

Political Transformations and Economic Performance*

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Abstract

Today's advanced economies typically possess a set of political institutions that link powerful centralized tax structures with parliaments that limit executive control over public finances. This paper argues that, by enabling governments to gather large tax revenues and channel funds toward non-military public services with positive economic benefits, states with "balanced" fiscal systems improve economic performance. To make our case, we examine the economic impacts of fundamental political transformations that resolved long-standing problems of weak fiscal authority and strong executive spending control in Europe. Our database is novel and spans 11 countries and 4 centuries. A dynamic simultaneous equation panel model indicates that the performance effects of efficient political regimes are positive, significant, and robust.

Keywords: political regimes, fiscal policy, public services, economic performance, European history.

JEL codes: C33, H11, H41, N43, O23, P48.

PRELIMINARY AND INCOMPLETE

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1 Introduction

A large literature in economics emphasizes the negative effect of executive predation on economic growth.¹ This view suggests that institutional constraints such as parliamentary control over government finances protect property rights and encourage investment by limiting the ability of rulers to expropriate. Consistent with arguments linking predatory or “strong” states with poor economic performance, current data indicate that there is a clear increasing relationship between ruler limits and income (Figure 1).

However, the literature’s focus on executive predation discounts the positive economic roles that robust governments may play. Political scientists argue that traditional local elites in parts of sub-Saharan Africa oppose fiscal control by national governments, leading “weak” states to underinvest in public services that increase productivity. By contrast, the successful development experiences of Asian Tiger nations took place under powerful fiscal states.² Consistent with claims relating fiscal strength to better economic outcomes, current data indicate that there is a strong positive correlation between tax revenues and income (Figure 2).

Taken together, this descriptive evidence suggests that today’s advanced economies strike a balance between weak and strong fiscal elements. Rich states typically possess a set of political institutions that link powerful centralized tax structures with parliaments that limit executive control over public finances. They are thus able to gather large tax revenues and can channel funds toward public services with positive economic benefits.³

Yet many of today’s advanced economies were not “born” with efficient fiscal and political institutions. Dincecco (2011) argues that sovereign governments in Old Regime Europe typically faced two fundamental political problems: fiscal fragmentation and absolutism. Though rulers exercised weak authority over taxation, they wielded strong control over spending. Under this equilibrium, executives were starved for revenues and spent funds on foreign military adventures rather than on non-military public services like transportation infrastructure with broad economic ben-

¹For theory, see North and Thomas (1973), Brennan and Buchanan (1980), North (1981), Levi (1988), McGuire and Olson (1996), and North et al. (2009). For empirics, see De Long and Shleifer (1993), Knack and Keefer (1995), and Acemoglu et al. (2001, 2002, 2005a).

²For Africa, see Migdal (1988), Herbst (2000), and Bates (2001). For East Asia, see Wade (1990) and Kang (2002).

³Acemoglu (2005) refers to this type of outcome as a “consensually strong state.”

efits. To improve fiscal outcomes, states had to gain force by implementing uniform tax systems at the national level. They also had to restrict power by establishing parliaments that could monitor government expenditures at regular intervals. Dincecco claims that the emergence of modern systems of public finance was the result of the resolution of these two key political problems.

Taking our cue from Dincecco's work, this paper argues that economic performance is likely to improve in states where governments are able to solve problems of weak fiscal authority and strong executive spending control. To make our case, we also study Europe, the birthplace of modern economic growth. Since governments around the world have implemented European forms of fiscal governance (La Porta et al., 1998, Nunn, 2009), a proper understanding of the European experience translates into useful lessons for today's emerging countries.

We claim that, by enabling governments to gather large tax revenues and channel those funds towards valued non-military public services, states with "balanced" fiscal systems stimulate economic performance. It is striking that the establishment of modern fiscal systems typically preceded economic takeoff in Europe's past. England possessed a fiscally centralized and politically limited regime before industrialization during the middle of the eighteenth century. Likewise, most countries in continental Europe implemented modern fiscal systems before industrialization during the second half of the nineteenth century. We interpret this timing as *prima facie* evidence that is consistent with our argument about the link between balanced fiscal states and economic performance.

To rigorously develop our claim, we perform a dynamic simultaneous equation panel analysis on a novel database that spans eleven countries and four centuries. By accounting for both the potential endogeneity of the fiscal and economic variables and for autocorrelation in fiscal and economic outcomes, this approach avoids simultaneous equation biases and yields consistent and efficient estimates. We divide our econometric analysis into two parts. The first tests the linkages between political regimes, tax revenues, and economic performance from 1650 to 1913. The second incorporates the available nineteenth-century disaggregated expenditure data and tests the linkages between regimes, revenues, non-military spending, and performance from 1816 to 1913. The results indicate that the impact of balanced fiscal systems on economic performance was positive and statistically significant.

Our paper is related to the literature that links the rise of representative govern-

ment and the provision of non-military public services. Military expenditures absorbed 70 to 90 percent of sovereign tax revenues in pre-nineteenth century Europe (Hoffman and Rosenthal, 1997). After 1815, states began to follow growth-oriented economic policies including infrastructure investments like railways or canals. Rosenthal and Wong (2011, ch. 6) attribute public service improvements to the mechanism of “voice” through parliament. Furthermore, Lindert (2004) focuses on representative government to explain the rise of the welfare state and mass schooling at the end of the nineteenth century. Voice is also at the core of the argument of North et al. (2009) regarding the historical transition from closed access orders that favored wealthy elites to open access orders that promote political and economic competition. Our study complements these works by rigorously examining the combined impacts of parliamentary government and centralizing fiscal reforms, which allowed states to collect greater tax revenues and thus play larger economic roles.

In this respect, our paper is also related to the literature that claims that the state was an active participant in the development of modern capitalist systems beyond the establishment of the institutional “rules of the game” as described by North (1981).⁴ Gerschenkron (1966) argues that government intervention was necessary for late-moving economies in nineteenth-century Europe like Austria, Denmark, or Germany that had to play industrial catch-up. Furthermore, Magnusson (2009) claims that the state also played an important role in the economic takeoff of first-mover countries like Britain. Our study provides a rigorous counterpart to these works.

Our paper thus contributes to the debate regarding the institutional origins of the Industrial Revolution. Mokyr (2008) argues that these origins are not well understood. North and Weingast (1989) and Acemoglu et al. (2005b) highlight formal institutions like parliament that generated efficiency gains by protecting property rights and reducing transaction costs. By contrast, Mokyr (2008, 2010) emphasizes informal, private-order institutions like cultural beliefs that engendered trust among inventors and entrepreneurs and promoted technological breakthroughs.⁵ Our study complements this literature by investigating the economic effects of improved fiscal and political capacity across many states and centuries.⁶

⁴Recently, Karaman and Pamuk (2011) also suggest that national security gains played a key role in the European growth process.

⁵Similarly, Clark (2007) highlights cultural values like patience, hard work, and ingenuity, but downplays the direct effect of formal institutions.

⁶The literature on the Industrial Revolution is enormous. Other recent works include van Zanden (2009) and Voigtländer and Voth (2010), who emphasize its medieval origins, and Allen (2009), who highlights the

Finally, our paper is related to the literature that examines the links between historical institutional factors and current economic performance, including Diamond (1997), Engerman and Sokoloff (1997), La Porta et al. (1998), Hall and Jones (1999), Acemoglu et al. (2001, 2002, 2005a), and Nunn (2008, 2009). However, none of these studies explicitly focus on fiscal capacity. In this respect, our study is related to the set of works by Besley and Persson (2008, 2009, 2010) which investigates the long-run relationships between warfare, investments in fiscal and legal capacity, and growth.⁷ Yet there are still few empirical investigations about the long-term links between fiscal and political capacity and performance. Our study adds to this burgeoning literature.⁸

The rest of the paper proceeds as follows. Section 2 describes the historical background, and Section 3 develops our theoretical implications. Section 4 presents the data and descriptive statistics. Section 5 describes the econometric methodology. Section 6 presents the sets of econometric results for the 1650-1913 and 1816-1913 periods. Section 7 concludes.

2 Historical Background

This section characterizes the two fundamental political transformations that resolved weak- and strong-state fiscal problems in European history. We argue that states gained tax force through fiscal centralization and restricted executive power through limited government.⁹

Fiscal Centralization

Most polities in Europe were fiscally fragmented before the nineteenth century. Contrary to the conventional wisdom, monarchs confronted a host of incumbent local institutions that reduced their fiscal powers. In the words of Epstein (2000, p. 13):

unique alignment of interest rates, energy prices, wages, and land rents in eighteenth-century Britain.

⁷Also see Acemoglu (2005) and Acemoglu et al. (2010, 2011a). This literature is related to the literature on warfare and state formation in Western Europe, including Kindleberger (1984), Brewer (1989), Tilly (1990), Hoffman and Rosenthal (1997, 2000), Epstein (2000), O'Brien (2001, 2005, 2011), and Rosenthal and Wong (2011).

⁸Exceptions include Besley and Persson (2009), Dincecco et al. (2011), and Dincecco and Prado (2011). Scheve and Stasavage (2010) test for the long-run effects of mass warfare on tax reforms.

⁹Our account follows Dincecco (2011, chs. 2, 3).

“[D]ecades of research on pre-modern political practices ... has shown how ‘absolutism’ was a largely propagandistic device devoid of much practical substance.”¹⁰

One general feature of fragmented states was the close relationship between local tax control and political autonomy. Provincial elites had strong incentives to oppose fiscal reforms that threatened traditional tax rights. The result was a classic public goods problem. Since each local authority attempted to free-ride on the tax contributions of others, the revenues that national governments could gather per capita were low.

To resolve the problem of local tax free-riding, executives had to gain the fiscal authority to impose standard tax menus rather than bargain place by place over individual rates. So long as states equalized rates across provinces at relatively high levels, government revenues per head rose. Hoffman and Rosenthal (2000) argue that both executives and local elites may have preferred centralized fiscal regimes as part of power-sharing agreements in which the executive received larger funds and elites, which coordinated efforts through representative bodies, could finance a larger portion of the non-military public services that they desired. We further discuss this possibility ahead.

A clear and simple definition of fiscal centralization facilitates comparison across states. The process of fiscal centralization was completed the year that the national government first secured its revenues through a standard tax system with uniform rates throughout the country. All pre-centralized regimes were classified as entirely fragmented, even for states where fiscal divisions were relatively small. This choice implies that some regimes counted as fully fragmented will encompass data associated with higher per capita revenues. Average improvements after fiscal centralization will therefore be smaller than otherwise. Systematic underestimation of the fiscal effects of centralization biases the data against the hypothesis that fiscal centralization increased revenues. The results of the econometric analysis will thus be stronger than otherwise if it still indicates that fiscally centralized regimes had significant positive effects on economic outcomes through improved public finances.

Table 1 displays the dates of fiscal centralization according to Dincecco (2011). England had centralized institutions very early. The Norman Conquest of 1066 established a uniformity of laws and customs that other states did not achieve until

¹⁰Also see Henshall (1992), Hoffman and Norberg (1994), Hoffman and Rosenthal (1997), Rosenthal (1998), O’Brien (2001), Magnusson (2009), and Dincecco (2009, 2011).

much later.¹¹ In many parts of continental Europe, structural fiscal changes took place swiftly and permanently after the fall of the Old Regime. The National Assembly transformed the tax system in France by eliminating traditional privileges with the start of the Revolution (1789-99). Napoleon completed this process upon taking power in 1799. The First French Republic conquered the Low Countries in 1795, and the Southern Netherlands including Belgium became standard French departments. The Batavian Republic, the successor to the Dutch Republic, established a national system of taxation under French rule in 1806. French conquest at the start of the 1800s was also the major catalyst for fiscal change on the Italian peninsula. However, the unification of tax systems among pre-unitary Italian states did not occur until after the establishment of the Kingdom of Italy in 1861. Finally, Prussia undertook major administrative reforms including fiscal centralization after its loss to France in the Battle of Jena-Auerstedt in 1806.

Although Napoleon defeated Austria in 1805 and invaded Portugal in 1807 and Spain in 1808, he failed to implement lasting administrative changes in those territories. Fiscal centralization did not take place in the Austrian Empire until after the Revolutions of 1848, which had important implications for bureaucratic structures. Most notably, the central government in Vienna began to implement an effective Cisleithanian tax system in Hungary.¹² Fiscal centralization also occurred in the 1840s in Spain during a period of major institutional reforms. Significant changes in public finances in Portugal took place in the 1850s after the end of a long revolutionary era. The 1859 reform led to the centralization and regulation of government accounts.

Pre-modern fiscal structures remained in Scandinavia through much of the 1800s. Major tax changes did not occur until the second half of the nineteenth century or later. The 1861 reform in Sweden abolished the ancient system of dividing tax subjects into different classes with many sub-groups and different rules for fixed contributions from each of them. Similarly, the 1903 reform in Denmark eliminated traditional tax structures and introduced a modern income tax with standard, country-wide rates.

