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Does War Make States?

Military Spending and the Italian State building, 1861-1945

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Abstract

We present empirical evidence on the relationship between military spending and the expansion of other governmental budgetary heading and tax revenues from the Unification of Italy (1861) up to the end of World War II. Mainly in the years preceding 1922, investments in education and social transfers to families moves together with the defense spending. That is, positive changes in defense implies both an increase in education and in transfers. Moreover, transfers also have a compensatory role during recessive phases. Positive changes in defence do not crowd out the investment in capital spending, while disinvestments in defense are associated with an increase in the investment in capital. The pro-cyclical behavior of the tax revenues is compatible with a debt financing dynamic of many government expenditures. Although our analytic narrative is not universally valid, it can support the persistent centrality of external war in the discontinuous development and expansion of the Italian central State, with some exceptions explained by the historical experience.

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1. Introduction

State authority and stability are expressed through public finances. This paper looks at the relationship between defence spending and the expansion of other governmental budgetary heading and tax revenues from the Unification of Italy (1861) up to the end of World War II.[1] According to conventional wisdom, after the tragedy of a war, there is a "peace dividend" in the countries involved. Aside from decrease in defence spending, it means different things fort different people. A common interpretation, the one we will follow here, is that public spending on "social needs" increased[2].

This idea comes from a wide literature on ratchet effects (Peacock and Wiseman, 1961 and subsequent papers), which argues that under normal conditions, public spending has an upward trend, aligned with the development of income and tax revenues. Great crises, determined by wars, serious depressions, epidemics or natural disasters, require a great commitment of public spending and therefore an increase in the tax burden. Exceptional events raise the level of tax tolerance by the electorate; once the crisis is over, citizens feel comfortable with the new level of taxation and they do not want to lose the public services that have been introduced. Spending resumes its normal path of growth, but at a higher level than the initial one: the public sector has therefore permanently displaced the private sector, increasing the tax burden and the public spending.

Political science has summarized this vision in a well-known aphorism: "War makes states and states make war", (Tilly, 1975. p.42). This view argues that, from a historical perspective, the ability to finance war was the key to the survival of the elites in power, so they created effective physical and fiscal infrastructures.

Following the same path, recent theoretical studies have examined the relationship between war and the State building referring to the efficiency of political institutions (Besley and Persson, 2008; 2009; Acemouglu, 2005; 2010). They highlight some long-run determinants of state building such as the risk of external or internal conflict, the degree of political instability, and the dependence on natural resources. They also state that countries with a belligerent past have greater fiscal capacity today.

In this paper, we try to bring these different perspectives together. Indeed, only a few other works, follow this approach. Dincecco, Federico and Vindigni (2011) use a new database to show that external and internal conflicts in pre-unification Italy had consequences for the demand of military spending which in turn had important effects for fiscal policy and the likelihood of institutional reform and the related improvements in the provision of non-military public goods.

In another work, Beetsma, Cukierman and Giuliodori (2016) find interesting results in their legislative, historical, theoretical and statistical evidence for the United States. The outbreak and persistence of the Great Depression, together with previous expansions of general suffrage, substantially increased the demand for redistributive policies by the median voter, despite the political leaders of the US Congress managed to partially prevent this demand from materializing into policies

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[1] Military spending associated with wars has been major cause of government deficits and debt financing. See recent paper of Smith (2020), for the UK Experience 1700-2016.
[2] Rockoff (1998) examines this point from a historical perspective.

active public. However, by increasing the tax program and strengthening the direct taxation mechanism, World War II created the conditions for a new fiscal capacity, both in terms of tax rates and tax collection capacity. Consequently, the post war decline in defence spending induced a new political equilibrium in which part of the peace dividend was channelled towards greater redistribution and hence growth in welfare spending.

Finally, Aghion, Jaravel, Persson and Rouzet (2019) uncovered three new stylized facts. First, investments in mass primary education are positively correlated with military conflicts. Second, if anything, democratization seems to be negatively associated with such investments. Third, primary enrolment seems to respond more to military threats in democracies than in autocracies.

Our contribution compared to these papers is to consider several single items of the Italian public expenditure over a larger time interval in order to: (1) avoid the general problems of cross country studies by comparing their policies; (2) overcome the greater likelihood of confounding factors when looking at different national politics. Primarily, our empirical results confirm the relationship between defense spending and other budgetary headings, in particular education and social transfers, mainly before 1922. Conversely, increasing capital investments are associated to military divestments.

Despite these empirical findings, the deepening of the historical Italian context recommend to take into account even qualitative aspects to confirm these outcomes. For example, the lagged effects of the Daneo-Credaro educational reform in 1911 or the 337 social policy measures triggered concurrently to the World War I (Pavan, 2019). Once again, the analytical blend of both quantitative and qualitative aspects is still the most comprehensive way to understand social sciences phenomena: if econometrics suggests, history necessarily matters.

Ultimately, our empirical analysis shows how the wars waged by the Kingdom of Italy from its birth (1861) until 1921 have been an aid to the formation of the state.

The paper is organized as follows. Section 2 introduces the Italian historical context from 1861 to 1945. Sections 3 describes the sources and data we have used in our analysis. Results are displayed in Section 4. The following Section 5 discusses the results of the empirical analysis, and Section 6 concludes.

