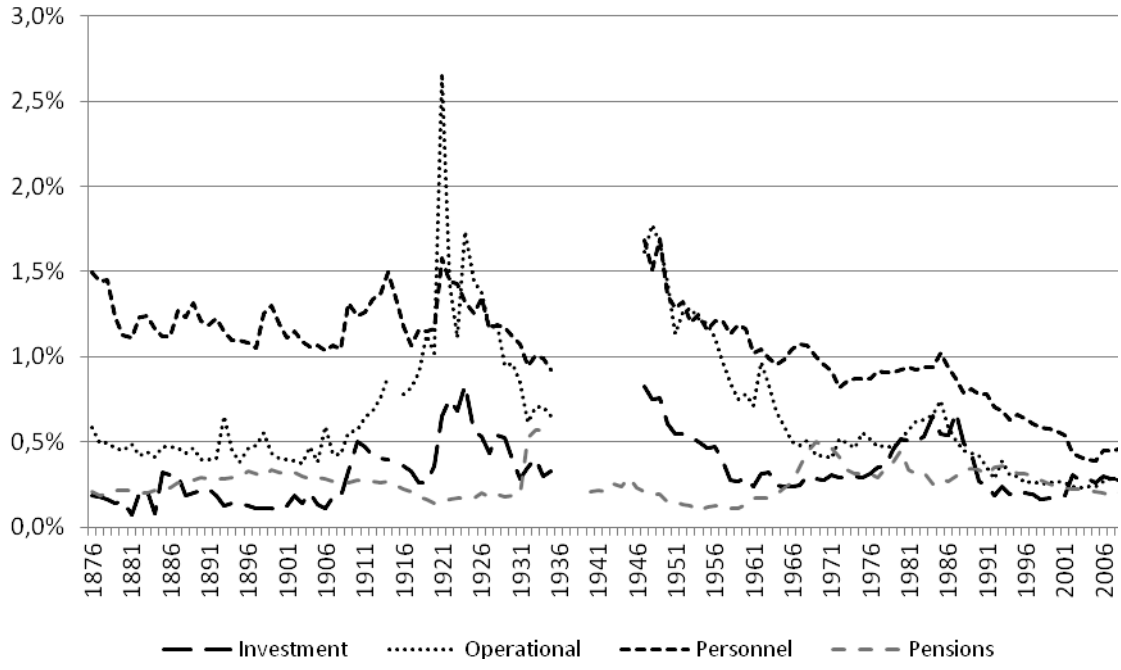


Sources: for Spanish military burden, my own estimates from 1876 to 1986; from 1987 on, NATO data (http://www.nato.int). Military spending data for the sample of European countries (except for Portugal) come from Hobson (1993) for the period 1876-1913, from the Correlates of War Project for 1914-1948 and from the NATO database for 1949-2009. Data for Portugal come from Valério (2001) for 1876-1948 and from the NATO database for 1949-2009. The figures on nominal GDP and exchange rates for the period 1876-1948 are from the databases of Global Finance (http://eh.net/databases/Finance/), Historical National Accounts (http://www.ggdc.net/databases/hna.htm), Measuring Worth (http://www.measuringworth.com/) and Jones-Obstfeld (http://www.nber.org/databases/jones-obstfeld/).
Notes: Spanish military expenditure could not be estimated for the Civil War period (1936-39) due to the lack of available data. Concerning the sample of European countries, there are no data for France in 1944-1949, Italy in 1942-1950 and Germany in 1914-1924 and 1939-1952. In those cases (all of them related to wartimes and post-war periods), the European average is estimated on the basis of the available data.

As has been indicated in chapter 1, the new dataset provides not only total military spending estimates but also its economic disaggregation among

personnel (payments to active personnel and pensions), military investment (major equipment and infrastructure costs) and operational expenditures (which includes other goods and services such as food, clothes, fuel, munitions, maintenance of equipment, etc.). My series additionally provide another further disaggregation by recording the pensions received by the militaries and their families, which are usually included by NATO within the personnel budget, in a separate category. Figure 2.2 presents the evolution of the different categories of Spanish military spending as a percentage of GDP for the period 1876-2009. It clearly shows the prominence of personnel expenses for most of the period, only approached (or even surpassed) by operational and investment expenditures in periods with high spending volatility.

Figure 2.2. Economic disaggregation of Spanish military spending/GDP (1876-2009)



Sources: from 1876 to 1986, my own estimates. From 1987 on, NATO data (http://www.nato.int).

Notes: military expenditure composition could not be estimated for the Civil War period (1936-39) due to the lack of available data. Additionally, figures on personnel, operational and investment expenditures could not be estimated for the period 1940-46 due to the lack of enough information in the original sources; data for operational and investment expenditures could not be estimated for 1915 for the same reason.

2.4. The explanatory factors of the evolution of Spanish military spending (1876-2009)

This section presents two different analyses aimed at studying whether political regimes significantly determined the patterns of military expenditure in Spain over the long run. Firstly, I run a breaking point test based on Ben-David and Papell (2000) and Vogelsang (1997) for both total and disaggregated military burden series (military spending as a share of GDP). This test identifies the main statistical shifts in the series (regardless of whether a unit root is present) and allows us to test whether political changes match the major shifts in the military spending patterns throughout the period. Secondly, I carry out a regression analysis for every military spending series to find out the aggregated effect of each political regime on Spanish military burden when controlling for the influence of other potentially conditioning factors (apart from political changes).

2.4.1. Structural breaks in Spanish military spending (1876-2009)

Following Ben-David and Papell (2000), the breaking points analysis is based on an extension of the $SupF_t$ test developed by Vogelsang (1997). The Vogelsang test for linear trending data involves estimating the following regression for every possible break point:

$$y_t = \mu + \theta_1 DU_{1t} + \beta t + \gamma_1 DT_{1t} + \sum_{j=1}^{k} c_j y_{t-j} + \varepsilon_t \qquad (1)$$

where $DU_{1t} = 1$ if $t > T_{B1}$, 0 otherwise, and $DT_{1t} = t - T_{B1}$ if $t > T_{B1}$, 0 otherwise, being T_{B1} every possible breaking point in the series. Equation (1) is estimated sequentially for each possible break year. The $SupF_t$ statistic is the maximum, over all possible trend breaks, of twice the standard *F*-statistic for testing $\theta_1 = \gamma_1 = 0$. The null hypothesis of no structural break is rejected if $SupF_t$ is greater than the critical value. For each choice of T_{B1}, the value of the lag length *k* is selected according to the criteria suggested by Campbell and Perron (1991). Following Ben-David and Papell (2000), I have set the upper bound of k at 8 and the criterion for significance of the t-statistic on the last lag has been set at 1.60.

Ben-David and Papell (2000) extended this procedure to allow for multiple breaking points. The equation to be estimated is the same as equation (1) but allowing for additional dummy variables:

$$y_t = \mu + \sum_{i=1}^{m} \theta_i DU_{it} + \beta t + \sum_{i=1}^{m} \gamma_i DT_{it} + \sum_{j=1}^{k} c_j y_{t-j} + e_t \quad (2)$$

where *m* is the number of breaking points. When *m* = 1, the expression is the same as the Vogelsang equation. When *m* = 2 the procedure becomes a test of one-break null against a two-break alternative. This time, $DU_{2t} = 1$ if $t > T_{B2}$, 0 otherwise, and $DT_{2t} = t\text{-}T_{B2}$ if $t > T_{B2}$, 0 otherwise, and T_{B1} is fixed by the year chosen by estimation of the one-break models. Equation (2) is estimated sequentially for each potential break year (T_{B2}), and the $SupF_t$ statistic is calculated as described above. Critical values have been taken from Ben-David and Papell (2000), who account for up to five breaks with 120 observations.[124] As usual in stability tests, the first and last years of the sample have not been included in the testing procedure. Here I have limited the sample to $0.1T < T_{Bm} < 0.9T$, with a required separation between break dates of at least five years. Following Ben-David and Papell (2000), the significance of the individual coefficients of every breaking point are also reported. Positive signs on coefficients θ reflect positive changes in the levels of the series, while positive signs on coefficients γ reflect positive changes in the slope of the series (and the opposite with negative signs).

Table 2.1 shows the results. The series of total military spending and of personnel and operational expenditures have five breaking points, most of them common across different series, while investment and pension expenditures do not show any significant break. Before the Civil War (1936-1939), all structural changes seem to be related with the long-lasting Moroccan war (1909-1927) and the modernization policies prevailing since the late 1900s. More precisely, the beginning of the war and the intensification of the military operations in the Moroccan Rif region fairly correspond to the breaking points found in 1908 and in 1920 (most of them positive in levels) in both the total military burden and the personnel and operational expenditures. In the case of the 1920 break, the negative

[124] Pons and Tirado (2004), who estimated the critical values for a sample of 125 observations, obtained almost identical values.

coefficients γ capture the beginning of the decreasing path of spending during the last stages of the war.

Table 2. 1. Sequential trend break tests (1876 - 2009)[a]

	Total military burden	*Personnel*	*Operational*	*Spain/Europe*
Trend breaks				
T_{B1}	1935 $^{L+,S+}$	1935 $^{L+,S-}$	1920 $^{L+,S-}$	1934 $^{L-,S+}$
T_{B2}	1945 $^{L-,S-}$	1920 $^{L+,S-}$	1935 $^{L+,S+}$	1913 $^{L-,S+}$
T_{B3}	1920 $^{L+,S-}$	1951 $^{S+}$	1966 $^{L-S+}$	1923 $^{L+,S-}$
T_{B4}	1908 $^{L+}$	1908 $^{L+}$	1908 $^{S+}$	1899 $^{L-,S+}$
T_{B5}	1978 $^{L+}$	1978 $^{L+,S-}$	1986 $^{L-,S-}$	1977 $^{L+,S-}$
SupF statistics[b]				
T_{B1}	21.68**	28.92***	22.92***	18.5**
T_{B2}	114.34***	28.88***	27.00***	52.68***
T_{B3}	39.62***	27.78***	80.02***	29.00***
T_{B4}	13.84*	22.82***	36.42***	19.90**
T_{B5}	13.82*	25.74***	35.10***	13.14*
Coefficients[c]				
μ	0.0206	0.0134	0.0068	0.7091
	(7.93)	(9.87)	(8.18)	(7.28)
β		-0.0000		
		(-4.48)		
θ_1	0.0391	0.0073	0.0128	-0.5861
	(10.31)	(10.26)	(11.79)	(-7.53)
γ_1	0.0056	-0.0003	-0.0019	0.0201
	(4.50)	(-2.22)	(-14.58)	(1.92)
θ_2	-0.0518	0.0030	0.0149	-0.8125
	(-10.50)	(6.90)	(14.02)	(-10.04)
γ_2	-0.0046	-0.0003	0.0005	0.0467
	(-3.77)	(-7.10)	(5.98)	(4.03)
θ_3	0.0154		-0.0019	0.3552
	(6.53)		(-2.46)	(3.48)
γ_3	-0.0014	0.0005	0.0008	-0.0908
	(-6.03)	(3.62)	(11.86)	(-5.61)
θ_4	0.0087	0.0022		-0.2324
	(4.19)	(5.81)		(-3.95)
γ_4			0.0007	0.0254
			(7.67)	(3.76)
θ_5	0.0072	0.0019	-0.0029	0.1196

	(3.64)	(4.78)	(-4.04)	(3.01)
γ_5		-0.0000	-0.0002	-0.0045
		(-2.86)	(-4.66)	(-2.33)

Notes: a) L+(-) refers to positive (negative) changes in level; S+(-) refers to positive (negative) changes in slope, b) *** Rejection of the null hypothesis at the 1% significance level; ** Rejection of the null hypothesis at the 5% significance level; * Rejection of the null hypothesis at the 10% significance level, c) t-statistics in parenthesis.
Sources: see text.

These results suggest that neither the establishment of Primo de Rivera's dictatorship (1923-1930) nor the advent of the Second Republic (1931-1939) can explain the major structural changes of the Spanish military spending series. As has been stated in previous historical studies, Primo de Rivera did not set up many significant changes in the army, but carried on the war of Morocco (intensifying operations in 1924) and the modernization plans initiated during the previous decade (particularly by increasing the aeronautical endowments). On the other hand, the reforms initiated by the first left-wing government of the 2nd Republic were rapidly interrupted after the political shift of the 1933 elections; additionally, the first democratic governments partially sustained the modernization efforts initiated well before, in the late 1900s. Therefore, the 2nd Republic had similar military burden ratios to those achieved during the late 1920s. The short-lived nature of these two political regimes, as well as the troubled international atmosphere, might explain the observed continuities in the military policies and the lack of structural changes in the series.

The next structural changes of Spanish military spending series, in 1935 and 1945, are the last ones directly related to wartimes. The former, which affects the total military burden and the two budgetary items, reflects the impact of the Spanish Civil War (1936-1939) and the immediate post-war years. Although military spending is not available for the four years of conflict, the positive sign on the level of the break reveals the high military resources demanded by the war. Additionally, the positive result on the slope seems to be the result of Spanish participation in the Second World War and the violent domestic opposition to the new dictatorial regime.[125]

[125] This effect cannot be observed in the different budgetary items due to lack of disaggregated data for 1940-46.

On the other hand, the 1945 break in the total military burden (with negative signs on both the level and the slope) marks the beginning of a long-lasting decreasing path, most likely due to the end of the Second World War and the weakening of the violent domestic turmoil.

In contrast to the former war-led results, the 1978 break in total military burden coincides approximately with the end of Franco's dictatorship and the establishment of the present democratic regime. It marks the beginning of a short-lived increase in the ratio levels (from 1978 to the second half of the 1980s) and a subsequent long-lasting decreasing trend (leading to the minimum levels of the whole period under study). This military spending pattern seems partially led by the operational expenditures series (although their initial increase in levels started earlier, in 1966, most likely due to the modernization plans designed in 1965 and extended afterwards). Similarly, personnel expenditures gradually decreased since the end of the 1970s, after a previous (slight) increase in levels. These patterns might be the result of the aforementioned plans of the transitional governments to achieve a better equipped army and to increase military retributions, which may have initially mitigated the democratic pressure to push down the military burden.

In summary, wars seem to explain the main military burden structural changes, particularly until the mid-1940s. On the other hand, the change in the political regime in the 1970s would help to explain some of the main structural changes of military expenditure afterwards. In contrast to these results, the test does not find any significant break on investment expenditures and military pensions, showing the lack of significant shifts in their long-term evolution (regardless of non-permanent changes in both series). In any case, beyond the structural changes, Figure 2.2 shows that investment expenditures have experienced several short-lived shocks that seem largely related with the formerly mentioned historical events. Firstly, both the Moroccan wartime and the early years of Franco's regime also show high investment burden levels. The Moroccan wartime investment levels might also be related to the modernization plans initiated in 1907 by the Minister of the Navy, José Ferrándiz, and subsequently reinforced by the Royal Order of 1926 and the subsequent military aircraft acquisitions. Secondly, the period from the second half of the 1970s to the late 1980s

show again a short-lived increase in investment levels (even higher than those of operational and personnel expenditures), which suggests that investment expenditures may also have led the contemporary increase in the total military burden. As has been said before, this seems to be the result of the efforts to modernize the army during the transition to democracy.

The fourth column of Table 2.1 reinforces these conclusions by showing the results found for the series of Spanish military burden expressed as a percentage of the European average. The 1913 and 1934 breaks (both negative in levels) seem to reflect the outbreak of the two World Wars and the increasing international military tension prevailing during the second half of the 1930s, which led to an enormous divergence between the Spanish military burden and that of the sample of European countries.[126] By contrast, the 1923 break (positive in levels) reflects the increasing military effort made by Spain in a context of international disarmament. This suggests that the increasing Spanish ratios during the 1920s were not driven by international military tension but by other domestic factors, such as the military intervention in Morocco in 1924. Finally, the last break in 1977 (also positive in levels) suggests, once more, that the short-term increase during the transition from dictatorship to democracy was not driven by international military tensions but by domestic factors, such as the aforementioned plans of the transitional governments to modernize the army and to increase military retributions.

2.4.2. The explanatory factors of Spanish military spending (1876-2009)

The breaking point test only provides preliminary evidence on the impact (or lack thereof) of political changes on Spanish military spending. A more comprehensive analysis of this issue would be provided by the estimation of the following equation:

$$MB_t = \alpha_0 + \alpha_1 POLITICAL_t + \alpha_2 Z_t + \varepsilon_t \qquad (3)$$

[126] The first break found in 1899 might be related to the Second Anglo-Boer War (1899-1902), as the British military burden accounts for a significant part of the European average.

where MB_t is the military burden in time t, $POLITICAL_t$ is the kind of political regime in time t and Z_t stands for a group of control variables usually included in the analysis of military expenditure determinants. This analysis can also be carried out for each of the military spending components, as in equation 4:

$$ECONCOMP_t = \alpha_0 + \alpha_1 POLITICAL_t + \alpha_2 Z_t + \varepsilon_t \quad (4)$$

where $ECONCOMP_t$ is each component of the military expenditure (personnel, pensions, investment and operational expenditures) in time t, expressed as a percentage of GDP and as a percentage of total military spending.

According to Collier and Adcock (1999) there is not a single correct way to define and characterize political regimes, so every research project needs to choose the empirical strategy that best fits its analytical purposes. Given that the main goal of this chapter is to explore the spending behaviour of different political regimes, I define the variable $POLITICAL_t$ following the "sharper differentiation" strategy defined by Collier and Adcock (1999), which accounts for different categories that group together similar cases. This approach has at least two major benefits. Firstly, it allows for a certain gradation beyond the all-or-nothing dichotomous variables, which has been proved relevant in several previous analyses.[127] Secondly, it also prevents the problems of inference associated with continuous variables.[128] Therefore, while acknowledging the valuable possibilities offered by continuous and dichotomous measures of democracy to the study of certain issues, a "sharper differentiation" strategy seems to be the most appropriate option for our purposes.

Given that there are no datasets from 1876 to 2009 based on the aforementioned approach, the Spanish political regimes are categorized as

[127] See Rota (2011) for the impact of non-full democracies on military burden. Other authors have also assessed a non-linear relation between democratization and conflicts. See Hegre (2014) for a summary of the literature.

[128] For instance, a continuous variable of democracy lacks enough information to disentangle whether a significant relationship with another variable is driven by differences between political regimes or within political regimes (Boix, Miller and Rossato, 2012).

follows. Firstly, democratic regimes are identified following Boix, Miller and Rosato (2012), which provide a long-term database on a dichotomous measure of democracy. The authors define democracies as those countries that meet high standards on political contestation (decisions to govern the state are taken through free and fair voting procedures) and participation (with a minimal level of suffrage). According to this criterion, the democracy dummy variable accounts for the Second Republic (from 1931 to 1936) and the current democracy (from 1977 to the present-day). On the other hand, the residual that remains in Boix, Miller and Rosato (2012) is further divided between those regimes that do not allow for multiparty national elections and those that allow for them but do not reach the Boix, Miller and Rosato's democratic standards.[129] The first category includes the Primo de Rivera's dictatorship, from 1923 to 1930, and Franco's dictatorship from 1939 to 1975 (called here "dictatorships", as generally referred by most historians). The second category accounts for the Restoration regime (1876-1923), which allowed for some degree of political contestation, but retained corrupted voting procedures and restricted suffrage. The dummy variable on this second type of regime (here called "restricted democracy") stays as the reference category for the analysis, so the coefficients of the dummy variables must be interpreted relative to this category.

As for the control variables (Z_t in equations 3 and 4), the explanatory factors of military spending usually considered by the literature are related with the outbreak of wars, the international military scenario and the economic environment. To account for the former, I use a dummy variable for the main wars in the Moroccan protectorate (the military contingencies in Morocco from 1909 to 1927 and the Ifni war in 1957) and the military intervention in European conflicts (Spanish participation in the Second World War).[130] As expected, all studies indicate a strong correlation

[129] This classification is inspired by the Wahman, Teorell and Hadenius (2013) theoretical approach; these authors also differentiate between non-democracies with multiparty national elections (what they call "multiparty authoritarian regimes") and other categories of authoritarian regimes that do not allow multiparty national elections.

[130] Although Spain only participated in the Second World War with a military division from 1941 to 1943 (though some of their soldiers remained in the front line until 1944), there was high military tension on the peninsular frontiers until the end of the conflict. For this reason, the war variable includes the whole Second World War. On the other hand, the dummy variable does not account for the late 19th century colonial wars as they

between wars and military spending, both for civil and international contests.[131]

Regarding the international scenario, the military threats posed by potential external enemies and the effects of military alliances are the most frequent variables in the literature. In the case of external threats, the Security Network theory suggests that military spending is affected by the spending behaviour of both the neighbouring countries and other countries of relevance in the international scenario.[132] As some of the past and present threats for European countries come from non-formal groups and cannot be measured (for instance, in the case of Spain, insurgency groups in the overseas colonies and in the Morocco protectorate represented some of the main threats during the second half of the nineteenth and early twentieth century), I use military spending data on the aforementioned sample of European countries in order to capture the systemic risk in the international scenario.

On the other hand, the incidence of military alliances (usually defined as a group of nations bound to provide protection to all members from aggression by common enemies) is generally included in order to capture either potential free-riding scenarios or social pressures to push up the members' military spending.[133] To control for these potential effects, I use the military burden of the North Atlantic Treaty Organization countries from 1982 to nowadays, as well as a dummy variable for the alliance with the United States since 1953. In the first case, I use the military burden of the allied countries in order to capture the influence of the allied military policies in every year. On the other hand, regarding the US alliance, I use a straightforward dummy variable in order to control for the mere presence of the American support. In this case, the annual variation of the allied military strength was much less important than the support itself received by the superpower.

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were not financed by the Spanish Treasury but by the Cuban Treasury (and therefore do not appear in the series).

[131] See, among others, Goldsmith (2003) and Dunne *et al.* (2003).

[132] See, for instance, Rosh (1988), Ades and Chua (1997) and Dunne and Smith (2007).

[133] For a comprehensive review of alliances and military spending, see Murdoch (1995). Among the most recent analyses, see Eloranta (2007) and Whitten and Williams (2011).

Among economic factors, income level and openness are often included in this kind of study, although the results on the incidence of these factors are not conclusive. Some authors suggest a negative relation between income per capita and the military burden, due to a trade-off with other more productive expenditures; by contrast, others suggest a positive relation on the basis of the neorealist theory. According to the latter, the ruling anarchy in the international arena forces states to devote the maximum available resources to national security (implying that countries can spend more resources as a share of GDP when income per capita is higher).[134] Similarly, the expected effect of economic openness is not clear. A negative correlation between openness and military spending would be associated to the higher benefits that politicians can obtain from economic competition, rather than from military conflict.[135] Alternatively, the neorealist theory argues that deeper contacts between states can encourage conflict and, therefore, boost military spending.[136] In line with this literature, I include both GDP per capita and the sum of exports and imports in terms of GDP as control variables.

Beyond these commonly used variables, I also include in the analysis the level of internal military repression exerted annually by the Spanish government as a control variable. This variable is aimed at capturing the effects of domestic turbulences in public order throughout the whole period; this is especially important in the Spanish case, as the army has been recurrently in charge of repression tasks, together with the police and the paramilitary corps. This factor is approached through a variable that accounts for the percentage of days that were annually under a state of war (locally and nationally declared). A state of war was declared in times of domestic turmoil in order to transfer the public order responsibility directly to the army. Other minor exceptional states, such as the precaution state and the alarm state, have not been included, because they did not involve the transfer of repression tasks from civil to military hands. Finally, a dummy variable on the professionalization of the army since 2002, which aims to

[134] See, for instance, Goldsmith (2003) and Dunne and Perlo-Freeman (2003). For a general approach to the neorealist theory, see Waltz (1982). The impact of the rates of economic growth on military spending has also been analysed by authors such as Goldsmith (2003) and Cypher (2007).
[135] Rosh (1988).
[136] Waltz (1982).

capture the potential effects of this major institutional change, is also included in the analysis.

Table 2.2. DF-GLS and KPSS test (1876 – 2009)

VARIABLES	*Test specification*	*DF-GLS*	*KPSS*
Military burden	constant	-2.183**	0.328
Military personnel/GDP	constant, trend	-2.785*	0.308***
Military investment/GDP	constant	-2.281**	0.309
Military operational costs/GDP	constant	-2.325**	0.350*
Military pensions/GDP	constant	-3.277***	0.118
Military personnel/total military spending	constant, trend	-2.323	0.250***
Military investment/total military spending	constant, trend	-3.393**	0.058
Military operational costs/total military spending	constant	-1.992*	0.308
Military pensions/total military spending	constant	-2.079*	0.499**
European military burden	constant	-3.261***	0.179
Repression	constant, trend	-3.072**	0.089
GDP per capita, in logs	constant, trend	-0.287	0.408***
Economic openness	constant, trend	-1.554	0.366***

Notes: The lag length selection for the DF-GLS is based on SIC/BIC criterion. *** Rejection of the null hypothesis at the 1% significance level; ** Rejection of the null hypothesis at the 5% significance level; * Rejection of the null hypothesis at the 10% significance level.
Sources: See text.

The time series analysis requires the data to be first tested for stationarity. The KPSS test specifies the null hypothesis of stationarity, while the Dickey-Fuller Generalized Least Squares test postulates the presence of a unit root as the null. Table 2.2 shows the results of applying both tests to all the variables considered in the analysis. The null hypothesis of a unit root can be rejected for all dependent variables except for military personnel/total military spending. The presence of a unit root cannot be rejected in the case of pc GDP and economic openness. The KPSS test rejects stationarity for military personnel/GDP, military operational costs/GDP, military personnel/total military spending, military pensions/total military spending, pc GDP and economic openness. On the

basis of these results, the regression analysis is only carried out with the stationary variables.[137] The military personnel/GDP, military operational costs/GDP and military pensions/total military spending variables are also used assuming weak stationarity (since they are stationary according to one of the tests but not the other), but their coefficients must be interpreted with caution.

Table 2.3 shows the regressions results of the OLS estimation of equations (3) and (4). As can be seen in Model 1, which tests the effect of political, strategic and economic variables on total military burden, democracy does not seem to have any significant effect on total military burden.[138] Although the present democratic period has achieved the lowest military burden ratios of the whole series (during the 1990s and the 2000s), the relatively high levels reached during the Second Republic (1931-1936) and by the transitional governments of the late 1970s and early 1980s may explain this lack of significance. According to Models 2 to 5, which provide the results for investment/GDP, personnel/GDP, operational/GDP and pensions/GDP ratios respectively, personnel expenditures contributed most to pushing down the military burden during democratic periods, mainly due to the effort to reduce the costs of chiefs and officers during the Second Republic and to the reorganization plans developed during the present democratic period (although the later was initially mitigated by increases in salaries). By contrast, democracy does not show any significant negative effect on investment and operational costs, which reflects the priority given to material expenditures rather than personnel endowments, particularly during the transitional period from Franco's dictatorship to the contemporary democracy. Similar results are found in Models 6 to 8, which provide additional insights on the effects of political regimes on investment,

[137] GDP pc and economic openness are otherwise analysed in first differences.

[138] Brauner (2014) indicates the possibility of reverse causality between military expenditure and democratization. The replication of the reported equation in Model 1 with 2LSL and heteroskedasticity and autocorrelation consistent standard errors, in which the lag of political variables and the lag of the dependent variable are used as instrumented variables for the potentially endogenous variable, provide similar results to those reported in the table (see Annex D). This suggests, in line with the conclusions drawn by Brauner (2014), that there is no reverse causality in the model. Moreover, I have applied a C statistic to test the endogeneity of the political variables. In line with the former results, the test cannot reject the null that the political variables may be treated as exogenous.

operational expenditures and pensions expressed as a percentage of total military spending.

The theoretical framework provided by Acemoglu, Ticchi and Vindigni (2010) helps to explain these results. According to the authors, transitional democratic governments would need to provide economic concessions to the military, as well as to involve them in international affairs, in order to ensure the loyalty of the army. As has been identified by military historians, these policies were indeed part of the Spanish military transition from the Franco dictatorship to a consolidated democracy. As a result, the military burden grew during the early democratic governments, which helps to explain the non-significant impact of democracy on the military burden found in Model 1. This kind of coup-proofing strategy has frequently been suggested to explain the usual positive relation between dictatorship and military burden.[139] Nevertheless, in the light of the Acemoglu, Ticchi and Vindigni's theoretical framework, this chapter complements this literature by arguing that economic concessions might also push up the military burden during democratic political transitions.

[139] See, for instance, Goldsmith (2003). Actually, the literature on *coups d'état* and political instability have extensively shown that autocracies might need to give economic concessions to the army in order to preserve their political power. See, for instance, Acemoglu, Ticci and Vindigni (2010), Besley and Robinson (2010), and Powell (2012).