¹¹England conjoined with Wales in 1536. The Act of Union of 1707 conjoined Scotland. A similar Act conjoined Ireland in 1800 (the Irish Free State was established in 1922). For consistency, the term "England" rather than "Great Britain" or the "United Kingdom" is used throughout the text.

¹²Austria and Hungary were the largest territories of the Austrian Empire (1804-67). The Compromise of 1867 led to the establishment of the Austro-Hungarian Empire (1867-1918). For consistency, the term "Austria" is used throughout the text.

Limited Government

By eliminating local tax free-riding, fiscal centralization increased the ability of national governments to collect greater revenues. Since rulers retained control over state expenditures, however, the consolidation of fiscal powers may have exacerbated problems of executive discretion.

Although rulers spent government funds as they pleased, elites in parliament exercised tax authority.¹³ Since elites feared that executives would spend additional funds in wasteful ways like foreign military adventures, they demanded the power of budgetary oversight before raising new taxes. In the words of Hoffman (2009, p. 24), monarchs “overspent on the military and provided more defense than their citizens likely desired. But they had little reason not to. Victory . . . won them glory, enhanced reputations, and resources . . . Losses never cost them their throne.”¹⁴ To evade parliament, rulers resorted to fiscal predation, which reinforced the fear that they could not be trusted. Elites in parliament thus resisted tax requests and revenues were low.

Regular control over state budgets firmly established the fiscal supremacy of parliament. In turn, the likelihood of poor spending choices by executives fell. Just as rulers and elites each had reasons to favor fiscal centralization, they both had incentives to set new rules over government expenditures. Structural tax reforms implied that rulers would receive greater revenues. However, the surrender of budgetary control was the only credible way for executives to guarantee that a portion of the new funds would be used on non-military public services that elites in parliament desired. So long as rulers and elites struck deals, regimes with low taxing and spending were less attractive.

Hoffman and Rosenthal (2000) argue that limited government emerged after 1800 due to an important change in the nature of warfare. For the first time, kings who were defeated on the battlefield also faced the risk of losing their thrones. The advantages of greater tax revenues to wage successful wars began to outweigh the benefits of absolute control over spending. Furthermore, Acemoglu and Robinson (2000) claim that rulers gained from expenditures on non-military public services that prevented social unrest.

Hoffman and Rosenthal (2000), who examine the broad historical shift from absolutist to parliamentary regimes, suggest that fiscal centralization and limited gov-

¹³Hoffman and Rosenthal (1997, 2000) refer to this type of outcome as “divided fiscal authority.”

¹⁴Also see Cox (2011).

ernment took place simultaneously. Although it is true that each political transformation complemented the other, they did not typically occur in one fell swoop. Structural changes in tax systems, which were in several cases imposed “exogenously” by French revolutionary or Napoleonic armies, generally took place decades before the establishment of stable national parliaments. Our analysis thus distinguishes between the fiscal and economic effects of fiscal centralization and those of limited government.

A valid depiction of parliamentary authority must capture its real power over the budget. It must also be clear and simple enough to apply across states. The substance of our definition derives from the original spirit of constitutional reform as expressed by the classic work of North and Weingast (1989). Limited government was established the year that parliament gained the stable constitutional right to control the national budget on an annual basis. The requirement that parliament’s power of the purse held for at least two consecutive decades ensures stability. To make the coding as objective as possible, years and regimes for which there are widespread academic consensus were chosen.

Selecting early dates to define political regimes as limited implies that average outcomes under parliamentary regimes will be worse than otherwise. Since public finances in Europe typically improved over time, the choice of early dates implies that some regimes classified as limited will encompass data associated with lower non-military spending per capita. Average improvements after parliamentary reforms will therefore be smaller than otherwise. Systematic underestimation of the fiscal impacts of limited government biases the data against the hypothesis that parliamentary reforms increased non-military spending. Any results of the econometric analysis that still indicate that limited government had significant positive effects on economic outcomes through improved spending habits will thus be stronger than otherwise.

Table 1 displays the dates of limited government according to Dincecco (2011). Parliamentary reforms typically occurred decades after fiscal centralization. Belgium was established as a constitutional monarchy after declaring independence from the Netherlands in 1830. In Prussia, King Frederick William IV granted a liberal constitution after the political revolutions of 1848.¹⁵ In Italy, the constitution first endorsed by King Charles Albert of Piedmont during the political revolutions of 1848 was ex-

¹⁵Tilly (1966) argues that there were binding fiscal constraints from that year onward, although the government operated without legislative approval of its military budgets during the 1860s. Also see Ziblatt (2006, pp. 113-16).

tended to the entire kingdom in 1861. In Austria, the Compromise of 1867, which established Austria and Hungary as distinct political entities, marked the start of the constitutional era. Spain fought several civil wars over the 1800s. After decades of failed attempts, a stable parliamentary regime was established in 1876.

By contrast, limited government and fiscal centralization took place within a decade of each other in Sweden and Portugal. Although Sweden enacted a constitution in 1809, the executive retained absolute veto authority, and parliament met only once every five years. The parliamentary reform of 1866, which replaced the traditional Diet of Estates with a modern bicameral legislature, established limited government. This institutional change occurred five years after fiscal centralization in 1861. Like Spain, Portugal fought a series of civil wars over the nineteenth century. A stable constitutional regime was established in 1851, eight years before fiscal centralization in 1859.

There are two cases in which limited government was implemented well in advance of fiscal centralization. In Denmark, King Frederick VII renounced his absolutist powers and established a two-chamber parliament after the political revolutions of 1848. Fiscal centralization did not take place in Denmark until 1903.¹⁶ Although the Dutch Republic (1572-1795) was not limited in the sense of a parliament that monitored executive spending, Tilly (1990), De Long and Shleifer (1993), Acemoglu et al. (2005a), and Stasavage (2005) code it as constitutional. Recall, however, that the Republic was fiscally fragmented at the national level.

Reverse Causation?

Before discussing the theoretical implications, it is useful to consider the possibility of reverse causation from fiscal or economic outcomes back to political transformations.¹⁷ For instance, did low per capita revenues affect government decisions to implement centralized tax institutions or limited government?

The historical evidence strongly suggests that political transformations were largely exogenous to public finances and economic outcomes. As described, the establishment of uniform tax systems was often the result of radical, externally imposed re-

¹⁶However, the constitutional revision of 1866 restricted the suffrage in ways that favored the conservative and the wealthy.

¹⁷Reverse causation is one instance of simultaneity problems, which also include selection bias and measurement error.

form. In the German territories, in the Low Countries, and on the Italian (and to a lesser extent, the Iberian) peninsula, fiscal centralization was the result of French conquest from 1792 onward. Indeed, Acemoglu et al. (2011b) study this case as a quasi-natural experiment to test for the long-term economic effects of the French Revolution.

Elsewhere, fiscal centralization often took place in the midst of large-scale administrative reforms that established new state bureaucracies. Major institutional changes typically occurred during times of economic, political, and social upheaval. The establishment of a uniform tax system in France itself during the Revolution (1789-99) illustrates the conflux of these factors, as does the case of Prussia during the Napoleonic Wars (1803-15), Austria during the Year of Revolutions (1848), and Portugal and Spain near times of civil wars.

A similar claim can be made for the establishment of limited government. Acemoglu et al. (2009) find that economic development does not cause transitions to democracy. Rather, important historical junctures, such as the French Revolution or the Revolutions of 1848, set countries on divergent politico-economic paths.

This point relates to the exact timing of institutional change. There is little evidence that supports the claim that states undertook political transformations in direct response to economic or fiscal conditions. Rather, these reforms were the result of exogenous shocks or the confluence of idiosyncratic economic, geographical, political, and social factors. Even if political reforms did occur due to the state of public finances or the economy, however, the precise date of institutional change was unpredictable and subject to chance.¹⁸

Highlighting the key role that chance plays in the exact timing of institutional change strengthens the argument that political transformations were largely exogenous to public finances and economic outcomes. To reinforce this claim, in Section 5 we describe the results of a series of exogeneity tests, which did not detect reverse

¹⁸The Glorious Revolution of 1688 in England illustrates this argument. Upon the death of Charles II in 1685, James II became king. Protestant elites were greatly troubled by the fact that James II was a devout Catholic with strong ties to France. The year 1688 was also the start of the War of the Grand Alliance, fought between France and a European-wide coalition including William III of Orange (who was crowned King of England alongside Queen Mary in 1689 after James II was deposed). One can argue that the coming together of particular events at a certain point in time (or, in a nutshell, chance) brought about limited government in England in 1688 but not before. Several previous attempts at institutional change failed, including the 1685 rebellion led by the Duke of Monmouth. By this logic, one can also make the case that constitutional reform in England could have occurred on any number of occasions from 1640 to 1700, or not at all. Indeed, Pincus (2009) claims that the Glorious Revolution was contingent and not pre-ordained. Similar arguments apply to France in 1789, the Year of Revolutions in 1848, and other critical junctures.

causality from fiscal or economic conditions to political transformations.

3 Theoretical Implications

We argue that fiscally centralized and politically limited regimes enabled states to raise large tax funds and then productively use them. Fiscal centralization increased the amount of revenues that governments collected per head by eliminating local tax free-riding. Since executives could make credible commitments to spend new funds on non-military public services rather than on ill-advised wars, limited government made parliaments more willing to submit to greater tax burdens. Hence, it also increased revenues per capita.¹⁹

Although higher tax revenues per head made it easier for executives to provide public services under fiscally centralized regimes, the consolidation of fiscal powers may have had an adverse impact on public finances through greater wasted spending. It is thus unclear whether expenditures on non-military public services actually rose under centralized versus fragmented regimes. However, by regularly monitoring the government's budget, and thereby reducing the likelihood of bad spending choices by executives, parliamentary power of the purse should have increased non-military expenditures.

Figure 3 summarizes the basic linkages between political regimes, fiscal characteristics, and performance outcomes. Regime type affected both the state's ability to collect tax revenues per capita and the way that it then spent them, which in turn influenced performance. For instance, investments non-military public services like transportation infrastructure (e.g., railways) should have reduced trade costs and increased income.²⁰

Complementing this figure, Table 2 describes the fiscal and economic features of different political regimes. Under fragmented and absolutist regimes, tax revenues per head should have been low and any available funds should have been unproductively used on foreign military adventures. Economic performance should have been poor as a result. Under centralized and limited regimes, by contrast, per capita revenues should have been high and funds should have been productively used on

¹⁹Dincecco (2009, 2011) shows that both political transformations led to significant revenue growth.

²⁰For theory, see Eaton and Kortum (2002). The cross-country study by Bogart (2008) finds that state railroad construction promoted development during the late nineteenth century. Also see O'Brien (1983).

non-military public services. By solving both political problems, performance should have been relatively better. Under fragmented and limited regimes, any available funds should have been productively used, but revenues per head should have been low. Hence, performance should have been higher than under fragmented and absolutist regimes but lower than under centralized and limited ones. Finally, under centralized and absolutist regimes, per capita revenues should have been high, but funds would not necessarily have been productively used. Here our prediction is less clear. Although performance under centralized and absolutist regimes should have been lower than under centralized and limited ones, depending on ruler spending decisions it could have been higher or lower than under fragmented and absolutist regimes or fragmented and limited ones.

4 Data and Descriptive Statistics

The data on government revenues from 1650 to 1913 are from Dincecco (2011). Systematic data for non-military expenditures are not available before the nineteenth century. These data, which we take from a variety of secondary sources, run from 1816 to 1913. The Appendix describes the sources and construction methods for the spending data.

Bonney (1995, pp. 423-506) discusses the limitations of historical budgetary data. European states did not maintain detailed fiscal records during the seventeenth and eighteenth centuries. National governments may have calculated yearly budgets in a variety of ways. Some states computed budgets with revenues that they intended to raise, even if funds did not enter government coffers until years later. Insofar as possible, the revenues used here were tax receipts for national governments in a given year. Ordinary and extraordinary figures were summed, and loan incomes were subtracted. Since the different ways in which Old Regime governments tabulated yearly revenues suggest that they typically overestimated the amounts of resources available to them, average revenues under fragmented and absolutist regimes should have appeared larger than otherwise. Furthermore, government accounting practices typically improved over time, reducing the number and magnitude of misestimates. These features bias the data against the hypothesis that political transformations led to greater tax incomes (and thus, potentially, improved economic outcomes). By the nineteenth century, national governments had typically developed modern fiscal ad-

ministrations, or were in the process of doing so. We are thus confident about the overall reliability of the 1816-1913 data on non-military expenditures.

To make revenue and expenditure calculations comparable across countries, all currency units were transformed into gold grams. This conversion reduced inflation effects. The cumulative world gold stock was relatively stable through the 1840s, when there were large gold discoveries in California and Australia. The econometric analysis explicitly controls for the fiscal and economic impacts of gold stock changes.