2. Historical context

The interplay between warfare, national accounts and social policies changes accordingly to the historical context we consider. Thus, few words must be spent on what Italy experienced, from the Unification to the following decades, both for the handling of internal and external conflicts and the development of more inclusive social policies. In this paper we intentionally avoid the words "welfare state". Given the time span we consider, it would not be historically coherent to define specific social reforms as part of an integrated welfare system. The words "welfare state" appears for the first time in the political context during the 1930s when the English scholars of social policy use it to contrast the Nazi "warfare state" (Titmuss, 1974). However, it's only after World War II that "welfare state" take the broad meaning we nowadays consider, including all the policies having a direct impact on the well-being of the citizens. Table 1 identifies the main events related to national defense, from Unification to World War II. These include riots, insurrectional revolts and conflicts involving other countries.

See in Appendix Table 1 "Internal and external conflicts, 1861-1945"

Measuring the impact of each event on a macroeconomic level can be misleading: many conflicts are very close each other and they can differ a lot both for the length and the military commitment. However, we can consider wider group of conflicts according to the Italian political history. Thus, the empirical analysis takes into account three groups of events. The first group refers to 1862-96, that are the years covering the Right and Left wing governments ended with the defeat of Adua and the following resignation of the fourth government chaired by Francesco Crispi. The second group covers the years 1897-1922. These years include the intensifying social conflict at the end of the century and the so called "Giolitti era" preceding World War I. Finally the last group, 1922-45, starts with the march on Rome by fascists militants and it end with World War II. A brief overview of the Italian history is now crucial to explain each results within its political and economic context.

In 1861, the newly formed Italian state inherites all the debts by the former existing states before Unification. It takes almost eight years to reach the same accounting standards within all regions through Cambray-Digny law of 1869. Until 1876, despite the right wing economic policy focused on the balance budget, expenditures are significant. The ratio between public debt and GDP increases from 38.16% in 1861 to 105.05% in 1876 (Osservatorio CPI, 2020). On average, around 14% of GDP covers expenses in interests, defense and public order (Ciocca, 2020). These were high since the Unification due to the civil unrest and the pressure on the new national borders. Regarding domestic policy, the Reign of Italy faces the explosion of the riots in southern regions as a result of the increasing tax burden and against the power of the landlords class. The repression of the brigandage is formally enforced by the Pica Law between 1863 and 1865 but it engages almost ten years of military control: by the end of 1860's more than a half of the Italian army fought against 80.000 brigands (Rochat and Massobrio, 1978). Regarding foreign military policy, the Reign of Italy completes its process of Unification in the following years: in 1866 the treaties of the third war of independence against the Austrian empire led to the annexation of Veneto while in 1870 the victory over the Pontifical army ratifies the conquest of Rome.

The rise of the left wing party in 1876 changes the focus of the political economy. Protectionism is the answer to a growing globalised economy. Moreover, military spending became crucial in the rush to colonialism. This reaches one-fifth of the total public expenditure by the end of the century (Ciocca, 2020) due to the ruinous campaigns in Eritrea and in the Abissinia war. On the domestic side, the increasing prices of the essential goods and the stagnating economy led to riots across the entire country until the murder of the king Umberto I. The Italian governements, from Francesco Crispi (1893-96) to Saracco (1900-01), quells the domestic uprisings through a strong military intervention.

With the turning of the 20th century, Italy confirms its ambitions within the international stage. The Libyan war in 1911-12 bring to the administration of Tripolitanian and Cyrenaica before the outbreak of World War I. During these years the public expenditure increases from 17% (1913) to 40% (1918) of the GDP at current prices (Ciocca, 2020). It take seven years (1925-26) to get back to pre-war level of expenditure (Brosio and Marchese, 1986). At that time Italy is already Fascists, after the march on Rome in 1922. In the following years Mussolini strengthens the regime by special laws issued in 1925-26. These laws bans the right to strike and reinforce the role of national police in the public

control. The pressure from farmers and the Fascist propaganda directs the Italian foreign policy to the creation of a colonial empire in the African continent.[3] The results of this attempt led to the alliance with the Nazi Germany and the following collapse of World War II. The costs for Italy were huge: almost 450.000 dead, the decrease of 40% of GDP and the stock of physical capital below the 4% (Ciocca, 2020). An entire country needed to be rebuilt.

3. Data and sources

We use annual time series data of Italy's central government spending that include the years 1862–1945. Data on specific economic and functional items of total government spending are at current prices. These are drawn from the series recently provided by Italy's State General Accounting Department (RGS, 2011)[4].

Specifically, we consider capital spending and transfers among the economic categories and the national defence and the expenditure in education and culture (excluding religion) among the functional categories. In particular, capital expenditure include goods, machinery and technical-scientific equipments directly paid by the State. Transfers count current transfers within general government and also capital transfers to general government, both to enterprises and to households. Spending refers to the total payments made in the year and have been obtained from the final budget of the state. From 1884 to 1964 Italy's fiscal year run from July 1st to June 30th. In our dataset, we changed this convention into the solar years by adding half of the expenditures made in two consecutive fiscal years and assuming an equal distribution of the expenditure over each fiscal year. All the variables are in nominal terms and computed as a share of nominal GDP. Regarding the GDP at current prices, we rely on the new series of Italy's national accounts provided by the Bank of Italy (Baffigi, 2015).

The trends in total spending are significantly influenced by military expenditure which up to the First World War weighs about 20% and is crucial for the completion of the unification of the country and for the colonial policy of Italy. During fascism, the gap between military and non-military spending is partially reduced, with the only exception of those years close to World War II.

In general, non-military public spending seems to experience a slow and steady evolution in the period preceding the First World War, which implies a significant stability of the tasks carried out by the state and of the social equilibrium of the period.