Table 2.3. Regression results for military spending in Spain, 1876 – 2009

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Dictatorship	0.00648*	0.000508	-6.63e-05	0.00220	-0.000802*	0.00243	0.0721*	-0.0393**
	(0.00355)	(0.000668)	(0.000633)	(0.00217)	(0.000409)	(0.0167)	(0.0417)	(0.0193)
Democracy	0.00243	4.82e-05	-0.00195**	-0.00103	0.000919	0.0196	0.0135	0.0274
	(0.00379)	(0.000898)	(0.000977)	(0.00237)	(0.000784)	(0.0214)	(0.0428)	(0.0357)
War	0.00773***	0.00145**	0.00114**	0.00301***	-0.000521**	0.0345**	0.0544***	-0.0415***
	(0.00230)	(0.000557)	(0.000445)	(0.00112)	(0.000238)	(0.0145)	(0.0201)	(0.0113)
Alliance USA	-0.0146***	-0.00357***	-0.00286***	-0.00663**	5.77e-06	-0.0609***	-0.0618	0.0262
	(0.00488)	(0.00112)	(0.00101)	(0.00277)	(0.000826)	(0.0216)	(0.0462)	(0.0361)
Alliance NATO	0.00105**	0.000517***	0.000314**	0.000538***	-0.000218**	0.0140**	0.00975***	-0.0162***
	(0.000418)	(0.000196)	(0.000128)	(0.000187)	(9.07e-05)	(0.00573)	(0.00352)	(0.00519)
European military burden	0.0334*	-0.00210	-0.00100	-0.00113	-0.000212	-0.0371	0.103	-0.0502
	(0.0190)	(0.00180)	(0.00242)	(0.00582)	(0.000869)	(0.0378)	(0.102)	(0.0399)
Repression	0.00787***	0.000178	0.00114*	0.00150*	0.000179	-0.0157	0.00807	0.00254
	(0.00296)	(0.000480)	(0.000610)	(0.000830)	(0.000261)	(0.0107)	(0.0140)	(0.0112)
Professionalization	0.00391**	0.00255***	0.000233	0.00249**	-0.000950*	0.137***	0.0653**	-0.0850**
	(0.00198)	(0.000650)	(0.000618)	(0.00122)	(0.000548)	(0.0184)	(0.0326)	(0.0342)
GDP pc (in dif.)	-0.0105	-0.00285	-0.00478*	-0.00367	-0.000941	-0.0141	0.0242	-0.00322
	(0.0110)	(0.00254)	(0.00254)	(0.00364)	(0.00167)	(0.0794)	(0.0909)	(0.0779)

Table 2.3. Regression results for military spending in Spain, 1876 – 2009 (continuation)

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Econ. Open. (in dif.)	-0.000150	-1.76e-05	-9.18e-05**	-0.000181	-1.34e-06	0.00116	-0.00160	0.000624
	(0.000265)	(4.26e-05)	(3.92e-05)	(0.000155)	(2.04e-05)	(0.00106)	(0.00233)	(0.00107)
Constant	0.0202***	0.00220***	0.0129***	0.00374***	0.00229***	0.103***	0.191***	0.101***
	(0.00292)	(0.000621)	(0.000582)	(0.00106)	(0.000371)	(0.0191)	(0.0229)	(0.0167)
Observations	129	121	122	121	129	121	121	129
F-test	29.67	12.27	5.72	24.28	11.02	66.19	35.57	31.74
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Following Wooldridge (2003), I use Newey-West standard errors (with 2 lags) in order to control for the presence of heterokedasticity and autocorrelation in the residuals. Time trends effects not reported in the table.

Sources: See text.

The former set of results also allows us to conclude that the newly international orientation of the Spanish army set up under the early democratic governments led to relatively high capital/labour ratios in military expenditures.[140] This finding is consistent with the literature that has explored the mechanization of armed forces. For instance, Caverley (2009) argues that democracies favour capital over labour military allocations due to the median voter's willingness to replace troops on the ground by military technology. By contrast, Sechser and Saunders (2010) consider that investments in military mechanization are more related to strategic factors than to political regimes. These authors suggest that domestic threats might force governments to favour labour over capital resources in order to better confront internal insurgency. The Spanish experience indicates that democratization and strategic factors might jointly help to explain the evolution of the military capital/labour ratio: the shift in the Spanish military strategy from domestic to international threats undertaken by transitional democratic governments came along with an enforced prominence of capital allocations.[141]

This trend to a capital-intensive army could also have been strengthened by the international military doctrines which have arisen from the 1970s onwards with the emerging information technologies and the new military systems. According to some military historians and analysts, these new doctrines would have led western countries to a new "revolution in the military affairs" that favoured capital investments.[142] Nevertheless, the increase in the capital/labour ratio is not a general feature of this period. As shown in Bove and Cavatorta (2012), the military transition from conscript armies to all-voluntary armed forces in a set of NATO countries from the 1980s onwards (which is part of the aforementioned revolution in the

[140] The series used in this paper do not include the recent *Programas Especiales de Armanento* (Special Programs for Weaponry) financed by the Spanish Ministry of Industry (see chapter 1 for a discussion of these credits). If we include them in the series the results remain fairly similar (see Annex E).

[141] From 2002 onwards NATO changed the way in which personnel expenditures were accounted (leading to potential artificial reductions in the level of personnel expenditures). To control for this potential shift, I have carried out the same regressions assuming that personnel expenditures did not decrease at all from 2001 to 2002. Results remain virtually the same (see Annex F).

[142] See, for instance, Rogers (2000). For a critical view of this alleged new revolution in military affairs, see Krepinevich (1994) and Marsh (2000).

military affairs) has not always gone together with an increasing share of equipment expenditures in the total military budget. For instance, Belgium, Italy and Netherland showed declining shares of equipment expenditures after adopting the all-voluntary armed forces system.

Returning to Table 2.3, it can also be seen that dictatorships had a (slightly significant) positive impact on the military burden (Model 1). Regarding the economic expenditure composition, the effect of dictatorship was also positive (but not significant) on material costs. These findings are in line with previous literature, which reports high levels of military burden in both the European interwar dictatorships and the current autocratic regimes. For instance, Eloranta *et al.* (2014) argue that autocracies (particularly the Nazi regime) jumped into the arms race of the 1930s more quickly than democracies. On the other hand, Models 5 and 8 show a negative correlation between dictatorships and military pensions. This result agrees with other studies on social spending which argue that dictatorships have a negative impact on public social provision. The military nature of the pensions does not seem to modify this negative linkage.[143]

The effect of the alliance with the US government, established since 1953 by the Franco regime, provides additional insights on the military nature of the Spanish dictatorship. According to Model 1, the alliance had a significant negative effect on the Spanish military burden. This is consistent with the idea that the US military agreement was used by Franco's dictatorship to grant national security while reducing the resources invested in the military. Its prominent impact on investment and operational costs reflects the army's withdrawal from the international arena and its concentration on domestic threats (where material expenses were less relevant). Moreover, the US military aid provided the Spanish army with modern military equipment (although it came from second-hand models), reducing the need of the Spanish government to invest in its own military equipment.

Lastly, the negative impact of democracy on personnel expenditures, as well as the negative (but non-significant) effect of dictatorship, seem to suggest that the Restoration governments (which are the reference period in

[143] Lindert (2004), Espuelas (2012).

the analysis) devoted more resources to personnel payments than the other regimes, while providing fewer resources to material military endowments. These results are fairly consistent with a Restoration army with relatively low equipment endowments, mainly focused on domestic threats and public order tasks (even though the modernization plans were initiated in the late 1900s). In contrast with the conclusions found by previous literature on restricted democracies, the Spanish Restoration did not follow more aggressive international policies than the following dictatorial and democratic regimes and did not sustain higher military expenditure than dictatorships.

In the case of the control variables, as could be expected from the results of the structural break analysis, wars exerted a significant and positive effect on both the military burden and most of its components. Its effects are higher on operational expenditures than on personnel and equipment, as the former account for most wartime costs. The European military expenditures also had a positive and significant incidence on total military burden, although no clear effects are found on the economic composition of expenditure. This probably captures the relatively high military burden levels achieved from the mid-1910s to the 1960s, more than half a century with high military tension in Europe. On the other hand, the alliance with NATO had a positive impact on the total military burden, probably due to the modernization efforts required by the alliance. Its higher coefficients on operational and investment costs suggest that the international military orientation of democratic Spanish governments favoured capital over labour endowments, as capital intensity might have been more appropriate to deal with international military threats and missions.

The professionalization of the army had a positive impact on investment and operational expenditures, which also reflects the aforementioned modernization efforts of recent democratic governments. On the other hand, repression had a significant and positive effect on the total military burden and the personnel and operational burden. This reflects the domestic-repressive orientation of the Spanish army, particularly in the conflictive final decades of the Restoration regime and during the 1940s, after the civil war, when the regime confronted substantial internal turmoil. Finally, the

economic variables have in general a negligible effect on the military spending variables.

2.5. Conclusions

Defence economics literature has analysed in depth the political determinants of military spending on the basis of several international panel datasets. According to most studies, democracies exert a negative influence on military burdens due to the social preferences for other public expenditures. This chapter challenges this conclusion by analysing a new Spanish military expenditure series from 1876 to 2009. Both the structural breaks test and the OLS analysis allow us to conclude that the democratic push to reduce the military financial burden may have been partially compensated by the restructuration and modernization of the Spanish army carried out by transitional governments during the late 1970s and the early 1980s and by the modernization policies prevailing during the interwar period. These policies favoured capital over labour endowments, as it might be more appropriate to confront international military threats. Further analyses of transitional periods and modernization patterns in international panel datasets could address the question of the extent to which this conclusion can be generalized.

On the other hand, and in accordance with defence economics literature, Spanish dictatorships had a positive effect on military spending. The results on the economic composition of expenditure seem to reflect the military priority given by Franco to domestic threats, particularly since the military pacts with the United States passed in 1953 and the subsequent entrance into multilateral international organizations. Similarly, the analysis of military expenditure composition seems to reflect the domestic orientation of the Restoration's army (1874-1923), mainly focused on increasing personnel costs rather than investment and operational expenditures. Finally, my results differ from those of Gadea and Montañés (2001), according to whom the Spanish military burden was almost entirely driven by GDP evolution (once wartimes and other outliers were excluded). As has been said, both the political and the international military factors seem to have had significant effects on the Spanish military burden evolution.

Annex C. List of wars in Spain, 1876-2009

Table C.1. List of wars in Spain, 1876-2009

Year	*War*	*War type*	*Political regime*	*Electors/adult population (%)*[a]
1879-1880	Little War in Cuba	Extra-State	Restoration (1874-1889)	Restricted democracy (19.6%)
1885	Caroline Island crises with Germany	Intra-State		
1893-1894	Melilla insurrection	Extra-State	Restoration (1890-1923)	Male universal suffrage (44.1%)
1895-1898	Cuban insurrection	Extra-State		
1896-1898	Philippine insurrection	Extra-State		
1898	Spanish-American War	Inter-State		
1909-1927	Spanish-Moroccan War	Extra-State	Primo de Rivera (1923-1930)	Dictatorship
1936-1939	Spanish Civil War	Intra-State	Second Republic (1931-1939)	Democracy (88.3%)[c]
1939-1945	Second World War[b]	Inter-State	Francisco Franco (1939-1975)	Dictatorship
1957-1958	Ifni War	Extra-State		
1989-2012	67 multilateral interventions		Monarchy Juan Carlos I (1975-)	Democracy (100%)

Notes: a) percentage of electors over the total adult population (from 1876 to 1932, population over 25 years old; from 1933 to 2012, population with right to vote); percentages are averages of each period, b) although Spain did not participate with a large contingent in the war, Franco's dictatorship established close links with the Axis and sent a military unit to fight with Germany from 1941 to 1943, c) the 1931 elections were still based on male suffrage, although universal suffrage was established in the new republican Constitution passed in December 1931 (and applicable to 1933 and 1936 elections).

Sources: my own compilation; the percentage of electors comes from Linz, Montero and Ruiz (2005).

Annex D. IV results

Table D.1. OLS and IV results for military spending in Spain, 1876 – 2009

	OLS	2SLS
VARIABLES	*Military burden*	*Military burden*
Dictatorship	0.00648*	0.0105*
	(0.00355)	(0.00552)
Democracy	0.00243	0.00659
	(0.00379)	(0.00645)
War	0.00773***	0.00786***
	(0.00230)	(0.00223)
Alliance USA	-0.0146***	-0.0126**
	(0.00488)	(0.00536)
Alliance NATO	0.0334*	0.0353*
	(0.0190)	(0.0210)
European military burden	0.00105**	0.00104***
	(0.000418)	(0.000317)
Repression	0.00787***	0.00742**
	(0.00296)	(0.00319)
Professionalization	0.00391**	0.00258
	(0.00198)	(0.00196)
GDP pc (in differences)	-0.0105	-0.0114*
	(0.0110)	(0.00605)
Econ. Openness (in dif.)	-0.000150	-0.000136
	(0.000265)	(0.000220)
Constant	0.0202***	0.0204***
	(0.00292)	(0.00239)
Observations	129	128
F-test	29.67	61.79
Prob>F	0.0000	0.0000
R^2		0.778

Notes: Following Wooldridge (2003), the OLS regression uses Newey-West standard errors (with 2 lags) in order to control for the presence of heterokedasticity and autocorrelation in the residuals. The endogenous variables in the 2SLS model are democracy and dictatorship, and the IV variables are the lag of the two supposed endogenous variables and the lag of the dependent variable. Time trends effects not reported in the table.

Annex E. Regression results (Special Programs on Weaponry included)

Table E.1. Regression results for military spending in Spain, 1876 – 2009

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Dictatorship	0.00661*	0.000656	-6.63e-05	0.00220	-0.000802*	0.0121	0.0697*	-0.0411**
	(0.00356)	(0.000669)	(0.000633)	(0.00217)	(0.000409)	(0.0168)	(0.0414)	(0.0197)
Democracy	0.00253	0.000169	-0.00195**	-0.00103	0.000919	0.0271	0.0116	0.0259
	(0.00379)	(0.000884)	(0.000977)	(0.00237)	(0.000784)	(0.0203)	(0.0425)	(0.0357)
War	0.00772***	0.00145**	0.00114**	0.00301***	-0.000521**	0.0343**	0.0545***	-0.0415***
	(0.00231)	(0.000553)	(0.000445)	(0.00112)	(0.000238)	(0.0142)	(0.0200)	(0.0114)
Alliance USA	-0.0147***	-0.00362***	-0.00286***	-0.00663**	5.77e-06	-0.0643***	-0.0611	0.0271
	(0.00491)	(0.00115)	(0.00101)	(0.00277)	(0.000826)	(0.0233)	(0.0455)	(0.0367)
Alliance NATO	0.000982**	0.000448**	0.000314**	0.000538***	-0.000218**	0.00969*	0.0108***	-0.0152***
	(0.000415)	(0.000193)	(0.000128)	(0.000187)	(9.07e-05)	(0.00567)	(0.00334)	(0.00524)
European military burden	0.0336*	-0.00187	-0.00100	-0.00113	-0.000212	-0.0228	0.0993	-0.0522
	(0.0190)	(0.00185)	(0.00242)	(0.00582)	(0.000869)	(0.0398)	(0.101)	(0.0405)
Repression	0.00788***	0.000200	0.00114*	0.00150*	0.000179	-0.0143	0.00770	0.00241
	(0.00296)	(0.000491)	(0.000610)	(0.000830)	(0.000261)	(0.0111)	(0.0138)	(0.0113)
Professionalization	0.00441**	0.00305***	0.000233	0.00249**	-0.000950*	0.161***	0.0567*	-0.0914**
	(0.00206)	(0.000837)	(0.000618)	(0.00122)	(0.000548)	(0.0340)	(0.0299)	(0.0368)
GDP pc (in dif.)	-0.00924	-0.00148	-0.00478*	-0.00367	-0.000941	0.0680	0.00249	-0.0207
	(0.0111)	(0.00280)	(0.00254)	(0.00364)	(0.00167)	(0.104)	(0.0890)	(0.0815)

Table E.1. Regression results for military spending in Spain, 1876 – 2009 (continuation)

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Econ. Openness (in dif.)	-0.000154	-2.12e-05	-9.18e-05**	-0.000181	-1.34e-06	0.000905	-0.00155	0.000678
	(0.000265)	(4.39e-05)	(3.92e-05)	(0.000155)	(2.04e-05)	(0.00123)	(0.00231)	(0.00110)
Constant	0.0201***	0.00208***	0.0129***	0.00374***	0.00229***	0.0957***	0.193***	0.102***
	(0.00292)	(0.000634)	(0.000582)	(0.00106)	(0.000371)	(0.0198)	(0.0225)	(0.0170)
Observations	129	121	122	121	129	121	121	129
F-test	26.62	8.16	5.72	24.28	11.02	62.03	38.04	28.99
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Following Wooldridge (2003), I use Newey-West standard errors (with 2 lags) in order to control for the presence of heterokedasticity and autocorrelation in the residuals. Time trends effects not reported in the table.

Annex F. Regression results (amendments on personnel expenditures)

Table F.1. Regression results for military spending in Spain, 1876 – 2009

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Dictatorship	0.00648*	0.000508	-6.03e-05	0.00220	-0.000802*	0.00251	0.0720*	-0.0393**
	(0.00355)	(0.000668)	(0.000633)	(0.00217)	(0.000409)	(0.0167)	(0.0417)	(0.0193)
Democracy	0.00242	4.82e-05	-0.00195**	-0.00103	0.000919	0.0195	0.0136	0.0275
	(0.00379)	(0.000898)	(0.000976)	(0.00237)	(0.000784)	(0.0214)	(0.0428)	(0.0357)
War	0.00772***	0.00145**	0.00114**	0.00301***	-0.000521**	0.0344**	0.0544***	-0.0415***
	(0.00230)	(0.000557)	(0.000445)	(0.00112)	(0.000238)	(0.0145)	(0.0201)	(0.0113)
Alliance USA	-0.0146***	-0.00357***	-0.00286***	-0.00663**	5.77e-06	-0.0609***	-0.0619	0.0262
	(0.00488)	(0.00112)	(0.00101)	(0.00277)	(0.000826)	(0.0215)	(0.0462)	(0.0361)
Alliance NATO	0.00105**	0.000517***	0.000314**	0.000538***	-0.000218**	0.0140**	0.00976***	-0.0162***
	(0.000418)	(0.000196)	(0.000129)	(0.000187)	(9.07e-05)	(0.00573)	(0.00352)	(0.00519)
European military burden	0.0334*	-0.00210	-0.00100	-0.00113	-0.000212	-0.0371	0.103	-0.0502
	(0.0190)	(0.00180)	(0.00242)	(0.00582)	(0.000869)	(0.0378)	(0.102)	(0.0399)
Repression	0.00787***	0.000178	0.00114*	0.00150*	0.000179	-0.0157	0.00807	0.00255
	(0.00296)	(0.000480)	(0.000610)	(0.000830)	(0.000261)	(0.0107)	(0.0140)	(0.0111)
Professionalization	0.00461**	0.00255***	0.000924	0.00249**	-0.000950*	0.123***	0.0535	-0.0952***
	(0.00198)	(0.000650)	(0.000629)	(0.00122)	(0.000548)	(0.0185)	(0.0323)	(0.0341)
GDP pc (in dif.)	-0.0105	-0.00285	-0.00486*	-0.00367	-0.000941	-0.0155	0.0258	-0.00257
	(0.0110)	(0.00254)	(0.00255)	(0.00364)	(0.00167)	(0.0792)	(0.0909)	(0.0779)

Table F.1. Regression results for military spending in Spain, 1876 – 2009 (continuation)

VARIABLES	*Model1 Military burden*	*Model2 Investment /GDP*	*Model3 Personnel /GDP*	*Model4 Operational costs/GDP*	*Model5 Pensions /GDP*	*Model6 Investment share*	*Model7 Operational costs share*	*Model8 Pensions share*
Econ. Openness (in dif.)	-0.000151	-1.76e-05	-9.31e-05**	-0.000181	-1.34e-06	0.00115	-0.00158	0.000641
	(0.000265)	(4.26e-05)	(3.92e-05)	(0.000155)	(2.04e-05)	(0.00105)	(0.00233)	(0.00107)
Constant	0.0202***	0.00220***	0.0129***	0.00374***	0.00229***	0.103***	0.191***	0.101***
	(0.00292)	(0.000621)	(0.000582)	(0.00106)	(0.000371)	(0.0191)	(0.0229)	(0.0167)
Observations	129	121	122	121	129	121	121	129
F-test	28.41	12.27	5.06	24.28	11.02	54.21	36.40	31.06
Prob > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Following Wooldridge (2003), I use Newey-West standard errors (with 2 lags) in order to control for the presence of heterokedasticity and autocorrelation in the residuals. Time trends effects not reported in the table.

Chapter 3. Opening the 'black box' of military spending: coup-proofing strategies in Spain (1850-1915)

Abstract

Armies have recurrently intervened in politics by leading (or giving support to) *coups d'état*. Several authors suggest that civilian governments have used military spending to overcome armies' grievances and avoid their insubordination. However, recent quantitative analyses do not reach conclusive results when exploring the impact of total military expenditure on the frequency and the success of *coup d'états*. I argue that total military spending might not be a good indicator of governments' effort to gain the loyalty of the army, as it may hide relevant changes in the composition of the military budget. This chapter opens this military spending 'black box' by studying the impact of officers' remunerations in Spain from 1850 to 1915. While total military spending does not seem to have any relationship with the frequency of coups, payments to officers (along with other coup-proofing strategies) appears to be associated to a lower frequency of coups.

3.1. Introduction

Armed forces have frequently intervened in politics. Ranging from the prominent political role played by several European armies in the 19th century to the very recent military coups in Latin America and Africa, armed forces have affected the fate of many governments and political regimes worldwide. The available information on *coup d'états* in developing countries clearly shows the political importance of the army. According to Decalo (1989), only 12 African states (20 per cent of the countries in the region) kept a civilian government in power without being disrupted by a military takeover for more than 25 years after independence. Nordlinger (1977) considered that Costa Rica and Mexico were the only Latin American countries free of 'praetorian' soldiers from 1945 to the late

1970s, while half of the 18 Asian states suffered successful coups in the same period. Powell and Thyne (2011) register 457 coup attempts in 94 states from 1950 to 2010 (227 of them successful), while Bove and Nisticò (2014) report 14 additional coup attempts (5 of them successful) from 2010 to 2014.[144]

Several scholars have tried to identify the determinants of *coup d'états*, as well as the impact of coup-proofing strategies applied by the governments in order to gain the acquiescence of the army. Among them, several authors have underlined the importance of the military's corporate interests as a motivation for coups, and the relevance of increasing military spending as a way to overcome the military disaffection. Given that army officers tend to value military expenditures more than the rest of society, governments may try to show their commitment with the armed forces by rising military spending.[145] In exchange, officers may feel more committed to the protection of governments and institutional stability.[146]

However, recent quantitative analyses do not reach conclusive results when exploring the effectiveness of military expenditures in preventing coups.[147] Increasing military spending has not been systematically associated to a lower coup risk or to less military insubordination. I suggest that this lack of conclusive results might be driven by data restrictions in panel datasets. To my knowledge, previous research on the topic has been based on total military spending data, and this may hide variations in expenditure composition that can be relevant to understand the frequency and the success of *coup d'états*. Total military expenditure is actually a 'black box' that conceals the potential relation between specific public expenditures and military coups.

This chapter aims to open this 'black box' by analysing wage payments to officers, under the assumption that these were one of the main ways to gain the acquiescence of the military hierarchy. Since most military coups are

[144] Powell and Thyne's (2011) and Bove and Nisticò's (2014) figures include *coups d'état* led by either military or civilians.
[145] Leon (2014).
[146] Powell (2012).
[147] Collier and Hoeffler (2007), Tusalem (2010), Powell (2012), Leon (2014), Piplani and Talmadge (2015).

led by military officers, public resources devoted specifically to improve their wellbeing may be more relevant than total military expenditure. To this purpose, I focus on the Spanish case from 1850 to 1915. The analysis is based on a new database of wage payments to the officer corps for five-year benchmarks, which improves previously available figures on officers' base salaries, as it also includes all other wage complements.

Spain is an interesting case to explore this topic. Spanish governments suffered recurrent military coups (*pronunciamientos*) since the beginning of the 19th century. During Isabel II's reign (1833-1868) and the subsequent Revolutionary period (1868-1874) there was more than one coup every four years on average. By contrast, the establishment of the Restoration regime (1874-1923) went along with the eradication of successful coups. Even if most historians have related this change with the new political framework designed by the political leader of the Restoration, Cánovas del Castillo, some authors have also suggested that the improvement in officers' wellbeing (along with other coup-proofing strategies) also contributed to the acquiescence of the army. However, partial and insufficient data on military wages have left this issue understudied so far.

My new data suggest that payments to officers improved steadily throughout the Restoration period, which can be interpreted as a government's strategy to get the army involved with the new political institutions. Even if this policy – as well as other coup-proofing policies – was not enough to avoid the 1923 military coup, it seems to be part of the institutional framework that prevented new successful *pronunciamientos* for almost half a century. This result highlights the importance of taking the composition of military spending into account when analysing the impact of public resources on the frequency and the success of *coup d'états*.

The chapter proceeds as follows. Section 3.2 reviews the previous literature on the motives and the determinants of *coups d'état*, as well as the previous studies on coup-proofing strategies. Section 3.3 reviews the Spanish history of coups, while section 3.4 explores new data on payments to military officers and the coup-proofing strategies. Section 3.5 provides some qualitative information on public policies and military grievances, and section 3.6 concludes.

3.2. Military intervention in politics

3.2.1. The motives to intervene

Political scientists and sociologists have often tried to understand why the army has been so repeatedly engaged in *coup d'états*.[148] Following the literature's footsteps, we can divide the motives that bring the army to wage coups in several categories. Firstly, the military may want to intervene in politics in order to defend a particular conception of the "national interests". Touched by an alleged "manifest destiny" to uplift "national values and virtues", the armed forces may feel the "duty to rule" or to "arbitrate" when "the civil authorities seems to them to threaten what they think are the permanent interests of the nation" (Finer, 1961, 35-36). The failures imputed by new ruling officers to civilian governments range from encouraging political disorder and subversive groups to failing to fulfil the constitutional principles.[149]

Nevertheless, it is not easy to know whether these claims reflect the soldier's real motivations or just intend to give the coup some civilian approval. Actually, this particular conception of national interests might be rooted in the self-corporate interests of the army, which brings us to the second category of motives that may explain military coups. Finer (1961, 47) considers the willingness to preserve the army's autonomy and its corporate status as "one of the most widespread and powerful of the motives for intervention" (what he calls "military syndicalism").[150] The pressures exerted by the German army during the Imperial era (1871-1918) provide a good example. Aiming at defending its autonomy from the Reichstag, the Imperial German army engaged in disputes on the size of the corps and the codes of military courts, forcing the resignation of several

[148] The army can intervene in politics in a wide variety of ways (Finer, 1961; Nordlinger, 1977). In this review I focus on *coups d'état* carried on (or supported by) military forces that substitute the established government by another military or civilian executive.

[149] Unlike the civilians, the military may see itself as a highly capable and efficient organization due to its bureaucratic characteristics and its explicit hierarchical structure (Nordlinger, 1977).

[150] Similarly, Nordlinger (1977, 63-64) argues that "by far the most common and salient interventionist motive involves the defense or enhancement of the military's corporate interests".

ministries and chancellors. Ludendorff and Hindenburg's ruling period during the First World War (1918) brought the power and the autonomy of the General Staff at their maximum.

Beyond the army's autonomy, several authors have underlined the military will to redistribute public resources in its favour.[151] Nordlinger (1977, 67) considers that "adequate budgetary support, as determined by the military, constitutes one of its chief corporate interests". On the one hand, more resources (generally) imply a higher ability to accomplish the armed forces' warfare missions, which may increase their ability to defend the alleged national interests and to gain domestic and international respect. For this reason, Finer (1961) argues that a military humiliation in an international war may encourage the army to intervene in politics in order to strengthen its military capability. In this regard, empirical studies suggest that not only weak democratic governments, but also autocrats, must be aware of the risks associated to military defeat.[152]

On the other hand, some authors emphasize the importance of the officers' rent-seeking strategies as reasons for coups. Finer (1961) argues that in those cases in which the army does not have any real war mission to perform, assaults to power mean new chances of promotion and rent-seeking. In this regard, Decalo (1989) identifies the self-interests of individuals as a factor for civil-military tension in Africa. Similarly, Acemoglu *et al.* (2010) consider the army as a collection of self-interested individuals which may turn against the government if this does not accomplish their expectations. These corporative and self-interest motives may explain why military coups that end up in military rule are followed by significant increases in military expenditures, as happened in Argentina, Chile or El Salvador in the 1970s. According to Bove and Nisticò (2014), the 1987 coup in Burundi and the 1975 coup in Chad are among the most

[151] Nordlinger (1977), Finer (1961), Acemoglu *et al.* (2010), Powell (2012).

[152] Debs and Goemans (2010). However, Finer (1961) also points out that recurrent military intervention in politics may diminish the army's ability to fight; thus, the military may also decide to remain out of politics in order to protect its warfare capacity. In this regard, Huntington (1991, 56) suggests that "professionally inclined military leaders often wish to end military regimes" due to the negative war-related consequences of military politicization.

extreme examples of this phenomenon, in which military spending almost doubled and tripled respectively.

The military may also intervene in politics on behalf of other political, social or ethnic groups. Some scholars consider the army as a 'perfect agent' of the economic and social elites. According to Acemoglu and Robinson (2001, 2009), the elite may organize a military coup in order to prevent democratization and, ultimately, wealth redistribution. Similarly, Tusalem (2010) suggests that the army may intervene in politics in order to protect the property rights. Echoing former studies on property rights and redistribution, Tusalem suggests that, in developing countries, the military has often engaged in the protection of property rights due to its dependence on American arms transfers and US military aid. This material interest has been complemented by a shared ideology on the destructive effects of redistribution on economic growth. Finally, the military often identify itself with the propertied class, as governments recruited its top generals from enriched families with Western education. According to Tusalem (2010), coups to protect property rights became commonplace in Latin America after the 1971 coup of General Banzer against the leftist General Torres in Bolivia and, particularly, after the removal of Salvador Allende by General Pinochet in 1973.