The years between missing revenue observations were interpolated. Population figures were also interpolated between census years. Since there were few major one-off fiscal changes or population shocks (e.g., plague) from 1650 to 1913 besides the two political transformations that we focus on, the interpolated data should provide reasonable estimates. However, as the linkages between tax bases and government spending were weaker than those for revenues, particularly during wars, we did not interpolate the years between missing expenditure observations.

Table 3 summarizes the relationships between political regimes and economic performance from 1650 to 1913. Our main performance measure is GDP per capita in 1990 international Geary-Khamis dollars from Maddison (2010). Average per capita GDP levels for centralized and absolutist (1,446), fragmented and limited (2,043), and centralized and limited (2,176) regimes were high relative to those for fragmented and absolutist ones (1,016). These trends also hold within individual countries. In France, for instance, average per capita GDP rose from 959 international dollars under the fragmented and absolutist regime to 1,357 under the centralized and absolutist one, and to 2,428 under the centralized and limited one.

The accuracy of the GDP estimates is reliable for the 1816-1913 period but diminishes before the nineteenth century. We thus calculate urbanization rates as urban populations as fractions of total populations from De Vries (1984) as an alternative performance measure for the 1650-1913 panel. Both overall and country-specific urbanization trends across political regimes resemble those for per capita GDP.

We argue that a key reason why economic outcomes were better under centralized and limited regimes was because those states were able to both raise large tax funds and productively use them. Table 4 summarizes the relationships between political regimes and revenues from 1650 to 1913. Average per capita revenues in gold grams for centralized and absolutist (7.05), fragmented and limited (10.49), and centralized and limited (12.97) regimes were high relative to those for fragmented and absolutist

ones (2.42). These trends also hold within individual countries. In France, for instance, average revenues rose from 3.32 gold grams per head under the fragmented and absolutist regime to 11.01 under the centralized and absolutist one, and to 28.60 under the centralized and limited one.

Similarly, Table 5 summarizes the relationships between political regimes and non-military spending from 1816 to 1913 for the nine countries for which these data are available. Average per capita non-military expenditures in gold grams for centralized and absolutist (7.29), and centralized and limited (10.77) regimes were high relative to those for fragmented and absolutist ones (1.41). Though average non-military expenditures per capita for fragmented and limited regimes were low (0.83 gold grams), there were only two observations available (these observations were for Portugal). These trends also hold within individual countries. In France, for instance, average non-military expenditures rose from 9.92 gold grams per head under the centralized and absolutist regime to 20.15 under the centralized and limited one.

Finally, Table 6 displays the available 1816-1913 spending data that is disaggregated beyond non-military expenditures. Central government spending on poor relief, unemployment compensation, health, and housing was low through 1913 (Lindert, 2004, ch. 2). We focus on expenditures on two non-military public services that nineteenth-century governments typically provided: infrastructure and education. Average per capita infrastructure and education spending for centralized and limited regimes (1.12 and 0.78 gold grams) was high relative to other regime types (there were no observations available for fragmented and absolutist regimes). These trends also hold within individual countries. In France, for instance, average infrastructure (education) expenditures rose from 0.68 (0.11) gold grams per head under the centralized and absolutist regime to 1.00 (1.18) under the centralized and limited one.

The descriptive statistics are consistent with our argument that political transformations improved economic performance through better public finances. However, simple bivariate correlations are not sufficient to fully characterize the linkages between political regimes and fiscal and economic outcomes. The fiscal and economic variables may be endogenous, or autocorrelated across time. Furthermore, historical features beyond political regimes like external and internal conflicts, country- and time-specific effects, and other elements, may also affect economic performance. To provide a rigorous test of our argument, we now perform an econometric analysis that explicitly accounts for these issues.

5 Econometric Methodology

To capture both the direct and indirect effects of political regimes on public revenues, non-military expenditures, and thus economic performance, we use a longitudinal dynamic simultaneous equation model (MaCurdy, 2007). This approach accounts for both the potential endogeneity of the fiscal and economic variables that appear on the right-hand sides of the system's equations and for autocorrelation in fiscal and economic outcomes, thereby avoiding simultaneous equation biases and yielding consistent and efficient parameter estimates (Greene, 2003, Baltagi, 2005).

The structural form of our econometric model is based on the theoretical framework as summarized in Figure 3, where (1) political regime type affect the state's ability to collect tax revenues and (2) the way that it then spends them (i.e., military versus non-military expenditures), which (3) in turn influences performance. We thus write the structural model, which adopts a standard one-way error component specification (Baltagi, 2005), as the following system of three equations:

$$\begin{aligned} \log(\text{Revenue}_{i,t}) = & \alpha_0 + \alpha_1 \log(\text{Revenue}_{i,t-1}) + \alpha_2 CA_{i,t} + \alpha_3 FL_{i,t} + \alpha_4 CL_{i,t} + \\ & \alpha_5 \log(\text{GDP}_{i,t}) + \alpha_6 \mathbf{X}_{i,t} + \mu_{i,1} + \epsilon_{i,t,1}, \end{aligned} \quad (1)$$

$$\begin{aligned} \log(\text{Expenditure}_{i,t}) = & \beta_0 + \beta_1 \log(\text{Expenditure}_{i,t-1}) + \beta_2 \log(\text{Revenue}_{i,t}) + \\ & \beta_3 \mathbf{X}_{i,t} + \mu_{i,2} + \epsilon_{i,t,2}, \end{aligned} \quad (2)$$

$$\begin{aligned} \log(\text{GDP}_{i,t}) = & \gamma_0 + \gamma_1 \log(\text{GDP}_{i,t-1}) + \gamma_2 \log(\text{Expenditure}_{i,t}) + \\ & \gamma_3 \mathbf{X}_{i,t} + \mu_{i,3} + \epsilon_{i,t,3}, \end{aligned} \quad (3)$$

where $i = 1, \dots, N$ denotes countries, $t = 1, \dots, T_i$ denotes time, $\mu_{i,j}$ are country-specific effects that reflect the influence of unobserved time-invariant features of states, and $\epsilon_{i,t,j}$ are the remainder error terms. As is standard in one-way error component models for panel data, we assume that the individual effects are uncorrelated both across units and with the remainder disturbances, and that the latter are mutually uncorrelated both over cross-sections and time (Baltagi, 2005). This specification allows for a flexible representation of individual heterogeneity and autocorrelation patterns with a minimal number of parameters (MaCurdy, 2007). As Equation 1 to 3 indicate,

our model accounts for two sources of persistence in the fiscal and economic variables: autocorrelation due to the inclusion of the lagged dependent variables among the regressors, and individual effects characterizing heterogeneity among states.

We use the natural logarithms for the dependent variables of revenues, expenditures, and GDP, since there is no theoretical motivation to favor levels over logs, and because logs facilitate the interpretation of our results. The key independent variables are the political regime indicators $CA_{i,t}$, $FL_{i,t}$, and $CL_{i,t}$, with the fragmented and absolutist regime $FA_{i,t}$ as the benchmark. The regime variables are binary, taking the value of 1 for each sample year that a country had a centralized and absolutist (fragmented and limited, centralized and limited) regime, and 0 otherwise.

These dummies represent a clear, concise, and intuitive way to measure the fiscal impacts of political arrangements. Recall from Section 2 that, although fragmentation levels varied across pre-centralized states, all pre-centralized regimes were classified as entirely fragmented. Since fiscal divisions in some pre-centralized states were relatively small, this choice implies that some regimes counted as fully fragmented will encompass data associated with better fiscal and economic outcomes. Average fiscal and economic improvements after fiscal centralization will therefore be smaller than otherwise. Systematic underestimation of the fiscal and economic effects of centralization biases the data against the hypothesis that fiscal centralization improved public finances and economic outcomes. The results of the econometric analysis will thus be stronger than otherwise if they still indicate that fiscally centralized regimes had significant positive impacts on the fiscal and economic variables.

Similarly, recall from Section 2 that early years were always selected to date limited government. Since public finances in Europe typically improved over time, this choice implies that some regimes classified as limited will encompass data associated with poorer fiscal and economic outcomes. Average improvements after parliamentary reforms will therefore be smaller than otherwise. Systematic underestimation of the fiscal impacts of limited government biases the data against the hypothesis that constitutional change improved public finances and economic outcomes. Any findings that still indicate that limited government had significant positive effects on the fiscal and economic indicators will thus be stronger than otherwise.

The discussion in Section 2 indicates that political transformations were largely exogenous to public finances and economic outcomes. To reinforce this claim, we performed C (“difference-in-Sargan”) tests for the exogeneity of the political regime

instruments, as well as Durbin-Wu-Hausman and Spencer-Berk tests for the exogeneity of $CA_{i,t}$, $FL_{i,t}$, and $CL_{i,t}$ in Equation 1 (Greene, 2003, Baum et al., 2002).²¹ In all cases, the test results indicate that $CA_{i,t}$, $FL_{i,t}$, and $CL_{i,t}$ can be treated as exogenous at the usual confidence levels.²²

The vector \mathbf{X} comprises a set of controls from Dincecco (2011). Hoffman and Rosenthal (1997) argue that the one true goal of absolutist monarchs was to wage war for personal glory and for homeland defense. Military spending was by far the largest component of national budgets through the 1800s. A binary variable that takes the value of 1 for each year of external conflicts in Western or Eastern Europe measures the effects of warfare. We must also consider the fiscal impact of internal conflicts, which disrupted tax and spending flows. A binary variable that takes the value of 1 for each year of civil war, coup, or revolution accounts for this factor.²³ Although the world gold stock was relatively stable through the early 1800s, large discoveries in California and Australia around 1850 led to a dramatic gold increase. A variable that calculates the yearly change in the cumulative world gold stock measures this impact. To round out our set of controls, we include time fixed effects to account for country- and Europe-wide shocks, as well as a linear time trend.

As is well-known, the inclusion of endogenous right-hand side regressors makes OLS estimates inconsistent (Baltagi, 2005). Hence, as is customary in simultaneous equation models with one-way error components (Cornwell et al., 1992, Baltagi, 2005), we use the political regime indicators and the controls included in \mathbf{X} as state-specific means and their deviations to instrument for $\log(GDP_{i,t})$, $\log(Revenue_{i,t})$ and $\log(Expenditure_{i,t})$ in Equations 1, 2, 3, respectively.²⁴ With respect to the standard static structural equation model, though, the inclusion of the lagged values of the dependent variables among the regressors introduces another source of endogeneity due to their correlation with the state-specific effects $u_{i,j}$. One common approach for handling this type of endogeneity is to difference the equations so as to eliminate the unobserved individual effects and then estimate the model using instrumental-variable techniques

²¹As we will describe ahead, the political regime dummies are included instruments in Equation 1 and excluded instruments in Equations 2 and 3.

²²For each of the equations in our model estimated by 2SLS, the p-values of the exogeneity tests for each and all of the regime indicators were always well above 0.10.

²³Again, the p-values of the Durbin-Wu-Hausman tests indicate that the war dummies can also be treated as exogenous at the usual confidence levels.

²⁴That is, following the notation in Baltagi (2005), we use $Q\mathbf{Z}_{i,t}$ and P_i, \mathbf{Z}_t as instruments for the contemporaneous endogenous variables included on the right-hand side of each equation in the system, where $\mathbf{Z}_{i,t} = [CA_{i,t}, FL_{i,t}, CL_{i,t}, \mathbf{X}_{i,t}]$.

(Anderson and Hsiao, 1982). Yet first-difference estimators often perform poorly due to the “weak instruments” problem, which is especially likely to be troublesome for growth models in a simultaneous equation settings (Bond et al., 2001, Mitze, 2010). We thus prefer a level estimator, instrumenting for the lagged dependent variables with the lagged first differences of the dependent variables and the lagged values of the exogenous variables (Harris and Matyas, 1996, Mitze, 2010).²⁵

The resulting Hausman and Taylor (1981)-type estimator that we use is well-suited for non-standard panel data settings like ours, when the number of cross-sectional units is small relative to the time dimension. Blundell and Bond (1998) note that GMM estimators are only appropriate for settings with small T and large N. As the time dimension increases, the efficiency gains from GMM techniques become negligible, while the “many instruments” problem and the computational difficulties associated with larger instrument sets become more acute (Judson and Owen, 1996, MaCurdy, 2007). Under these conditions, Hausman-Taylor-type estimators have been shown to outperform first-difference and GMM estimators (Mitze, 2010).²⁶

Our econometric analysis is divided into two parts. The first tests the linkages between political regimes, tax revenues, and performance for the 1650-1913 panel. The second incorporates the available expenditure data and tests the linkages between regimes, revenues, non-military spending, and performance from 1816 to 1913. While the second part uses the full system of Equations 1 to 3, the first uses a simplified version to account for the lack of pre-nineteenth century spending data. In both cases, we estimate our model using limited (2SLS) and full-information (3SLS) IV methods. We only report the limited information results here. However, the full-information estimation (which we intend to report in the future version) does not alter the key results in any significant manner.