Regarding the composition of public sector expenditure by categories, capital expenditure is a relevant component, reaching an all-time high in 1887, accounting for 11.7% of total expenditure. This confirms what other historical studies[5] claim about the country's infrastructural effort after the unification. Although this cannot imply that public intervention made a decisive contribution to the economic development of the country and its industrialization, it is certainly an important element of the economic policy of the period and it confirms the political and social balance achieved of the time. During Fascism, capital investments are still a significant amounts of total expenditure, with a

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[3] In a recent paper Acemoglu et al. (2021) provide evidence that landowner associations and greater presence of local elites played an important role in the rise of Fascism.
[4] From 1862 to 1967, the reconstructions by economic and functional categories are based on the RGS volume (1969).
[5] See R. Romeo (1967) and A. Pedone (1967).

peak in 1929, without however reaching the levels of the period 1884-1889. Moreover, as total public expenditure increases, capital expenditure raises its share over the GDP, approaching 5% in 1932.

Expenditure on education grows in real terms between 1862 and 1913 at a compound annual growth rate (CAGR) of 8%, strongly accentuating its weight with respect to total expenditure (from 1.6 to 4.9%) and to GDP (from 0.2 to 0.8%). The compound CAGR in constant euros is, instead, 5.5% from 1919 to 1939 and 5.3% from 1926 to 1939. A comparison with other European countries, however, shows a lower public sector commitment over the same period.[6]

Redistributive expenditure (transfers to households) has an irregular trend. Instead of an obvious long-term growth trend as for education, we observe periods of decline in real terms for this component (especially in the first decade during the governments of the right wing party) and periods of strong growth.

Redistributive expenditure seems to respond to short-term needs. However the relevance of this component appears to be growing overall, although it is still modest in 1910 (less than 1% of GDP). In the following period, the redistributive expenditure is characterized by a jump at the end of the First World War and by a strong expansion in the years 1919-22; subsequently it is low until 1930 and then it starts to grow again. A temporary "displacement effect" connected to the war seems to emerge for this item. (See appendix: Figure 2, Ratio between single items of expenditure and GDP and Figure 1 Ratio between single items of expenditure and total expenditure).

Another variable is tax revenue relative to GDP. Time series has been reconstructed by aggregating three sources: from 1861 to 1865 this percentage is calculated on data from Repaci (1962); for the years 1866 to 1884 the source is Brosio and Marchese (1986); finally, the time series from 1885 to 1945 it is taken from Artoni and Biancini (2003).

Figure 3 (See Appendix) shows the trend in revenues compared to GDP from 1861 to 1945 and also in this case the time series can be divided into 3 sub-periods. In the first, which runs from 1861 to 1914, revenues compared to GDP are on average 9.87. In this period, the State revenue essentially comes from four groups of taxes: monopolies, consumption taxes, taxes on the exchange of wealth and direct taxes. Direct taxes and consumption taxes guarantee the highest revenue compared to total revenue (Brosio and Marchese, 1986). The revenue is ensured by taxes imposed primarily on the popular masses, and among the most significant is the tax on the ground: this tax is introduced in 1868 and is calculated referring to cereals ground by the mills, thus hitting the bases of the popular nutrition (Salvatori, 1990).

The second period, which runs from 1915 to 1924, records an average value of revenues compared to GDP equal to 12.40. Tax revenues are distinguished between taxes on income and assets and indirect taxes. According to Artoni and Biancini (2003) "*The tax system of this period is in a line of absolute continuity with that formed in the post-unification period, which in its structure had certainly not incorporated the important changes in the economic structure of our country that occurred in the Giolitti period* "(p. 321).

In the third period, from 1925 to 1945, there is a reduction in tax revenues compared to GDP, the average value of which becomes equal to 11.81. The tax policy of this period is characterized by the introduction of some extraordinary taxes, a very frequent practice in the history of Italy. The extraordinary progressive tax on dividends of commercial companies, the extraordinary real estate tax, the extraordinary tax on the capital of joint-stock companies and the extraordinary tax on the

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[6] On the comparison between European countries see Pistoresi and Salsano (2020).

capital of industrial and commercial companies are therefore established, to which, in 1939, ordinary tax on assets follows (Repaci, 1962).

4. Empirical results

Tables 2-5 shows several regressions of change in GDP share of public expenditure (different items) on the change in the share of defense expenditures. Specifically, we consider public expenditure in capital, education and transfers. By the government's budget constraint, increases in the share of public expenditures have to be accompanied by increases in the share of tax revenues or national debt, hence we also analyze the tax revenues behavior.

The empirical analysis takes into account three periods corresponding to the different groups of events mentioned in paragraph 2. All the regressions include a constant of which for brevity reasons we do not report the estimate. We also control for past economic fluctuations and past change in total population or different dependency ratios in order to check for autonomous forces contributing to the changes in public expenditure and tax revenues and reducing the omitted variable bias. Tables 2-5 do not report the estimated coefficients for the population and dependency ratio effects because they are always not statistically significant, however they are always included (see, the Notes of the tables).

In order to test for the possible existence of asymmetric effects of economic expansions and contractions on different items of the public spending, we introduce one period lagged Hodrick-Prescott cycle when this is positive and zero otherwise, i.e *CycleUp(-1)* and one period lagged Hodrick-Prescott cycle when this is negative and zero otherwise, i.e *CycleDown(-1)*. Lagged variables are used to reduce the endogeneity problems. Major changes in defense expenditure are associated with wars or war threats and can be reasonably assumed exogenous, as it is standard in fiscal policy analysis (e.g., Ramey 2011; Beetsa et al. 2016). We allow the impact of defense expenditure to differ depending on whether the share of defense expenditure goes up or down, in order to verify the possible existence of ratchets or asymmetric effects on the particular item of the public expenditure analysed. Thus, we introduce change in GDP share of defence expenditure when change is positive and zero otherwise (Δ*DefUp)* and change in GDP share of defence expenditure when change is negative and zero otherwise *(ΔDefDown)*. *F*-test are presented to support the existence of a significant asymmetric effects of defense. If the null hypothesis, that is the coefficients of the upward and downward movements in the share of defense are equal, is rejected, we present the regressions for the combined effect. A similar argument applies in testing the asymmetric effect of economic expansions and contractions on capital spending.