On the other hand, Finer (1961) argues that the army may support social groups that belong to the same social class as the military. The author indicates that such social affinity does not necessarily favour the economic elites; for instance, the Egyptian armed forces gave their support to small farmers in the 1930s, while the Brazilian army in the 1920s was on the side of the professional middle class. In this regard, Nordlinger (1977) argues that the officers' middle-class origins help to explain why military officers are inclined to act in accordance with middle-class interests. Ethnic or religious linkages may also be very relevant, as happened, for instance, in Syria when several Sunni military units revolted against the Asad's Alawi government to support the Muslim Brotherhood revolt of 1976-1982.[153]

[153] McLauchlin (2010). The ethnic or religious loyalties may also inflame divisions within the military (particularly due to suspicions about the officers' recruitment and promotion policies) and motivate coups and countercoups in fractionalized armed forces (Nordlinger, 1977).

And finally, military interventions may be also carried on behalf of foreign agents. For instance, Maurer (2013) argues that military intervention in developing countries during the 20th century was in occasions backed by the US government in order to defend the American investors' property rights.

3.2.2. The opportunities to intervene

All these motives may not be sufficient to prompt military *coup d'états*. Beyond the army's claims, the domestic and international context determines the opportunity to wage successful coups. Above all, the social legitimacy of the regime appears to be one of the fundamental determinants of the frequency and success of coups.[154] In this regard, Finer (1961, 82-83) argues that "the decline of confidence in the politicians and civil processes is liable to enhance the popularity of the military. By the same token, it weakens the authority of the civilian regime and renders it an easier prey to the intervention of the army, which, in these circumstances, comes to be regarded as a deliverer". Similarly, Nordlinger (1977, 93) suggests that "the presence of a legitimizing mantle sharply inhibits the translation of interventionist motives into coup attempts; the absence or loss of governmental legitimacy is easily the most important factor that facilitates this transformation". More precisely, the military may inhibit to intervene due to its aversion to rise up against a significant part of the population and its reluctance to foment and deal with the consequent political disorder, as well as its fear of fracturing the military cohesiveness.

Belkin and Schofer (2003, 607) provide a quantitative approach to measure the impact of social legitimacy. They define legitimacy as "the degree of consensus among citizens, elites, and organizations about the state's right to make rules", which is measured in terms of the degree of political competition and regulation. This social legitimacy is additionally combined with two other variables that capture the strength of civil society and the frequency of previous coups; the resulting variable allows these authors to measure the evolution of what they call 'coup risk'. In a dataset of 167 states between 1960 and 2000, the authors find a very positive correlation between this measure of coup risk and *coups d'état*, suggesting that low legitimacy, weak civil society and recurrent past coups are associated to

[154] Finer (1961), Belkin and Schofer (2003), Powell (2012).

more frequent coup attempts. Previous coup experience has also been identified by other scholars as a key factor that harms social legitimacy.[155] Londregan and Poole (1990, 175) even suggest the existence of a "coup-trap" in which previous coups hinder the capability of the governments to avoid further military interventions.[156]

Other scholars focus on political regimes. Recent quantitative analyses have found a non-linear relationship between democratization and *coup d'états*. While democratic regimes are protected by their political legitimacy and autocratic governments are protected by repression, semi-democratic regimes are particularly vulnerable to domestic military threats due to its combination of low legitimacy and low coercive capacity.[157] However, repression dose not insulate autocratic leaders from coups; Svolik (2009, 766) reports than over two-thirds of authoritarian regimes finish due to coups. According to this author, when dictatorship relies on military forces for domestic repression, the army may feel in a better position to demand better material conditions and status. If these demands are not attended, the military may "extract those concessions by force".

Semi-democracies may be also vulnerable due to their own political actors. Luttwak (1979, 8) argues that "violent methods are generally used when legal methods of securing a governmental change are useless because they are too rigid – as in the case of ruling monarchies where the ruler actually controls policy formation – or not rigid enough." Political systems with too rigid political turn may force (or encourage) opposition groups to rely on the military to reach the power.[158] According to Belkin and Schofer (2003, 607), "when nonmilitary actors agree about the state's right to make rules, when there is common willingness to pursue institutionalized procedures to redress grievances and forgo extrasystemic channels for dispute resolution,

[155] Finer (1961), Londregan and Poole (1990), Piplani and Talmadge (2015).
[156] *Coup d'états* in one country might also influence the frequency of coups in the neighbouring countries. See Li and Thompson (1975) and De Bruin (2015).
[157] Piplani and Talmadge (2015). Powell (2012) finds less conclusive results. This same non-monotonic relationship is found between democratization and civil wars. See Hegre (2014) for a review of the literature on democracy and conflict.
[158] Very 'flexible' methods of governmental change might also foster coups. The author mentions the example of the Russian throne until the seventeenth century, which was neither hereditary nor elective, but 'occupative' (whoever took the throne became the Czar). This kind of rules encourages violent assaults to power too.

and when laws are sufficient for protecting individual and organizational interests from executive abuse, political opposition is unlikely to drag the military into politics". As we shall see in the following sections, this will be one of the key factors that explain the evolution of the Spanish military interventions in the period of study.

Other authors combine political and economic factors to explain the frequency of coups.[159] Luttwak (1977, 24) argues that a precondition of a coup is that "the social and economic conditions of the target country must be such as to confine political participation to a small fraction of the population". In poor countries most people are politically passive due to illiteracy, poverty, and enforced silence. As long as the mass do not scrutiny the day-to-day activities of the government, it will also uncritically accept an illegal change in government. Meanwhile, senior bureaucrats who are not too deeply committed with the previous regime will value the opportunities offered by the coup to negotiate better salaries and positions, while the elite may also appreciate the safety of inaction. According to this author, this expected lack of reaction is precisely what coups need to success. Similarly, Nordlinger (1988) suggests that bad economic performance hinders the social legitimacy of governments, which has been found to facilitate the translation of military motives to intervene into effective coup attempts.

Londregan and Poole (1990) echo Luttwak and Nordlinger's line of argument in a quantitative analysis for 121 countries from 1950 to 1982. These authors find that the probability of having a coup in the poorest countries of their sample is 21 per cent higher than in the richest countries.[160] These authors also find a negative relation between economic growth and *coup d'états*, regardless of the level of income. Kiu Kim (2014) also finds that negative temporary shocks in GDP growth rates raise the probability of coup attempts. According to him, negative economic shocks may encourage citizens to engage in antigovernment activities and to accept the result of a coup, which also reflect the regime's weakness and its lower

[159] Similar approaches have been also taken in the analysis of civil wars. See Collier and Rohner (2008) and Hegre and Nome (2010).
[160] Other authors find less conclusive results. See, for instance, Tusalem (2010) and Powell (2012).

capacity to overcome internal threats.[161] The army would use this institutional weakness to pressure for a better redistribution of public resources and to protect the property rights of the middle class.[162]

Other scholars have underlined the importance of foreign guarantees to explain the success of *coups d'état*. Luttwak (1977, 27) argues that in colonial or pseudo-independent countries a coup cannot be successful without the approval of a foreign power. For instance, the coup in Vietnam that overthrew Ngo Dinh Diem was carried out after "sounding out" the opinion of the US embassy in Saigon. On the other hand, foreign actors may also prevent coups and foster political stability. In this regard, Huntington (1991) argues that political leaders in Greece, Portugal and Spain during the so called 'third wave of democratization' (initiated in 1974) saw the integration into the European Community as a safeguard of the stability of democracy. Similarly, Decalo (1989) stresses the importance of external military support to prevent domestic military upheavals in francophone African countries. French troops and weapons stationed in bases in some of these countries underwrite their political stability.

Finally, authoritarian repression and international warfare have been also associated to military intervention.[163] As has been said, the use of the military forces for domestic repression increases the army's influence over public policy. If the government does not assume the new army's demands, the military may try to extract those concessions by force. Acemoglu *et al.* (2012) and Svolik (2012) relate domestic repression with inequality: higher levels of social inequality will force the oligarchic governments to rely more on the military to avoid revolts, which would increase the army's political power and the probability of a military intervention.[164] Similarly, Finer (1961) argues that international warfare increases the civilian

[161] O'Kane (1993) finds that dependency on primary commodity exports increases the risk of a coup in developing nations because of the economic shocks and the consequent domestic turmoil that sudden drops in the international prices generate. Tusalem (2010) reaches similar conclusions.

[162] Similarly, Powell (2012) suggests that lower levels of GDP per capita may ease coups due to aim of the army to ensure the desired military budgets.

[163] Finer (1961), Acemoglu *et al.* (2012), Svolik (2012), Powell (2012).

[164] Svolik (2012) expands the argument to suggest a non-monotonic relation, in which very high levels of inequality will force the government to concede the requested amounts of resources.

dependency on the military, which provides the latter higher opportunities to condition public policies and to demand a more favourable distribution of resources.

3.2.3. The impact of coup-proofing strategies in coup attempts

The aforementioned motives and opportunities to intervene provide a broad outline to understand coup risk. Nevertheless, not all countries with, say, low legitimacy and poorly economic performance, suffer *coup d'états* with the same frequency. Why some governments with adverse conditions are able to remain in power without any significant military uprising for decades?

Previous literature has emphasized that governments may implement coup-proofing strategies in order to diminish the coup risk that they face. These strategies are directed to either harm the army's capacity to organize coups or to overcome the motives of the military intervention (or both at the same time). Regarding the former, there is a long list of possible strategies that governments may use to make the organization of a military coup difficult. For instance, the establishment of security forces under direct civilian control may be used as a way to counterbalance a military plot. If these forces have conflicting interests with the regular army (via different rewards or personnel selection) they might stand up for the government.[165] The creation of multiple special security forces in Zaire by Mobutu Sese Seko, some of which were never deployed out of the capital, is just one example of this widely used strategy.[166] De Bruin (2015) specifies that such counterbalancing strategy reduces the ratio of successful military coups, but not the frequency of coups attempts, due to the additional grievances that it creates.[167] Additionally, Powell (2014) reminds that this strategy comes at a price, as it hinders the military's ability to fight wars.

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[165] See, for instance, Nordlinger (1977), Decalo (1989), Powell (2012), De Bruin (2015).
[166] Powell (2014).
[167] Nordlinger (1977, 49) suggests that the army may feel outraged by the creation or expansion of militia forces as they "call into question the military's ability to execute its exclusive national security responsibility, reduce the political standing of the armed forces, allow for a reduction in the size of the officer corps, and perhaps threaten its very existence".

Diversionary interstate conflict may also help to prevent *coup d'états*, particularly when counterbalancing strategies are not in place.[168] According to Piplani and Talmadge (2015), international wars do not reduce the military's disposition to engage in coups, but hamper the army's ability to organize them successfully. Plotters may face severe constrains to put their plans in practice when part of the army is fighting abroad, while rotation of units and the injury or death of key officers might also frustrate their initiatives. On the other hand, Besley and Robinson (2010, 659) argue that reducing the size of the army makes the coups prohibitively expensive. If the government cannot meet the army's corporative demands, it can create a "tin pot" army that "is docile because it is so weak".[169] Lastly, in case of ethnic, religious or culturally heterogeneous countries, the recruitment of officers that belong to the groups that support the established regime helps to subject the military to government's authority.[170]

Beyond the counterbalancing strategies, governments can also try to remove the motives that favour military intervention. In this regard, most analyses have focused on military spending as a way to demonstrate the government's commitment with the army. In this regard, Leon (2014, 367) argues that military officers care about military spending more than the rest of society and "will prefer situations in which military spending is high over situations in which it is low (ceteris paribus)". Thus, increasing military expenditures may diminish the probability of a coup even if the political and economic context provides opportunities for it. For this reason, Huntington (1991, 252) famously encouraged governments to "give toys" to the army and to improve the officer's wellbeing in order to appease its willingness to intervene in politics.

Nevertheless, recent quantitative analyses have reached mixed results when exploring the effects of increasing military expenditures on the frequency and success of coups. For instance, Leon (2014) finds a positive correlation between high military expenditure and low probability of a coup in a dataset for 153 countries from 1963 to 1999. However, Powell (2012)

[168] Powell (2014).
[169] Powell (2012) additionally argues that bigger armies are more capable of defeating any potential defences, despite the coordination obstacles associated to big armies.
[170] Decalo (1989), McLauchlin (2010).

obtains less conclusive results in a dataset for 143 countries from 1961 to 2000. While he finds a negative impact of military expenditures per capita in coup attempts, he does not find any significant result when using total military spending. On the other hand, Collier and Hoeffler (2007) only find a positive impact in the African continent. When taking into account the whole world, higher military spending does not diminish the probability of a coup. Lastly, Piplani and Talmadge (2015) and Tusalem (2010) do not find any significant correlation between both variables in datasets of 158 countries from 1950 to 2010 and 88 developing nations from 1970 to 1990 respectively.

Actually, it is not clear either whether governments facing high coup risk tend to increase military expenditure in order to avoid military takeovers. Bove and Nisticò (2014) find that new regimes established after successful coups tend to increase military spending, while Collier and Hoeffler (2007) point that those African governments facing higher levels of coup risk increased military spending above the rest. However, Bove and Nisticò (2014) also suggest that this redistribution of resources in favour of the army could be the result of the government's willingness to gain the loyalty of the army or the result of the higher negotiation power acquired by the army after a successful coup. In the latter case, spending increases would confirm the importance of the military's corporate interests in coups, but would say nothing about coup-proofing strategies.

One of the main limitations of these analyses is the lack of disaggregated data on military spending. Total military expenditures provide information on the overall distribution of public resources, but do not disentangle their specific purposes. Were these expenditures devoted to salaries or to other kind of budgetary items? And were they used to pay the officers? Is it possible that total military expenditure does not have any effect on the frequency of coups, but wage payments to officers do? In this literature, military expenditure appears as a 'black box' that needs to be opened in order to understand the interplay between military intervention and coup-proofing. Powell (2012) recognizes this limitation when argues that personnel and equipment expenditures could have different effects on future coup attempts. Similarly, Bove and Nisticò (2014, 325) remind us that

using total military spending "hinges crucially on how the resources provided to the military actually are distributed within the armed forces".

In order to open this 'black box', the next sections are devoted to explore the opportunities and the motives of *coup d'états* in Spain from the mid-19th century to the early 20th century, as well as the coup-proofing strategies applied by the governments in order to gain the acquiescence of the army. Particularly, I will explore the officer's remunerations – as a particular case of military expenditure – and its relationship with the evolution of *coup d'états* throughout the period of study.

3.3. The Spanish case: *coup d'états* from 1833 to 1920

After King Ferdinand VII's death in 1833, Spain became a constitutional monarchy. Isabel II's reign (1833-1868) was the first long-lasting parliamentary regime in Spain after the short liberal rule during the Independence War against France (1808-1814) and the so-called Liberal Triennium (1820-1823). The 1834 Royal Statute (*Estatuto Real*) established that sovereignty would be shared by the parliament (*Las Cortes*) and the king, while the 1837 Constitution included the first systematic bill of rights in Spanish history. The lower chamber of the parliament (*Congreso de los Diputados*) acquired the legal authority to pass the law, even though the king kept important prerogatives such as the right to veto, the right to dissolve the parliament and the right to designate and remove the Ministers. In line with other European constitutions of the moment, political participation was severely restricted to owners and wealthy people.[171]

Isabel II's reign was troubled since the beginning by recurrent political and social instability. Above all, its first seven years were violently distressed by a civil war against the *carlistas*, absolutist supporters of the self-proclaimed Charles V, Ferdinand VII's brother. Even though the war ended in 1839-40 with the defeat of the *carlistas* and an agreement between the contenders (*Convenio de Vergara*), the *carlistas* rose up again in 1847-1849 and in 1872-1876. The sale of the common lands in the countryside, as well as the development of the new working class in the northern regions of the country, contributed to make political and social instability recurrent.

[171] See, for instance, Fontana (2007).

Additionally, the liberal agrarian reform confronted the government with the Church, which encouraged traditionalist and absolutists movements against the new institutions.

In this context of internal instability, the Spanish army was mainly devoted to contain domestic turmoil during the first decades of Isabel II's reign. Despite of the creation of two paramilitary corps devoted to guard the coasts (*Carabineros*) and to protect the rural roads and properties (*Guardia Civil*), the army kept wide prerogatives on public order.[172] In this regard, as early as in 1821 (during the aforementioned Liberal Triennium) the army acquired the duty to safe-keep the constitutional order, at the same time that the military jurisdiction was extended to any political crime committed by civilians.[173] Shortly afterwards, in 1835, the parliament established the first state of siege's regulation (later extended to the state of war), according to which the military would become the legal authority in times of harsh domestic turmoil. Even if this was initially established to face situations of inland warzones, the state of siege rapidly encompassed the repression of social uprisings and other alleged dangerous movements. The army's autonomy in public order affairs reached a point in which the military command could even declare the state of war without asking for any previous government's authorisation.

This domestic orientation contrasts with the low activity of the Spanish army in the international military scenario. Despite of the so-called Quadruple Alliance signed in 1834 with Great Britain, France and Portugal, Spain remained neutral in most of the major current international conflicts (such as the Belgian and Greek's independences, the Crimean War, the Italian and German unification wars, etc). It was not until the late 1850s when the Spanish army engaged in several military interventions, such as those in Conchinchina (1857-1863), Mexico (1861-1862), Morocco (1859-1860), Santo Domingo (1861-65) and the First Pacific War (1863-1866). However, only in Morocco the army obtained a significant territorial gain,

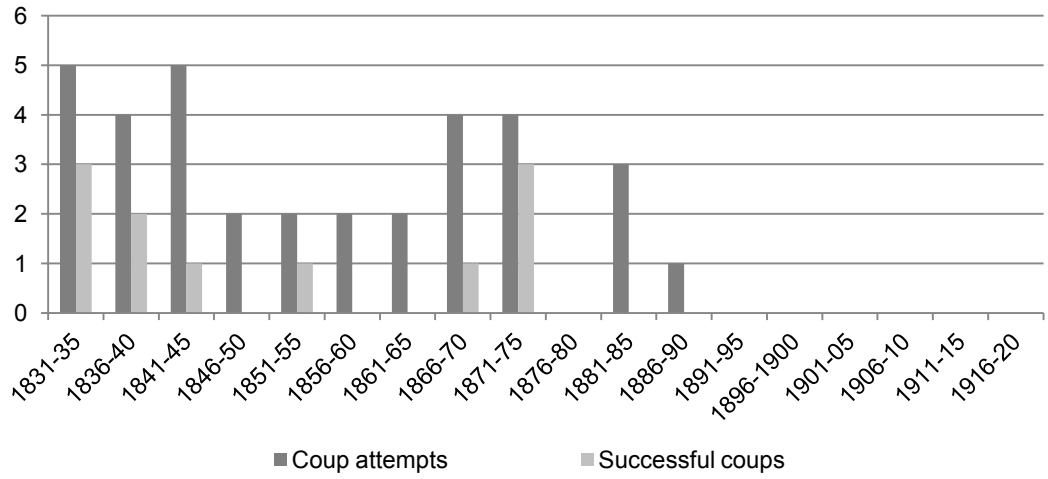
[172] This helps to explain why, despite being a Peninsula, Spain had most of its troops spread over its inland territory instead of its coasts and frontiers, while devoting many more resources to their land forces than to their navy. See Headrick (1981), Sabaté (2013).

[173] Cepeda (1999). The army's domestic interventions ranged from individual detentions to mass punishment, such as the 1842 bombardment of Barcelona (Ballbé, 1983).

even though it hardly paid for its 3.000 million *reales* and its 10.000 deaths.[174] Later on, interventions abroad were aimed at fighting colonial revolts in Latin America and Northern Africa, such as the Ten Years War in Cuba (1868-78), the Small War in Cuba (1879-1880), the Melilla's Insurrection (1893) and the Cuban and Philippines independence Wars (1895-1898). The only war against another western country, the Spanish-American War against the United States in 1898, ended in a few months with a resounding defeat.[175]

According to the reviewed literature on *coup d'états*, the combination of weak democracy with low social legitimacy, as well as a domestic orientation of the army and not very successful international military operations, created the propitious context for military interventions in politics. Figure 3.1 shows the attempted and successful *coups d'état* in Spain from 1831 to 1920 in five-year periods. The attempted coups account for those military actions of insubordination explicitly devoted to overthrow the government in favour of a new executive or designed to threaten the government in order to force a policy change. Successful coups account for those coups that succeeded in expelling the government or in forcing the desired policy change.

Figure 3.1. *Coup d'états* in Spain (1831-1920)



Source: Linz, Montero and Ruiz (2005).

[174] Vilar (2009).
[175] Puell de la Villa (2006), Vilar (2009), Torre del Río (2009).

As could be expected, Spain was severely hit by military interventions during most of this period. The 1830s and the first half of the 1840s saw almost one coup attempt per year, with a ratio of success above 40 per cent. In the next four quinquennia the regime reduced its exposure to military intervention to two coup attempts per period, while from the second half of the 1860s to the first half of the 1870s the military returned to former levels of intervention. By contrast, military coups almost disappeared after the mid-1870s. From 1874 to 1922 there were only four failed coup attempts, all of them in the 1880s, and it was not until 1923 when the military intervened again with General Miguel Primo de Rivera's *coup d'état* that was the starting point of a military dictatorship of almost seven years (1923-1930).

Most scholars agree that the institutional design of the Spanish political system explain this evolution.[176] As has been said, Isabel II's reign (1833-1868) was based on a very restricted census suffrage. Except for the 1836 election, in which the queen was forced to accept an extended suffrage, all subsequent elections until 1868 were characterized by very restricted voting rights and corruption. Progressive movements (initially organized under the umbrella of the Progressive Party, and since 1849 onwards under the more leftist Democratic Party) could not reach power with the established political rules, because electoral fraud blocked any possible change in the parliamentary majority. To overcome this blockade, the progressive elites relied on military officers to raise them to power: the progressive governments established in 1836, 1840 and 1854 began with *coups d'état* led by military officers (the latest two of them by General Baldomero Espartero, who was even regent from 1840 to 1843).[177]

Similarly, the conservative liberals (under the umbrella of the Moderate Party) put an end to these progressive episodes (that generally involved expanding voting rights to middle classes) by resorting to the army. The new moderate periods initiated in 1843 and 1856 started with military interventions, this time under the leadership of General Ramón María

[176] Headrick (1981), Busquets (1982), Seco Serrano (1984), Fernández Bastarreche (2006).
[177] Puell de la Villa (2006), Fontana (2007).

Narváez.[178] All these coups have been called *pronunciamientos*, in which a group of generals (and in some occasions other lower-grade military officers) organized a plot to overthrow the government on behalf of an opponent political faction. In none of these cases the plotters aimed at implementing a military dictatorship; they behaved as "spokespeople and military branches of political groups, and invariably after being required by them".[179] According to Puell de la Villa (2006), the plotters expected to accomplish their objectives without fighting; they aimed at obtaining the tacit or explicit support from the rest of the army during the following hours after the beginning of the coup. In case that several military units (particularly those settled in the capital, Madrid) openly confronted the coup, the plotters generally gave up their plans and tried to go into exile.

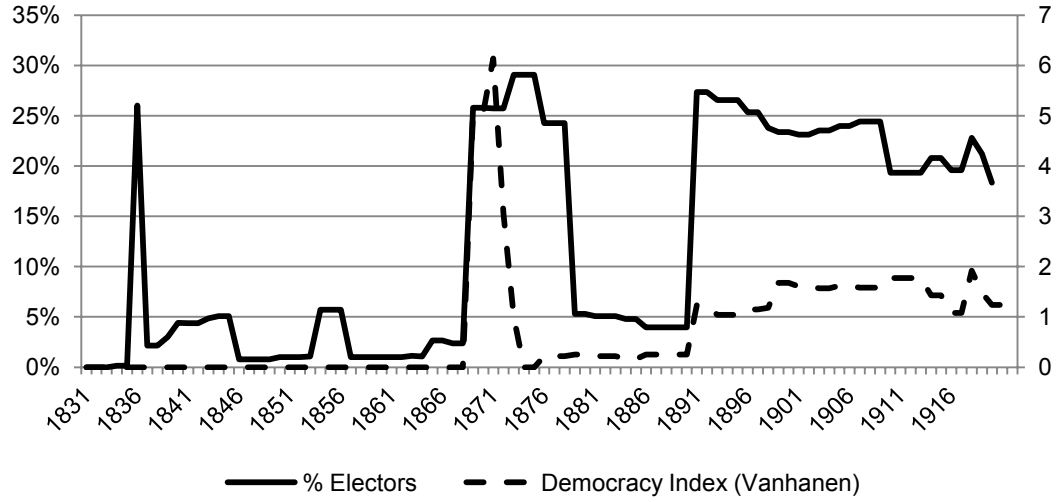
The 1868 Glorious Revolution started a period of extended civil rights in a context of high social and political instability. The mobilization of the progressive liberal opposition, once again led by a group of generals (among them, General Juan Prim y Prats, later president of the government) put an end to Isabel II's reign and established a new short-lasting liberal monarchy under the head of Amadeo I. After two years of political turmoil, Amadeo resigned and the First Spanish Republic was established (1873-74). Suffrage was extended to all adult men (see figure 3.2), and civil rights were significantly expanded. Nevertheless, monarchical and conservative factions pressured to overthrow the new political regime: as can be seen in graph 3.1, coup attempts increased dramatically during this period. The *pronunciamientos* of Generals Manuel Pavía and Carlos Martínez Campos in 1874 ended the First Republic and restored the Bourbon monarchy.

According to most authors, the new Restoration regime (1874-1923), designed by the conservative politician Antonio Cánovas del Castillo, removed the former political conditions that had favoured the *pronunciamientos*.[180] The conservative and the liberal parties agreed to

[178] Even when another liberal party emerged in the political scenario in the 1850s as a reaction to both the Progressive and the Moderate parties – the Liberal Union (Unión Liberal) – another general (Leopoldo O'Donnell) took the leadership of the movement once again.
[179] Seco Serrano (1984, 81).
[180] Headrick (1981), Busquets (1982), Seco Serrano (1984), Fernández Bastarreche (2006).

share power in what has been called the peaceful turn (*turno pacifico*). Fraudulent elections were organized in order to ensure such controlled turn in government, which excluded the leftist movements (such as the republicans) and the more traditionalist factions (such as the *carlists*). In the words of Belkin and Schofer (2003, 607), the bulk of the former "political opposition" lost the incentives to "drag the military into politics". Even if political participation was extended to male suffrage in 1890, the voting system continued to be altered through bribery and repression (see figure 3.2).[181]

Figure 3.2. Political participation in Spain (1831-1920)



Notes and sources: Number of electors as a share of total population (left axis, continuous line) and Vanhanen's index of democracy (right axis, dotted line). The percentages of electors are estimates based on Linz, Montero and Ruiz (2005). The Vanhanen's democracy index, which is based on a combination of political participation and competition, can be found in https://www.prio.org/Data/ According to Vanhanen, an indicative threshold value for democracy would be 5 (even though it also requires minimum values of each of its components).

Nevertheless, the former narrative explains only half of the picture. Even if the political system offered opportunities (or incentives) to the military to intervene in politics before 1874, the military themselves had to be willing to do so. The historical narrative clarifies why politicians wanted the

[181] Universal suffrage was not established until 1932, under the Second Republic (1931-1939).

military in politics, but not the military's willingness to act. Actually, during the Restoration period there were also minority parties (such as the republicans) that were systematically excluded from the 'pacific turn' and also depended on the military to achieve power. However, after 1874 most generals did not respond to these parties' petitions, and the republicans could only promote four failed coup attempts during the 1880s.

Scholars have often suggested that revolted officers intervened in politics due to their ideology. Since the Independence War against the French in 1808-1814, the Spanish army became a heterogeneous social institution. The officer corps was no longer compounded exclusively by the sons of the aristocratic families, but also by those promoted soldiers and guerrilla that had fought during the war.[182] Despite Ferdinand VII's efforts to isolate these new officers and to return to an Old Regime's army, non-aristocratic officers became increasingly abundant in the military forces.[183] These new military actors, generally belonging to families of small landowners and professionals, gave their support to the liberal factions during absolutism, and later on divided their support between the Moderate and Progressive parties during Isabel II's reign.