²⁵For instance, $\log(\text{Revenue}_{i,t})$ in Equation 1 is instrumented for with the predetermined variables $\Delta \log(\text{Revenue}_{i,t-1})$, $\Delta \log(\text{Expenditure}_{i,t-1})$ and $\Delta \log(\text{GDP}_{i,t-1})$, as well as with the exogenous variables $Q\mathbf{Z}_{i,t-1}$ and $P\mathbf{Z}_{i,t-1}$. In theory, all of the lags of the predetermined variables along with all of the leads and lags of the variables in \mathbf{Z} could be used as instruments for the lagged dependent variables (Ahn and Schmidt, 1995, MaCurdy, 2007). In practice, however, we only use lags of length 1 in order to avoid the “many instruments” problem, which would be particularly troublesome here in light of the large number of periods in our panel (Baltagi, 2005, Mitze, 2010).

²⁶A detailed description of estimation methods for longitudinal simultaneous equation models exceeds the purposes of this paper. Interested readers may consult Baltagi (2005), MaCurdy (2007), and Mitze (2010), as well as the references therein.

6 Estimation Results

1650-1913 Panel

Table 7 presents the results of the two-stage least-squares (2SLS) estimation for the 1650-1913 period in two panels. Panel A presents the 2SLS estimates for the equation testing the effect of public revenues on economic performance, and Panel B presents the estimates of the effects of political regimes on public revenues.²⁷

Column (1) reports the results from a static simultaneous equation model (i.e., no lagged endogenous variable are included on the right-hand sides). The estimates in Panel B indicate that political transformations had significant positive effects on public revenues. The coefficients for the moves from the fragmented and absolutist regime to the centralized and absolutist one and the centralized and limited one are significant at the 1 percent level, and the coefficient for the move to the fragmented and limited regime at the 5 percent level. Similarly, the estimates in Panel A indicate that public revenues in turn had significant positive effects on GDP per capita, our main measure of economic performance, while GDP also has a positive concurrent effect on per capita revenues. Both coefficient are significant at the 1 percent level.

How about the controls? External wars had a significant positive impact on public revenues, but a significant negative impact on economic performance. By contrast, internal conflicts had negative effects on both dependent variables, though this effect was only significant for revenues. Changes in the world gold stock had negligible impacts on both revenues and per capita GDP. The signs for the effects of the controls are typically consistent across specifications, though the significance generally falls in later specifications. The main exception is the negative impact of gold stock changes on revenues, which becomes significant in later specifications.

Column (2) repeats the specification in Column (1) for the dynamic panel. Both the coefficients on the lag of public revenues in Panel A and the lag of per capita GDP

²⁷The modified system of equations that we use for the 1650-1913 panel takes the form:

$$\log(\text{Revenue}_{i,t}) = \alpha_0 + \alpha_1 \log(\text{Revenue}_{i,t-1}) + \alpha_2 \text{CA}_{i,t} + \alpha_3 \text{FL}_{i,t} + \alpha_4 \text{CL}_{i,t} + \alpha_5 \log(\text{GDP}_{i,t}) + \alpha_6 \mathbf{X}_{i,t} + \mu_{i,1} + \epsilon_{i,t,1}, \quad (4)$$

$$\log(\text{GDP}_{i,t}) = \gamma_0 + \gamma_1 \log(\text{GDP}_{i,t-1}) + \gamma_2 \log(\text{Revenue}_{i,t}) + \gamma_3 \mathbf{X}_{i,t} + \mu_{i,3} + \epsilon_{i,t,3}. \quad (5)$$

in Panel B are positive and significant, indicating strong persistence, particularly for economic performance, over five-year intervals. The impacts of political transformations on per capita revenues in Panel B fall, but the coefficients for centralized and absolutist regimes and centralized and limited ones remain significant at the one percent level. Though the effect of the the move to the fragmented and limited regime is positive, it becomes insignificant. Similarly, the impact of revenues on economic performance falls, but remains highly significant.

Time fixed effects capture widespread shocks specific to each five-year interval. However, we must still account for general fiscal and economic improvements from 1650 to 1913. Column (3) adds a linear time trend to the previous dynamic specification. The effects of political transformations on public revenues, and in turn public revenues on economic performance, remain similar in magnitude and significance to those shown in Column (2).

Column (4) repeats the full dynamic specification from Column (3) for our alternative performance measure, urbanization rates. Since urbanization rates persisted for notably longer periods than per capita GDP, this specification uses 25-year intervals. The results resemble those shown in previous columns. The estimates in Panel A indicate that political transformations had significant positive effects on public revenues. Indeed, this specification restores the significance of the effect of the move to the fragmented and limited regime at the 1 percent level. Similarly, the results in Panel B indicate that public revenues in turn had a significant positive impacts on urbanization. Unlike the previous specifications that use per capita GDP as our performance measure, however, we do not find a concurrent effect of urbanization rates on per capita revenues.

The estimates obtained from the structural representation of the econometric model clearly show that political transformations had strong direct impacts on public revenues and, through this channel, strong indirect impacts on economic performance. To fully assess the marginal effects of political transformations on fiscal and economic outcomes, we now compute the dynamic and cumulative multipliers based on the reduced-form parameters derived from the specification in Column (3).²⁸

Figure 4 plots the dynamic multipliers for the impacts of political transformations

²⁸Starting from the structural form representation of the model, $\Gamma Y_t + \Lambda Y_{t-1} + \Phi Z_{t+t} = U_t$, the reduced form is given by $Y_t = \Pi Y_{t-1} + \Theta Z_t + V_t$, with $\Pi = -\Gamma^{-1}\Lambda$, $\Theta = -\Gamma^{-1}\Phi$, and $V_t = \Gamma^{-1}U_t$. The impact on Y of changes in the exogenous variables Z can then be quantified through a multiplier analysis based on the reduced-form parameters Π and Θ . See Greene (2003) for details.

on fiscal and economic outcomes at five-year intervals over a century-long period, holding all other exogenous variables constant. The left panel indicates that the effect on per capita revenues peaked initially. The immediate impact of the move from the fragmented and absolutist regime to the fragmented and limited one increased per capita revenues by 7 percent, the move to the centralized and absolutist regime by 11 percent, and the move to the centralized and limited regime by 20 percent. By contrast, the right panel indicates that the peak of the performance effect was delayed until 10 years after regime change took place. At the peak point, the impact of the move from the fragmented and absolutist regime to the fragmented and limited one increased per capita GDP by 0.09 percent, the move to the centralized and absolutist regime by 0.13 percent, and the move to the centralized and limited regime by 0.23 percent. Both the revenue and performance effects of regime change gradually eroded. However, the decay rate of the latter was much slower than that of the former, implying that the positive indirect impacts of higher revenues on economic performance endured after the direct effects of political transformations on revenues had diminished.

Indeed, Figure 5, which plots the average cumulative economic impacts of political transformations, indicates that performance effects accrued with time. The move from the fragmented and absolutist regime to the centralized and absolutist one increased per capita GDP by 0.74 percent over a half-century (due to a per capita revenue increase of 49 percent), and by 1.28 percent over a century (due to a per capita revenue increase of 53 percent). Similarly, the move to the fragmented and limited regime increased per capita GDP by 0.49 percent over a half-century (due to a per capita revenue increase of 32 percent), and by 0.85 percent over a century (due to a per capita revenue increase of 35 percent). Finally, the move to the centralized and limited regime increased per capita GDP by 1.29 percent over a half-century (due to a per capita revenue increase of 85 percent), and by 2.24 percent over a century (due to a per capita revenue increase of 93 percent).

To further illustrate the performance effects of regime change, we perform a counterfactual exercise. Figure 6 plots actual per capita GDP levels for individual countries in 1913 (the last sample year) against two alternative scenarios: per capita GDP in 1913 if the country had had a centralized and limited regime from 1650 (the first sample year) onward, or if it had always had a fragmented and absolutist regime. Consistent with our argument about the economic benefits of balanced fiscal states, per capita

GDP in 1913 is always higher under the first alternative scenario (“always had a centralized and limited regime”) than under the second (“always had a fragmented and absolutist regime”). Furthermore, per capita GDP in 1913 under the first alternative (“always had a centralized and limited regime”) is typically higher than the actual level.²⁹

The magnitudes of these differences depend on the actual length of time that states spent under various regime types. In France, for instance, fiscal centralization took place in 1790 and limited government in 1870 (see Table 1). However, if France had been centralized and limited from 1650 onward, then per capita GDP in 1913 would have been 3,220 international dollars rather than 3,136, a 2.68 percent increase. By contrast, England had a centralized and limited regime from 1688 onward, implying that the economic gain from having established it less than four decades earlier in 1650 was relatively small (i.e, a 0.38 percent increase). The interesting comparison here is thus whether England had had a fragmented and absolutist regime over the entire 1650-1913 period. In that case, per capita GDP in 1913 would have been 4,456 international dollars rather than 4,622 (actual value), a 3.58 percent decrease.

In sum, the results described in this section indicate that political transformations had significant positive impacts on economic performance through public revenue increases. While the magnitude of these effects are mainly illustrative and should be viewed cautiously in light of the *ceteris paribus* assumption, they are strongly significant and robust across alternative specifications.

Data limitations prevent us from explicitly testing the links from revenues to non-military expenditures, and in turn from non-military expenditures to performance, in this setting. However, systematic disaggregated spending data are available over the nineteenth century, allowing us to gain a full picture of the linkages from political regimes to economic performance. The next section discusses these findings.

1816-1913 Panel

Table 8 presents the results of the two-stage least-squares (2SLS) estimation for the 1816-1913 period in three panels. Panel A presents the estimates for Equation 3, which tests the effect of non-military expenditures on economic performance. Panel

²⁹The two exceptions are Belgium and Italy, both of which were founded as centralized and limited regimes. In these cases, actual per capita GDP levels in 1913 and those under the first alternative scenario are the same.

B presents the estimates of the effect of public revenues on non-military expenditures (Equation 2). Finally, Panel C presents the estimates of the effects of political regimes on public revenues (Equation 1).

The specifications in Columns (1) to (3) are identical to those for the 1650-1913 period from Table 7. Column (1) reports the results for the static simultaneous equation model. The estimates in Panel C show that political transformations also had significant positive effects on public revenues over the nineteenth century alone.³⁰ Similarly, the results in Panel B indicate that public revenues in turn had significant positive impacts on non-military spending. Finally, Panel A shows that non-military expenditures had significant positive effects on economic performance. All coefficients of interest in Panels A to C are significant at the 1 percent level. Column (2) repeats the specification in Column (1) for the dynamic panel. Though the impacts of the coefficients of interest in Panels A to C fall once autocorrelation due to the presence of lagged dependent variables is taken into account, they remain significant at the 1 percent level. Adding a linear time trend as shown in Column (3) to account for general fiscal and economic improvements over the nineteenth century does not change in any significant way the results for the coefficients of interest from Column (2). Finally, the results for the controls for external and internal conflicts and gold stock changes are typically negligible across specifications. In cases where one or more of these coefficients are significant, the signs sometimes switch in alternative specifications.

To examine the effects of political transformations in greater detail, Figure 7 plots the dynamic multipliers computed from the estimates obtained using the full specification in Column (3). The dynamic impacts of the different political regimes on revenues (left panel), which peaked initially and then fell, and for performance (right panel), which peaked after 10 years, resemble those for the 1650-1913 period (see Figure 4). Now the immediate impact of the move from the fragmented and absolutist regime to the centralized and absolutist one increased per capita revenues by 14 percent, and the move to the centralized and limited regime by 28 percent. Similarly, the peak impact of the move from the fragmented and absolutist regime to the centralized and absolutist one increased per capita GDP by 0.32 percent, and the move to the centralized and limited regime by 0.63 percent. The magnitudes of these marginal

³⁰Recall from Section 4 that there were only two data observations available for the fragmented and limited regime for the 1816-1913 period (for Portugal). We thus exclude this regime from this part of our analysis.

impacts are larger for the 1816-1913 period than their counterparts for the 1650-1913 one, a result which we attribute to the unique economic dynamism of the nineteenth century relative to previous eras.

The relationship between public revenues and economic performance was mediated by non-military expenditures. Like performance, the dynamics for non-military spending (center panel of Figure 6) peaked after 10 years. The impact of the move from the fragmented and absolutist regime to the centralized and absolutist one increased per capita non-military expenditures by 13 percent, and the move to the centralized and limited regime by 26 percent. Like revenues, the decay rate of non-military spending was much faster than that for performance, implying that the positive indirect economic impacts of improved public finances endured beyond the direct fiscal effects of political transformations were depleted.

As for the 1650-1913 period, the performance effects of political transformations for the 1816-1913 period accumulated over time. Figure 8 illustrates this point by plotting the cumulative multipliers over a century-long period. The move from the fragmented and absolutist regime to the centralized and absolutist one increased per capita GDP by 1.51 percent over a half-century, due to a per capita revenue increase of 67 percent and a subsequent non-military expenditure increase of 38 percent. Similarly, the move to the centralized and limited regime increased per capita GDP by 2.97 percent over a half-century, due to a per capita revenue increase of 130 percent and a subsequent non-military expenditure increase of 75 percent. Like the dynamic multipliers, the magnitudes of the cumulative effects are larger for the 1816-1913 period than for the 1650-1913 one.