Table 2 analyses if defense spending exerts a statistically significant negative or positive effect on public expenditure in capital. Columns 1 and 2 suggest a significant inverse relationship over the period 1861-1896 (significance 1% level): when the GDP share of defense goes down, the GDP share of capital goes up, and vice-versa. This outcome is weaker (in size and significance 10%) when the whole period is considered (columns 5-6).

The regression in column 3 repeats the regression in column 1 for the period 1897-1922. It reveals a significantly negative coefficient on defense when its share goes down (significance at 5% level), implying an increase in the capital share, while there is no significant effect on the capital, when the defense spending goes up. *F*-test that the coefficients of the up and down movements in the share of defense are equal is rejected at the 1 percent level. Moreover, in this period the 36% of the variability

of total public expenditure in capital is due to the change in defense. These findings support the existence of a significant asymmetric effect of defense on capital (significance 5%) during the period 1897-1922: wars do not seem to crowd out the investment in capital in this period, while disinvestment in defense induces an increase in capital expenditure.

All these results are obtained controlling for the past business cycle fluctuations. Specifically, there is evidence of a positive link between past upturns and downturns and positive and negative change in current capital expenditure. This outcome is coherent with the procyclical behavior of the revenues documented in table 4.

See in Appendix, Table 2 "Defense and capital"

Table 3 mainly describes a positive relationship between increases in defense and education spending (columns 3,4,7,8). This asymmetric relationship is statistically relevant (the F-test, where the coefficients of the upward and downward movements in the share of defense are equal, strongly conduces to rejects the null hypothesis) in particular over the period 1897-1922 (columns 3, 4). The variability of the expenditure in education is explained for more than 50% by changes in defense spending and business cycle fluctuations (adjusted R^2=0.54 and 0.53, respectively).

The link between past business cycle fluctuations and current investment in public education is positive: past expansionary phases correspond to an increase in the expenditure in education in the subsequent period and vice-versa, while wars seem to finance investment in education. The asymmetric effect of defense spending on education is not robust in the subsample 1922-1945: in this period the symmetrical positive relationship between defense and education is only relevant at 10% significance level. Furthermore, the relationship seems worse described as the goodness of the model worsens (adjusted R^2= 011, column 6). This deterioration is also reflected in the regression over the entire period (adjusted $R^2 = 0.22$, adjusted $R^2 = 0.23$ in columns 7-8 respectively). Thus, mainly the sub-period 1897-22 drives the result over the entire time span.

See in Appendix, Table 3 "Defense and education"

Table 4 focuses on the effects of the defence spending on tax revenues. Over the years 1863-1945, changes in GDP share of defence expenditure are positively linked to the tax revenues (column 8) and this result is significant at the 5% level. This seems led by the relevance of the relationship between these two variables in the period 1863-1896 (column 2), significant at 1% level: for positive changes in defense the tax revenues decreases, while this is not statistically significant for negative changes in defense spending. This outcome is not robust for 1897-1922 and 1922-1945.

Regarding business cycle, revenues are pro-cyclical over the entire period and in the subsamples 1861-1896 and 1922-1945 (columns 2,6,8), increasing in expansion phases and decreasing in recessive phases (1% significance level). In the period 1897-22, this procyclicality is asymmetrical: during boom phases, revenues significantly increase (1% significance level) and do not fall in recession phases (columns 3,4).

See in Appendix, Table 4 "Defense and tax revenues"

Table 5 shows that defense spending is positively and significantly related to public expenditure in transfers until 1922 (columns 2 and 4): when the GDP share of defense goes up (down), the GDP share of expenditure in transfers goes up (down). This finding is supported by the *F*-test that the does not reject the null hypothesis stating that the coefficients of the upward and downward movements in the share of defense are equal (1 percent level). This link is particularly strong and significant (1 percent level) in the period 1897-1922, where more than the 55% of the variability in transfers is due to defence changes and expansions in economic activity (adjusted $R^2 = 0.57$ and adjusted $R^2 = 0.59$ in columns 3, 4 respectively).

Note that transfers increase when the past business cycle is positive (positive relation) and also when the past business cycle is negative (negative relation). Thus, transfers have a compensatory role during recessive phases over the entire period (column 7). This outcome is coherent with the procyclical behavior of the revenues documented in table 4.

See in Appendix Table 5 "Defense and transfers"

5. Discussion

After the political Unification in 1861, the Italian government needs to provide a central administration to the newborn country. This involves regulatory aspects as much as the infrastructures and the creation of a national army, and other choices of public policies aimed at the creation of a modern state. (Plebano 1900).
Our analysis of the relationship between military spending and the other budgetary heading it is now discussed and interpreted in the light of the historical context of those years.

Capital

Considering the entire period 1863-1945, we find evidence of an inverse relationship between military spending and investments in capital (Table 2), when the GDP share of defense goes down, the GDP share of capital goes up, and vice-versa. The comparison across different sub-periods reveals that the effect on the capital is more pronounced, when the defense spending goes down until the 1922. In particular, during the years 1897-1922 positive changes in defense do not significantly crowd out the investments in capital spending, while divestments in defense are associated with a significant increase in the investments in capital.