In this regard, the experience of the revolutionary period (1868-1873), which also received initially the support of well-known officers, would have gradually changed the military's inclination to engage in political disputes. According to some authors, promises to abolish military conscription during the First Republic (1873-1874) ended up in revolts and mutinies, at a time when military discipline was relaxed and the troops (mainly composed by recruits) could not be easily commanded. Several laws and legislative projects, such as the creation of the so-called Voluntaries for Liberty (*Voluntarios de la Libertad*) – a popular militia –, or the (failed) announcement of dissolution of the army made by the Barcelona provincial government (*Diputación de Barcelona*), frightened the officers. Once the monarchical regime was restored in 1874, most rejected the

[182] Busquets (1982), Seco Serrano (1984), Cepeda (1999).
[183] In 1836 the new constitutional order abolished the requirement of nobility to join the military academies. Since 1865 Jew and Arab descendants were also eligible (Puell de la Villa, 2000).

prospect of another democratic republic, and the army's hierarchy started to appreciate the stability of the Restoration system.[184]

3.4. Military spending and coup-proofing strategies in Spain

Beyond the officers' ideology, some scholars have also pointed out the importance of the army's corporative interests to understand the dynamics of the *pronunciamientos*. As has been indicated in section 3.2.1, corporate interests might be related to general grievances felt by the military as an institution or to the self-interests of individual officers. Most of the literature has underlined the importance of the plotters' self-interest over the army's institutional claims. Actually, the army itself had a relatively modest role in Spanish coups; they were organized and executed by a small group of generals or officers on their own initiative. They aimed at gaining their troops and other units' support for their cause, but expected passivity and acquiescence from the rest of the army.[185] Moreover, even if there were many common deficiencies in the Spanish army to be solved, every military branch and stratum had its own (and sometimes conflicting) interests. For instance, recruits were generally willing to see themselves discharged from the burden of military service, while officers wanted more soldiers to accomplish their missions. Similarly, the faculty corps (artillery and engineers) defended their own promotion systems, based on rigorous antiquity, against attempts to expand the infantry's system (which was based, in theory, on merits and, in practice, on political criteria) to the whole army.[186]

Regarding the officers' self-interests, claims related to opportunities of promotion were especially relevant. Since the end of the Independence War (1808-1814), the Spanish army inherited an overcrowded officer corps. As has been already pointed out, a new generation of wartime officers was incorporated to the army after the war, which disproportionally inflated the hierarchy in relation to the remaining number of troops. The First Carlist War (1833-1839) worsened the situation, as the number of officers

[184] Headrick (1981), Seco Serrano (1984), Puell de la Villa (1998).
[185] Puell de la Villa (2006).
[186] Similar confronted interests could be found in the training system. See, for instance, Puell de la Villa (2000).

increased dramatically due to the government's compromise to hire those that had fought in the *carlist* faction and wanted to become part of the official army (the so called "Vergara's Embrace", the *Abrazo de Vergara*). As a result, Headrick (1981) reports that the ratio of soldiers to officers in Spain was about 6 to 10 soldiers per officer in 'peacetimes', while at the end of the 1880s it was 24 in Germany, 20 in France or 18 in Italy. As a consequence, promotions in 'peacetime' periods became very unusual, and those members of the armed forces that wanted to improve their professional and labour conditions became severely discouraged.[187]

This excess of officers not only frustrated the staff's professional aspirations, but also implied small individual remunerations even if the total budget was relatively high.[188] According to Headrick (1981), the officers received a very low salary that forced them to search for complementary sources of income, including begging in some extreme cases. Puell de la Villa (2006) also points out that most officers received lower salaries than civil servants of equivalent level. In this context, *pronunciamientos* became a way to improve the wellbeing of the plotters. Given that successful coups systematically ended up with promotions and awards for those officers playing active roles in the uprisings, *coups d'état* were seen as the mechanism to escalate in the chain of command in peacetime.[189] Thus, the military coups would have not been exclusively ridden by the plotters' ideology, or their desire to favour the army's interests as an institution, but also by their expectations of better individual conditions.

In these circumstances, one key question arises: was the lack of successful military coups during the Restoration period related to a coup-proofing strategy based on higher wages and promotions? Even if the new institutional system diminished the political claims for military coups, the Restoration governments could have tried to establish a coup-proofing strategy to lessen the army's claims and its motives to confront the executive. Headrick (1981) probably provides the more comprehensive answer to this question. The author suggests that the Restoration governments, aware of the importance of putting an end to the long-lasting

[187] Headrick (1981), Puell de la Villa (2006).
[188] Puell de la Villa (2000), Sabaté (2013).
[189] Headrick (1981).

tradition of military intervention in politics, decided to improve the material conditions of officers to gain their acquiesce. For instance, Alfonso XII's proclamation was followed by general promotions, while officers' wages were increased during the 1870s and the 1880s. According to this author, these measures put an end to moonlighting and "some of the officer's claims" that had previously prompted military coups.[190]

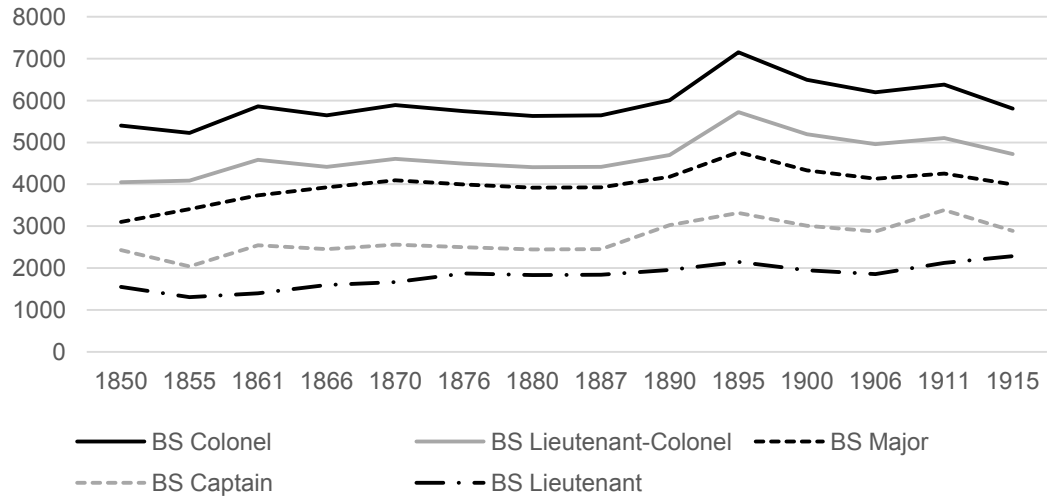
However, other authors, like Fernández Bastarreche (2006), suggest that the Restoration's containment policy in military spending worsened the wages and harmed the social consideration of the military profession during the last quarter of the nineteenth century. According to him, this helps to explain the increasing hostility between the military and the civilian governments throughout the period – that eventually ended up with the 1923 Primo de Rivera's military coup and the subsequent military dictatorship. Even though the author recognizes some nominal increases at the beginning of the Restoration regime, these were not enough to avoid a relative decline of military salaries, compared with civilian wages. Actually, in his analysis of the Spanish army during the first decades of the twentieth century, Cachinero (1988) argues that low salaries and scarce opportunities of promotion (together with other claims related with the fighting capacity of army) were the main grievances of the military institution. Although this author does not compare this situation with former periods, this could be the result of a decrease in military remunerations during the Restoration.

In order to contribute to disentangle this debate, I provide new officer's remunerations data. To start with, figure 3.3 shows the evolution of the real yearly base wages for a set of military categories (colonel, lieutenant-colonel, major, captain and lieutenant) from 1850 to 1915 in several benchmark years, expressed in pesetas of 1850. All wages in figure 3.3 were assigned to infantry officers that commanded troops in a line regiment.[191] As can be seen, in most cases there were two periods of increasing real wages: the 1860s and the 1890s, both of them due to increases in nominal wages (particularly the early 1860s and the early

[190] Seco Serrano (1984) relies on Headrick to reach similar conclusions.
[191] Similar data can also be found in Fernández Bastarreche (1978), expressed in current *reales* per month.

1890s) and to relatively low inflation (the 1860s) or deflation (the first half of the 1890s). By contrast, during the early years of the Restoration regime there was just a modest increase in the lieutenant category.

Figure 3.3. Real yearly base salary for several categories of officers (1850-1915)

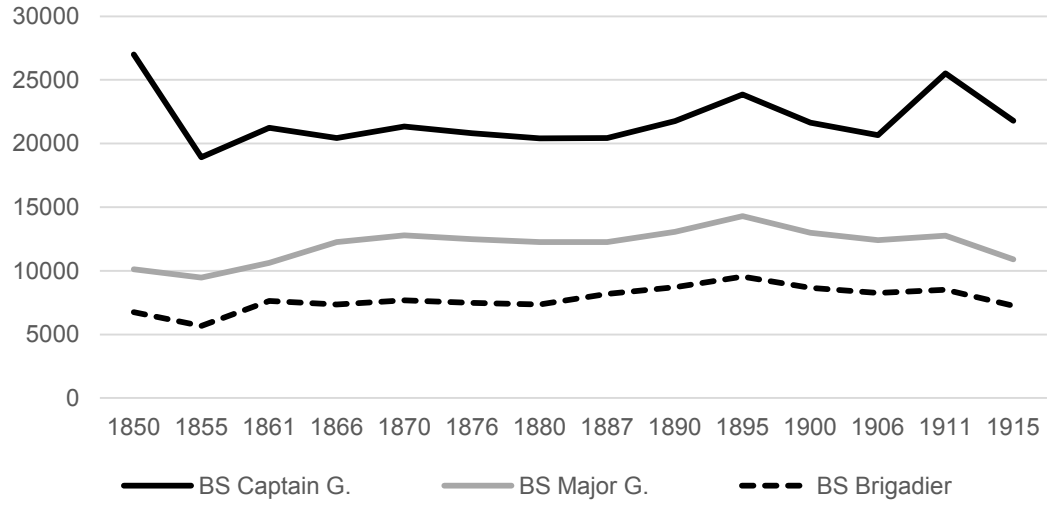


Notes: Yearly base salary for infantry officers with command of troops in constant *pesetas* of 1850.
Sources: Salaries from Spanish national accounts (*Presupuestos Generales del Estado*) and GDP deflator from Prados de la Escosura (2003).

According to this data, the early Restoration governments do not seem to have applied any clear coup-proofing strategy based on military salaries, or at least not more than in previous decades. However, the 1890s saw an unprecedented increase in real wages, just after the last *pronunciamientos* of the 1880s, which could reflect the government's reaction to recent military insubordination. On the other hand, the decreasing real wages observed during the twentieth century might explain the increasing military displeasure described by Cachinero (1988). An analogous picture is found when taking into account the general grades. Figure 3.4 shows the evolution of the base salary for captain generals, major-generals and brigadiers. Once again, the 1860s and the 1890s show significant increases in the three levels. Additionally, the captain generals' salaries experienced a very sharp

increase in 1911 due to the growth of their nominal wages from 25.000 *pesetas* to 30.000 *pesetas* per year.[192]

Figure 3.4. Real yearly base salary for several categories of generals (1850-1915)



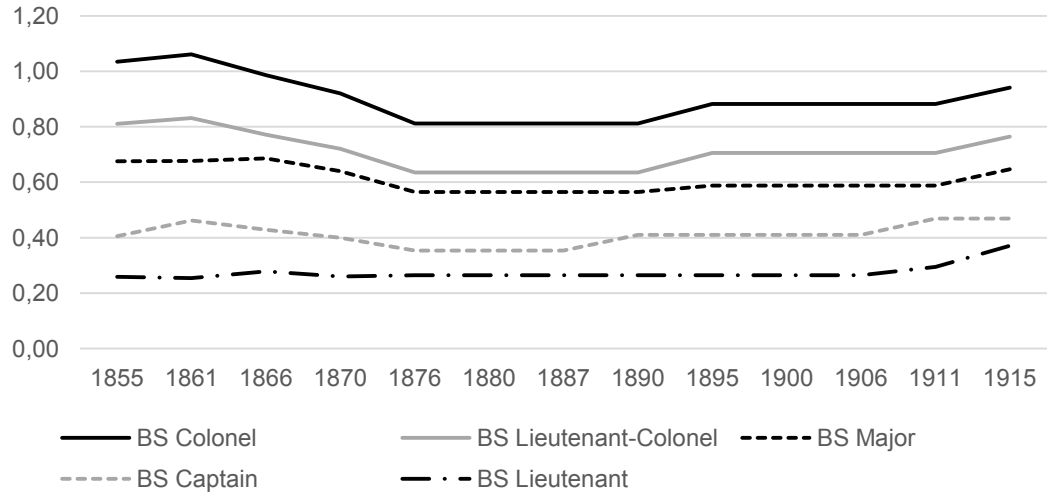
Notes and Sources: see figure 3.3.

If we compare these figures with the salary of other civil servants, the results point to similar conclusions. Figures 3.5 and 3.6 show the aforementioned military salaries as a share of the salaries of the Madrid courts judges. In this case, the Restoration governments seem to have broken the previous diminishing trend of relative military salaries, particularly in the case of the higher categories. Nevertheless, this changing pattern can hardly explain the lack of successful coups after 1874, and it does not reflect either a clear pattern of coup-proofing via improving the military conditions of the officers. Even if it displays a higher sensitivity towards officers' labour conditions, it just reflects a weak effort to gain the military's acquiescence. However, relative wages of several officer grades (particularly captains, lieutenant-colonels and colonels) grew in the 1890s, which suggest again a governments' reaction in the aftermath of the 1880s

[192] The sharp reduction in captain generals' wages from 1850 to 1855 is probably due to some accounting differences in the base salary of these two benchmarks (possibly regarding some complementary gratifications included within the base salary in 1850). On the other hand, the decrease from 1911 to 1915 in all categories was mainly due to First World War inflation.

military interventions. The first half of the 1910s also show an improvement of officers' relative wages; despite of the decreasing pattern in absolute terms, they performed better than the Madrid courts judges' salaries.

Figure 3.5. Yearly base salary for several categories of officers as a share of Madrid judges' salary (1850-1915)

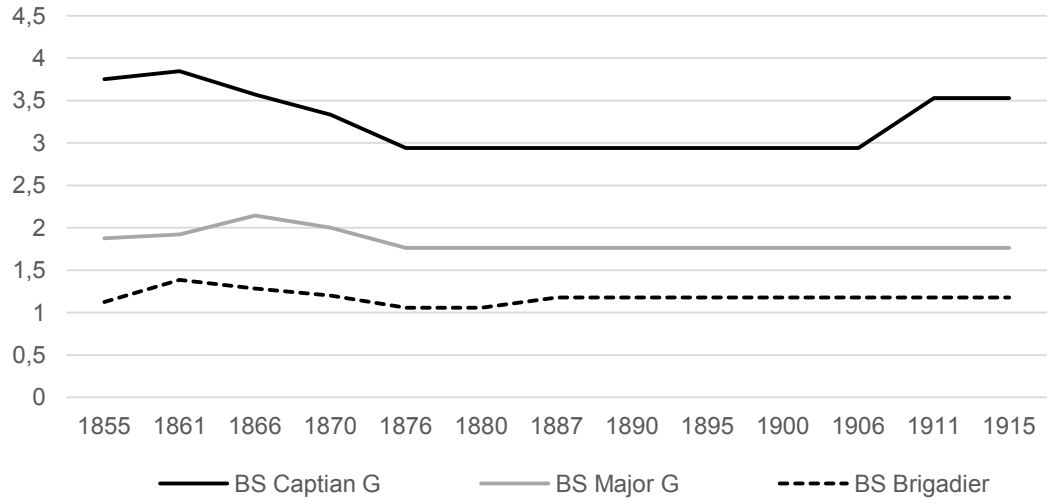


Notes and Sources: see figure 3.3. Judges salaries from Spanish national accounts (*Presupuestos Generales del Estado*).

Nevertheless, these figures do not reflect the real remuneration received by officers. As has been reported by Fernández Bastarreche (1978), the base salaries received by the army were complemented by additional remunerations that varied according to professional categories and other specific conditions. The report "*Memoria sobre la organización y estado del ejército en 1º de enero de 1860*" written by the Section of History of the War Deposit in 1860 provides detailed information on the huge variety of these military gratifications. For instance, the report accounts that a colonel servicing in an infantry regiment with two battalions earned 333,33 reales per month (almost 15 per cent of its monthly base salary) as a gratification for commanding troops, while the same colonel in an infantry regiment with three battalions earned 500 reales (21 per cent). By contrast, in the case of the cavalry, a colonel's gratification for command was about 400 reales (17 per cent). There was even more diversity in the so called 'pluses', which were gratifications given in wartimes or in extraordinary

circumstances. For instance, a captain could earn 120 reales per month (12 per cent of its monthly base salary) when protecting royal places during a King's stay; the officers could also receive 100 reales per month during military operations, and military chiefs could receive an undetermined amount depending on the efficiency and behaviour of their forced labourers in fortification works.

Figure 3.6. Yearly base salary for several categories of generals as a share of Madrid judges' salary (1850-1915)

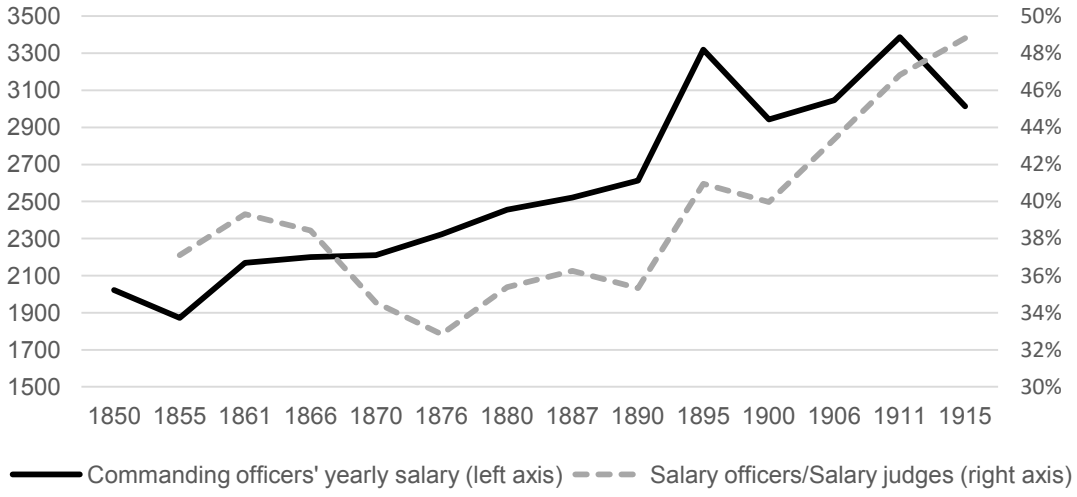


Notes and Sources: see figures 3.3 and 3.5.

Given that these complementary earnings were increasingly important during the late 19th and the early 20th centuries, the base salary does not represent the actual officers' earnings. However, the diversity of these gratifications makes it very difficult to provide a long-term homogeneous series for every category. Fortunately, the *Presupuestos Generales del Estado* (Spanish national budgets) provide the overall military spending devoted to the officer (and general) corps' remunerations. This may be divided by the total number of officers reported in the national accounts in order to estimate their average individual earnings. Even if this measure only provides an estimated mean of all officer grades, it allows exploring to what extent the Restoration governments improved officers' wellbeing. Figure 3.7 shows the average officers' remunerations from 1850 to 1915 in constant pesetas of 1850 (continuous black line) and as a share of the Madrid judges' salary (dotted grey line) in several benchmarks years. As in

previous figures, I just take into account the remuneration of officers with effective command of troops, and exclude those officers that were in the reserve and received only part of the salary.

Figure 3.7. Average total remuneration of commanding officers (1850-1915)



Sources: see figures 3.3 and 3.5.

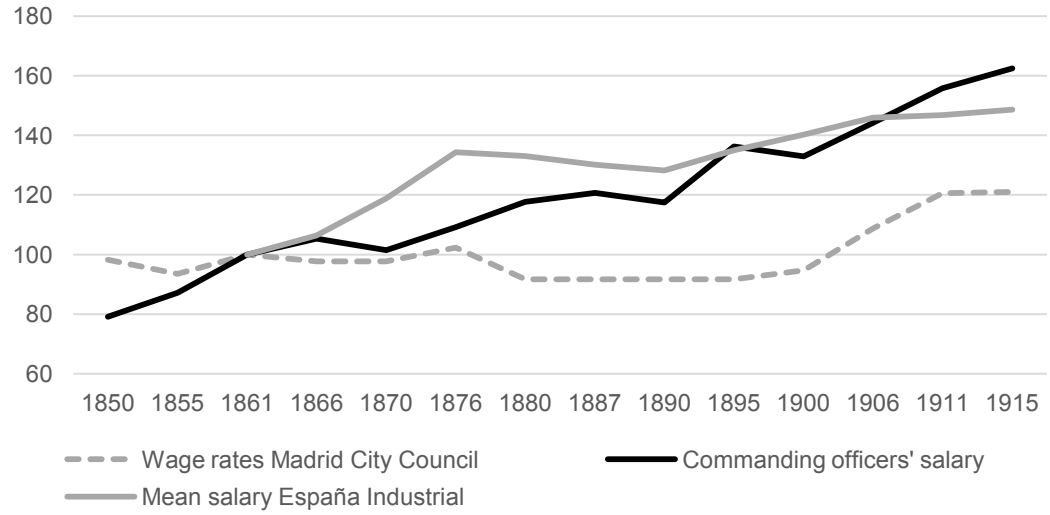
This time the picture is fairly different. In contrast with the rather flat series presented in figures 3.3 and 3.4, the full payments to officers were gradually increased from 1850 to 1915, and particularly from 1870 onwards.[193] On the other hand, the ratio of officers' payments to judges' salaries decreased from the early 1860s to the 1876 benchmark, to increase afterwards, particularly since the 1890s. Even if this data does not specify whether this growth is driven by increasing remunerations or by an increasing share of better paid officers in relation to lower hierarchical grades, the figures suggest an effective effort to improve the wellbeing of the military officer corps. In line with Headrick (1981), the Restoration governments not only implemented a political system that discouraged

[193] The sharp growth from 1890 to 1895 can be explained by the combination of increasing nominal salaries and the decrease in the number of captains and lieutenants in the infantry line regiment (which are low graded and low paid officers within the chain of command), as well as by the intense deflation of the early 1890s. By contrast, the drop from 1895 to 1900 is mainly explained by the inflationary trend initiated in 1895. Similarly, the decrease of 1915 is fully explained by the inflation rates related to the First World War.

military intervention, but also devoted financial efforts to overcome the grievances that could drive officers to mount coups.

Similar comparisons can be drawn with other labour categories. Figure 3.8 compares three wages indices: the commanding officers' (full) average remunerations with the wage rates of the City Council of Madrid and the weighted mean salary of the industrial company *La España Industrial S.A*., all in nominal terms. In the case of the latter, the gap between both indices widened from 1861 to 1876 in favour of the industrial wages, but started to shrink in the following decades, to finally reverse the gap at the end of the century. As for the wage rates of the City Council of Madrid, they were rather stable until 1900 (with a significant drop in 1880). Compared with the officers' remunerations there was an increasing gap since the beginning of the period, which grew especially larger during the 1880s and the 1890s. All in all, these figures seem to suggest again an effort to improve the wage payments to officers above those of other civilian sectors.

Figure 3.8. Evolution of wages and commanding officers' remunerations, 1850-1915 (1861=100)



Sources: Nominal wages of the City Council of Madrid and La España Industrial S.A. come from Maluquer de Motes and Llonch (2005). For officers' remuneration data see figure 3.3.

These figures allow exploring the coup-proofing strategies in more detail than total military expenditures (as has been the norm in previous analyses).

In order to compare my results with those that would be obtained by using total military spending, figure 3.9 presents the same ratios as figure 3.7 but using overall expenditure (in constant *pesetas* of 1850). Both series are rather flat until the 20th century, which could wrongly induce to discredit the existence of a coup-proofing strategy based on public spending.[194]

Figure 3.9. Total military spending per commanding officer (1850-1915)

Sources: Public expenditures from Spanish national accounts (*Presupuestos Generales del Estado*) and GDP deflator from Prados de la Escosura (2003). For judges' wages see Figure 3.5.

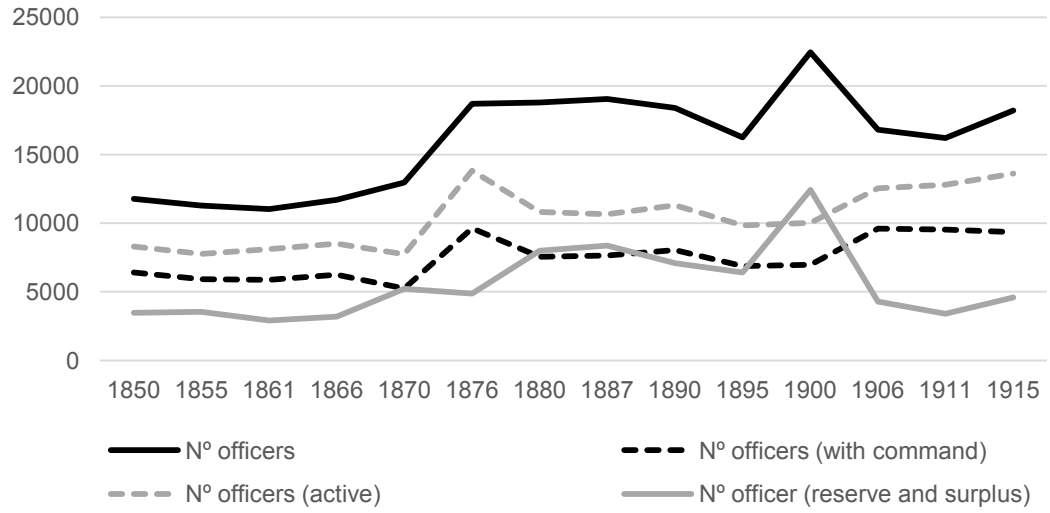
As has been said before, a complementary way to improve the wellbeing of the officer corps was increasing the number of promotions. Improving the position along the chain of command did not only imply higher social recognition but also better economic conditions. Figure 3.10 shows the evolution of the number of officers in our period of study.[195] The total number of officers increased substantially in 1870-1876 and remained high until the end of the period. Similar increases can be observed in the number

[194] The main peaks (1861, 1900 and 1911-1915) are directly related to wartimes: the military interventions in Africa and Asia (1859-1863), the war in Cuba and Philippines (1895-1898) and the Moroccan War (1909-1927) respectively.

[195] National budgets do not provide actual figures on the number of officers, but just estimations that could change in the course of the fiscal year. Nevertheless, they allow disaggregating the total number of officers in several categories (see figure 3.10). Additionally, budget data are similar to other available information, differing only 1.5 to 7.8 per cent from the (actual) amounts provided by the *Anuarios Militares de España* for 1900, 1906 and 1915.

of active officers and the number of commanding officers in the first half of the 1870s, which suggests that the army incorporated into its active chain of command some of the new officers that fought in the Third Carlist War (1872-76). However, the number of active officers decreased substantially in the second half of the 1870s, at the same time that the officers in the reserve increased; even if the early Restoration governments preferred to ensure war-related promotions rather than cutting the number of officers to return to previous levels, part of these new positions were transferred to the reserve.

Figure 3.10. Number of officers in the Spanish army (1850-1915)



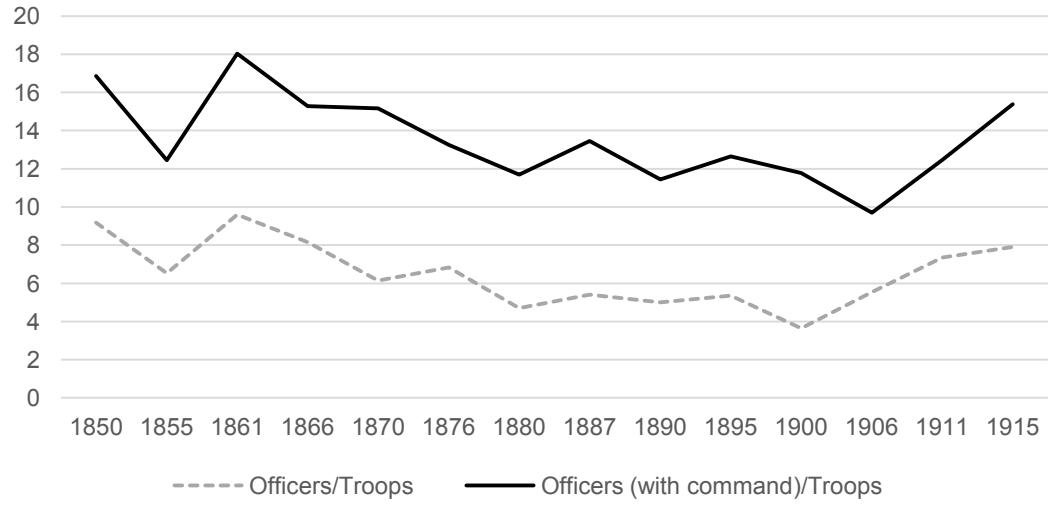
Notes: the number of officers with effective command of troops accounts for those officers that were commanding troops in any branch of the land forces; the total number of officers includes the former ones plus those officers in the reserve and surplus officers (without effective command of troops and half – or part of the usual – salary) and those officers – or civil servants working for the Ministry of War with equivalent grade – in charge of non-fighting services (military health, military justice, administration, etc.); the active officers accounts for the total number of officers minus the officers in the reserve.
Sources: Spanish national accounts (*Presupuestos Generales del Estado*).

The officers in the reserve also increased significantly in the 1870 and (particularly) the 1890 benchmarks, which reflect the end of the 1860s colonial adventures and the Cuban and Philippines independences respectively. These increases suggest again that governments preferred to keep officers in the corps even if there were no specific tasks for them. However, the 1900 increase was mainly led by the so-called ‘surplus

officers' and the 'officers to be replaced' that came from the colonies, which were to be rejected from the corps in the following years (as can be seen by the subsequent sharp decrease in the reserve and surplus officers). This downside was partially compensated by an increase of the number of active officers and the number of commanding officers after 1900. Once again, this seems to reflect Spanish governments' willingness to avoid conflicts with the officers even if this implied an inflated officer corps that contributed to harm fiscal sustainability.

A consistent pattern is found in the number of officers as a share of the number of troops and subordinate employees. As can be seen in figure 3.11, the number of troops per officer during the Restoration remained significantly lower than in previous time-periods (even though the decrease had started already in the 1860s). The ratio rose again in the twentieth century, due to the Moroccan War initiated in 1909: the number of troops increased more than the number of officers thanks to the 'stock' of officers in the reserve that could be deployed in wartime.