Figure 9, which repeats our counterfactual GDP exercise for individual countries for the 1816-1913 period, indicates that per capita GDP in 1913 is again always higher under the first alternative scenario (“always had a centralized and limited regime”) than under the second (“always had a fragmented and absolutist regime”). Moreover, per capita GDP in 1913 under the first alternative (“always had a centralized and limited regime”) is again typically higher than the actual level.³¹ Now, if France had been centralized and limited from 1816 onward, then per capita GDP in 1913 would have been 3,225 international dollars rather than 3,136, a 2.82 percent increase. On the other hand, if France had had a fragmented and absolutist regime over the entire

³¹The two exceptions are England and Italy. England had a centralized and limited regime over the entire 1816-1913 period. As described, Italy was founded as a centralized and limited regime. In these cases, actual per capita GDP levels in 1913 and those under the first alternative scenario are again the same.

1816-1913 period, then per capita GDP in 1913 would have fallen to 3,081 international dollars, a 1.77 percent decrease.

To complete our analysis of the 1816-1913 data, we disaggregate the available non-military expenditure data into spending on infrastructure or education in the last two columns of Table 8. Due to the small number of observations available, we restrict our attention to the analysis of the impact of government expenditures on economic performance.³² Column (4) displays the full dynamic specification from Column (3) for infrastructure spending. The estimates reported in Panel A indicate that infrastructure expenditures had a significant positive performance effect. A 1 percent increase in per capita infrastructure spending led to a 4 percent increase in per capita GDP per five-year interval. Similarly, Column (5) shows the results for education expenditures, which also had a significant positive performance effect. A 1 percent increase in per capita education spending led to a 1 percent increase in per capita GDP per five-year interval. Both the infrastructure and education coefficients are highly significant.

Overall, these results provide further evidence that political transformations had significant positive impacts on economic performance through public finance improvements. By explicitly testing the linkages from government revenues to non-military expenditures, and in turn from non-military expenditures to performance, the findings for the 1816-1913 period complement those for the 1650-1913 one.

7 Conclusion

Today's advanced economies strike a balance between weak and strong fiscal elements. Rich states typically possess a set of political institutions that link powerful centralized tax structures with parliaments that limit executive control over public finances. However, many of today's advanced economies were not "born" with efficient fiscal and political institutions. In this paper, we argued that economic performance is likely to improve in states where governments are able to solve both problems of weak fiscal authority and strong executive spending control. States with "balanced" fiscal systems stimulate economic performance by enabling governments to gather large tax revenues and channel those funds towards valued non-military public services.

³²Recall from Section 4 that there were no data observations for the infrastructure or education variables for the fragmented and absolutist regime.

To make our case, we examined the history of political transformations in Europe, where modern economic growth began two centuries ago. Most Old Regime states were fiscally fragmented, or weak, in 1650, our starting year. Local tax free-riding reduced the ability of national governments to collect revenues. Fiscal centralization, which generally took place after the fall of the Old Regime at the end of the eighteenth century, was the first fundamental political transformation that states underwent. However, the consolidation of fiscal powers may have exacerbated problems of executive control. Since strong rulers could still use government funds as they pleased, spending constraints were necessary. The establishment of parliamentary limits, which typically occurred during the nineteenth century, was the second fundamental political transformation that states experienced. By the eve of World War I in 1913, European states could gather large tax revenues, and rulers faced parliamentary spending constraints. The end result was a set of balanced fiscal and political institutions of the sort that characterizes modern systems of public finance in wealthy countries.

To rigorously develop our argument, we performed a dynamic simultaneous equation panel analysis on a novel database that spanned eleven countries and four centuries. This approach avoids simultaneous equation biases and yields consistent and efficient estimates by accounting for both the potential endogeneity of the fiscal and economic variables and for autocorrelation in fiscal and economic outcomes. We first tested the linkages between political regimes, tax revenues, and economic performance for the 1650-1913 period. We then incorporated the available nineteenth-century expenditure data and tested the linkages between regimes, revenues, non-military spending, and performance for the 1816-1913 period. The results of our econometric analysis indicate that the impact of balanced fiscal systems on economic performance was positive, statistically significant, and robust to the specification.

Taken as a whole, our findings suggest that fiscally centralized and politically limited regimes form part of a basic set of politico-economic institutions that underlie economic success. To conclude our study, we briefly examine three modern cases that roughly correspond with the main regime characteristics present in European history: executive “absolutism” in North Korea, fiscal “fragmentation” in Guatemala, and tax centralization and democratic government in South Korea.³³ Take first the authoritarian regime of Kim Jong-Il in North Korea, which spends very large sums

³³This account follows Dincecco (2011, ch. 8), who also provides sources.

on the military. Defense expenditures constitute up to 25 percent of North Korean GDP, and there are well over 1 million active duty military personnel. By contrast, defense spending in South Korea is less than 3 percent of GDP, and there are fewer than 700,000 active duty military personnel. It is thus probable that parliamentary control over the budgetary process in North Korea would improve the allocation of tax resources toward public services that would most benefit society.

Parliamentary power of the purse, though, is not always sufficient to ensure economic success. Unlike North Korea, Guatemala is a constitutional democratic republic. However, conservative oligarchs oppose structural reforms to the tax system. Between 2001 and 2003, the Supreme Court received more than 50 appeals from conservative interest groups to clarify, eliminate, or reduce taxes. Tax revenues, which rely heavily on indirect taxes, sum to less than 10 percent of GDP. By contrast, tax shares in rich countries are typically more than 20 percent of GDP, and in many cases more than 30 percent (see Figure 2). Underfunding contributes to a lack of public services in Guatemala such as transportation infrastructure. Only 35 percent of Guatemalan roads were paved in 2001, and there was only 0.13 road kilometer per square kilometer of territory, compared with 0.87 road kilometer per square kilometer of territory for (similarly-sized) South Korea. It is thus likely that greater fiscal prowess by the central government in Guatemala would enable its parliament to implement new and better public services that would foster development.

South Korea is our final example. Unlike its counterpart in the North, South Korea is a constitutional democratic republic, and unlike Guatemala, it is a powerful fiscal state. South Korea became an OECD member in 1996, and its economy is among the world's largest. By 2009 per capita GDP was 28,000 U.S. dollars. South Korea has an extensive transportation network of air, bus, ferry, highway, and rail routes. Moreover, the education index for South Korea, which measures literacy and school enrollment from kindergarten to university, is ranked among the world's top 10. This evidence suggests that the South Korean government is not only able to gather large tax resources, but employs funds in productive ways that stimulate growth.

In total, our study provides rigorous proof that the key fiscal feature that distinguishes today's advanced economies is the institutional balance between weak and strong fiscal elements. To lay the proper institutional foundations for growth, emerging economies like Guatemala and North Korea must seek to overcome both types of fiscal problems, but not simply one or the other, just as European states once did.

Data Appendix

Data for per capita tax revenues and the control variables from 1650 to 1913 are from Dincecco (2011, Appendices A.1, A.2, A.3). These data are downloadable from the website <http://sites.google.com/site/mdincecco/>. See Section 4 of the text for further details.

Data sources for military, infrastructure, and education expenditures per capita are listed as follows. These data are not available for Belgium or Denmark. Disaggregated expenditure data in home currencies were converted into gold grams following the methodology in Dincecco (2011, Appendix A.2). Data for total expenditures and population are from Dincecco (2011, Appendices A.1, A.2) unless otherwise stated. These data concern total spending by national governments including debt service and incorporate loan amounts when given. Non-military expenditures per head were computed as per capita total expenditures minus per capita military expenditures.

Austria. Military spending data are from Pammer (2010, Figure 5.1). Infrastructure and education expenditure data are not available.

England. Military, infrastructure, and education spending data are from Mitchell (1988, Public Finance Table 4). To compute military expenditures, spending for the Army and Ordnance and for the Navy were summed. Infrastructure expenditures uses the spending category for Works and Buildings, and education expenditures the category for Education, Art, and Science.

France. Military, infrastructure, and education spending data are from Fontvieille (1976, Tables CVXI-XXXV). Infrastructure expenditures uses the spending category for Public Works.

Italy. Military spending data are from the Ufficio Storico (1980, pp. 508-9) for 1861-9 and Hobson (1993) for 1870-1913. Infrastructure and education expenditures are from Brosio and Marchese (1986, Table 4a). Infrastructure spending uses the expenditure category for Public Works.

Netherlands. Military spending data are from van Zanden (1996, Table 4) for 1816-41. Van Zanden provides data averages for 1816-20, 1821-4, 1825-9, 1831-4, 1835-9, and 1841-50. The average for 1816-20 was used for 1816, the average for 1821-4 for 1821, and so on. The military spending shares closely match those from van Zanden and van Riel (2010, Table 2.1). Total expenditure data from this source were used in combination with the information on shares to back out military expenditures. For 1816-30 we divided these figures by the expenditure share for the Southern Netherlands (i.e.,

Belgium, Luxembourg, and their hinterlands) according to van Zanden (1996, Table 5) to derive military expenditures for the (Northern) Netherlands, as data for total expenditures from Dincecco (2011) exclude the Southern Netherlands. The source for the 1816-41 data does not distinguish between infrastructure and education spending. Rather, both are included under the expenditure category for Home Affairs. Military, infrastructure, and education spending data are from van Zanden and van Riel (2010, Table 2.3) for 1850-1913. They provide data shares at 10-year intervals for 1850, 1860, 1870, 1880, 1890, 1900, and 1913. Total expenditure data from this source were used in combination with the information on shares to back out military expenditures.

Portugal. Military, infrastructure, and education spending data are from Silveira (1987, Table 8) for 1816-27, Mata and Valério (2001, Table 1) for 1832-45, and Mata (1993, Table 1) for 1851-1913. To compute military expenditures, spending by the Ministerio da Guerra (after 1827; Exercito beforehand) and the Ministerio da Marinha were summed. Infrastructure expenditures uses spending by the Ministério das Obras Públicas. There was no education ministry over this period. Education expenditures thus uses the category for the education burden (i.e., Encargos cum Instruções). Since the total military spending calculation matches well with the Encargos cum Defesa category (and perfectly from 1884 onward), we are confident that the same holds for education.

Prussia. The German Reich (1871-1945) was a federal system and a great deal of taxing and spending was done at the state (e.g., Prussian) level. The federal government was responsible for military expenditures and welfare (Ziblatt, 2006). Spoerer (2010, Table 4.1) provides Prussian military and welfare expenditures for 1847 and 1867. After unification there are only Reich data available for these categories. These data were not used because there was no clear way of integrating the pre-1871 Prussian series with the post-1870 Reich one. Spoerer's data for Prussia were supplemented with 1820 data for military defense from Ziblatt (2006, Table 3.1). Here total Prussian expenditures from 1821 were used due to data availability.

Spain. Military spending data are from Carreras and Tafunell (2006), Table 12.8 for 1816-42 and Table 12.13 for 1845-1913. To compute military expenditures, spending by the Ministerio de Guerra (through 1842; the Ministerio de Defensa from 1845 onward) and the Ministerio de Marina were summed. The sources for the 1816-99 data do not distinguish between infrastructure and education spending. Rather, both are included under the expenditure category for the Ministerio de Estado through 1842 and the

Ministerio de Fomento from 1845 onward.³⁴

Sweden. Military spending data are from Krantz and Schön (2010, Table XI). At the central government level, there are no separate expenditure categories for infrastructure or education. Rather, it is probable that both are included under the spending category for civil services. We thus use this category as a proxy for these two types of expenditures.

³⁴Disaggregated infrastructure and expenditure data for the Ministerio de Fomento are displayed for 1900-13. These data indicate that infrastructure (Ministerio de Obras Públicas) and education (Ministerio de Educación y Ciencia) comprised all of the Ministerio de Fomento's expenditures for these years.