This result supports the predominant historiographical position (Romeo, 1967; Brosio and Marchese, 1986) stating that the Italian liberal ruling classes allocated most of the available resources into public infrastructure in order to modernize the state, even by decreasing military spending in some cases. The "great jump" of the Italian economy, according to Gerschenkron hypothesis (1955), leans on this new context where, in addition, the new structure of the banking system (mutual banks), stimulated capital investments in some industries, such as textile and mechanics. In addition, the adoption of suitable national policies - i.e. public subsidies and protectionist measures - fostered the capital accumulation within the Italian economy (Ciccarelli, Proietti 2013).

The role of the past business cycles is significant over the entire period: past expansionary phases lead to increases in current capital expenditure, while during economic downturns the expenditure declines.

Education

The empirical results (Table 3) point out a positive relationship between defence and the national expenditure on education, especially during the period 1897-1922. These confirm what other authors (Aghion et al. 2019, Obinger and Petersen, 2015) show for different countries. However, the causal effects of war involvements in mass schooling must be discussed referring to the specific historical context.

In the new-born Reign of Italy the census of 1861 records an illiteracy rate of 78% (Dal Passo and Laurenti, 2017). The adoption of Casati Law immediately after Unification simply marks the distinction between primary and secondary education, without significant improvements: still in 1871 illiteracy involves the 73% of the Italian population. Mass schooling is not on the political agenda. The first attempt to spread education to the masses come with the following Coppino Law in 1877. Primary school becomes compulsory for the first three years while sanctions are disposed for defaulting. During these years the investments in education follow the slow building of a centralised State.

The "Giolitti era" marks a new political course after the violent riots at the end of the century. Socialist and Catholics are the main actors discussing the need for reforming the national education system. The debate led to Orlando law in 1904. This act extends the compulsory schooling until the age of twelve, including four years of primary school and an examination for the admission to the middle school. Otherwise, there is the chance to attend a two-years course for professional activities. At the same time the law establishes night school and school care for lower social classes. The following law n. 383 in 1906 enforces the compulsory schooling for Southern Italy, including Sicily and Sardinia. Three years later the parliamentary inquiry led by Camillo Corradini in 1909 underlines the need for a more effective public intervention (Dal Passo and Laurenti, 2017). Thus, due to the Daneo-Credaro law in 1911, the central government starts to directly manage the municipal schools, leaving to regional capitals the direction of schools within the metropolitan area. Before the outbreak of World War I, in January 1914 the law n. 27 defines the first school programmes for the pre-primary education. It is the completion of the set of reform of the Liberal governments before Fascism. The correlation between World War I and expenditure in education can be explained here as a results of the lagged effects of the rollout of this acts. More generally, these reforms follow the growing industrialization of the country requiring a new set of basic skills, mostly the technical ones.

After World War I, Fascist party takes the power in 1922 emphasizing the centralization process. Mussolini and his ministers aim to replace the democratic institutions defining a new cultural and political course. This affects all the institutions, including schools and education. The first result is the reform introduced by the fascist education minister, Giovanni Gentile, in 1923. Despite the extent of compulsory schooling to the age of fourteen, results were not significant (Dal Passo and Laurenti, 2017). However, the reform substantially marks the distinction between high school (*licei*) and professional schools. High schools become the introductory course to University, while professional schools provide different curricula referred to the main productive sectors. The following law Bottai

in 1940, also known as *Carta della Scuola*, rules professional schools curricula both for minor occupations and for skilled labor required by the large-scale industry. The outbreak of World War II and the fall of Fascism suspend any kind of intervention in education until the new Constitution in 1948.

Transfers

Alike education, social transfers have a positive correlation with military spending, as stated by Table 5. Defence spending is positively related to public expenditure in transfers until 1922: when the GDP share of defense goes up (down), the GDP share of expenditure in transfers (down). This link is particularly strong in the period 1897-1922.

In particular, transfers increase when the past business cycle is positive (positive relation) and when the past business cycle is negative (negative relation). Thus, transfers have a compensatory role during recessive phases over the entire period. This outcome is coherent with the procyclical behavior of the revenues shown in table 4.

A branch of recent literature confirmed the causal link between wars and social measures (Obinger, Petersen and Starke, 2018; Moses, 2018). Once again, quantitative results must be compared to the historical facts to avoid examples of misleading correlation as in the case of education.

Until World War I, Italy does not have a structured welfare system, as noticed in the other European countries. In 1914 only 4.8% of population is covered by measures of social protection and just the 1.56% of government spending is allocated to welfare measures (Pavan, 2019). The first period we consider in the analysis (1862-1896) is lacking in effective reforms, with a few exceptions. The care for the poor, that is recognized as a charitable endeavour, is formally admitted in 1862 with the law n. 753, also known as "Rattazzi law" by the name of the Minister of the Interior that issued it. The law allows municipalities to optionally establish charity congregations supporting the already existing *Opere pie*. The congregations become mandatory only almost thirty years later with "Crispi law" issued in 1890, as an evidence of the slow evolution of social care system. In particular, the role of Catholic church is still prominent in this field. The Rattazzi and Crispi laws are the main social care reforms in the period together with the institution of "*Cassa Nazionale per gli Infortuni sul Lavoro*" in 1883, an insurance institute against work accidents. Even in this case it is not easily evident the correlation between military expenditure, according to Table 1, and this tiny set of reforms.