Figure 3.11. Troops per officer in the Spanish army (1850-1915)



Notes and sources: see text and figure 3.10.

These changes may be considered part of a comprehensive plan to put an end to the secular tradition of military coups. Some authors talk about a 'tacit pact' between the government and the military: the latter would remain out of politics as far as the former did not contravene the army's

priorities in military affairs.[196] For instance, military budgets were generally passed without much debate, and those reforms that displeased the army were generally dismissed.[197] On the other hand, the 1878 Constitutive Law of the Army clearly specified that soldiers could not participate in political meetings (except for military ministries, deputies, senators and officers in the reserve).[198] This 'pact' ensured that officers could manage military affairs on their own and would have no reasons to confront the government. The aforementioned flexibility in military remunerations, as well as the acceptance of an inflated officer corps (that aggravated the excess of officers inherited from previous periods), might be understood as part of this effort to content the army.

Other complementary coup-proofing strategies can be also found during this period. Some authors suggest that Cánovas del Castillo favoured the figure of the 'king-soldier', in which the kings Alfonso XII (1874-1885) and Alfonso XIII (1886-1931) were appointed as the supreme command of the army. This strategy was aimed at ensuring that officers would not intervene in politics against the king's will.[199] Moreover, the Restoration's governments blockaded the career of those generals that intervened in politics in the wake of the 1868 revolution, while promoting those involved in the 1874 coups.[200] The generational change was also in favour of the new institutions: most generals that prospered in the late 1870s and 1880s were trained after the 1868 Revolution, and most of the brass hats that intervened in politics during Isabel II's reign were no longer active.[201]

Interestingly, the Restoration governments did not apply other coup-proofing strategies that have been discussed in section 3.2.3. The regime did not develop any clear attempts to counterbalance the power of the army. This decision could be related with the failed – and counter-productive –

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[196] Seco Serrano (1984), Cardona (1984), Puell de la Villa (2000), Fernández Bastarreche (2006).
[197] Headrick (1981).
[198] *Ley Constitutiva del Ejército*, Art. 28, *Gazeta de Madrid* nº 354, November 30th 1878, Vol. IV, pg. 602
[199] In the 1878 *Ley Constitutiva del Ejército* (Constitutive Law of the Army) and the 1889 additional law the king was literally named the "supreme command" of the army. See Headrick (1981), Lleixà (1986), Puell de la Villa (2000).
[200] Headrick (1981), Fernández Bastarreche (2006).
[201] Seco Serrano (1984), Fernández Bastarreche (2006).

previous experiences, such as the creation of a large National Militia during the so-called progressive biennium (1854-1856) under the leadership of the general Baldomero Espartero, which did not help to defeat the 1856 *pronunciamiento*. On the contrary, the militia raised some officers against the progressive governments.[202] In fact, according to De Bruin (2015) and others, counterweight may help to counteract coups, but at the same time may irritate the military. On the other hand, the establishment of a rural paramilitary corps (*Guardia Civil*) in 1844, during the Moderate Party's government, which could have been also used as a counterweight against progressive military uprisings, did not perform that role due to its organic dependency upon the Ministry of War (its chief command was even a military officer).

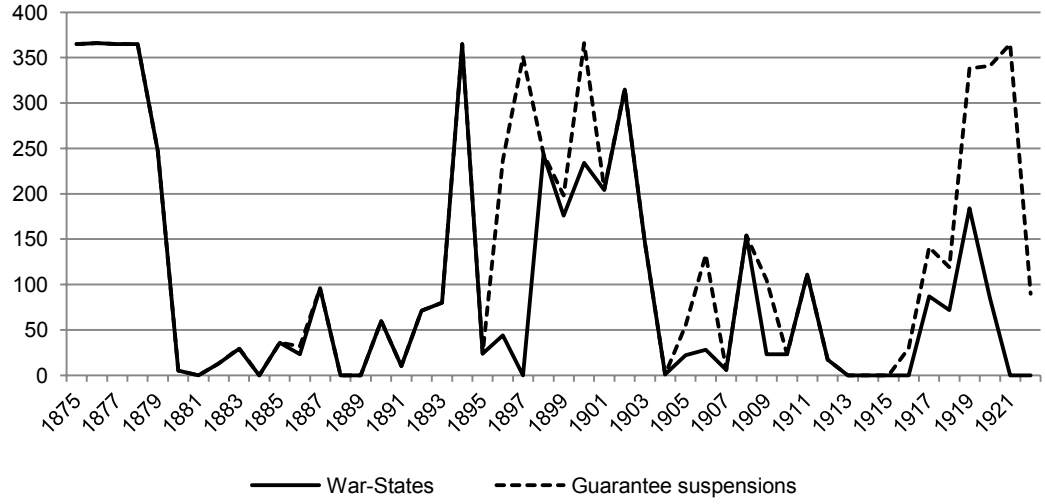
Similarly, the Restoration governments did not use diversionary international warfare as a way to keep the army occupied and to hinder the organization of a coup (at least before the twentieth century). According to most historians, Cánovas del Castillo, the architect of the Restoration regime, was well aware of the Spanish military weakness, which prevented the country to play a role in the international scenario with other European military powers. Thus, the army's main international missions were to maintain the *statu quo* and protect the Spanish colonies and the own country's integrity.[203] Moreover, the *carlist* movement, the urban republicanism and the labour movement were seen as the main dangerous threats; thus, the Restoration governments prioritised the army's domestic orientation.[204]

In this regard, Figure 3.12 shows the percentage of days per year that Spain was under war state or under siege state (locally and nationally declared) from 1875 to 1922. As has been said, war states were declared in times of domestic turmoil in order to transfer the public order responsibility directly to the army, while siege states allowed the government to suspend constitutional guarantees. The figure suggests that the army took the command of public order particularly during wartimes, when public turmoil

[202] A similar process took place during the Liberal Trienium in 1820-1823. See, for instance, Headrick (1981).
[203] Elizalde (1998).
[204] Puell de la Villa (1998).

became tougher. States of war were also frequent during the early years of the Restoration, which reflects the confidence that the governments placed on the army to protect the new institutional order.

Figure 3.12. States of war and states of siege in Spain (1874-1923)



Notes: own elaboration based on González Calleja (1998).

From a theoretical perspective, this military withdrawal may reflect the difficult coexistence between domestic-oriented coup-proofing strategies and successful military adventures against foreign countries. Besley and Robinson (2010) argue that governments must choose one among two main competing options to avoid coups: accept all the military's grievances by creating a powerful army (which could be dangerous in case of a conflict with the civilian authorities) or disdain their claims and create a "tin pot" army (which is not powerful enough to threat the government, but is not very useful in case of international warfare). Restoration Spain might represent another variation of this dilemma: governments agreed to favour officers (who had been the main threat to the previous governments), but this came at a price: the army was hardly prepared for international warfare as the bulk of the budget had to be devoted to an inflated officer corps instead of to other warfare endowments.

3.5. Coup-proofing strategies and military grievances in public discourses

Given that several coup-proofing strategies seem to have been applied to overcome the army's grievances, it is time now to address whether these policies were explicitly designed to avoid coups and to what extend the army recognized this effort. Although this would require a more exhaustive revision of parliamentary discussions and discourses of political leaders, some preliminary insights can be advanced.[205]

Firstly, political leaders were certainly aware of the need to find preventive solutions to military coups. In this regard, the parliamentary discourse pronounced by Cánovas del Castillo on July 2nd 1877 provides some broad evidence about this concern and the need to implement preventive coup-proofing strategies. In his answer to the deputy (and General) Salamanca y Negrete about disciplinary measures taken against several generals, Cánovas asked rhetorically to the audience in the parliament:

"*Is there any experienced man, any conscientious man that believes that is possible to constantly maintain the discipline in the army without using preventive measures? Is there anyone who believes that it is possible to keep the discipline without knowing the spirit and the condition of the armed forces, using only criminal and judicial measures to prevent seditions?" No; (...) the industry of conspiracies has advanced too much in Spain to believe that it is possible to know and to impede seditions by only using judicial procedures*."[206]

Similarly, in the same discourse, Cánovas emphasized that the military prerogatives given to the king in the 1876 Constitution were the result from a thorough decision, while reaffirmed the conviction that the parliament should remain away from those issues that were the army's competence:

"*(...) the present Constitution gives more military authority to the King than former Constitutions. This is not an accidental outcome; it has been*

[205] Such exhaustive review will be part of my future research agenda.
[206] *Prerrogativas del Rey respecto del mando del Ejército, DSC de 2 de julio de 1877*, in Cánovas del Castillo (1999 [1854-1888]).

thoroughly considered by the constitutional commission; it has been the result of the commission's conviction (...); in the same way that no country discusses the negotiations about diplomatic measures if the Government does not declare that these measures can be discussed, the decisions regarding the command, the government and the discipline of the army cannot be constantly discussed by the legislative corps without a great threat for the discipline and without nullifying the constitutional article that gives the prerogative of the supreme command to the King."[207]

On the other hand, it is also relevant to assess whether the armed forces recognized the effort made by the Restoration governments to prevent coups. In this regard, the military press provides a unique opportunity to approach the army's state of mind. For instance, *El Correo Militar* (The Military Post), a military newspaper created in 1869 by a republican military writer and reformed as a conservative newspaper during the Restoration, reviewed with surprising frankness the aforementioned coup-proofing strategies and the end of the *pronunciamientos* in its article "The Army and politics" published on April 8th 1893:

"*In the latest times there had been attempts to isolate the army from politics (...). It was, then, a clever policy to avoid having discontented generals in the army, trying that all of them, or at least a vast majority, served in destinies that were in accordance with their category; the consequent combination of moral and material satisfaction made it difficult for them to think about asking to politicians what the military organization was already giving to them.*"

Similarly, *La Correspondencia Militar* (The Military Correspondence) praised in its July 27th 1898 edition the aforementioned military promotions (even if this recognition was used to criticise the situation of the *Carabineros*, the coast guard corps):

"*The chains of command of the general Arms, due to several orders, have improved notably; those of the auxiliary Corps have done it extremely well and, at last, those of the Guardia Civil, so far neglected, have experienced*

[207] *Prerrogativas del Rey respecto del mando del Ejército, DSC de 2 de julio de 1877*, in Cánovas del Castillo (1999 [1854-1888]).

an important advance; only those of the Carabineros suffer all the pain that falls upon their personnel, killing their spirit and inner satisfaction, and keeping constantly among them these elements of displeasure and complaint and anxiety."

The *Correspondencia* also related fairly explicitly military loyalty and military staff's wellbeing in its issue of June 23rd 1900, after the military repression of disturbances in Madrid:

"*We will repeat it one and thousand times, we will say it forever; to rule is to repress; this is why today there has been repression and the triumph of our Patria cheers many death hearts up (...) But it is possible to repress in such a definitive and conclusive way only when the Armies stay side by side with the Governments, because the Governments take care of the Armies; when the bayonets, like nowadays, are side by side with those who order the compliance of the laws (...)*"

Nevertheless, these quotes might suggest a placidness in civilian-military relations that was far from reality. Unlike the former paragraphs, the military's claims for better conditions and more self-management of their own affairs were bitterly present throughout the period. In this regard, the *Correspondencia* voiced the military's corporative grievances throughout the Restoration regime and reflects the conservative turn that the army experienced throughout the period: established in 1877 by a republican major (that even participated in one of the republican coup attempts that took place in the 1880s), the newspaper got progressively closer to the conservative party and ended up giving support to the 1923 military coup. In its edition of November 24th 1898 it claimed for higher wages for the lowest grades of the officer corps, such as captains and lieutenants. Entitled "Act of Justice", the article said:

"*We have been repeating since many years that the salary assigned to military officers in Spain is miserable and impede them to cover their necessities with comfort; but no Government has worried about it, not even to study it (...) No more delays and postponements, kill the harmful laziness and undertake the required measures to solve this issue that affects the dignity of the armed corps (...)*"

Similarly, the *Correo* published on May 10th 1886 an article that threateningly related the alleged low salaries of the officers in the 1880s (and also low military spending) with the past tradition of military coups:

"*With our miserable army, with an officer corps to whom every privilege has been denied, that lives in misery, to whom every mean of welfare and decorum has been skimped, we can only expect ruin, disturbance,* pronunciamiento*, internal disputes, the standstill of trade and industry (...)*"[208]

Similar claims can be also found when talking about the desired autonomy of the army. The *Correspondencia* reflects the military frustration for the alleged civilian interference on military issues when reviewing the parliamentary discussion of the 1900 Ministry of War's budget:

"*All civilians that have intervened in the [parliamentary] debate have been stuck in a vicious circle that is harmful for the Fatherland and for the Army; this is: we needed to economize, to economize a lot, to economize like crazy (...). There were so much nonsense in their speeches, and so many absurdities were proposed due to the absolute ignorance of civilians regarding military issues, to the lack of study of the military problems and to the incomprehensible antipathy against the army!*"[209]

These critical pieces suggest that the aforementioned increases in the officer's remunerations and other coup-proofing strategies were probably a reaction to the harsh military claims. Even if the press probably exaggerated the tough economic conditions of the military, it reflects the state of mind that prevailed in the military conservative circles. Despite recognizing the effort done by the governments to improve officers' wellbeing, this same military press kept a very belligerent attitude against them throughout the period. Thus, it can be concluded that these coup-proofing strategies were (to some extent) welcomed by the army, but were far from sufficient to

[208] The *Correo* actually reprints an article appeared in the newspaper *El Resumen* (The Summary). This same newspaper published a discourse pronounced in June 1886 by the General López Domínguez that also linked the social problems of the army and the threat of the *pronunciamientos* (Boned, 1992).
[209] *La Correspondencia Militar*, January 26th 1900.

contain their claims. Once the institutional framework of the Restoration started to stagger, these measures were hardly enough to contain the military insubordination.

3.6. Conclusions

All in all, the Spanish governments applied a set of coup-proofing strategies that, along with the new political design implemented by Cánovas del Castillo, put an end to the long-term tradition of *pronunciamientos*. Among them, military spending was used to improve the officers' wellbeing and to overcome some of the grievances that brought the military into politics in previous decades. Even if the military kept a privileged access to legislative power and continued to pressure the governments for better conditions (as well as for more aggressive external policies and more autonomy from politics), these pressures remained under certain control during several decades. Given that the country had a very prolific history of *pronunciamientos*, and knowing that past coups have been proven to be a powerful explanatory variable for future coups, this historical shift was a significant achievement.

Military spending has also been used to foster political stability in other historical periods, such as the transition from Franco's dictatorship to democracy in the second half of the 1970s. According to Agüero (1995), the army's professional decay during Franco's regime (1939-1975) gave civil elites the opportunity to link the political democratization with the military modernization. In this line, Serra (2008) suggests that new major investment in equipment, as well as the reorganization of the military structure and growing salaries to professional soldiers were part of a modernization program designed to get more competitive armed forces and to involve them with the newly democratic institutions. In this regard, in the second chapter I found that the military burden increased during that period due to modernization policies and particularly to investment and operational budgetary items.

Nevertheless, it must be noted that these two historical experiences do not imply that increasing officers' remuneration and military spending – as well as applying other coup-proofing strategies – is a certain way to avoid future

coups. Rather, these experiences suggest that military spending might be helpful to consolidate new political institutions as far as it helps to build social legitimacy and reduce military grievances against the political system. In this regard, the early democratic governments of the 1970s and 1980s used military spending to improve the acquiescence of the army, but the new regime endured despite of the sharp decrease of the military burden in the 1990s. Once social legitimacy was build and most of the army recognized their new opportunities under the democratic regime (as well as the social impediments to impose a political shift), the military remained out of politics.[210]

By contrast, the Restoration regime perished in 1923 under General Primo de Rivera's *coup d'état* despite the systematic increase in officers' remunerations. Even if these higher remunerations could contribute to gain the acquiescence of the army, other factors weakened the regime's political stability. For instance, several authors argue that the defeat in the Spanish-American War in 1898 and the consequent loss of the Cuban and Philippines colonies contributed (among other factors) to put pressure on the military-civilian relations and to weaken the stability of the system.[211] On the other hand, the "peaceful turn" established at the beginning of the Restoration regime started to break down when minority parties increased their parliamentary representation – particularly since the approval of male suffrage in 1890. Even if fraud continued to characterize subsequent elections, the new urban vote destabilized the conservative-liberal equilibrium of the Restoration's original design.[212]

Actually, Puell de la Villa (1998) emphasises that the military policies undertaken by Canovas del Castillo favoured the creation of an autonomous military power that ended up by monopolizing Spanish politics during most of the twentieth century.[213] The binomial king-army and the 'tacit pact' between the government and the army gave place to an emerging militarism. Therefore, the Restoration's coup-proofing strategy contributed to prevent military coups in the short term, but also eroded the

[210] Agüero (1995).
[211] Seco Serrano (1984), Cardona (1983), Ferndández Bastarreche (2006).
[212] Curto *et al.* (2012).
[213] See also Cardona (1983), Lleixà (1986).

government's capability to prevent coups in the longer term. According to the same author, this problem was reinforced by the generational change in the army in the turn of the century, with new officers that had not lived the Revolutionary Six-Year Period (1868-1874) and its military troubles.

Chapter 4. Does military pressure boost fiscal capacity? Evidence from late-modern military revolutions in Europe and North-America

Abstract

Warfare and military competition have been defined as important driving forces for the expansion of fiscal capacity during late-modern times. However, the empirical evidence remains inconclusive, and we still lack a historical narrative that explains how warfare has affected the evolution of late-modern fiscal systems. This chapter aims to fill this gap by analysing the effects of warfare on fiscal development in the light of the so called 'Revolutions in Military Affairs' (RMA) that took place in Western countries since the mid-19th century to the present. The results suggest that the interplay between warfare and fiscal expansion has followed an inverted 'U-shape' pattern, in which changes in military tactics and technology have pushed public revenues up until the destructive power has passed the nuclear threshold level. Additionally, the results pose that politics is relevant to complete this war-led narrative, despite having been understudied in most of the previous quantitative literature.

4.1. Introduction

Shortly before the end of the First World War, the Austrian economist Joseph Schumpeter (1918) argued in his famous article "The Crisis of the Tax State" that, during the early-modern period, growing warfare expenses forced sovereigns to pile up debts and to progressively expand the tax system.[214] Following these preliminary Schumpeterian insights, recent historical studies have defined military competition as one of the most important driving forces for the expansion of fiscal capacity in early-modern times. The main line of argument suggests that the persistent

[214] Spoerer (2010) points out that other authors like Gustave Schmoller formulated similar ideas some decades earlier.

technological change and the growing size of armies experienced since the Infantry Revolution of the 14th century made war increasingly costly. This forced governments to improve their long-term taxation capacity and their access to public debts in order to provide better military endowments and to pay off the heavy financial burdens inherited from wartime.[215]

Similar arguments have been applied to late-modern fiscal history, even though the historical interplay between warfare and fiscal development remain less clear. Unlike the studies on the early-modern period, the analyses focused on late-modern times have not addressed the successive changes in the character of warfare and its potential consequences in terms of fiscal development. Therefore, to what extent the transformation in the nature of warfare has shaped the evolution of fiscal systems remains unexplored. To fill this gap, this chapter analyses the effects of warfare on late-modern fiscal development in the light of the so called 'Revolutions in Military Affairs' (RMA) that took place in the Western countries (i.e. Western Europe, the US and Canada) since the mid-19th century to the present.

The RMA are usually defined as periods of innovation in which military forces develop new tactics, doctrines, procedures and technological engines. According to military historians, the Western countries' warfare has experienced at least four major RMA since mid-19th century, concretely the Land Warfare and Naval Revolutions (1850-1913), the Interwar Revolution (1914-1945) and the Nuclear Revolution (since about 1945). I argue that these key processes not only transformed the character of warfare but also determined the evolution of late-modern public revenues in Western countries. Specifically, the increasing cost of warfare associated to the Land Warfare and Naval Revolutions, and even more the impressive mobilization of resources related to the Interwar Revolution, gave place to permanent increases on public revenues over time. By contrast, the exceptional destructive capacity of the Nuclear Revolution contributed to diminish the pressure of warfare on fiscal systems, as major military conflicts among great powers became politically unacceptable. All in all, the interplay

[215] Historical research on this topic has inspired a growing theoretical literature that analyse the links between warfare, fiscal capacity and economic performance. See, for instance, Besley and Persson (2009), Dincecco and Prado (2012).

between warfare and fiscal expansion followed an inverted 'U-shape' pattern, in which changes in military tactics and technology pushed public revenues up until the destructive power passed the nuclear threshold level.

The chapter addresses this topic by analysing a new international dataset on public expenditure and revenues for a set of thirteen European and North American countries from the mid-19th century to the present. The results, based on structural break tests and regression analysis, are largely consistent with my hypothesis. Moreover, my results also indicate that politics is relevant to complete this war-led narrative. More precisely, autocracies appear to have favoured persistence in public revenues during the Interwar Revolution compared to democratic countries due to their militaristic policies. By contrast, persistence was higher in democracies after the Second World War, due to their higher commitment with non-military purposes compared to autocratic regimes. Lastly, democracies also appear to have enforced persistence in direct taxes during the Interwar Revolution compared with autocratic regimes, which reflect their higher commitment with progressive taxation.

The chapter proceeds as follows. Section 4.2 and 4.3 review the previous literature on warfare and fiscal capacity, and the main 'Revolutions in the Military Affairs' that took place during the 19th and the 20th centuries respectively. Section 4.4 presents the new dataset, and section 4.5 analyses the growth and the persistence of public revenues in each country of the sample by applying structural break tests. Sections 4.6 and 4.7 analyse the incidence of military pressure on the growth of fiscal capacity by applying regression analyses, and Section 4.8 concludes.

4.2. The interplay between warfare and fiscal expansion

The Austrian economist Joseph Schumpeter published in 1918 his famous article "The Crisis of the Tax State". There, the author described the difficult financial straits suffered by the *Reich* and the other powers of today's Austrian territory during the 14th and 15th centuries. According to him, "the most important cause of the financial difficulties consisted in the growing expenses of warfare", mainly due to the "emergence of mercenary armies" to confront the larger Turkish forces. The princes reacted by getting

indebted and negotiating new taxes on behalf of the "common exigency". Out of this "common exigency" the tax system developed and helped to create the so called "tax state".[216]

This Schumpeterian "tax state" concept has inspired a growing literature that analyses the evolution of fiscal systems in modern times, in which military competition and the increasing cost of warfare play a prominent role. For instance, Kersten Krüger (1987), who formally characterized the "tax state" in terms of its ability to levy regular taxes and to raise loans, considered the growing military forces and the expanding administration as the main causes of the 16th century crisis of state finances and the opening up of new sources of revenues. More recently, Bonney and Ormrod (1999, 5, 16) described the origins of the "tax state" as a "consequence of military developments", in which taxation was "reactive, driven by expenditure, especially expenditure on war". The increasing size of the armies and the technological innovations in the fields of military and naval armaments led to "escalating military costs which spiral out of control in periods of sustained warfare". The response was an increase on regular direct and indirect taxes, as well as a conversion from short-term to long-term loans guaranteed by the state.[217]

This prominent role of warfare on the development of modern tax systems has also been emphasised by authors such as the historical sociologist Charles Tilly (1990) and the military historian Geoffrey Parker (2010), who argue that technological changes and the growing size of the armies since the expansion of the gunpowder and the defence artillery in early-modern times made war more destructive and costly over time. The changing character of warfare gave military superiority to those states that were able to sustain large and permanent armies equipped with modern technologies, what forced European governments to appeal increasingly to long-term

[216] Schumpeter (1918, 13).

[217] As has been argued by Patrick K. O'Brien (2011, 417), those states that improved their capacity to tax in early-modern times also increased their capacity to borrow loans. According to the author, borrowing money during wartime was critical for waging war, as revenues from taxes and domains flowed slowly but the need for payments to armed forces was generally urgent. In this context, credits and long-term loans could be obtained, as time went on, "by way of anticipation of inflows of tax revenues".

credits and taxes.[218] Since early-modern states were mainly devoted to warfare and kings' prestige, the increasing costs of military competition became a powerful stimulus to expand the sources of public revenues and to evolve to more sophisticated fiscal structures.[219] Those fiscal expansions undertaken during wartimes persisted in post-war times – producing the so called 'ratchet effect' – due to the incentives of governments to provide better military endowments and to the heavy financial burdens inherited from wartime.

Similar arguments have been applied to late-modern fiscal history, even though the results are less conclusive. In one of the key contributions, Peacock and Wiseman (1961) argued that the First and Second World Wars brought about a permanent displacement effect on British public expenditures due to the social acceptance of higher levels of public taxation. Similarly, in a quantitative analysis on the evolution of public revenues in a sample of major powers (France, Japan, United Kingdom and United States) during the 19th and the 20th centuries, Rasler and Thompson (1985) conclude that global wars (but not minor interstate wars) gave place to permanent increases in public revenues (as a percentage of GDP). The authors suggest that the persistence of higher public revenues after global wartimes was led by the pressure exerted by non-war expenditures, which were a response to the new social problems, domestic coalitions and bureaucratic organizations that emerged after the war.[220]

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[218] According to Hoffman (2012), the winner-take-all tournament in Europe explains why rulers decided to spend enormous amounts of resources on new military technology (which actually prompted innovation by learning by doing).

[219] See also Hoffman and Rosenthal (1997), Karaman and Pamuk (2013) and Gennaioli and Voth (2015).

[220] Several authors highlight the conflict inherent in the expansion of post-war social rights and public services. In a recent comprehensive study, Obinger and Petersen (2014) argue that relevant welfare policies developed after the two world wars were actually set up during wartimes (and even during the phase of war preparation), when governments needed to ensure a healthy and loyal population. Kier (2010) calls it the 'payback' strategy, in which governments commit to repay civilians with post-war reforms in order to ensure their cooperation on the home front and the battlefield. In this line, some scholars emphasize that wartime mobilization was not driven by a purely impersonal mechanism to obtain obedience, but that states had to rely on civil society organizations and local elites to implement conscription and maintain the cohesion of the front home. Thus, "as the state made claims over civil society in the name of national defence, both combatants and civilians increasingly invoked popular sovereignty to make claims upon the state" (Purseigle, 2014, 262).

Other authors have further extended this kind of analyses to broader datasets, even though they have not always addressed the reasons behind the persistence of higher post-war revenues. For instance, Jaggers (1992) analysed the intensity of warfare in a dataset of European and American countries. The author concluded that inflated levels of resource mobilization in international military conflicts (measured as the total number of battle deaths) and the 'societal trauma' caused by civil wars (measured by a combination of the number of battle deaths per 10.000 inhabitants and the political outcome of the war) led to increasing post-war state revenues per capita. From a different empirical strategy, Besley and Persson (2009) and Dincecco and Prado (2012) argue that late-modern and early-modern wars are positively correlated with present fiscal capacity (measured, among other variables, by the average of the current share of taxes over GDP) in broad international datasets. Finally, Dincecco, Federico and Vindigni (2011) find a positive correlation between higher levels of military spending and taxation in the Italian states during the *Risorgimento*.

By contrast, other authors have raised some doubts about the real effects exerted by warfare in the late-modern public budgets. For instance, Dincecco (2009) finds a small negative effect of warfare (measured by average military deaths per conflict year) on current per capita revenues from the mid-17th century to the outburst of the First World War. The author argues that wars might have exerted a negative effect on fiscal development due to the destruction that they caused, even though he also recognises that some of the main positive breaks in the series of public revenues fit with military conflicts. From another perspective, other authors do not agree on the alleged new public civilian duties appeared due to wartimes. For instance, Fontvieille (1976) concluded that the two World Wars did not gave place to higher public expenditures in France once military spending and war-related costs are excluded from the accounts. Similarly, Broadberry and Howlett (1998) argued that the Second World War did not bring about major increases in social expenditures in Great Britain, while Broadberry and Harrison (2005) conclude that the First

World War did not end up with major increases in civilian expenditures (once debt services are excluded).[221]

Lastly, some authors have also explored the effect of warfare on direct tax revenues, but with unclear results. In this regard, Besley and Persson (2009) conclude that those countries that were more engaged in international wars in late-modern times ended up with a higher share of direct taxes within total public revenues. On the other hand, Aidt and Jensen (2009) observe that the establishment of temporary income taxes often coincided with the outburst of wars, as happened in the United States during its Civil War (1861-65), in the Austrian Empire during its war against Sardinia (1848-49) or in Denmark during its wars against Prussia (1848-49 and 1864). However, they do not find any significant correlation between warfare and permanent income taxes, and conclude that the financial pressures created by war might have caused the establishment of emergency tax innovations rather than lasting income tax reforms. More recently, Mares and Queralt (2013) find stronger links between the outburst of wars and the establishment of permanent income taxes during the 19th century in Europe. Finally, Scheve and Stasavage (2010, 2012) argue that major 19th and 20th century wars gave place to increasing progressive taxes, as governments tried to compensate the major battle efforts done by poorer social groups during wartimes by taxing the richer.[222]

4.3. 'Revolutions in Military Affairs' since the mid-19th century

As has been said, the literature focused on early-modern times generally links changes in military tactics and technology with increasing costs of warfare, which at turn brought about higher financial pressures on public budgets during and after wartimes. By contrast, the analyses devoted to late-modern times have neglected these military changes when exploring the interplay between warfare and fiscal development. Warfare has been treated as a static phenomenon, and we still lack a historical narrative that

[221] Similar claims are made by Nullmeier and Kaufmann (2010), who argue that social spending has followed an increasing path from 1918/20 to the mid-1970s.