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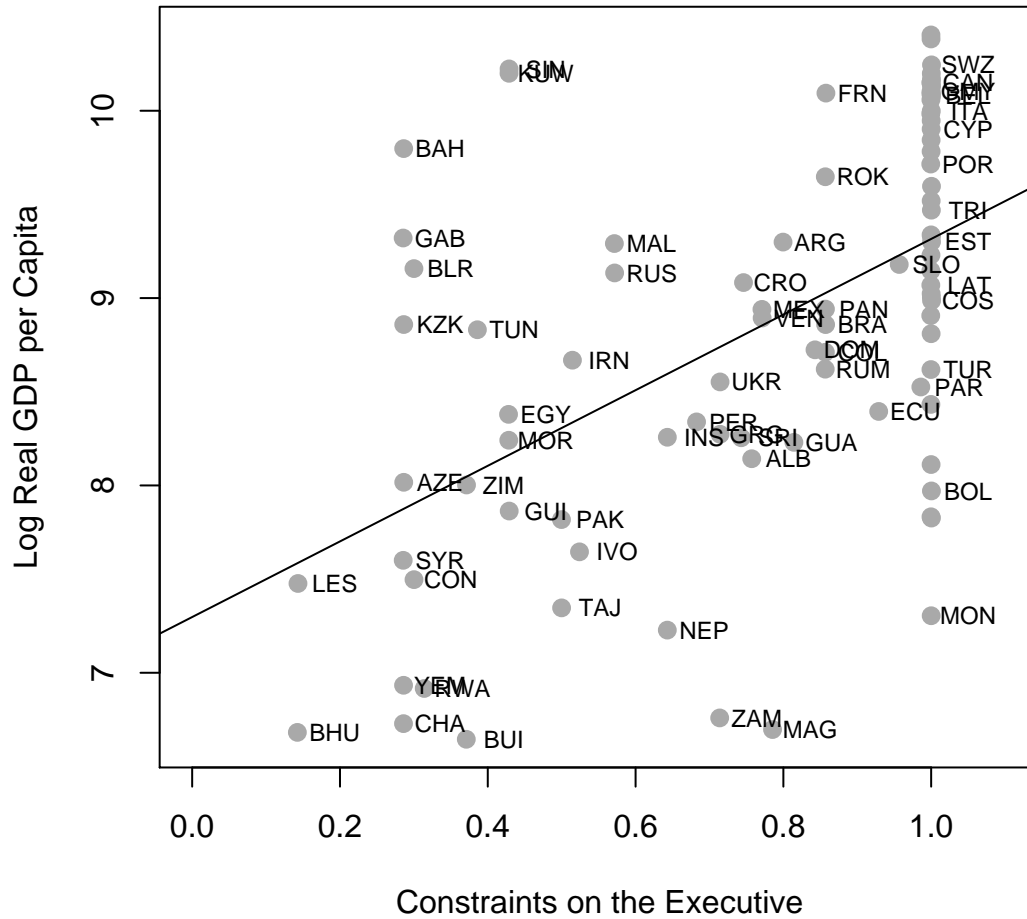
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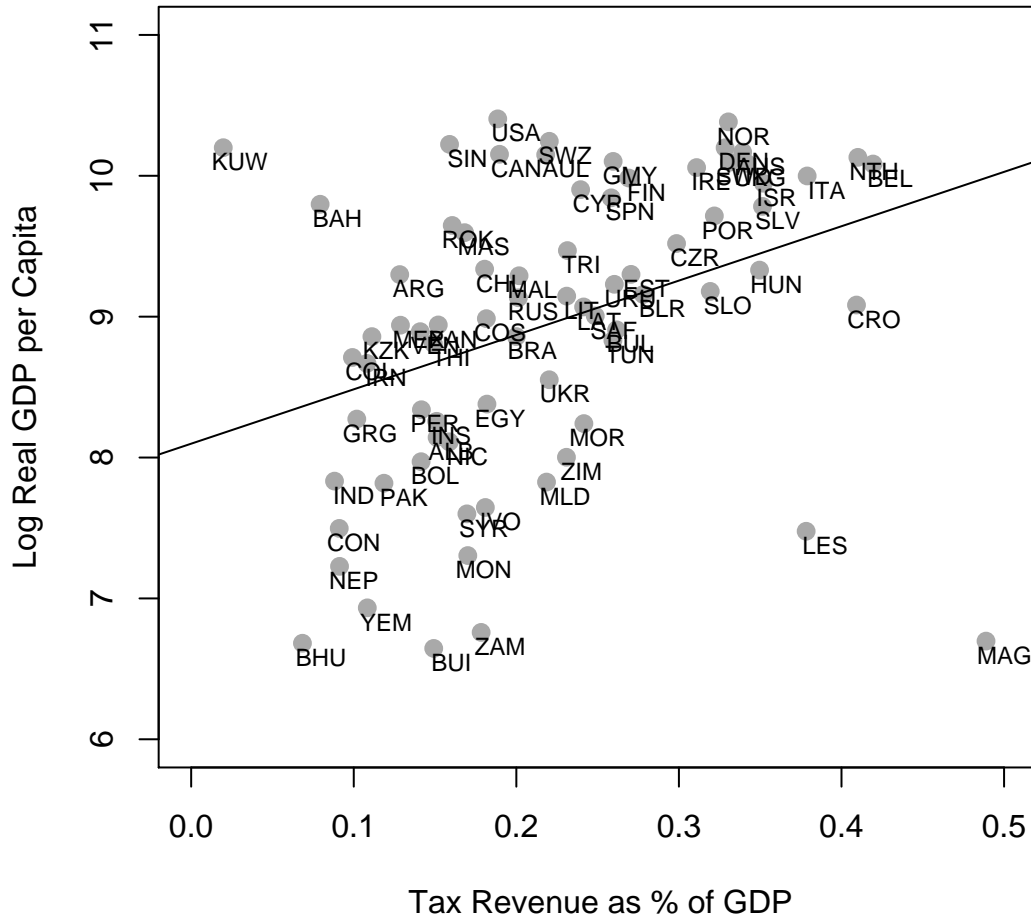
Figure 1: Constraints on the Executive and Income, 1995-2004



Source: Heston et al. (2006), Jaggers and Marshall (2008).

Note: Constraints on the executive are average constraints on the executive index normalized from 0 to 1 between 1995 and 2004 from Polity IV Database. Log real GDP per capita is average log GDP per capita in constant U.S. dollars expressed in international prices from Penn World Tables.

Figure 2: Tax Revenue and Income, 1995-2004



Source: Heston et al. (2006), International Monetary Fund (2009).

Note: Tax revenue collected by central governments as percentage of GDP is average between 1995 and 2004 from Government Financial Statistics Database. Log real GDP per capita is average log GDP per capita in constant U.S. dollars expressed in international prices from Penn World Tables.

Figure 3: Flow Chart

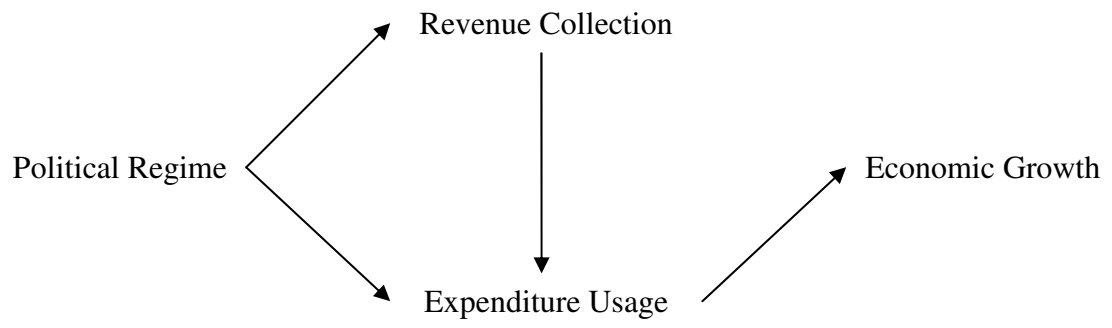
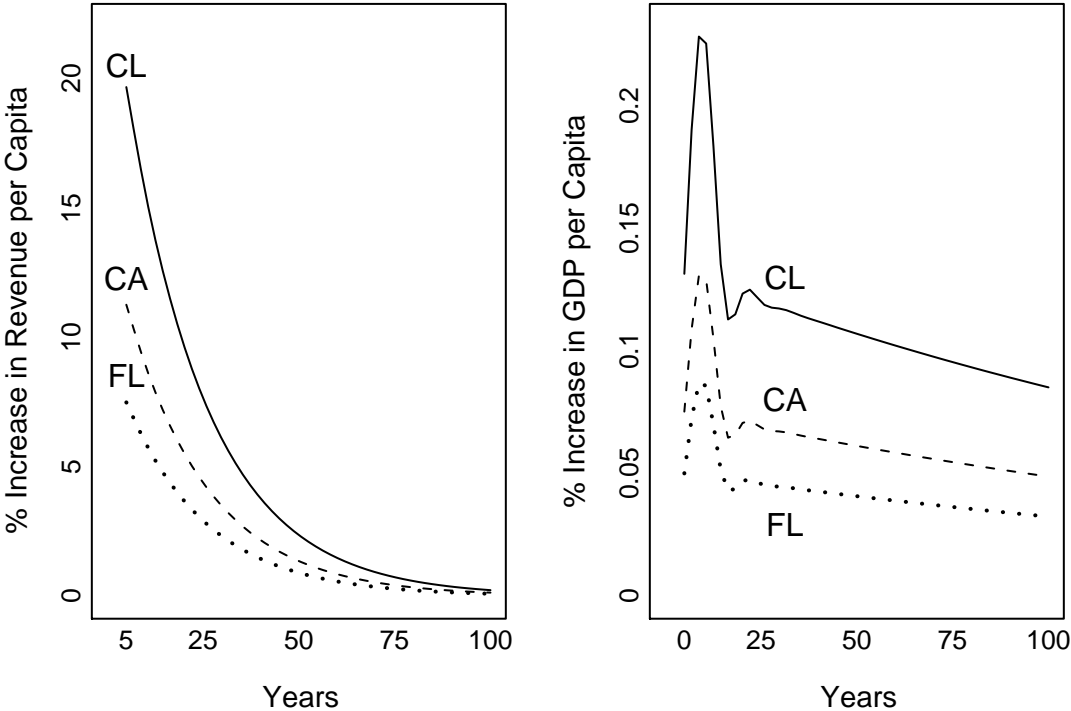


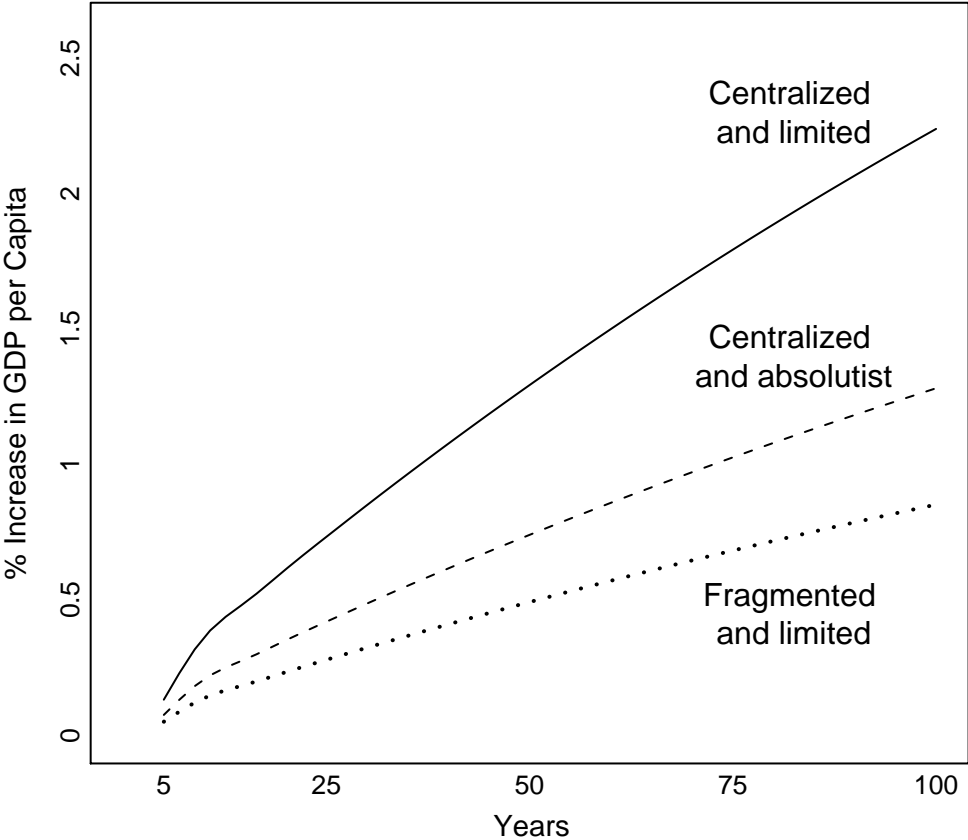
Figure 4: Dynamic Fiscal and Economic Effects of Regime Type, 1650-1913



Source: See text.

Note: CA=Centralized and Absolutist, FL=Fragmented and Limited, CL=Centralized and Limited. Left (right) panel displays average effect of regime type on per capita revenues (economic performance) relative to fragmented and absolutist regime at 5-year intervals.