Instead, the following period, 1897-1922, introduces an extensive program of reforms, especially during the years of the Great War. This is confirmed by the 337 measures about the social sphere, from old-age pensions to unemployment benefits, issued by October 1919 (Pavan, 1919). The first evidence of the changing course is the establishment of the Ministry of Military Assistance and War Pensions in November 1917. This new authority covers the pay out of pensions to veterans, the financial support for the families of soldiers and the assistance for injured and disabled (Pavan, 2019). Following the same path, the Ministry of Treasure Nitti, in December 1917, introduces free life insurance policies for enlisted men, officers, children (both natural and legitimate) and for parents. The social measures of these years affect also the other side of population which was indirectly involved in the war. In August 1917 Boselli administration introduces the mandatory accident insurance coverage for farm-workers, involving about nine-millions individuals. For the first time

Italian government recognises a *de iure* right to a professional category. At the end of the war, the decree n. 603 of April 1919, introduces the possibility of an old-age pension for about twelve million workers (Pavan, 2019) including white collars, shopkeepers and farm workers. By the end of the same year, Nitti administration issued a program for mandatory unemployment insurance for both agricultural and industrial workers. It is the stand for a structured and modern welfare state. The Great War, according to Pavan (p. 864, 2019), "triggered an acceleration involving a brief but intense series of reforms which […] brought the country into line with the rest of Europe".

The advent of Fascism in 1922 changes the course of social policies inherited from the previous governments. The symbol of this change is the removal of the Ministry of Labor and Social Insurance early in 1923, three years after its creation by Nitti administration in 1920. This opens a series of small reforms that erase part of the achievements made by Liberals: from the removal of mandatory old-age insurance and disability for the sharecroppers to the suspension of yearly contribution to unemployment insurance. A course that can also explain the results in the empirical analysis.

Tax revenues

Military spending and tax revenues are positively related. This outcome is not robust during the period 1897-1922 (Table 4), that is a positive change in GDP share of military expenditure corresponds negative change in GDP share in tax revenues.

This result implies that in order not to decrease the level of total expenditure, there has been a redistribution in the individual items of expenditure with increases in some items and decreases in others or that there has been a financing of expenditure through an increase in the public debt, which occurred. Indeed, the ratio between public debt and GDP since 1891 remained around 100% to reach in 1897 (119.4%) and in 1921 (158.4%)
The result reasonably suggests the Great War as the main determinant for the need of revenues, especially during the recovery years.

Despite this leap-and-fall during the WWI years, the trend of the tax revenues is coherent with the trend of public expenditure for most of the years from the Unification to the turning of the century (Brosio, Marchese 1986). The first Italian governments attempt to increase tax revenues by collecting at most the 10% of the national wealth in order to heal public finances (Manestra 2010). This target is inspired by the liberal policies and it remains in place until the break of WWI and the following regressive system of taxation adopted by fascists regime.

6. CONCLUSIONS

Several studies, mainly looking to cross-country data, proved the existence of a link between wars public spending and state building. This paper analyses the relationship between military spending and the expansion of other governmental budgetary heading and tax revenues from the Unification of Italy (1861) up to the end World War II.

Despite econometrics suggests a relationship between defense and public expenditure on education, investments in capital and social transfers, the historical context give us relevant hints on the possible

explanation of the empirical evidence. In particular, the adoption of specific economic policies seems to be the relevant reasons to the effects captured by the econometric models, confirming the need to focus on singular national cases. This approach allows to overcome the forced interpretations of such different national contexts and it underlines the crucial role played by the descriptive analytical tool of history. Once again, the combination of the quantitative analysis and the historical reconstruction appears as the proper methodology to avoid simple conclusions and misleading interpretations of economic questions. The underlying hint of the paper is that for Italy, the war conflicts of the period 1861-1921, mainly external wars not fought on the Italian territory, played a role in terms of social harmonization, development of state infrastructures and finally of driver of educational innovation on the population. In fact, the military expenditure incurred in the period 1861-1921 generated a positive externality which manifested itself in a general modernization of the country and its institutions. The case of Italy indicates that military imperatives had key impacts on nascent democracy and economic development. This results of our analytic narrative are consistent with the thrust of the theoretical literature about nation building through wars described in the previous sections.

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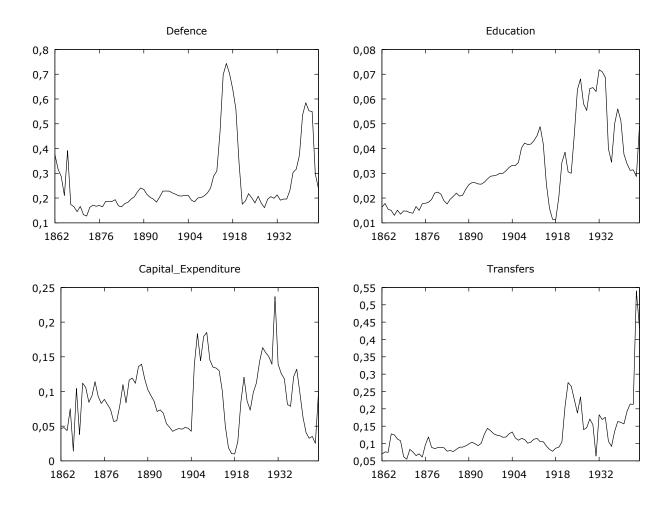
APPENDIX