[222] Purseigle (2014) also sees income and extraordinary taxes as a financial and ethical solution to wartime mobilization. The 'ethics of mobilization' required an equitable answer to the claims of the competing interests groups, as belligerent populations defined their contribution to the war effort through negotiation.

explains to what extent warfare-making has affected – or not – the impact of wars on fiscal development in late-modern times. This section aims to address this issue by providing a review of the fundamental changes in the Western way of war during late-modern times and its potential effects on fiscal systems.

Military historians have classified the most critical military changes in the so-called 'Revolutions in Military Affairs' (RMA). According to Murray and Knox (2001), the RMA are periods of innovation in which military forces develop new tactics, doctrines, procedures and technological engines. In spite of its name, the RMA generally require long-term periods to be developed and consolidated, and end up changing the ways in which wars are carried out. Parker (2010) describes them with the biological concept of 'punctuated equilibrium', in which short periods of significant changes are followed by long-term periods of gradual and slow adjustments.

Krepinevich (1994) and Rogers (2000) document four basic RMA since the mid-19th century, namely, the Land Warfare Revolution, the Naval Revolution, the Interwar Revolution and the Nuclear Revolution.[223] Both the Land Warfare and the Naval Revolutions can be seen as a direct inheritance from the French and the Industrial Revolutions. The French Revolution established new tactical battlefield approaches based on almost universal conscription and the intensification of firearms power (particularly by the mobile artillery), while the Industrial Revolution placed newly abundant resources in the hands of governments and provided outstanding war technological innovations. For instance, from the mid-19th century to the First World War, the former wooden ships powered by wind and armed with short-range cannons gave way to metal-hulled ships powered by turbine engines and armed with long-range rifled artillery. According to Murray and Knox (2001), the Industrial Revolution first influenced the Crimean War (1853-56), where the rifled muskets, the telegraphy and the steamships let British and French armies to defeat the

[223] Tilly (1990) characterizes this whole period as the 'age of specialization', in which military forces became a powerful specialized branch of the national government and the division of labour between armies and police sharpened.

numerically superior Russian forces.[224] Nevertheless, it was not until the American Civil War (1861-65) that the new industrial technology and mass mobilization were clearly combined.[225]

The First World War combined, with the highest ferocity and mortality, both industrial firepower and logistics with mass mobilization. According to Bailey (2001), warfare in 1914 was still a lineal affair, with doctrines that emphasized flank attacks and envelopment tactics. These doctrines led to physical encounters of masses of infantry and cavalry supported by artillery firing directly at short range. The new mass armies sustained by railroads and industrial economies during the First World War closed the flanks, so that new tactics had to be developed to focus on breaking the enemy front and destroying its backward forces. Indirect fire and technical improvements in aerial observation, photography and ballistic calculus, were some of the keys of the new warfare doctrine. Due to the huge scope of these changes, Bailey (2001) argues that the development of armoured vehicles, aviation and information technologies during the following decades were just incremental improvements upon the conceptual model established during the First World War.

All in all, Black (2006, pg. 11) defines the period from 1860 to 1945 as the 'age of total war', in which "the human, ideological, and economic resources provided by population growth, nationalism, economic development, globalization, and imperial strength provided the wherewithal for large-scale conflict".[226] Even if the process of technological, tactical and doctrinal evolution could initially lead to faster wars in favour of the best

[224] Similarly, Onorato *et al.* (2014) argue that mass mobilization spread thanks to the extension of the railway network in the second half of the 19th century rather than immediately after the French Revolution.

[225] The three major European wars in 1859, 1866 and 1870-71 also involved the use of some new military technologies and tactics on the battlefield, mainly due to Helmuth von Moltke's doctrines within the Prussian army, although they did not extend the war mobilization to the level of the American Civil War. For instance, even though the Franco-Prussian War (1870-71) was shaped by innovative military technologies (such as the French *chassepot* rifle and the Prussian breech-loading cannon), it did not led to a massive recruitment of troops. See Williamson (2010).

[226] Obviously, this does not imply that all wars could be defined as 'total'. For instance, differences in technology and manpower allowed the western countries to fight transoceanic imperial wars without having to wage global but just limited conflicts (even if for the colonized societies these could be well defined as total wars).

equipped armed forces, the spread of the innovations among major armies rapidly removed previous military superiorities.[227] Additionally, the growth of per capita revenues and the increasing efficiency of the government agencies allowed diverting a growing share of the national output to warfare requirements without leaving the basic reproduction necessities uncovered.[228] Table 4.1 shows the war-related deaths in several major wars in France, United Kingdom and United States since the mid-nineteenth century to the present and the maximum number of mobilized soldiers per year of war. It shows that those numbers increased throughout the period until reaching its maximum levels in the First and the Second World Wars.

Table 4.1. War-related deaths and mobilized soldiers per year of war in several major European and North-American wars (1850-1995)

	Period	France		United Kingdom		United States	
		Deaths	Mobilized	Deaths	Mobilized	Deaths	Mobilized
Crimean War	1854-1856	95	645	22	382	-	-
American Civil War	1861-1865	-	-	-	-	618	1.063
Franco-Prussian War	1870-71	152	1.000	-	-	-	-
Second Boer War	1899-1902	-	-	22	521	-	-
World War I	1914-1918	1.385	5.277	908	4.430	117	2.897
World War II	1939-1945	213	5.000	419	5.090	405	12.123
Korean War	1950-1953	-	-	0,7	872	54	3.636
French-Indochina War	1946-1954	94	1.025	-	-	-	-
Vietnam War	1965-1973	-	-	-	-	58	3.550

Notes: Data from Sarkees and Wayman (2010). All figures are in thousands.

In line with Krepinevich (1994) and Rogers (2000), Murray and Knox (2001) conclude that nuclear weapons developed since 1945 constitute the latest RMA (particularly since 1949, when the Soviet Union was able to confront the North-American nuclear power with its own nuclear bomb). The forthcoming combination of mass weapons and ballistic missiles

[227] Rogers (2000).
[228] Broadberry and Harrison (2005).

(which provided better effectiveness than other kind of available arm systems, while reducing the own causality rates) increased the military power of both contenders. According to Walker (2000, 705), "nuclear warfare was unlike any previous kind of warfare". Once mounted on ballistic missiles, nuclear weapons brought a great amplification and foreshortening of war, as "world wars would now be conducted in a matter of hours in a frenzy of destruction".

Murray and Knox (2001) suggest that this unprecedented destructive power of nuclear and mass weapons and the peerless deathly wars that they could cause explain the prudent attitudes of major powers during the Nuclear Revolution era.[229] Even though western armies kept very active military policies in the so called Third World, and did not renounce to get ready for the outburst of a major conventional war (that could even end up with a nuclear conflict), warfare among nuclear nations – and their main allies – became something to be avoided.[230] As a consequence, several authors such as Jervis (1989), Levy and Thompson (2011), and others, suggest that the Nuclear Revolution contributed to reverse the former pattern of harsher and increasingly costlier warfare in Western countries.[231]

I argue that this historical pattern of warfare has at turn determined the specific relation between wars and Western fiscal development. Firstly, the Land Warfare and Naval Revolution, and even more the Interwar Revolution, increased the pressure of warfare on fiscal systems. Particularly, the increasing costs of warfare forced governments to search for new sources of revenues in order to cover wartime cost, as well as to prepare the armed forces for future costlier wars. Moreover, governments

[229] This line of argument should not deny the importance of social protest and anti-war activism in democratic contexts, which raised awareness about the destructive power of nuclear weapons and contributed to made mass-killing politically unacceptable.

[230] In theoretical terms, Jackson and Morelli (2009) argue that a type of pure peace equilibrium is achieved when the costs of war are overwhelmingly high and war became not worthwhile. This theoretical reasoning might well apply in this case, even if the period was not characterized by a stable equilibrium but a very dangerous and unsteady nuclear order (Walker, 2000).

[231] The spread of democratization and international trade are usually considered additional relevant factors to understand the evolution of the frequency of wars, even though most studies on these topics do not focus on Western countries' major wars but on all kind of interstate wars worldwide. See Gleditsch (2008) and Hegre (2014) for a review of the literature.

needed to keep fiscal pressure up after wartimes in order to cover the higher civilian expenditures that came up due to the industrial-style warfare (such as reconstruction costs, veteran benefits or new social expenditures). By contrast, the unprecedented destructive capacity of nuclear weapons contributed to reduce the likelihood of major industrial-style wars between great powers and its main allies, which at turn diminished the probability of new war-related displacement effects in their public revenues. Unlike former RMAs, the increasing destructive capacity of the Nuclear Revolution did not put more pressure on Western's fiscal systems but reduced it by making major wars unlikely.

All in all, the whole period might be characterized by an inverted 'U-shape', in which changes in the character of warfare increased the pressure of wars on Western countries' public revenues until the destructive capacity reached the nuclear threshold level. This framework implies that the interplay between warfare and fiscal expansion must be treated as a historical phenomenon that depends on the historical nature of warfare. A similar logic has been developed by Gennaioli and Voth (2015) for early-modern times. According to these authors, warfare stimulated fiscal development in Europe after the 16th century – but not before – because the ongoing military revolution started to make money important for military success. I argue that warfare stimulated fiscal development in Western countries until the second half of the 20th century – but not after – given that the ongoing military revolution contributed to make major wars unlikely.[232]

4.4. Data on public expenditures and revenues

To assess the historical interplay between warfare and fiscal expansion, this chapter presents a new international dataset on public spending and revenues of central government for a set of thirteen European and North

[232] Some authors argue that recent developments in information technologies have given place to a new military revolution that could increase again the risk of major wars. For instance, Levy *et al.* (2001) warn about the possibility of future military crises related with new military technologies and the resulting shifts in world power. However, military analysts and historians agree neither on the revolutionary nature of these changes nor on its future implications. For instance, Murray and Knox (2001) consider that the military and doctrinal innovations that were seen in the Gulf War were already exhausted in the 2000s. It is probably too early to draw sound conclusions about this issue.

American countries from c.1850 to 1995.[233] Public spending has been disaggregated into military and civil expenditures. Military spending is a comprehensive indicator of the effective pressure exerted by military activities on fiscal systems, as it reflects the financial effort done by governments on military endowments. Its main shortcoming is related to the fact that military expenditures do not cover all war costs. For example, public mobilization of civil production and distribution, interest debts related with war loans, reconstruction of damaged civil infrastructure, payment of war reparations, or indirect costs such as the opportunity costs of conscription are not included in military spending.[234] Nevertheless, it accounts for the costs of military services, which are clearly the bulk of the expenditures for war preparation, and can also be considered as a good basis for a comparison among the public effort undertaken in different wartimes.

Compared with the evidence provided in this chapter, previous international datasets on military spending, such as those by the Stockholm International Peace Research Institute (SIPRI), the International Institute of Strategic Studies (IISS) or the United Nations Office for Disarmament Affairs (UNODA), cover shorter time-periods. On the other hand, the Correlates of War Project (COW) dataset provides a long-term series since the beginning of the 19th century to the present for a broad set of countries, but most of their historical sources and methods are not specified. By contrast, my new dataset covers a long period while also clarifies the sources and the criteria used to collect the data. Most data come from secondary sources (mainly national historical statistics) and fit as much as possible with the North Atlantic Treaty Organization (NATO) methodological criterion, which is

[233] Central government data take into account neither the revenues nor the expenditure from regional and local administrations. Therefore, the analysis is necessarily focused on the behaviour of central public structures.

[234] See, for instance, Stiglitz and Bilmes (2012). Rockoff (2012) provides an interesting attempt to account for the total military and civil costs of North-American wars throughout the 20th century. However, there is still no similar data available for other countries in the long-term. Additionally, Rockoff focuses his analysis on wartimes, but does not provide similar data on the peacetime costs of wars and war preparation, such as the opportunity costs of conscription or the reparation of damaged civil infrastructures.

one of the most comprehensive and widespread criteria on military spending and is used by several international institutes and organizations.[235]

Table 4.2. Descriptive statistics

	Total revenues		Direct tax revenues		Military spending		Civil spending	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Belgium	14.1%	8.7%	5.2%	5.2%	2.0%	1.0%	15.4%	10.8%
Canada	11.8%	6.5%	4.3%	4.5%	2.9%	5.7%	8.0%	3.8%
Denmark	12.9%	10.0%	4.8%	5.1%	2.1%	1.2%	10.9%	10.4%
France	14.7%	5.2%	3.6%	2.6%	5.7%	7.4%	9.6%	4.8%
Germany	11.7%	8.9%	8.0%	3.3%	6.7%	12.9%	6.9%	4.2%
Italy	14.7%	5.6%	4.1%	2.3%	4.8%	5.6%	13.9%	9.4%
Netherlands	18.7%	9.3%	8.2%	4.6%	3.2%	1.7%	13.7%	9.9%
Norway	10.6%	6.8%	3.6%	2.4%	2.1%	1.0%	11.6%	4.2%
Portugal	8.6%	5.3%	2.5%	1.8%	2.5%	1.5%	6.3%	5.7%
Spain	10.4%	4.0%	4.0%	1.8%	2.7%	1.2%	7.7%	5.4%
Sweden	12.2%	8.4%	4.5%	4.3%	2.7%	1.0%	11.8%	10.0%
United Kingdom	17.1%	9.6%	7.1%	5.7%	6.7%	9.1%	10.1%	8.2%
United States	8.5%	7.0%	4.5%	5.2%	4.2%	5.8%	4.8%	4.7%
TOTAL	12.8%	7.3%	5.0%	3.8%	3.7%	4.2%	10.1%	7.0%

Sources: See Annex G.

On the other hand, the dataset on public revenues has been elaborated on the basis of the historical statistics compiled by Brian Mitchell (1990, 2003, 2007), which account for total public revenues of central government (excluding loan receipts). Other secondary sources (mainly national historical statistics) have been used to complement Mitchell's dataset when needed. In order to analyse the evolution of the fiscal structure, the dataset also includes information on direct taxes, which mainly contains land, property and income taxes. Both public expenditures and revenues have been measured as a percentage of the GDP. This allows exploring the historical evolution of these variables in terms of the total resources available in the economy. Moreover, the so-called 'military burden' (that is, military expenditures as a share of GDP) is generally considered the best

[235] As has been said in previous chapters, the NATO defines defence expenditure as payments made by a national government specifically to meet the needs of its armed forces or those of allies. See Annex G for details on the sources.

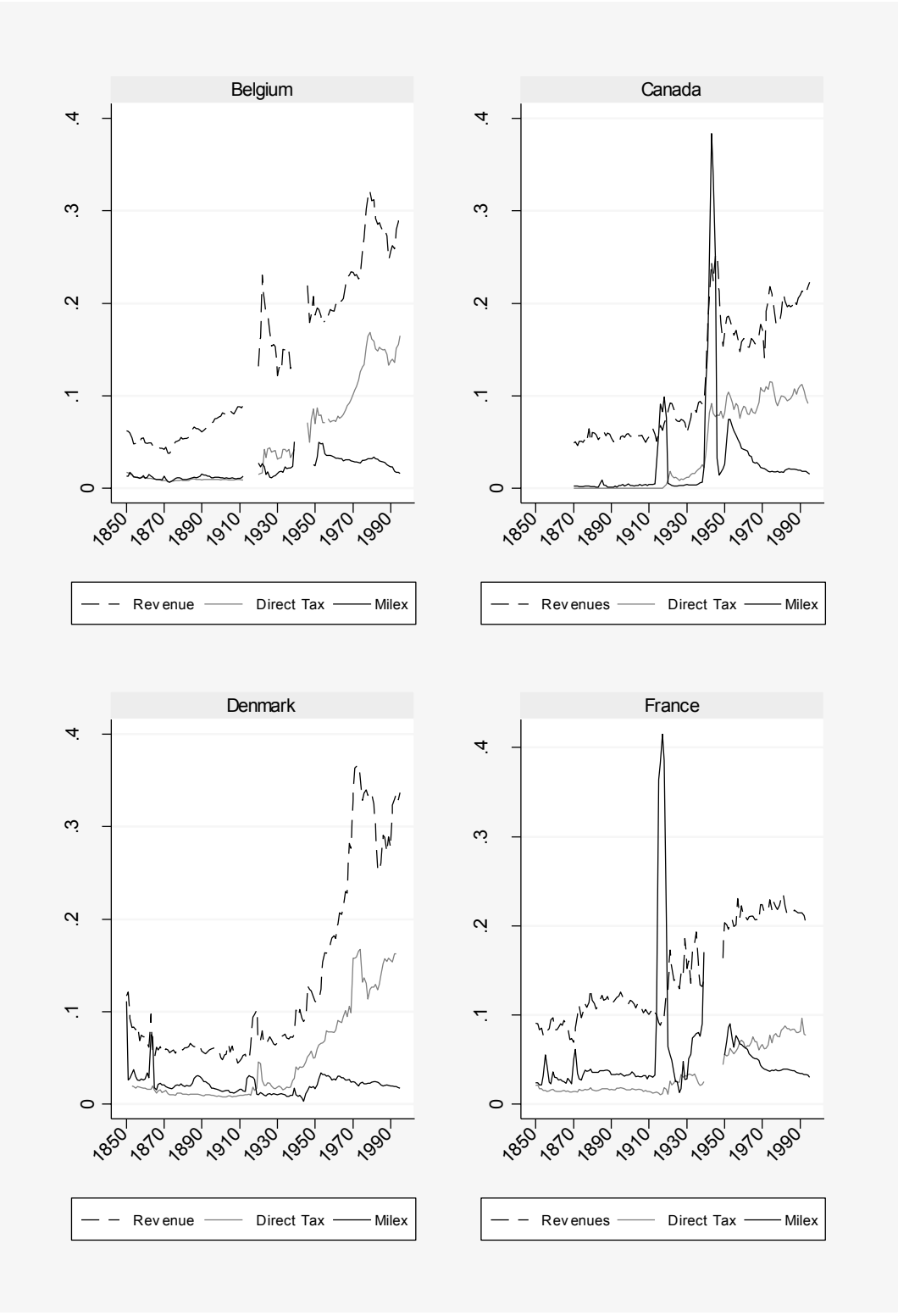
way to capture the relative effort done by every country on military endowment.

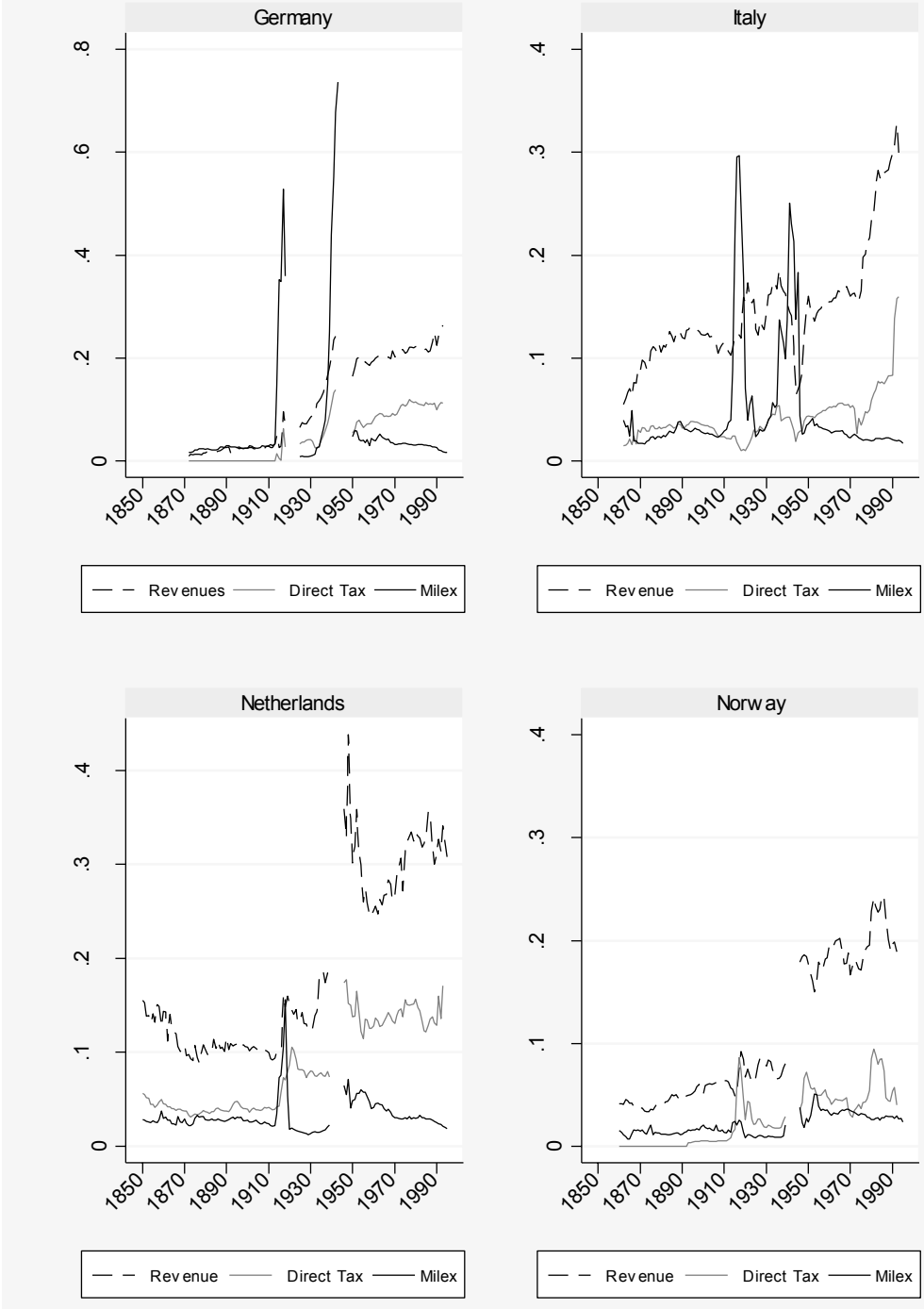
Figure 4.1 shows the military burden for all the countries of the sample. The highest ratios of military burden in major powers (France, Germany, UK and US) were reached during the Interwar Revolution period, with maximum values during the outburst of the First and (particularly) the Second World War. Similar levels were only reached in the US during the Land Warfare and Naval Revolution period due to the American Civil War (1861-65). This is consistent with the description of the Interwar Revolution as very cost-intensive RMA in which military recent technological innovations were combined with mass armies.

By contrast, the other European continental wars and the ongoing European imperialist hostilities did not consume the same amount of resources.[236] Similarly, the European and US military interventions in the so-called Third World during the Nuclear Revolution period (as well as the NATO and the UN multilateral operations, or even the Gulf War in 1991) did not lead to such sharp increases in military expenditures. Nevertheless, during the Nuclear Revolution period military burden ratios were much higher than the 19th century standards (except in Germany, due to the restrictions imposed by the allied countries after the Second World War). As has been mentioned before, the harsh international tension during the Cold War era forced armies to constantly update their firepower capabilities (both their conventional and their mass destructive weapons), despite the lack of total wars among major powers.

[236] The technological race undertaken during this period did not clearly lead to growing military burdens, which suggest that it was mainly supported by the extra resources provided by the process of economic growth. Eloranta (2007) raises similar conclusions when analysing military spending in a set of major combatants for the period 1870-1914.

Figure 4.1. Military expenditures and public revenues (as a percentage of GDP) in a set of European and North-American countries (c.1850-1995)




Germany
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.2
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.8
1850
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1910
1930
1950
1970
1990
Revenues
Direct Tax
Milex
Italy
0
.1
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1850
1870
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1910
1930
1950
1970
1990
Revenue
Direct Tax
Milex
Netherlands
0
.1
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1850
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1890
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1950
1970
1990
Revenue
Direct Tax
Milex
Norway
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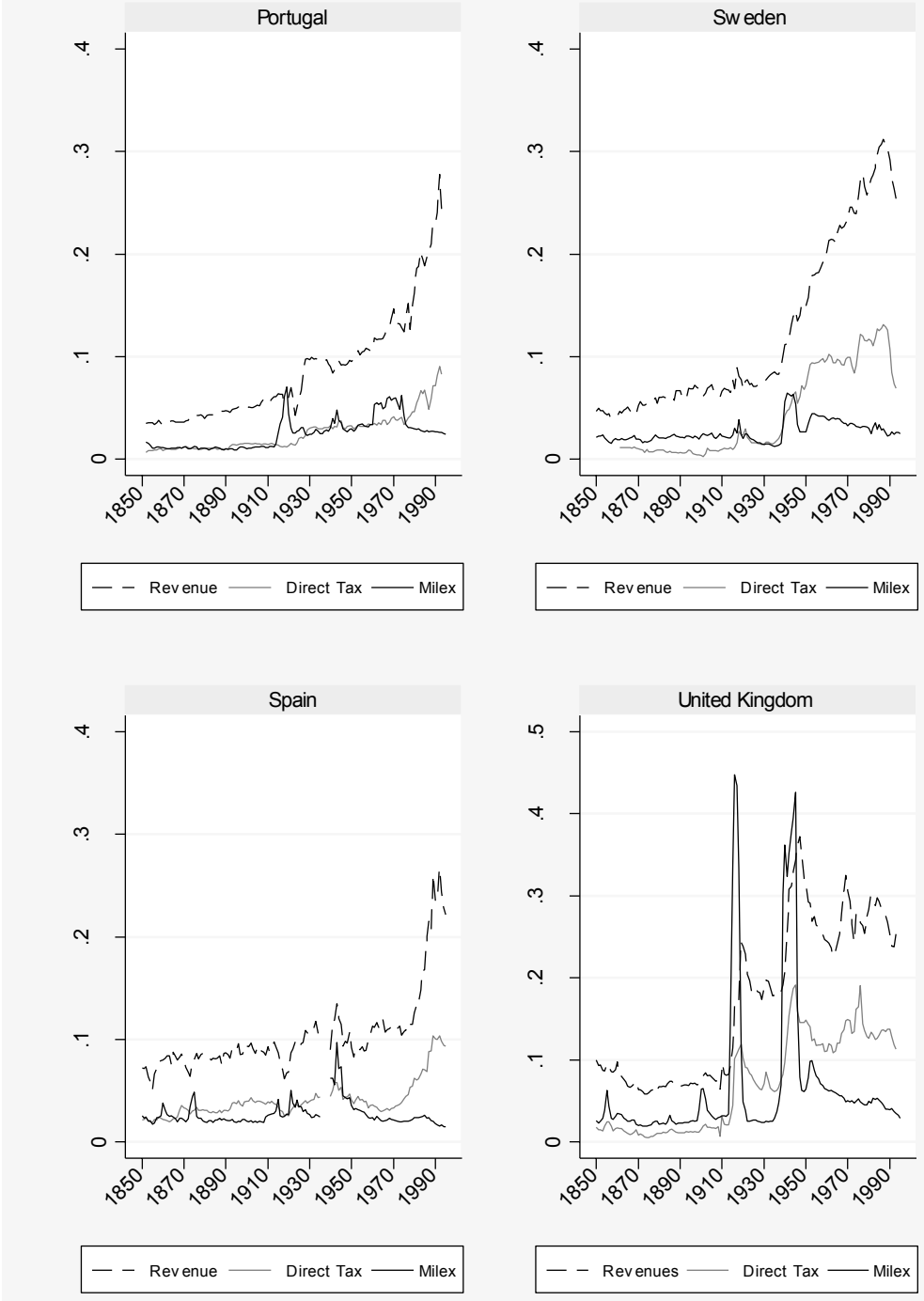
Portugal
Sweden
Spain
United Kingdom
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Direct Tax
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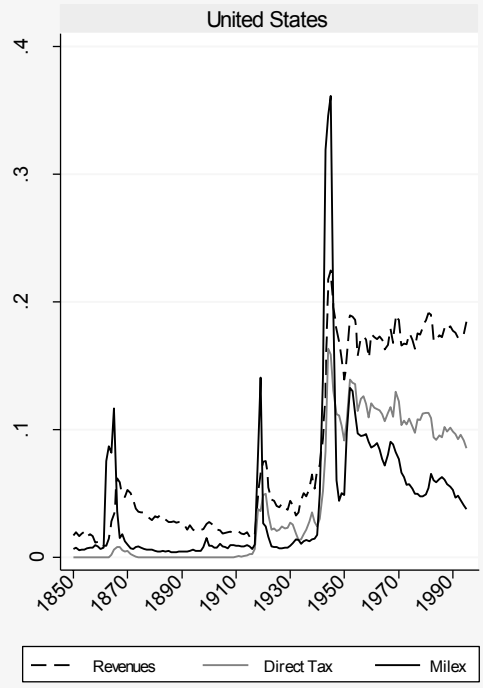

Notes: see text and Annex G for data-sources. There is no available data for Belgium from 1913 to 1919 and from 1940 to 1945; for Canada from 1850 to 1869; for Danish direct taxes from 1850 to 1852; for France from 1940 to 1948; for Germany from 1919 to 1924 and from 1943 to 1949; for Netherlands from 1940 to 1945; for Norway from 1850 to 1859 and from 1940 to 1945; for Portugal from 1850 to 1851; for Spain from 1936 to 1939; and for Swedish direct taxes from 1850 to 1860.

All in all, and despite the differences among the countries of the sample, the overall picture of the three RMA episodes seems to reflect the aforementioned inverted 'U-shape', in which the Interwar Revolution brought the highest military burden ratios. Regarding the set of secondary powers (Belgium, Canada, Denmark, Italy, Netherlands, Norway, Portugal, Spain and Sweden), most of them present lower military burden ratios (and lower volatility) than the great powers, except for Canada and Italy during the Interwar Revolution. This reflects the secondary role played by these countries in the international scenario, which spared them the need to constantly update their RMA military capabilities. Nevertheless, in line with the former major powers' trends, the maximum values for most countries are found during the Interwar Revolution period, while during the Nuclear Revolution the ratios were initially high but decreased over time.