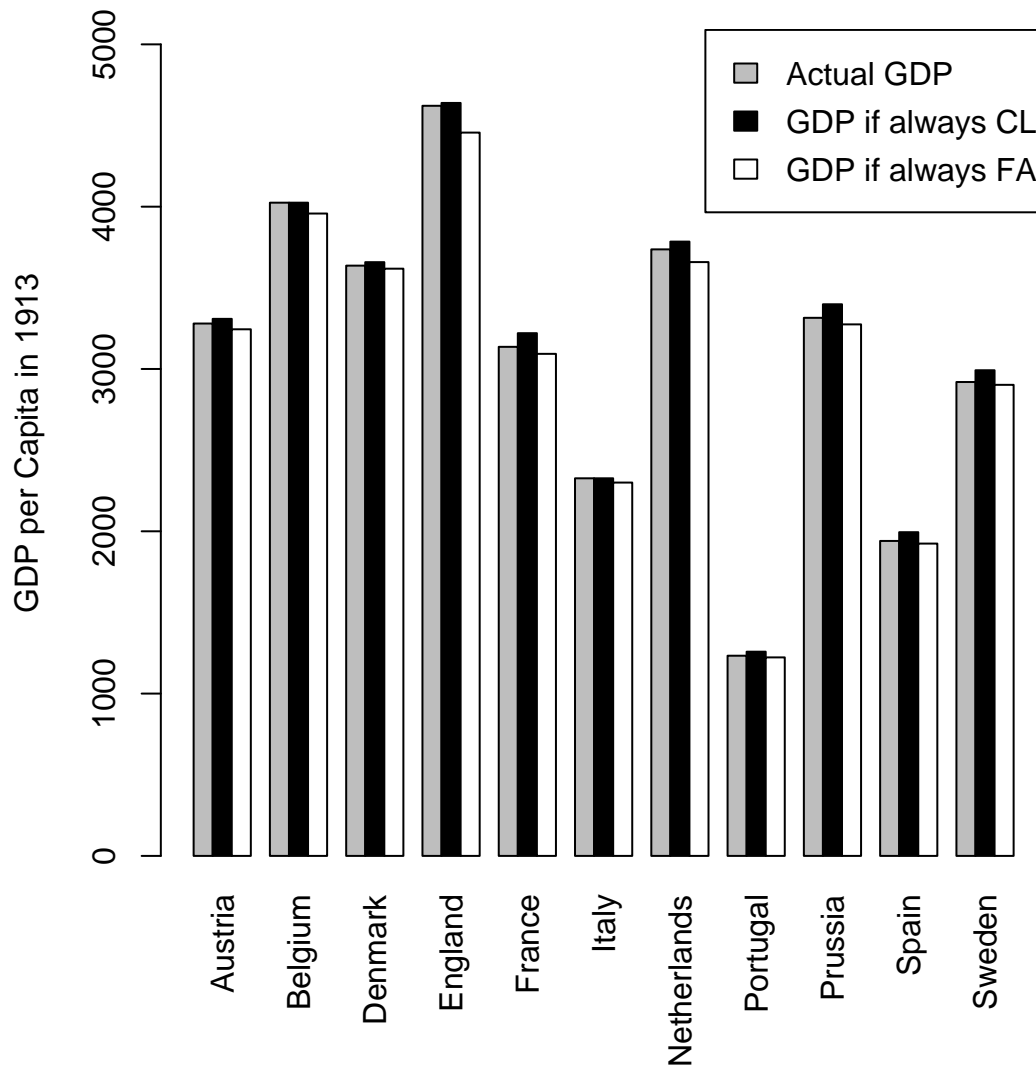
Figure 5: Cumulative Performance Effects of Regime Type, 1650-1913



Source: See text.

Note: Figure displays average cumulative effect of regime type on economic performance relative to fragmented and absolutist regime.

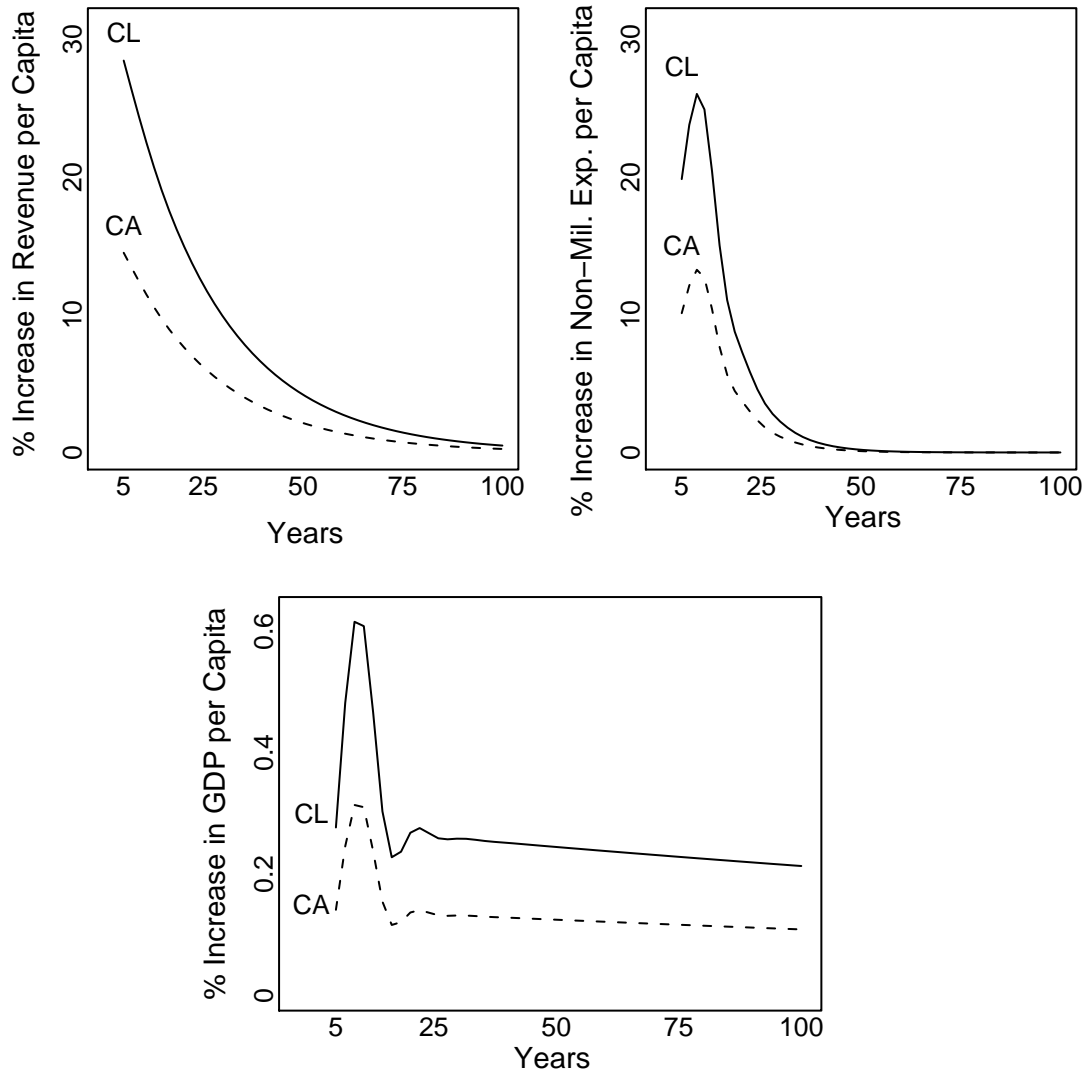
Figure 6: Counterfactual GDP for 1650-1913 Panel



Source: See text.

Note: Figure displays actual per capita GDP in 1913 against counterfactual GDP if country (i) always had centralized and limited (CL) regime or (ii) always had fragmented and absolutist (FA) regime.

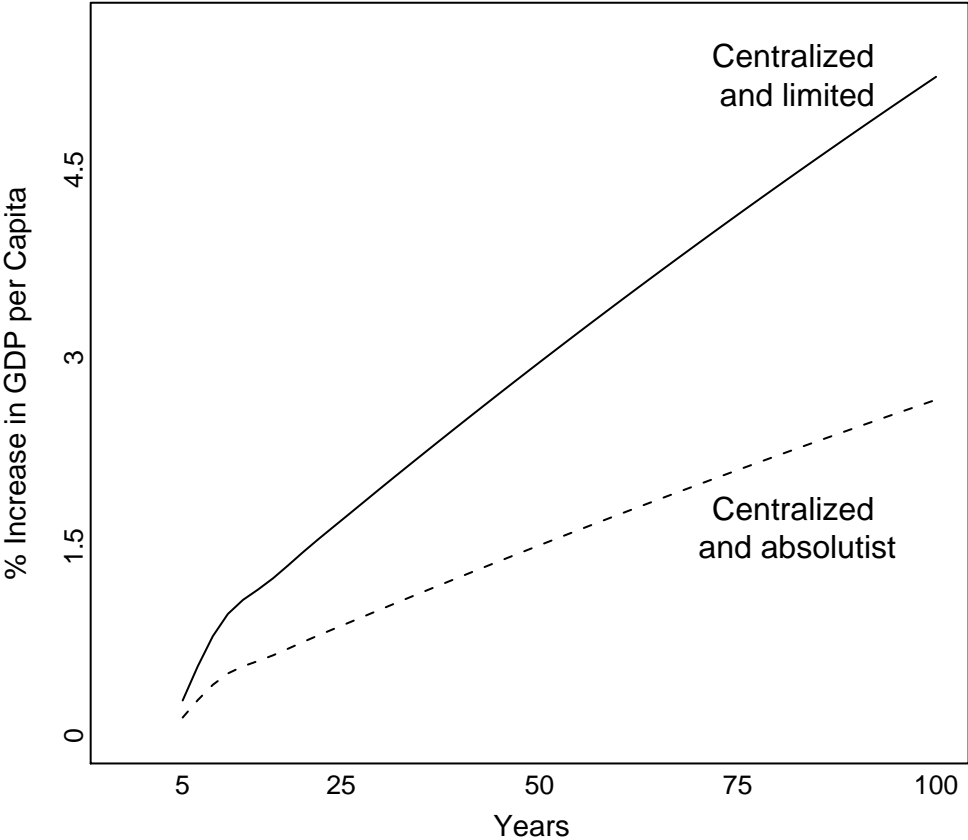
Figure 7: Dynamic Fiscal and Economic Effects of Regime Type, 1816-1913



Source: See text.

Note: CA=Centralized and Absolutist, CL=Centralized and Limited. Left (center, right) panel displays average effect of regime type on per capita revenues (per capita non-military expenditures, economic performance) relative to fragmented and absolutist regime at 5-year intervals. Fragmented and limited (FL) regime excluded due to lack of observations.

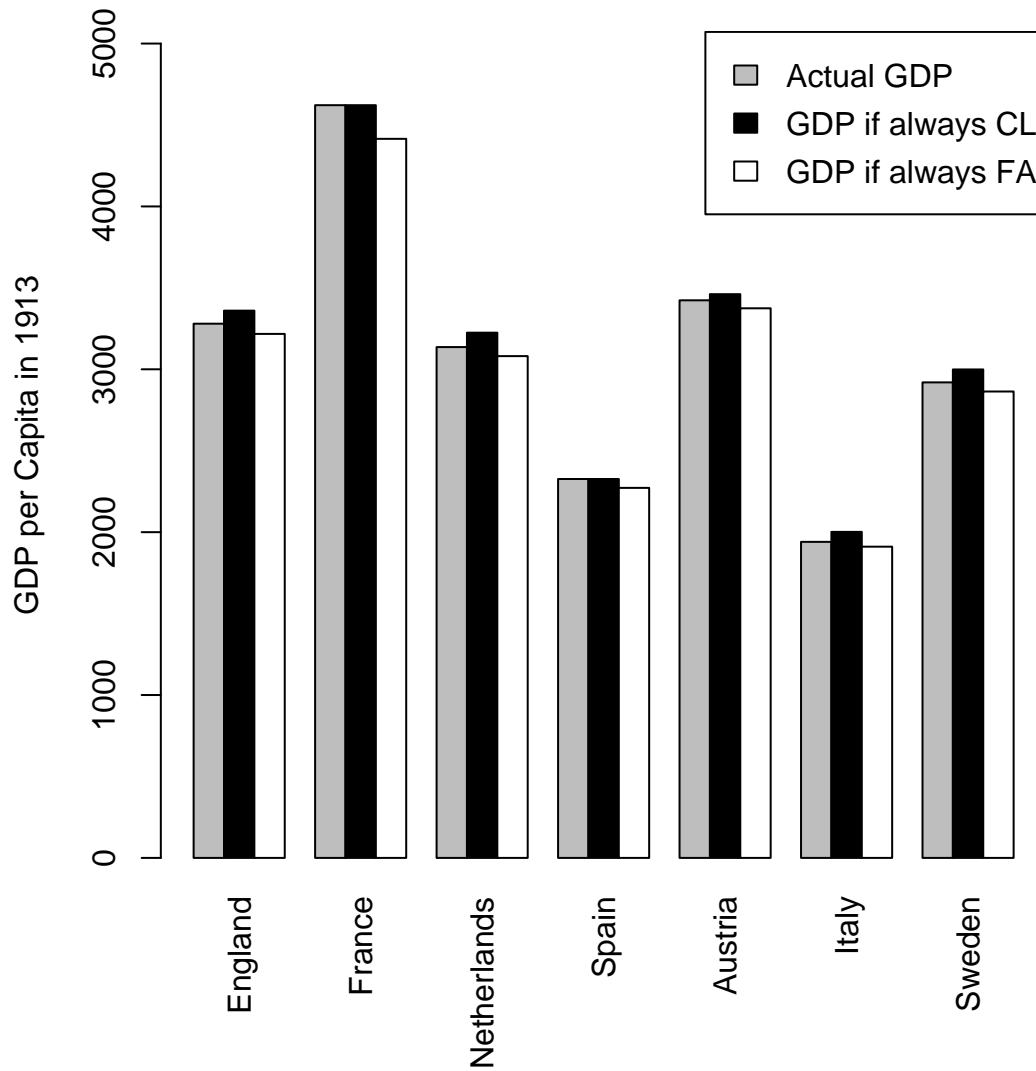
Figure 8: Cumulative Performance Effects of Regime Type, 1816-1913



Source: See text.