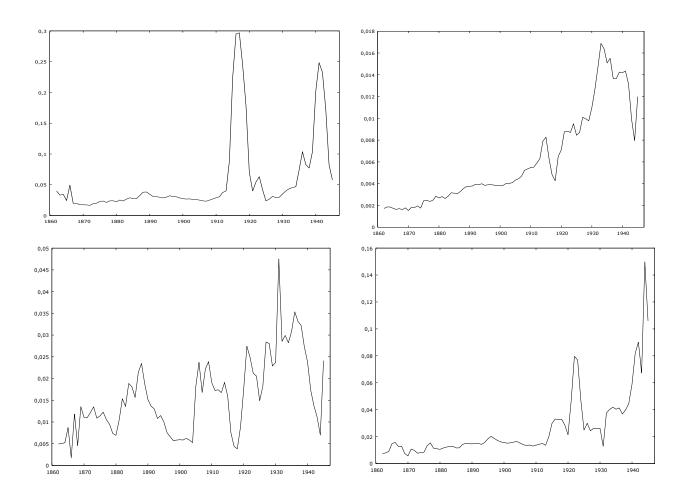Figure 1: Ratio between single items of expenditure and total expenditure

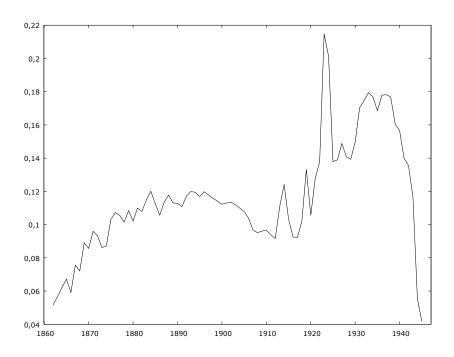Figure 2: Ratio between single items of expenditure and GDP

Figure 3: Ratio between Revenue and GDP

Table 1: "Internal and external conflicts, 1861-1945"

Years	Event
1863-65	Pica Law: repression of brigandage
1866	Third Italian War of Independence
1870	Conquest of Rome
1887	Defeat of Dogali
1895-1896	Abissinia War
1898	Upheavals in Milan
1900	Murder of king Umberto I
1911-12	Libyan War
1915-18	World War I
1919-22	Anatolian military occupation
1922-24	Tripolitanian War
1925-26	Fascist Laws
1929-30	Battle of Fezzan (Libya)
1928-32	Cyrenaican War
1935-36	Ethipian War
1940-45	World War II

Table 2 Effects of the defence on capital expenditure.

Dependent variable: change in GDP share of total public expenditure in capital, $\Delta GCap$

	(1)	(2)	(3)	(4)	(5)	(6)
Period	1862-1896	1862-1896	1897-1922	1922-1945	1862-1945	1862-1945
$\Delta Defence$		- 0.26***				−0.035*
		(0.066)				(0.020)
$\Delta DefUp$	−0.173		0.026	−0.034	−0.017	
	(0.117)		(0.024)	(0.038)	(0.017)	
$\Delta DefDown$	−0.342***		−0.061**	−0.064	−0.048***	
	(0.039)		(0.026)	(0.084)	(0.019)	
$CycleUp\ (-1)$	−0.001	−0.0001	0.018	−0.002	0.023***	
	(0.016)	(0.000)	(0.013)	(0.022)	(0.009)	
$CycleDown\ (-1)$	0.019	0.024	0.021	0.017	0.008*	
	(0.018)	(1.37)	(0.016)	(0.013)	(0.005)	
$Business\ Cycle\ (-1)$						0.011**
						(0.005)
R^2	0.29	0.29	0.36	0.08	0.11	0.11
$\overline{R}^2$	0.16	0.17	0.19	-0.17	0.07	0.07
DW	2.2	2.3	2.0	2.2	2.4	2.4
N	33	33	26	24	82	82
H_0 : *Test of symmetry for the defence*	p=0.16		p=0.00		p =0.30	
H_0 : *Test of symmetry for the business cycle*					p=0.21	

Notes: All the regressions include a constant and the change in total population at time t-1 of which for brevity reasons we do not report the estimate. The past change in population is always not significant. The estimation is OLS with robust standard errors. i.e the HAC correction for heteroskedasticity and autocorrelation in the residuals (in parentheses). *** 1% significance level. ** 5% significance level. * 10% significance level. DW: Durbin Watson test statistic. N: number of observations. *Test of simmetry:* we provide the p-value for no ratchet or asymmetric effects of defence and economic fluctuations on government spending. i.e coefficients of $\Delta DefDown$ and $\Delta DefUp$ are equal and $CycleUp(-1)$ and $CycleDown$ (-1) are equal respectively.

Table 3 Effects of the defence on education expenditure.

Dependent variable: change in GDP share of total public expenditure in education, ΔEduc

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Period	1862-1896	1862-1896	1897-1922	1897-1922	1922-1945	1922-1945	1863-1945	1863-1945
ΔDefence						0.007*		
						(0.004)		
ΔDefUp	−0.002	−0.0017	0.025***	0.019***	−0.006		0.009**	0.008***
	(0.005)		(0.004)	(0.005)	(0.009)		(0.004)	(0.004)
ΔDefDown	0.004	0.004	−0.003	-0.001	0.026*		−0.002	-0.0001
	(0.004)		(0.003)	(0.003)	(0.015)		(0.003)	(0.004)
CycleUp (-1)	0.002		0.005**		−0.002		0.003**	
	(0.002)		(0.002)		(0.004)		(0.001)	
CycleDown (-1)	0.002**		0.010***		0.026		0.004***	
	(0.001)		(0.001)		(0.003)		(0.001)	
Business Cycle (-1)		0.002**		0.007**		0.003*		0.004***
		(0.001)		(0.002)		(0.001)		(0.00)
R^2	0.20	0.20	0.63	0.60	0.29	0.23	0.27	0.26
$\overline{R}^2$	0.06	0.09	0.54	0.53	0.09	0.11	0.22	0.23
DW	2.6	2.6	1.92	1.4	1.27	1.23	1.31	1.30
N	33	33	26	26	24	24	88	88
H_0 : Test of symmetry for the defence			p=0.00		p=0.15		p=0.05	
H_0 : Test of symmetry for the business cycle	p=0.85		p=0.10		p=0.46		p =0.48	