Figure 4.1 also shows the data on total and direct tax revenues. In all great powers, their highest increases took place during the Interwar Revolution period, mainly during major wartimes. By contrast, they were fairly stable during the previous period. Total and direct tax revenues (as a percentage of GDP) became stable again in France, Germany and the US after the Second World War, while total revenues fluctuated widely in the UK (although presumably not due to changes in the military burden). On the other hand, some of the major increases in the total and direct tax revenues of secondary powers took place during the Interwar Revolution period too, although the evidence seems to be less homogeneous. In summary, these figures can be taken as preliminary evidence to suggest that the very intensive wars of the Interwar Revolution gave place to permanent shifts in public revenues, while other wars did not have the same impact.

4.5. Structural breaks in total and direct tax revenues

To start exploring the interplay between warfare and fiscal expansion, this section studies the timing of major changes in fiscal development and its degree of persistence in every country of the sample. To do so, I run a breaking point test based on Ben-David and Papell (2000), which identifies the main statistical shifts in both the intercept and the trend of a variable, regardless of whether a unit root is present or not in the series. The analysis is based on an extension of the $SupF_t$ test developed by Vogelsang (1997). The test involves estimating the following regression for every possible break point:

$$y_t = \mu + \theta_1 DU_{1t} + \beta t + \gamma_1 DT_{1t} + \sum_{j=1}^{k} c_j y_{t-j} + \varepsilon_t \qquad (1)$$

where $DU_{1t} = 1$ if $t > T_{B1}$, 0 otherwise, and $DT_{1t} = t - T_{B1}$ if $t > T_{B1}$, 0 otherwise, being T_{B1} every possible breaking point in the series. Equation (1) is estimated sequentially for each possible break year. The $SupF_t$ statistic is the maximum, over all possible break-points, of twice the standard *F*-statistic for testing $\theta_1 = \gamma_1 = 0$. For each choice of T_{B1}, the value of the lag length *k* is selected according to the criteria suggested by Campbell and Perron (1991). Following Ben-David and Papell (2000), I have set the upper bound of k at 8 and the criterion for significance of the t-statistic on the last lag has been set at 1.60.

Ben-David and Papell (2000) extended this procedure to allow for multiple breaking points. The equation to be estimated is the same as equation (1) but allowing for two additional dummy variables:

$$y_t = \mu + \sum_{i=1}^{m} \theta_i DU_{it} + \beta t + \sum_{i=1}^{m} \gamma_i DT_{it} + \sum_{j=1}^{k} c_j y_{t-j} + e_t \qquad (2)$$

where *m* is the number of breaking points. When *m* = 1, the expression is the same as the Vogelsang equation. When *m* = 2 the procedure becomes a test of one-break null against a two-break alternative. This time, $DU_{2t} = 1$ if $t > T_{B2}$, 0 otherwise, and $DT_{2t} = t\text{-}T_{B2}$ if $t > T_{B2}$, 0 otherwise. T_{B1} is fixed by the year chosen by estimation of the one-break model. Equation (2) is estimated sequentially for each potential break year (T_{B2}), and the $SupF_t$ statistic is calculated as described above. Critical values have been taken from Ben-David and Papell (2000), who account for until five breaks with 120 observations. As usual in stability tests, the first and last years of the sample have not been included in the testing procedure. Here I have limited the sample to $0.1T < T_{Bm} < 0.9T$, with a required separation between break dates of at least 10 years.

Table 4.3 presents the results for both the total and the direct tax revenues (the two of them as a percentage of GDP). Several breaks fit with the outburst or the end of major wartimes.[237] Regarding the total revenues, the World Wars are associated with significant and positive breaks in Belgium, Canada, France, Netherlands, Norway and the US, while France and the US also show positive breaks during the Franco-Prussian War and the American Civil War respectively. All those breaks took place during wartimes characterized by significant budgetary efforts, with the exception of the occupied countries (Belgium in the two World Wars, and France, Netherlands and Norway in the Second World War), for which military burden is not available.[238] Similarly, Canada, France, Netherlands and the

[237] No significant results have been found in the UK for total revenues, as well as in Germany, Norway and the UK for direct tax revenues, due to the persistent volatility of the series.

[238] Even for the occupied countries, wars could exert a significant impact on public revenues. For instance, Grytten (2004) argues that the Norwegian boost in fiscal pressure after the Second World War was carried out by the Labour Party's government (in power since 1935), which took the opportunity to maintain the levels of public expenditures

US experienced their main breaks in direct tax revenues during the World Wars (although in the case of France it came once the First World War was finished), which again led to persistently higher revenue levels.[239]

This set of results mainly fits with the aforementioned inverted 'U-shape', in which major permanent increases took place during the Interwar Revolution's wartimes, while most of the other wars undertaken during the previous or subsequent RMA did not gave place to such fiscal displacements. By contrast, in Germany and Italy total revenues suffered negative changes in levels during the Second World War, which reflects the higher pre-war levels sustained by the two countries, in comparison with their subsequent evolution. The German break reflects the end of the very intensive increase in the ratio between public revenues and GDP initiated in 1928. Whereas up to 1932 this increase was actually provoked by the fall in GDP, later on it went along with the Nazi rearmament plan. On the other hand, the Italian break in 1942 reflects the wartime distortions and the inflationary process that took place after the military partition of the country during the last stages of the war. This time, and despite the increasing public revenues since the mid-1930s, the severe fluctuations of the Italian series and the changing policies of the Mussolini's regime might explain the lack of breaks during the interwar dictatorship.

established in the country during the Nazi occupation (well above the historical spending ratios).

[239] The positive 1937 break in Sweden (both for total and direct tax revenues) might be explained by both military and non-military factors. Even though it reflects the temporal special taxes rose during the Second World War, the change in the trend starts earlier due to the new taxes raised in the early-1930s to compensate for the Great Depression downfall. Similarly, there was a wave of raising revenues in the Netherlands since the mid-1930s, although the sharper part of the increase captured by the test took place during the Second World War.

Table 4.3. Sequential trend break tests on total and direct tax revenues in a set of European and North American countries

	Belgium	Canada	Denmark	France	Germany	Italy	Netherlands	Norway	Portugal	Spain	Sweden	USA
TOTAL REVENUES												
Breaks[a]												
T_{B1}	1912 $^{L+,S-}$	1939 $^{L+,S-}$	1973 $^{L-,S-}$	1939 $^{L+}$	1942 $^{L-,S-}$	1942 $^{L-,S+}$	1933 $^{S+}$	1939 $^{L+,S+}$	1925 $^{L+,S+}$	1982 $^{L+}$	1980 $^{L+,S-}$	1941 $^{L+,S+}$
T_{B2}	1974 $^{L+,S-}$	1971 $^{L+,S+}$	1950 $^{S+}$	1918 $^{L+}$	1928 $^{L-,S+}$		1952 $^{L-,S-}$	1979 $^{L+,S-}$	1978 $^{L+,S+}$		1937 $^{L+,S+}$	1917 $^{L+,S+}$
T_{B3}	1939 $^{L+,S+}$			1871 $^{L+}$	1968 $^{L-,S+}$		1916 $^{L+,S-}$	1966 $^{L-,S-}$				1865 $^{L+}$
T_{B4}					1907 $^{S+}$		1981 $^{S-}$					1952 $^{L-,S-}$
SupF stats[b]												
T_{B1}	17,18*	30,70***	18,84**	17,96**	67,72***	21.34**	17,18*	85,1***	31,34***	29,48***	30,90***	46,06***
T_{B2}	33,30***	36,56***	20,72**	19,96**	15,94**		33,92***	51,56***	25,28***		25,88***	15,54*
T_{B3}	28,30***			18,74**	14,64*		17,96**	25,22***				14,68*
T_{B4}					20,74***		17,42**					18,12**
DIRECT TAX REVENUES												
Breaks[a]												
T_{B1}	1979 $^{L-}$	1939 $^{L+}$	1937 $^{S+}$	1939 $^{L+,S+}$		1972 $^{L-,S+}$	1939 $^{L+,S-}$		1977 $^{S+}$	1960 $^{L-,S+}$	1973 $^{L+,S-}$	1942 $^{L+,S+}$
T_{B2}	1951 $^{L-,S+}$		1974 $^{L-}$	1920 $^{L+}$			1916 $^{L+,S-}$		1927 $^{L+,S+}$		1937 $^{L+,S-}$	1917 $^{L+,S-}$
T_{B3}				1979 $^{L+,S-}$			1955 $^{L+,S+}$					1953 $^{L-,S-}$
T_{B4}				1967 $^{L-,S+}$			1982 $^{L-,S+}$					1931 $^{L-,S+}$
SupF stats[b]												
T_{B1}	17,16*	51,18***	19,82**	44,82***		31,56***	31,82***		20,70**	19,92**	24,70***	67,34***
T_{B2}	18,16**		31,88***	30,68***			75,80***		31,70***		20,28**	40,68***
T_{B3}				13,80*			32,36***					25,18***
T_{B4}				14,42*			42,74***					16,42**

Notes: a) L+(-) refers to positive (negative) changes in level; S+(-) refers to positive (negative) changes in the slope, b) *** Rejection of the null hypothesis at the 1% significance level; ** Rejection of the null hypothesis at the 5% significance level; * Rejection of the null hypothesis at the 10% significance level, c) t-statistics in parenthesis.

The increasing public revenues sustained by interwar dictatorships can be also found in Portugal, where the 1925 break fits with the establishment of the Portuguese military dictatorship in 1926 (that ended up with the "Estado Novo" in 1933) and reflect the new militarist policies set up thereafter. By contrast, unlike the interwar autocratic regimes, the Franco's dictatorship in Spain (1939-1975) did not end up with higher public revenues after the Second World War. Despite the initial increase in the fiscal pressure during the war (alongside with increasing military spending), the fiscal system moved back to low levels of taxation, especially compared with the previous democratic period of the Second Republic (1931-1939). The autocratic nature of the regime in a context of decreasing military expenditures might have prevented to sustain the wartime increases in the fiscal burden. Actually, the two breaks in 1978 and 1982 fit with the early years of the democratic transitions in Portugal (1974) and Spain (1977), which suggests a positive incidence of democratization on fiscal expansion during the second half of the 20th century.

4.6. The permanent effects of warfare on fiscal development

In order to further explore the interplay between warfare and fiscal expansion, this section analyses the permanent effects of major wars in the evolution of total and direct tax revenues when controlling for other political and economic factors. To do so, I estimate the following equation:

$$R_{it} = \alpha_0 + \alpha_1 WARFARE_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \qquad (3)$$

where R_{it} is total revenues of the central government (as a share of GDP) in year t and country i, $WARFARE_{it}$ captures the permanent effects of warfare and Z_{it} stands for a group of control variables. The regressions include country fixed effects, in order to capture those constant country features not included in the model, as well as time fixed effects. As in Dincecco (2009), which in turn relies on Beck and Katz (1995), the analysis is based on an OLS regression model with 'panel corrected' standard errors, along with an AR1 term, in order to control for to the presence of heteroskedasticity,

autocorrelation and cross-sectional dependency.[240] Similarly, I run the following equation for direct tax revenues:

$$DT_{it} = \alpha_0 + \alpha_1 WARFARE_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \quad (4)$$

where DT_{it} is direct tax revenues of the central government (as a share of GDP) in year t and country i, while $WARFARE_{it}$ and Z_{it} stand for the same group of variables. In both regressions, $WARFARE_{it}$ is a set of variables that take value 0 before the end of each war and the maximum military burden level (military spending/GDP) of wartime after the conflict. These variables behave like dummies that capture the long-term impact of each war on public revenues, but using the maximum military burden level of wartime in order to control for the intensity of the wars. The list of wars included in this set of variables is based on two different criteria. Firstly, I consider those wars that implied an increase higher than 100 per cent in the military burden levels achieved in 5 years or less. Secondly, I consider those ones that implied an increase higher than 50 per cent in the military burden levels achieved in 5 years or less as long as they kept the military burden ratio above 5 per cent of GDP. Both measures capture those wars that required a significant budgetary effort (beyond the number of battle deaths that they caused), but the second one avoid those wartimes that provoked high military burden increases but at very low levels.[241]

The group of control variables comprehends both political and economic factors, as well as variables for foreign occupation and for all wars included in the models. Concerning the latest, these are added in order to control for specific changes during wartimes, and take value 0 before and after the war and the maximum military burden level during the war. To control for the occupation by a foreign country during wartimes, I have also included a dummy variable that takes value 0 before and after the occupation and

[240] I have also checked for stationarity and cointegration for all the models. According to the results of the Fisher type tests for unit roots in panel datasets we can reject the null of unit roots at 1 per cent of confidence. Moreover, the Kao test for panel cointegration with a lag length selection based on SIC criterion allows rejecting the null of no cointegration at 1 per cent of confidence (three occupation dummies and fixed effects have been excluded from the test to avoid collinearity).

[241] I also applied the condition of a minimum of five years between the wars in order to avoid mixing their effects. When two conflicts are closer in time, I only consider the one with the highest military burden ratio. See Annex H for the list of wars included.

value 1 during the occupation. Additionally, a dummy variable is included to account for the period after the occupation (0 before the end of the occupation and 1 afterwards). These dummies aim to control for the impact of wartimes in a context of occupation, in which military expenditures might remain low (or are not known, as happens in most cases) even if the countries are hit by the war.

Among the political factors, I include the level of democratization, since representative governments may be more compelled to respond to social demands than autocratic regimes, leading to higher taxes to cover increasing social expenditures.[242] Additionally, the extension of political participation reduces the income of the median voter (as franchise is progressively extended to poorer people), making parliaments more prone to increase direct taxes on wealthier citizens. All in all, political participation might be related with fiscal expansion. I use the Polity IV index, which estimates the degree of democratization for each country on an annual basis with a scale from -10 to 10 (where the maximum level corresponds to present democratic systems in Western countries).

Concerning economic variables, the analysis incorporates the level of GDP per capita in 1990 Geary-Khamis dollars, in order to control for the potential effects of economic growth on public revenues. An increase in GDP might automatically decrease total revenues and direct tax revenues, measured as a percentage of GDP. However, Wagner's law suggests that economic development is associated to higher government spending, so that the overall effect could be positive. The model also includes an economic openness variable (measured as the ratio between the sum of exports and imports and GDP) in order to control for revenue changes induced by globalization. Higher economic openness might be related to a higher demand for social protection and social expenditure expansion. By contrast, economic openness also increases the international competition among countries and might therefore provoke tax reductions.[243]

Table 4.4 presents the estimation results of equation (3) and (4). As can be seen in Models 1 and 2, the two world wars show positive and significant

[242] Lindert (2004), Espuelas (2012).
[243] Rodrik (1997), Huberman and Lewchuk (2003).

results. This points out that the Interwar Revolution's warfare gave place to permanent changes in the public revenue levels. The occupation variables for the two wars are also significant and have positive coefficient. Even if there is no available data to account for the wartime military burden in most of the occupied countries, the results suggest that wartimes also had long-term effects on those countries' public revenues (although lower than in the case of the other belligerent countries, as can be seen by the slightly lower coefficients in the four models). By contrast, most of the remaining wars did not end up with permanently higher revenue levels afterwards, even if new taxes were raised during the outburst of the conflicts. Some wars even had a negative impact on public revenues. For instance, the negative result of the Second Schleswig War might reflect the neutralist and retirement policy undertaken by the Danish government after the defeat against Prussia and Austria in 1864.[244] In other words, those wars at the top of the aforementioned inverted 'U-shape' were the only ones that had permanent positive effects on public revenues.[245]

Models 3 and 4 show the regression results for direct tax revenues (equation 4). Once again, results are positive and significant for the two World Wars in the two models, which indicates that these wars did not only end up with permanent increases in public revenues but also in direct tax revenues. On the other hand, this time the Second Boer War and the Korean War have had significant effects too. The former seems to capture the higher tax revenue levels sustained during the first years of the twentieth century in the UK, alongside with the Lloyd George's War Budget on Poverty and the naval race set up in the last stages of the Naval Revolution. This last result suggests that the Land Warfare and Naval Revolution exerted a positive effect on fiscal expansion in the last stages of the period, when the new costly naval technologies and the increasing international military tension pushed the British military burden up.

[244] Kirchhoff (2002).
[245] This time even the Franco-Prussian War and the American Civil War, which were significant in the structural break analysis, do not appear to be so in the regressions.

Table 4.4. Regression results for total and direct tax revenues (1850-1995)

Dep. variable	Model1 Revenues	Model2 Revenues	Model3 Direct Tax	Model4 Direct Tax
War variables	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%
Democracy	0.000278	0.000239	9.88e-05	6.58e-05
	(0.000239)	(0.000237)	(0.000129)	(0.000128)
Econ. openness	-0.00149	-0.00114	-0.000905	-0.000669
	(0.00441)	(0.00440)	(0.00248)	(0.00248)
GDP pc (log)	0.0116	0.00875	0.00736*	0.00753*
	(0.00714)	(0.00718)	(0.00437)	(0.00434)
WWI	0.0946***	0.0925***	0.0346***	0.0298***
	(0.0206)	(0.0213)	(0.0105)	(0.0109)
WWII	0.0376**	0.0373**	0.0221**	0.0183*
	(0.0175)	(0.0177)	(0.00999)	(0.00991)
Crimean War	-0.148	-0.138	0.00106	-0.00447
	(0.229)	(0.229)	(0.138)	(0.138)
Korean War	-0.00324	-0.0461	0.0747*	0.123**
	(0.0552)	(0.0736)	(0.0400)	(0.0488)
Saskatchewan Rebellion	-0.196		0.299	
	(1.270)		(0.638)	
Second Schleswig War	-0.526**	-0.523**	0.00197	-0.00249
	(0.244)	(0.246)	(0.149)	(0.150)
Franco-Prussian War	-0.0706	-0.0479	-0.117	-0.108
	(0.243)	(0.244)	(0.0882)	(0.0874)
Seven Weeks War	0.208		0.0151	
	(0.264)		(0.213)	
Third Carlist War	-0.341		-0.113	
	(0.255)		(0.120)	
Second Boer War	0.288	0.271	0.309**	0.243*
	(0.187)	(0.186)	(0.143)	(0.142)
American Civil War	-0.00351	-0.0106	0.00338	0.0108
	(0.0667)	(0.0675)	(0.0540)	(0.0539)
Spanish-American War	-0.0466		0.768*	
	(0.602)		(0.459)	
Second Spanish-Moroccan War		-0.251		-0.234**
		(0.213)		(0.0968)
Occupation (IWW)	0.0415***	0.0395***	0.0206***	0.0186**
	(0.0125)	(0.0129)	(0.00751)	(0.00768)
Occupation (IIWW)	0.0333***	0.0312***	0.0147***	0.0140**
	(0.0104)	(0.0108)	(0.00540)	(0.00554)
Constant	0.0568	0.0904	-0.00492	0.000357
	(0.0741)	(0.0753)	(0.0456)	(0.0456)
Country Fixed Effects	Yes	Yes	Yes	Yes
Time Fixed Effects	Yes	Yes	Yes	Yes
War variables	Yes	Yes	Yes	Yes

Observations	1,726	1,726	1,71	1,71
R-squared	0.547	0.531	0.477	0.467
Number of states	13	13	13	13

Notes: For details on the sources, see text and Annex G. 'Panel corrected' standard errors are used due to the presence of heteroskedasticity, autocorrelation and cross-sectional dependency (standard errors are in brackets). *** significance at 1%, ** significance at 5%, * significance at 10%

On the other hand, the effect of the Korean War might be associated to the recovery of the North-American tax revenue ratios during the outburst of the Asian conflict, which reversed the decreasing trend of the immediate post-Second World War years. According to Rockoff (2012), the Korean War was unique in American experience in the twentieth century as taxes (particularly personal and corporate income taxes) were substantially raised while the Federal Reserve limited the monetization of the federal debt (much used in former wartimes). Even though the income federal rates established during the Second World War were mainly maintained afterwards, the Korean War and the military objectives set up afterwards by the federal authorities (in the context of the Cold War era) brought the ratios again to permanent upper levels.

4.7. The role of political regimes in fiscal persistence

This section further explores the previous results by analysing the role of political regimes in fiscal persistence. According to Besley and Persson (2009), representative governments should invest more in fiscal capacity than less representative regimes, as governments became more about common interests. It implicitly entails that democracies should favour the positive shifts in public revenues after wartimes compared to autocracies. However, the literature on defence economics has extensively shown that autocratic regimes tend to bear higher military expenditures than democracies.[246] Therefore, it seems reasonable to expect that those increases in public revenues during both the Land Warfare and Naval Revolutions and the Interwar Revolution that were related to the growth of military spending would have been most strengthened by autocratic regimes. On the contrary, those increases that were most related to non-military purposes should be more strengthened by more representative

[246] See, for instance, Goldsmith (2003) and Fordham and Walker (2005).

governments. In order to explore these possibilities, I run the following equation:

$$R_{it} = \alpha_0 + \alpha_1 WARFARE_{it}*POLITICAL_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \qquad (5)$$

where R_{it} is the level of total public revenues of the central government (measured as a share of GDP) in year t and country i, $WARFARE_{it}*POLITICAL_{it}$ is the interaction term between warfare and the degree of democratization, and Z_{it} is the same set of control variables as in the previous regressions.

Moreover, political regimes might also help to explain the evolution of the structure of fiscal revenues, as it could be expected a positive correlation between democracies and direct taxes. Aidt and Jensen (2009) conclude that the extension of the franchise to poorer citizens favoured the adoption of direct taxes as new voters were who most benefited from income taxation. Moreover, Scheve and Stasavage (2010, 2012) argue that democracies might need to increase progressive taxes in order to compensate the major battle efforts done by poorer social groups during wartimes. According to them, the societal consensus required to mobilize population for the war effort was easier to maintain if the burden of the war was perceived to be fairly shared among different social groups. Once again, I run the same equation for direct tax revenues in order to explore these features:

$$DR_{it} = \alpha_0 + \alpha_1 WARFARE_{it}*POLITICAL_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \qquad (6)$$

where DR_{it} is the level of direct tax revenues of central government (as a share of GDP), and $WARFARE_{it}*POLITICAL_{it}$ and Z_{it} stand for the same group of variables.

Table 4.5 presents the results of the equations (5) and (6) when the level of democracy is interacted with the two World Wars.[247] Concerning the total revenues, the interaction term is significant in both wars, being positive for the Second World War and negative for the First World War (Models 1 and 2). This would suggest that, after the First World War, autocratic regimes

[247] The other wars are not interacted with democracy due to the lower degree of political variability among the participant countries.

undertook permanent changes in public revenues above democracies, probably due to the militarist ambitions of the Italian and (particularly) German dictatorships during the 1930s (alongside with their broader public investment plans). Similarly, the establishment of the Portuguese military dictatorship in 1926 increased the ratios of public revenues thereafter.[248] On the other hand, the positive coefficients of the interaction between the Second World War and democracy suggest that democracies favoured permanent changes in public revenues above autocratic regimes, probably due to their higher engagement with Welfare State policies and (especially in the case of the main powers) to the need to invest in innovative and costly military equipment.

Models 3 and 4 show the regression results for direct tax revenues (equation 6). The coefficient of the interaction term between democracy and the Second World War is also positive and significant. Therefore, as could be expected, democracies appear to have been more engaged in progressive taxation than autocratic regimes after 1945. This result fits with the conclusions drawn by Scheve and Stasavage (2010, 2012), who state that major war-related mobilization is compensated by democracies with increasing progressive taxation. By contrast, the coefficient of the interaction between democracy and the First World War is not significant and negative in models 5 and 6, suggesting that the higher fiscal effort done by dictatorships after 1918 did not come along with the same increase in direct taxation.

[248] According to Harrison and Wolf (2012, 17), the high fiscal capacity of interwar dictatorships can be explained by their capacity "to substitute the instruments of modern nationalism and modern repression for their adversaries' advantages of fiscal transparency and voluntary tax compliance".

Table 4.5. Regression results for total and direct tax revenues (1850-1995)

Dep. variable	Model1 Revenues	Model2 Revenues	Model3 Direct Tax	Model4 Direct Tax	Model5 Revenues	Model6 Revenues	Model7 Direct Tax	Model8 Direct Tax
War variables	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%
Democracy	0.000191	0.000195	5.38e-05	4.52e-05	0.000388	0.000336	0.000108	9.50e-05
	(0.000216)	(0.000215)	(0.000119)	(0.000117)	(0.000276)	(0.000274)	(0.000159)	(0.000156)
Econ. openness	-0.00160	-0.00134	-0.00117	-0.000893	-0.00178	-0.00103	-0.000773	-0.000537
	(0.00442)	(0.00441)	(0.00248)	(0.00248)	(0.00603)	(0.00599)	(0.00353)	(0.00353)
GDP pc (log)	0.0105	0.00814	0.00702	0.00734*	0.0151*	0.0107	0.0121**	0.0126**
	(0.00711)	(0.00715)	(0.00438)	(0.00434)	(0.00905)	(0.00907)	(0.00568)	(0.00557)
WWI	0.109***	0.107***	0.0388***	0.0337***	0.0969***	0.0961***	0.0246*	0.0201
	(0.0205)	(0.0211)	(0.0105)	(0.0109)	(0.0242)	(0.0258)	(0.0138)	(0.0143)
WWII	-0.161***	-0.156***	-0.0613**	-0.0535**	0.0157	0.00948	0.0292**	0.0247*
	(0.0545)	(0.0548)	(0.0267)	(0.0266)	(0.0192)	(0.0195)	(0.0137)	(0.0133)
WWI*democracy	-0.00249***	-0.00253***	-0.000907	-0.000821				
	(0.000912)	(0.000914)	(0.000576)	(0.000570)				
WWII*democracy	0.0193***	0.0189***	0.00837***	0.00722***				
	(0.00512)	(0.00517)	(0.00255)	(0.00250)				
Civil/military expenditure					0.000185	0.000184	-5.75e-06	1.23e-05
					(0.000170)	(0.000154)	(9.10e-05)	(7.97e-05)
WWI*civilexp					-0.00505**	-0.00580**	0.000210	-0.000207
					(0.00225)	(0.00227)	(0.00123)	(0.00122)
WWII* civilexp					0.00810***	0.00908***	-0.000608	-0.000376
					(0.00265)	(0.00265)	(0.00152)	(0.00148)
Crimean War	-0.151	-0.142	-0.00238	-0.00791	-0.156	-0.143	0.00255	-0.00380
	(0.230)	(0.229)	(0.136)	(0.136)	(0.259)	(0.261)	(0.159)	(0.154)
Korean War	-0.0173	-0.0634	0.0775**	0.123***	0.0297	0.00242	0.0879	0.149**
	(0.0546)	(0.0718)	(0.0392)	(0.0472)	(0.0740)	(0.0899)	(0.0567)	(0.0611)
Saskatchewan Rebellion	-0.215		0.315		-0.359		0.195	
	(1.260)		(0.621)		(1.658)		(0.920)	
Second Schleswig War	-0.525**	-0.519**	0.00257	-0.00261	-0.527*	-0.533*	-0.0219	-0.0298
	(0.243)	(0.244)	(0.147)	(0.148)	(0.319)	(0.322)	(0.215)	(0.215)

Table 4.5. (*Continuation*)

Dep. variable	Model1 Revenues	Model2 Revenues	Model3 Direct Tax	Model4 Direct Tax	Model5 Revenues	Model6 Revenues	Model7 Direct Tax	Model8 Direct Tax
War variables	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%	Δ100%	Δ50%,>5%
Franco-Prussian War	-0.0415	-0.0275	-0.115	-0.109	-0.114	-0.0786	-0.124	-0.120
	(0.245)	(0.245)	(0.0867)	(0.0856)	(0.251)	(0.254)	(0.115)	(0.110)
Seven Weeks War	0.195		0.00516		0.217		0.0271	
	(0.267)		(0.213)		(0.314)		(0.198)	
Third Carlist War	-0.287		-0.0886		-0.386*		-0.124	
	(0.253)		(0.114)		(0.234)		(0.141)	
Second Boer War	0.304	0.308*	0.343**	0.272**	0.417*	0.361	0.358**	0.296*
	(0.185)	(0.184)	(0.138)	(0.137)	(0.216)	(0.222)	(0.161)	(0.154)
American Civil War	-0.00322	-0.0105	0.00268	0.0125	-0.00736	-0.0133	-0.000858	0.00588
	(0.0662)	(0.0667)	(0.0536)	(0.0533)	(0.0990)	(0.101)	(0.0802)	(0.0798)
Spanish-American War	-0.0991		0.779*		-0.0312		0.751	
	(0.590)		(0.444)		(0.822)		(0.657)	
Second Spanish-Moroccan War		-0.192		-0.218**		-0.385**		-0.262**
		(0.211)		(0.0921)		(0.188)		(0.110)
Occupation (IWW)	0.0405***	0.0390***	0.0204***	0.0186**	0.0370***	0.0339**	0.0170**	0.0145*
	(0.0124)	(0.0126)	(0.00711)	(0.00728)	(0.0126)	(0.0137)	(0.00852)	(0.00860)
Occupation (IIWW)	0.0279***	0.0263**	0.0136***	0.0130**	0.0444***	0.0416***	0.0235***	0.0237***
	(0.0102)	(0.0104)	(0.00508)	(0.00523)	(0.0106)	(0.0110)	(0.00726)	(0.00724)
Constant	0.0762	0.104	0.000155	0.00343	0.0118	0.0615	-0.0489	-0.0470
	(0.0740)	(0.0750)	(0.0455)	(0.0455)	(0.0930)	(0.0945)	(0.0592)	(0.0585)
FE and war variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,726	1,726	1,710	1,710	1,631	1,631	1,615	1,615
R-squared	0.555	0.546	0.505	0.493	0.622	0.596	0.519	0.518
Number of states	13	13	13	13	13	13	13	13

Notes: For details on the sources, see text and Annex G. 'Panel corrected' standard errors are used due to the presence of heteroskedasticity, autocorrelation and cross-sectional dependency (standard errors are in brackets). *** significance at 1%, ** significance at 5%, * significance at 10%

Models 5 to 8 complement these results by analysing whether the observed fiscal changes were driven by increasing military or civil expenditures. In order to do so, I run the following equations:

$$R_{it} = \alpha_0 + \alpha_1 WARFARE_{it} * CIVILMILEX_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \quad (7)$$
$$DR_{it} = \alpha_0 + \alpha_1 WARFARE_{it} * CIVILMILEX_{it} + \alpha_2 Z_{it} + X_t + \eta_i + \varepsilon_t \quad (8)$$

where R_{it} and DR_{it} are the total public revenues and direct tax revenues of the central government (measured as a share of GDP) in year t and country i, $WARFARE_{it} * CIVILMILEX_{it}$ is the interaction term between warfare and the ratio between civil and military expenditures, and Z_{it} is the same set of control variables as in the previous regressions. A positive coefficient of the interaction term would suggest that the displacement effect was associated with the prominence of civilian expenditures over the military, while a negative one would indicate that the impact was more associated with the prominence of military spending. The interaction term has been applied to the two World Wars, as they had positive effects in the former regressions and provide enough variability among countries.