Note: Figure displays average cumulative effect of regime type on economic performance relative to fragmented and absolutist regime. Fragmented and limited (FL) regime excluded due to lack of observations.

Figure 9: Counterfactual GDP for 1816-1913 Panel



Source: See text.

Note: Figure displays actual per capita GDP in 1913 against counterfactual GDP if country (i) always had centralized and limited (CL) regime or (ii) always had fragmented and absolutist (FA) regime. Fragmented and limited (FL) regime excluded due to lack of observations.

Table 1: Dates of Political Transformations

	Fiscal Centralization	Limited Government
England	1066	1688
France	1790	1870
Belgium	1795	1831
Netherlands	1806	1572-1795, 1848
Prussia	1806	1848
Spain	1845	1876
Austria	1848	1867
Portugal	1859	1851
Italy	1861	1861
Sweden	1861	1866
Denmark	1903	1848

Source: Dincecco (2011).

Note: See text for definitions of fiscal centralization and limited government.

Table 2: Fiscal and Economic Characteristics of Political Regimes

Regime Type	Revenues	Non-Military Spending	Growth
Fragmented and Absolutist	Low	Low	Low
Centralized and Absolutist	High	?	?
Fragmented and Limited	Low	High	Increases
Centralized and Limited	High	High	High

Table 3: Per Capita GDP Levels, 1650-1913

		All Regimes	FA	CA	FL	CL
Totals	Obs	356	128	57	27	144
	Mean	1,670	1,016	1,446	2,043	2,176
Austria	Obs	21	7	5		9
	Mean	1,872	1,422	1,743		2,451
Belgium	Obs	16				16
	Mean	2,662				2,662
Denmark	Obs	11			9	2
	Mean	2,908			2,378	3,439
England	Obs	53		8		45
	Mean	1,625		1,169		2,081
France	Obs	54	28	17		9
	Mean	1,581	959	1,357		2,428
Italy	Obs	10				10
	Mean	1,668				1,668
Netherlands	Obs	39		10	16	13
	Mean	2,331		2,027	1,995	2,970
Portugal	Obs	30	17		2	11
	Mean	963	907		928	1,053
Prussia	Obs	46	24	9		13
	Mean	1,459	973	1,239		2,164
Spain	Obs	43	29	7		7
	Mean	1,291	950	1,200		1,725
Sweden	Obs	33	23	1		9
	Mean	1,591	1,172	1,462		2,140

Source: Maddison (2010).

Note: FA=Fragmented and Absolutist, CA=Centralized and Absolutist, FL=Fragmented and Limited, CL=Centralized and Limited. Data are expressed in 1990 international Geary-Khamis dollars and use 5-year averages.

Table 4: Per Capita Revenues, 1650-1913

		All Regimes	FA	CA	FL	CL
Totals	Obs	356	128	57	27	144
	Mean	8.23	2.42	7.05	10.49	12.97
Austria	Obs	21	7	5		9
	Mean	7.89	3.11	6.02		14.54
Belgium	Obs	16				16
	Mean	14.78				14.78
Denmark	Obs	11			9	2
	Mean	11.90			9.80	13.99
England	Obs	53		8		45
	Mean	8.09		2.69		13.49
France	Obs	54	28	17		9
	Mean	14.31	3.32	11.01		28.60
Italy	Obs	10				10
	Mean	14.41				14.41
Netherlands	Obs	39		10	16	13
	Mean	12.20		10.86	12.07	13.66
Portugal	Obs	30	17		2	11
	Mean	1.38	0.76		0.96	2.42
Prussia	Obs	46	24	9		13
	Mean	6.32	3.62	3.84		11.51
Spain	Obs	43	29	7		7
	Mean	2.35	1.00	2.34		3.72
Sweden	Obs	33	23	1		9
	Mean	5.29	2.89	3.63		9.36

Source: Dincecco (2011).

Note: FA=Fragmented and Absolutist, CA=Centralized and Absolutist, FL=Fragmented and Limited, CL=Centralized and Limited. Data are expressed in gold grams and use 5-year averages.

Table 5: Per Capita Non-Military Spending, 1816-1913

		All Regimes	FA	CA	FL	CL
Totals	Obs	138	27	29	2	80
	Mean	5.07	1.41	7.29	0.83	10.77
Austria	Obs	20	6	5		9
	Mean	8.26	2.77	6.01		16.00
England	Obs	19				19
	Mean	12.15				12.15
France	Obs	20		11		9
	Mean	15.03		9.92		20.15
Italy	Obs	9				9
	Mean	12.85				12.85
Netherlands	Obs	10		4		6
	Mean	12.95		13.00		12.89
Portugal	Obs	19	6		2	11
	Mean	1.18	0.46		0.83	2.24
Prussia	Obs	3		2		1
	Mean	3.86		2.72		5.00
Spain	Obs	19	6	6		7
	Mean	1.80	0.71	1.88		2.81
Sweden	Obs	19	9	1		9
	Mean	3.98	1.61	3.34		6.98

Source: See Appendix.

Note: FA=Fragmented and Absolutist, CA=Centralized and Absolutist, FL=Fragmented and Limited, CL=Centralized and Limited. Data are expressed in gold grams and use 5-year averages.

Table 6: Infrastructure and Education Spending, 1816-1913

		All Regimes	FA	CA	FL	CL
Panel A: Per Capita Infrastructure Expenditures						
Totals	Obs	70	0	13	2	55
	Mean	0.64		0.68	0.21	1.02
England	Obs	19				19
	Mean	0.23				0.23
France	Obs	20		11		9
	Mean	0.84		0.68		1.00
Italy	Obs	9				9
	Mean	2.92				2.92
Netherlands	Obs	6				6
	Mean	1.57				1.57
Portugal	Obs	13			2	11
	Mean	0.35			0.21	0.48
Prussia	Obs	3		2		1
	Mean	1.34		0.67		2.02
Panel B: Per Capita Education Expenditures						
Totals	Obs	70	0	13	2	55
	Mean	0.37		0.29	0.04	0.78
England	Obs	19				19
	Mean	0.72				0.72
France	Obs	20		11		9
	Mean	0.64		0.11		1.18
Italy	Obs	9				9
	Mean	1.29				1.29
Netherlands	Obs	6				6
	Mean	0.51				0.51
Portugal	Obs	13			2	11
	Mean	0.06			0.04	0.08
Prussia	Obs	3		2		1
	Mean	2.17		1.31		3.03

Source: See Appendix.

Note: FA=Fragmented and Absolutist, CA=Centralized and Absolutist, FL=Fragmented and Limited, CL=Centralized and Limited. Data are expressed in gold grams and use 5-year averages.

Table 7: Estimation Results, 1650-1913

	(1)	(2)	(3)	(4)
Panel A: Dependent Variable is Economic Performance Measure				
	GDP _t	GDP _t	GDP _t	Urban _t
Per capita revenues _t	0.29*** (0.01)	0.01** (0.001)	0.01** (0.001)	0.01** (0.001)
Per capita GDP _{t-1}		0.98*** (0.02)	0.98*** (0.02)	
Urbanization rate _{t-1}				0.98*** (0.08)
External war dummy	-0.22*** (0.07)	-0.004 (0.004)	-0.004 (0.004)	-0.01 (0.02)
Internal war dummy	-0.02 (0.09)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.03)
Change in gold stock	0.02 (0.48)	-0.03 (0.04)	0.03 (0.03)	-0.01 (0.02)
P-value of Wald χ^2	0.00	0.00	0.00	0.00

Table 7, Continued: Estimation Results, 1650-1913

	(1)	(2)	(3)	(4)
Panel B: Dependent Variable is Per Capita Revenues _t				
Centralized and absolutist regimes	0.57*** (0.12)	0.11*** (0.03)	0.11*** (0.03)	0.37*** (0.09)
Fragmented and limited regimes	0.36** (0.16)	0.07 (0.08)	0.07 (0.08)	0.58*** (0.23)
Centralized and limited regimes	0.60*** (0.11)	0.20*** (0.05)	0.20*** (0.05)	0.35*** (0.12)
Per capita revenues _{t-1}		0.79*** (0.05)	0.79*** (0.05)	0.65*** (0.11)
Per capita GDP _t	2.09*** (0.14)	0.19* (0.11)	0.19* (0.11)	
Urbanization rate _t				-0.73 (0.69)
External war dummy	0.59*** (0.19)	0.04 (0.07)	0.04 (0.07)	-0.11 (0.28)
Internal war dummy	-0.50** (0.26)	-0.08 (0.13)	-0.08 (0.13)	-0.06 (0.33)
Change in gold stock	-0.41 (1.32)	-0.29*** (0.08)	0.27*** (0.07)	-0.05 (0.28)
P-value of Wald χ^2	0.00	0.00	0.00	0.00
Time fixed effects	Yes	Yes	Yes	Yes
Linear time trend	No	No	Yes	Yes
Observations	322	334	334	58
Number of countries	11	11	11	11
Average obs per country	29	30	30	5

***Significant at 1%; **Significant at 5%; *Significant at 10%

Note: Revenue and GDP data are in natural logarithms. Data in Columns (1) to (3) use 5-year averages. Data in Column (4) use 25-year averages. Robust standard errors are in parentheses.

Table 8: Estimation Results, 1816-1913

	(1)	(2)	(3)	(4)	(5)
Panel A: Dependent Variable is Per Capita GDP _t					
Per capita non-military exps _t	0.27*** (0.04)	0.01*** (0.001)	0.01*** (0.001)		
Per capita infrastructure exps _t				0.04*** (0.01)	
Per capita education exps _t					0.01** (0.01)
Per capita GDP _{t-1}		0.98*** (0.01)	0.98*** (0.01)	0.51*** (0.07)	0.53*** (0.06)
External war dummy	-0.37* (0.22)	-0.02* (0.01)	-0.02* (0.01)	0.002 (0.02)	0.06** (0.03)
Internal war dummy	-0.09 (0.17)	0.01 (0.02)	0.01 (0.02)	-0.33*** (0.12)	-0.36*** (0.11)
Change in gold stock	0.08 (0.21)	-0.03** (0.01)	-0.03** (0.01)	-0.02** (0.01)	0.02*** (0.01)
P-value of Wald χ^2	0.00	0.00	0.00	0.00	0.00
Panel B: Dependent Variable is Per Capita Non-Military Expenditures _t					
Per capita revenues _t	0.96*** (0.04)	0.70*** (0.05)	0.70*** (0.05)		
Per capita non-military exps _{t-1}		0.48*** (0.04)	0.48*** (0.04)		
External war dummy	0.44** (0.21)	0.02 (0.11)	0.02 (0.11)		
Internal war dummy	-0.03 (0.17)	0.25*** (0.02)	0.25*** (0.02)		
Change in gold stock	-0.23 (0.21)	-0.08 (0.07)	-0.08 (0.07)		
P-value of Wald χ^2	0.00	0.97	0.08		

Table 8, Continued: Estimation Results, 1816-1913

	(1)	(2)	(3)	(4)	(5)
Panel C: Dependent Variable is Per Capita Revenues _t					
Centralized and absolutist regimes	0.84*** (0.24)	0.14*** (0.04)	0.14*** (0.04)		
Centralized and limited regimes	0.85*** (0.28)	0.28*** (0.06)	0.28*** (0.06)		
Per capita revenues _{t-1}		0.80*** (0.04)	0.80*** (0.04)		
Per capita GDP _t	1.52*** (0.26)	0.47*** (0.18)	0.47*** (0.18)		
External war dummy	1.07** (0.48)	0.01 (0.04)	0.01 (0.04)		
Internal war dummy	-0.73* (0.40)	0.10** (0.05)	0.10** (0.05)		
Change in gold stock	-0.75 (0.47)	-0.02 (0.03)	-0.02 (0.03)		
P-value of Wald χ^2	0.00	0.00	0.00		
Time fixed effects	Yes	Yes	Yes	Yes	Yes
Linear time trend	No	No	Yes	Yes	Yes
Observations	91	99	99	55	55
Number of countries	6	7	7	4	4
Average obs per country	15	14	14	14	14

***Significant at 1%; **Significant at 5%; *Significant at 10%

Note: Revenue, expenditure, and GDP data are in natural logarithms. Data use 5-year averages. Robust standard errors are in parentheses.