Notes: All the regressions include a constant and the past change in the dependency ratio defined as those aged 0-14 divided by total population of which for brevity reasons we do not report the estimate. The change in the dependency ratio at t-1 was always not significant. The estimation is OLS with robust standard errors. i.e the HAC correction for heteroskedasticity and autocorrelation in the residuals. We report *t-statistics* in parentheses. *** 1% significance level. ** 5% significance level. * 10% significance level. DW: Durbin Watson test statistic. N: number of observations. *Test of simmetry:* we provide the p-value for no ratchet or asymmetric effects of defence and economic fluctuations on government spending. i.e coefficients of ΔDefDown and ΔDefUp are equal and *CycleUp(-1)* and *CycleDown* (-1) are equal respectively

Table 4 Effects of the defence spending on tax revenues

Dependent variable: change in GDP share of total tax revenues, ΔREV

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Period	1863-1896	1863-1896	1897-1922	1897-1922	1922-1945	1922-1945	1863-1945	1863-1945
ΔDef		-0.32***		0.050		0.163*		0.005**
		(0.071)		(0.115)		(0.100)		(0.002)
$\Delta DefUp$	−0.297		−0.141***		−0.138**		-0.016	
	(0.18)		(0.040)		(0.056)		(0.087)	
$\Delta DefDown$	−0.334***		0.136		0.823		0.235**	
	(0.077)		(0.115)		(0.275)		(0.09)	
$CycleUp(-1)$	0.072**		0.111***	0.092***	0.100*		0.111***	
	(0.028)		(0.029)	(0.030)	(0.049)		(0.034)	
$CycleDown(-1)$	0,055		−0.012	0.040	−0.038		0.031	
	(0.036)		(0.018)	(0.032)	(0.047)		(0.021)	
Business cycle (-1)		0.061**				0.059**		0.08***
		(0.016)				(0.015)		0.013
R^2	0.32	0.32	0.37	0.27	0.39	0.29	0.31	0.28
$\overline{R}^2$	0.19	0.24	0.21	0.15	0.22	0.19	0.26	0.26
DW	2.34	2.14	2.14	2.02	1.86	1.93	1.92	1.97
N	33	33	26		29	29	88	88
$H_0:$ Test of symmetry for the defence	p=0.85		p=0.05		p =0.61		p=0.098	
$H_0:$ Test of symmetry for the business cycle	p =0.75		p=0.00		p =0.14		p=0.093	

Notes: All the regressions include a constant and the past change in the dependency ratio defined as those aged 14-64 divided by total population of which for brevity reasons we do not report the estimate. The change in the dependency ratio at t-1 was always not significant. The estimation is OLS with robust standard errors. i.e the HAC correction for heteroskedasticity and autocorrelation in the residuls. We report *t-statistics* in parentheses. *** 1% significance level. ** 5% significance level. * 10% significance level. DW: Durbin Watson test statistic. N: number of observations. *Test of simmetry:* we provide the p-value for no ratchet or asymmetric effects of defence and economic fluctuations on government spending. i.e coefficients of $\Delta DefDown$ and $\Delta DefUp$ are equal and $CycleUp(-1)$ and $CycleDown$ (-1) are equal respectively.

Table 5 Effects of defence on transfers expenditure

Dependent variable: change in GDP share of total public expenditure in transfers, ΔTR

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Period	1863-1896	1863-1896	1897-1922	1897-1922	1922-1945	1922-1945	1863-1945
ΔDefence		0.056*		0.153***		0.083	
		(0.031)		(0.039)		(0.108)	
ΔDefUp	0.090**		0.134 ***		0.245		0.037
	(0.042)		(0.046)		(0.201)		(0.49)
ΔDefDown	0.033		0.162***		0.036		0.014
	(0.051)		(0.039)		(0.549)		(0.17)
CycleUp (-1)	0.004	0.004	0.113***	0.110***	0.0389*	0.088	0.028***
	(0.008)	(0.008)	(0.029)	(0.029)	(0.019)	(0.075)	(2.84)
CycleDown (-1)	−0.046	−0.044**	0.0161	0.0214	−0.076	−0.077**	−0.049**
	(0.019)	(0.018)	(0.013)	(0.0128)	(0.064)	(0.034)	(−2.06)
R^2	0.19	0.19	0.66	0.66	0.22	0.15	014
$\overline{R}^2$	0.04	0.07	0.57	0.59	0.00	-0.02	0.09
DW	2.01	1.95	1.52	1.50	2.11	2.67	2.57
N	33	33	26	26	29	24	82
H_0: Test of symmetry for the defence	p=0.39		p=0.85		p=0.77		
H_0: Test of symmetry for the business cycle	p=0.047		p=0.00		p=0.11		p=0.010

Notes: All the regressions include a constant and the past change in the dependency ratio defined as those aged 0-14 and over 64 divided by total population of which for brevity reasons we do not report the estimate. The change in the dependency ratio at t-1 was always not significant. The estimation is OLS with robust standard errors. i.e the HAC correction for heteroskedasticity and autocorrelation in the residuals. We report *t-statistics* in parentheses. *** 1% significance level. ** 5% significance level. * 10% significance level. DW: Durbin Watson test statistic. N: number of observations. *Test of simmetry:* we provide the p-value for no ratchet or asymmetric effects of defence and economic fluctuations on government spending. i.e coefficients of ΔDefDown and ΔDefUp are equal and *CycleUp(-1)* and *CycleDown* (-1) are equal respectively.