As can be seen in Models 5 and 6, the coefficients of the interaction terms in the case of the Second World War are positive and significant. This suggests that the permanent increases in public revenues after this war were enhanced when the ratio between civil and military expenditure was above the mean. These results fit with the insights presented above: the fiscal effects of wartimes were reinforced in democracies (compared with autocracies) when civilian expenditure was more relevant to understand persistence. By contrast, the interaction term is significant and negative in the case of the First World War, which indicates that the war-led increase in public revenues was higher in those countries with a higher (relative) military spending. Again, the results fit with the mentioned idea that fiscal effects of wartimes were reinforced in autocracies when military expenditures were more important.

Models 7 and 8 present the results for direct tax revenues. In this case neither the First nor the Second World Wars seem to have had significant effects. Concerning the Second World War, these results suggest that those countries that ended up with permanent fiscal increases due to their higher

civilian expenditures were forced to increase indirect taxes in order to finance it. It additionally implies that those democratic regimes that strengthened the permanent increases on direct tax revenues after the Second World War were not necessarily doing so due to the higher prominence of civilian expenditures (as the case of the US exemplifies, in which direct taxes increased in a context of higher prominence of military burden).

4.8. Conclusions

Warfare has been considered a key factor for the expansion of fiscal capacity during early and late modern periods. This chapter has explored the interplay between warfare, military pressure and fiscal expansion by analysing the permanent effects of late-modern warfare on a sample of major and secondary powers in the light of the historical 'Revolutions in Military Affairs'. The results point out that the interplay between warfare and fiscal expansion has followed an inverted 'U-shape' pattern, in which the Interwar Revolution warfare has been related to major permanent increases in total and direct taxes revenues of central governments. On the other hand, the Nuclear Revolution allowed an impressive increase in destructive power with lower costs, which contributed to make major wars more unlikely and prevented new war-related displacements effects on fiscal systems. This result suggests that the interplay between warfare and fiscal development cannot be categorized with a permanent general law but needs to be analysed as a particular historical phenomenon.

Moreover, the chapter has explored the role of political regimes in the former war-lead narrative. In this regard, the positive impact of the First World War on public revenues was stronger under autocratic regimes, while the opposite held after the Second World War. The analysis on the composition of expenditures suggests that, during the Interwar period, autocracies pushed revenues up due to their militaristic policies, whereas revenue increases under democracies after the Second World War were driven by their major engagement with civilian expenditures (while they kept investing in the preparation for further major conventional wars). On the other hand, democracies after the Second World War and the Korean War not only increased their total public revenues but also their direct taxes,

which reflect their major engagement with fiscal progressivity. These results entail that the impact of wartimes in fiscal expansion is not necessarily progressive, as autocratic regimes and militaristic policies might be part of this phenomenon. Further research on the specific civilian expenditures that are related with permanent long-term effects of warfare would provide more information about the mechanisms behind the interplay between wars and fiscal development. Similarly, deeper analyses about the different aspects of democratic institutions (such as political participation, constraints on the executive, etc.) would improve our understanding of the role played by political regimes in this war-led narrative.

Annex G. Data sources

Belgium

Nominal military expenditures (ME) from Clement (2000) for 1850-1940 and from the NATO dataset for 1949-1995. Gross Domestic Product (GDP) from Smits, Woltjer and Ma (2009) for 1850-1913, 1920-1939 and 1945-1990, and from the IMF database (http://www.imf.org) for 1990-1995. Central Government Revenues (CGR), Direct Tax Revenues from Central Government (DT), and Civil Expenditures (CIVILEX) from Mitchell (2003) for 1850-1912 and 1920-1974, and from the Eurostat database (http://ec.europa.eu/eurostat) for 1975-1995. Export and import data from Mitchell (2003).

Canada

ME from Bird (1983) for 1867-1948 and from the NATO dataset for 1949-1995. GDP from Jones and Obstfeld (2001) for 1870-1925, from Crozier (1983) for 1926-1976 and from Mitchell (2007) for 1977-1995. CGR and DT from Mitchell (2007), and CIVILEX from Bird (1983), Mitchell (2007) and the Department of Finance Canada dataset (http://www.fin.gc.ca/). Export and import data from Mitchell (2007).

Denmark

ME from Johansen (1985) for 1850-1948 and from the NATO dataset for 1949-1995. GDP from Mitchell (2003). CGR, DT and CIVILEX from Johansen (1985) for 1850-1979 and yearly statistical accounts published by Danmarks Statistics (www.dst.dk/aarbog) for 1980-1995. Export and import data from Mitchell (2003).

France

ME from Fontvieille (1976) for 1850-1939 and from the NATO dataset for 1949-1995. Nominal GDP from Smits, Woltjer and Ma (2009) for 1850-1913 and 1920-1938; from Jones and Obstfeld (2001) for 1914-1919 and 1939; and from the National Institute of Statistics and Economic Studies (INSEE) dataset for 1949-1995. CGR and DT from Mitchell (2003) for 1850-1977 and from INSEE for 1978-1995. CIVILEX from Fontvieille (1976) and Mitchell (2003) for 1850-1977 and from Mitchell (2003) and the National Institute of Statistics and Economic Studies (INSEE) dataset for 1949-1995. Export and import data from Mitchell (2003).

Germany

ME from Andic and Veverka (1963) for 1872-1913 and 1925-1938, from Petzina *et al.* (1978) for 1939-1943 and from the NATO dataset for 1953-1995. Nominal GDP from Jones and Obstfeld (2001) for 1872-1913 and 1925-1938, and from Mitchell (2003) for 1950-1995. GNP from Abelshauser (1998) for 1939-1943. Military burden data from Ritschl (2005) for 1914-1918. GDR and DT from Mitchell (2003). Export and import data from Mitchell (2003).

Italy

ME from Ragioneria generale dello Stato (2011) for 1862-1932; from Zamagni (1998) for 1933-1947; and from the NATO dataset for 1951-1995 (data for 1948 comes also from Ragioneria generale dello Stato, 2011). GDP from Baffigi (2011). CGR and DT from Mitchell (2003). CIVILEX

from Ragioneria generale dello Stato (2011). Export and import data from Mitchell (2003).

Netherlands

ME from Centraal Bureau voor de Statistiek (2001) for 1850-1939 and 1945-1948, and from the NATO dataset for 1949-1995. GDP from Centraal Bureau voor de Statistiek (2001, 2010). CGR and CIVILEX from Centraal Bureau voor de Statistiek (2001, 2010) and DT from Mitchell (2003). Export and import data from Mitchell (2003).

Norway

ME from Banks (1976) for 1860-1913; from the Statistiske Sentralbyra (1948) dataset for 1914-1944; from Statistiske Sentralbyra (1959) for 1945-1948; and from the NATO dataset for 1949-1995. GDP from Grytten (2004). CGR from Statistiske Centralbyra (1926) for 1850-1913 and from Mitchell (2003) for 1914-1992. DT from Mitchell (2003). Exports and imports from Mitchell (2003).

Portugal

ME from Valério (2001) for 1850-1948 and from the NATO database for 1949-1995. GDP from Valério (2001). CGR, DT and CIVILEX from Valério (2001). Exports and imports from Valério (2001).

Spain

ME from Sabaté (2013). GDP from Prados de la Escosura (2003). CGR, DT and CIVILEX from Comín and Díaz (2005). Export and import data from Tena (2005).

Sweden

ME from Schön and Krantz (2012) for 1850-1950 and from the COW dataset for 1951-1995. Exchange rates to convert dollars to Swedish crowns from the Historicalstatistics.org dataset (data collected by Rodney

Edvinsson). GDP from Schön and Krantz (2012). CGR from Fregert and Gustafsson (2007) for 1850-1880, and from Mitchell (2003) for 1881-1993. CIVILEX from Fregert and Gustafsson (2007). DT and export and import data from Mitchell (2003).

United Kingdom

ME from Mitchell (1990) for 1850-1913, 1919-1937 and 1946-1948; from Broadberry and Howlett (2005) for 1914-1918; from the COW dataset for 1938-1945; and from the NATO dataset for 1949-1995. Exchange rates to convert dollars to pounds from the Measuring Worth dataset for 1938-1945. Nominal GDP from Measuring Worth (http://www.measuringworth.com/). CGR and DT from Mitchell (2003). CIVILEX from Mitchell (2003) and from the Office for National Statistics dataset (http://www.ons.gov.uk/). Export and import data from Mitchell (2003).

United States

ME from Carter (2006) for 1850-1948 and from the NATO dataset for 1949-1995. Nominal GDP from Measuring Worth (http://www.measuringworth.com/). CGR, DT and CIVILEX from Carter (2006) and Mitchell (2007). Export and import data from Mitchell (2007).

Annex H. List of major wars included in the regression analysis

Table H.1. Major wars for the whole sample of countries (1850-1995)

Countries / War	Period	War	Period
Belgium			
World War Iº	1914-1918	World War IIº	1939-1945
Canada			
Saskatchewan Rebellion*	1885	World War II*#	1939-1945
World War I*#	1914-1918	Korean War*#	1950-1953
Denmark			
Second Schleswig War*#	1864	World War IIº	1939-1945
World War I*	1914-1918		
France			
Crimean War*#	1854-1856	World War I*#	1914-1918
Franco-Prussian War*#	1870-1871	World War IIº	1939-1945
Germany			
World War I*#	1914-1918	World War II*#	1939-1945
Italy			
Seven Weeks War*	1866	World War II*#	1939-1945
World War I*#	1914-1918		
Netherlands			
World War I*#	1914-1918	World War IIº	1939-1945
Norway			
World War IIº	1939-1945		
Portugal			
World War I*#	1914-1918		
Spain			
Third Carlist War*	1872-1876	World War II*#	1939-1945
2nd Spanish-Moroccan War #	1921-1926		
Sweden			
World War II*#	1939-1945		
United Kingdom			
Crimean War*#	1854-1856	World War II*#	1939-1945
Second Boer War*#	1899-1902	Korean War#	1950-1953
World War I*#	1914-1918		
United States			
American Civil War*#	1861-1865	World War I*#	1914-1918
Spanish-American War*	1898	World War II*#	1939-1945
American-Philippine War*	1899-1902	Korean War*#	1950-1953

Notes: see main text for the sources. The wars marked with an asterisk correspond to those conflicts that implied more than 100 per cent of increase in the military burden levels (within a maximum of 5 years). On the other hand, the wars marked with a hashtag correspond to those wars that implied more than 50 per cent of increase in the military

burden levels and that kept the ratio above 5 per cent of GDP (again within a maximum of 5 years). The two measures require at least five years in between the wars. When two conflicts are closer in time, only the one with the highest military burden ratio remains in the list. Finally, the circle accounts for those countries occupied during wartimes.

Conclusions

5.1. Main conclusions

Military expenditures have been one of the most relevant spending items of European states budgets throughout most of the modern period. Its importance has drawn the attention of economic historians, economists, peace and conflict scholars, and many other social scientists. Most of their academic efforts have been devoted to understand the determinants and the consequences of military spending in the short and the long term. This thesis has tried to contribute to these topics with new datasets and new interpretations to ongoing debates.

The first chapter of the thesis has presented new estimates of the Spanish military spending from 1850 to 2009. The lack of long-term homogeneous evidence has been one of the main limitations of the international literature that analyses the determinants and consequences of military expenditures. Although there are several projects and institutions aimed at compiling cross-country data, such as the Stockholm International Peace Research Institute (SIPRI) or the Correlates of War Project (COW), they either provide short-term series or are based on a range of non-homogeneous or non-specified sources. My new Spanish dataset is based on the North Atlantic Treaty Organization (NATO)'s criterion, which provides one of the most comprehensive international definitions on military spending. These new estimations allow making reliable comparisons between different historical periods and contribute to build up an international comparable and homogeneous database on long-term military spending.

My new dataset includes the economic and administrative composition of military expenditure, which allows exploring in more detail the evolution of the resources devoted to the army. Disaggregated figures of military expenditure are very difficult to find in long-term international compilations, even though they might be crucial to interpret the evolution of total military spending. In order to provide clear and comparable figures,

the economic categorization of the series is also based on the NATO classifications, which account for personnel (further divided in the thesis into personnel and pensions), investment and operational expenses. The administrative disaggregation shows the budgets managed by the Ministry of War, the Ministry of Navy, the Ministry of Air and (when applicable) the Ministry of Defence.

This new quantitative information also makes it possible a better understanding of the Spanish military history from the mid-nineteenth century to the present. Even if there are previous series of Spanish military expenditure, they are for short-term periods or do not provide long-term homogeneous disaggregated series. My new data allows concluding that the resources devoted to the military have increased in real terms throughout most of the period of study. The only exceptions appear to be the years immediately after the wars (when spending levels always diminished in comparison to peak wartimes) and the late 1980s onwards, when military spending remained fairly stable. As a percentage of GDP (so-called military burden), the series show several periods with sharp increases, generally related to wartimes. The most remarkable one is the first decade of Franco's dictatorship, when the military burden reached the highest ratios of the whole time-period. By contrast, the lowest historical ratios (as well as the lowest ratios of military spending as a percentage of total public spending) were achieved in the 1990s and the 2000s.

The data on the economic and administrative composition of military expenditure show an army mainly based on land forces and personnel expenditures, which reflect the domestic orientation of the military. The periods with the highest ratios of investment as a share of total spending were 1910-1949 and 1980-2009, most likely due to the military modernization efforts. Complementary data for personnel expenditures on chiefs and officers from 1861 to 1926 show an increasing amount of resources devoted to pay the salaries and gratifications of the military hierarchy until the end of the nineteenth century. In line with the military historiography, the prominence of these payments seems to reflect an inflated officer corps inherited from wartimes.

When comparing the Spanish military burden with a sample of European countries and the US, Spain appears to bear relatively high ratios during the period before the Spanish Civil War (1936-39), most likely due to the combination of the aforementioned payments to an inflated officer corps and the extensive use of the armed forces to confront domestic threats. By contrast, Spain kept relatively low ratios during the Cold War era compared with major powers. During the post-Cold War period, the Spanish ratios have remained generally lower but closer to those of other European countries. In terms of expenditure composition, Spain had a similar pattern to other Southern European countries during the last three decades under consideration, although the share of investment expenditures increased in the 2000s to levels close to those of the Central and North European countries.

Besides the interest that the reviewed military policies might draw on Spanish historiography, Spain also provides an interesting case to study the political determinants of military spending from a historical perspective. Since the end of the Third Carlist War (1872-1876), Spain was ruled by several political regimes, including three long-lived and fairly stable ones: a restricted democracy during the Bourbon Restoration (1874-1923), the dictatorship of Francisco Franco (1939-1975) and the present democratic regime (1977-nowadays). It therefore provides an appealing scenario to study the military policies of different political regimes and their potential impact on military spending. The dictatorship of Primo de Rivera (1923-1930) and the democratic Second Republic (1931-1939) also allow studying the effect of short-lasting political regimes on military spending policies.

According to most studies that analyse the determinants of military expenditure in the short and the long term, democracies exert a negative influence on military spending due to the citizens' preferences for productive and social expenditures (see, for instance, Goldsmith, 2003; Fordham, 2005; Brauner, 2014). The second chapter of the thesis discusses this widely accepted conclusion by analysing the Spanish case between the Restoration period and the present democracy. Even if during the 1990s and the 2000s the military burden was lower than in previous decades, the political transition from Franco's dictatorship to democracy involved increasing military burdens due to the modernization policies and the

reorientation of the army towards international missions. Following the theoretical grounds proposed by Acemoglu *et al.* (2011) and the historical review of military policies, the chapter concludes that this growing military burden can be explained by the need to adapt the army to the new international missions and to commit the military within the newly democratic institutions.

On the other hand, and in accordance with most of the literature, the Spanish dictatorial regimes kept relatively high military burdens in historical perspective. The analysis of the economic composition of the military expenditure reflects the priority given by Franco's regime to domestic threats, particularly since the military pacts with the United States approved in 1953 and the subsequent incorporation into international organizations. Actually, military policies undertaken by the Franco's regime allowed the first contemporary democratic governments to link the aforementioned military modernization with the democratization process. Even if the military could fear that the democratic governments would hinder its alleged autonomy and influence, military modernization opened a window of opportunity for those officers that were highly concerned about the warfare capacity of the armed forces.

On a related topic, the third chapter of the thesis suggests that military expenditures might be used to achieve the army's acquiescence in favour of the political system even if total military spending does not significantly increase. In this regard, the chapter shows that payments to officers improved steadily throughout the Restoration regime (1874-1923), which can be interpreted as a coup-proofing strategy to increase the army's loyalty to the new political system. Even if this policy – as well as the other coup-proofing policies – was not enough to avoid the 1923 coup, it seems to be part of an institutional framework that prevented coup attempts for more than forty decades. This broke down the former pattern of recurrent *pronunciamientos* that had been the norm in the Spanish political system since the beginning of the nineteenth century.

Lastly, the fourth chapter analyses the impact of warfare on the development of fiscal capacity in late-modern times. In this regard, several economic historians and historical sociologists (among others) have seen

warfare and military spending as key factors to explain the state-building process and the institutional changes in modern times. Among them, several authors argue that the changing character of warfare that took place in the continent from the sixteenth century onwards increased the cost of wars, forcing the European sovereigns to pile up debts and to gradually expand the fiscal system (see, for instance, Tilly, 1990; Hoffman and Rosenthal, 1997; Parker, 2010; Karaman and Pamuk, 2013). More precisely, Gennaioli and Voth (2015) argue that the gunpowder revolution made money important to win wars, and this explains why warfare stimulated fiscal expansion in early-modern times but not before.

Wars and military competition have also been related to the development of late-modern fiscal capacity, even though the role played by the changing character of warfare remains understudied (see, for instance, Rasler and Thompson, 1985; Jaggers, 1992; Besley and Persson, 2009; Dincecco *et al.* 2011). To fill this gap, the fourth chapter explores the interplay between warfare, military pressure and fiscal expansion by analysing the permanent effects of late-modern wars on the growth of public revenues for a set of major and secondary powers in the light of the historical 'Revolutions in Military Affairs'. To do so, I provide a new dataset of disaggregated public expenditures and revenues for eleven European countries plus the US and Canada from 1850 to 1995. The inclusion of secondary powers – such as Spain – in the analysis allows exploring more robustly the impact of warfare when taking into account the relative military effort made by every country.

The results suggest that the interplay between warfare and fiscal expansion has followed an inverted 'U-shape' pattern, in which the Interwar Revolution (1914-1945) has been related to major permanent increases in total and direct tax revenues of central governments. On the other hand, the Nuclear Revolution (since about 1945) allowed an impressive increase in armies' destructive capacity at lower costs, which contributed to make major wars more unlikely and prevented new war-related displacements effects on fiscal systems. In line with the mentioned paper by Gennaioli and Voth (2015), the changing character of warfare contributes to explain (together with other domestic and international factors) why the relationship between warfare and fiscal expansion has been not the same in different

historical periods. This result allows concluding that the interplay between warfare and fiscal development cannot be described as a permanent general law but needs to be analysed as a particular historical phenomenon.

Moreover, this chapter shows that the positive impact of the First World War on public revenues was stronger under autocratic regimes, while the opposite happened after the Second World War. The analysis suggests that, during the Interwar period, autocracies pushed revenues up due to their militaristic policies, whereas revenue increases under democracies after the Second World War were driven by their major engagement with civilian expenditures (while they kept investing in the preparation for future major conventional wars). On the other hand, democracies after the Second World War and the Korean War not only increased their total public revenues but also their direct taxes, which reflect their major engagement with fiscal progressivity. These results imply that the impact of wartimes on fiscal expansion is not necessarily progressive, as autocratic regimes and militaristic policies might be part of this phenomenon.

5.2. Limitations of the study and future lines of research

This work presents some limitations and opens new lines of research. The next paragraphs are devoted to show some of the limitations and prospects of the four chapters, with a particular emphasis on the last ones. To start with, the first chapter aims at encouraging new data compilations on military spending for other case studies in order to build up a disaggregated and comparable long-term panel dataset. This would allow more reliable comparisons between countries and further analyses on the composition of military expenditure. Additionally, the comparison of my new Spanish military spending estimates with those of the Correlates of War Project (COW) poses the need to revise the COW's estimates in order to adapt them to the new updated series. Even if the COW's dataset remains a very useful tool for historical analyses, their military spending figures should be used cautiously.

The second chapter of the thesis suggests that the army may influence the spending policies of transitional governments. This same conclusion has also been achieved by other authors when studying autocratic regimes and

weak democracies. To my view, this chapter suggests at least two future lines of research. Firstly, an analysis based on an international panel dataset would allow exploring the spending behaviour of transitional governments more generally. For instance, Bove and Nisticò (2014) analyse the evolution of military expenditure after *coups d'état* in a set of countries in recent decades, concluding that those coups that gave place to military dictatorships went along with higher military expenditures than those ones that failed or ended up with democratic regimes. Similar analyses could be undertaken to explore civilian political transitions. The modernization of the armed forces undertaken by several transitional governments during the latest democratization wave (such as in Greece or Argentina) shows the potential relevance of this analysis (Huntington, 1991).

On the other hand, the analysis of the military influence in consolidated democracies would mean another step further in the same direction. Even if the fear of a *coup d'état* remains much lower in consolidated democracies than in other political regimes – and despite the political neutrality that the army is obliged to observe – the military may exert other kind of pressures in order to influence governmental policies. For instance, Brooks (2009) identifies five levels of military political intervention in democracies, ranging from "public appeal" (i.e. public comments made by respected officers to influence public opinion) to "shoulder tapping" (lobbying-like activities to achieve the support of the members of the country's legislative branch). In this regard, several analysts have identified the 1960s and the post-Cold War era as the periods with more political interventions of the armed forces in recent American political history (Betts, 2009; Nielsen and Snider, 2009). Knowing that governments tend to respond to social pressures (Morales, 2014), and that these responses might be biased towards more powerful social actors (Gilens, 2005), the military might be a relevant institution to be taken into account when studying the budgetary process in consolidated democracies.

Regarding the third chapter (which analyses the Spanish coup-proofing strategy in 1850-1923), further work is needed to provide additional qualitative and quantitative evidence. Firstly, the qualitative references provided in the chapter represent just a preliminary approximation to the study of political discourses and press articles. A more systematic review of

the political speeches pronounced by the heads of the liberal and conservative political parties and the Ministers of War in the national parliament (*Congreso de los Diputados*), as well as a more systematic review of other military and civilian newspapers (such as *El Resumen* or *El Mundo Militar*), will constitute the next step to complete the most qualitative part of the paper. This study should help to assess the specific purposes of the alleged coup-proofing strategies and the consequent responses of the army and the military hierarchy.

Similarly, new quantitative evidence could help to strengthen the argument. Firstly, regression analyses would provide additional insights about the impact of wage payments to officers on the frequency and the outcome of *pronunciamientos*. To do so, new yearly data would be necessary, because the benchmarks observations presented in the chapter do not allow for enough variability to explore the impact of all the policies that were in place during the period of study. Fortunately, yearly data is available in the archives of the Ministry of Finance and Public Administration (*Ministerio de Hacienda y Administraciones Públicas*). Thus, extending the present dataset constitutes the other next step in the planned future research. Moreover, new data on civilian salaries (both from public services and from other private sectors) would help to reinforce the evidence on the relative growth of officers' salary payments. The national budgets (*Presupuestos Generales del Estado*), as well as monographic studies, provide these figures.

On the other hand, one might argue that the results found in this chapter explain why the empirical analyses that explore the impact of coup-proofing strategies on *coups d'état* based on total military expenditure remain inconclusive (Collier and Hoeffler, 2007; Tusalem, 2010; Powell, 2012; Leon, 2014; Piplani and Talmadge, 2015). In this regard, new data on disaggregated military expenditures for other countries and time periods would help to increase the precision of these analyses in order to account for those coup-proofing policies that involved payments to the military hierarchy (or any other specific spending policies). If the result of this sort of analyses tend to show that specific budgetary items of military expenditures foster political stability, this should be taken into account when exploring the costs and the benefits of increasing military spending.

Lastly, the fourth chapter is probably the one that open more opportunities for future research. First of all, the analysis could be extended to include the total public revenues of the general government. This would provide sounder results, by taking into account not only those changes that took place in central government but also in local and regional administrative levels. Unfortunately, data availability remains as a major limitation to carry on this analysis. As Philip T. Hoffman has recently noted, information on different expenditures and revenues categories for local governments still need to be properly compiled (Hoffman, 2015). The data provided by Flora *et al.* (1983) – recently scanned and edited by Jordan Scavo and Peter Lindert under the Global Price and Income History Group project – provides a good starting point (as has been recently shown by Beramendi and Queralt, 2014), even if nineteenth century data is generally based on a few benchmarks. Future additional data compilations will make this kind of analyses sounder.

Beyond these data concerns, some other aspects regarding the impact of warfare on public revenues deserve further attention. For instance, even if the Interwar Revolution's warfare gave place to long-lasting increases in total public revenues and direct tax revenues, not all countries ended up with the same fiscal policies. Other factors, besides the intensity of war, might explain why some countries (such as France or Italy) were less responsive to warfare than others (such as the UK or the US). In this regard, as I show in this chapter, different political regimes undertook different fiscal policies in post-war periods; however, further research is needed to understand the differences between countries with similar political regimes. For instance, different levels of voting rights might affect the interests of political parties and their spending policies (Aidt and Jensen, 2009; Mares and Queralt, 2013; Beramendi and Queralt, 2014). Similarly, different aspects of democratic institutions (such as political participation, constraints on the executive, etc.) might also condition the outcome of the political bargain process (Eloranta *et al.* 2014). Thus, a deeper analysis on the political side of the war-driven historical narrative could provide new interesting results.

Lastly, another appealing future line of research is related to the sample of countries included in the analysis, since the analysis should be extended, as far as possible, to other non-European and developing countries. While I considered necessary to limit the scope of the referred chapter to Europe and its Offshoots, further research should be devoted to explore the impact of late-modern warfare on fiscal expansion in developing countries. Actually, there has been a growing literature on this topic in recent decades. For instance, Chowdhury and Murshed (2013) find a negative relation between wars and fiscal capacity in a set of developing countries from 1980 to 2010, but they do not differentiate among types of conflicts. By contrast, Besley and Persson (2009) and Dincecco and Prado (2012) argue that late-modern and early-modern wars are positively correlated with present fiscal capacity (measured, among other variables, by the average of the current share of taxes over GDP) in broad international datasets. Recently, Dincecco *et al.* (2014) find that early-modern wars predict greater fiscal capacity across the Old World. Taylor and Botea (2008) condition the argument to the degree of ethnic homogeneity in the countries.

However, several aspects should be further addressed to understand the applicability of the warfare-making / state-building thesis in the current developing world. For instance, according to Tilly (1985, 1990), developing countries have had access to an exceptional amount of foreign capital, particularly in the context of Cold War international disputes. This author suggests that this external source of resources could have allowed governments to finance warfare without the need to impose sacrifices to their populations. This implies that external warfare not necessarily would have driving countries to democratization and better fiscal capacity but to external dependence (see also Centeno, 2003; Leander, 2004). On the other hand, the increasing number of internal armed conflicts in the post-World War II period, together with the declining interstate wars since the 1980s (Sarkees *et al.* 2003; Pettersson and Wallensteen, 2015), poses the need to account for the impact of different types of wars. While international wars may foster state-building, civil wars may prevent it (Besley and Persson, 2009; Cárdenas, 2010; Kurtenbach, 2011). The growth of internationalized internal armed conflicts since the mid-2000s and the increasing peacekeeping operations since the 1980s may pose similar concerns (Gleditsch, 2008; Pettersson and Wallensteen, 2015). The combination of

these variables of interest – among others – may give place to promising lines of research.

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