Fiscal Centralization, Limited Government, and Public Revenues in Europe, 1650-1913

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Abstract: Most polities in Ancien Régime Europe suffered from fiscal fragmentation and absolutist rule. By the start of World War I, however, many of these same countries had centralized institutions and limited government. Using a newly assembled panel data set of per-capita revenues, this paper carries out a systematic analysis of political regimes and public revenues in Europe over the 17th to 20th centuries. The results indicate that both centralized and limited regimes were associated with significantly higher levels of per-capita revenues than fragmented and absolutist ones, even after controlling for other economic and political factors. Tests for structural breaks support these findings, suggesting close relationships between major turning points in the revenue series and political transformations.

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1. Introduction

Most polities in Ancien Régime Europe faced two fiscal problems: fragmentation and absolutism. Because of jurisdictional divisions, sovereigns had incomplete power to raise taxes on their own. Putting crowns in charge of tax rates was therefore the only way to increase revenue streams. Though rulers exercised weak authority over revenues, they had great command over expenditures. Since monarchs often chose personal consumption (e.g. foreign military adventures) over public services that would most benefit society (e.g. roads), limits to executive discretion were the only way to curb spending excesses. Political conflicts in Old Regime Europe were thus about who held control over the raising and spending of public funds.[1]

To improve our understanding of the effects of fragmentation and absolutism on government finances, this paper examines the co-evolution of political structures and public revenues in Europe over the long run. My framework for analysis consists of two basic elements. The first comes from North and Weingast (1989), who claim that institutional changes following the Glorious Revolution of 1688 enabled the English crown to make a credible commitment to responsible fiscal policies.[2] Key to the argument was that parliament possessed a regular constitutional right to monitor how the king spent tax

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[1] Such issues remain relevant in the contemporary political economy literature. Current works often focus on problems of executive discretion, suggesting that limited government is sufficient for growth. For theoretical statements, see among others North and Thomas (1973), North (1981), and McGuire and Olson (1996). For empirical studies, see De Long and Shleifer (1993), Knack and Keefer (1995), and Acemoglu, Johnson, and Robinson (2001, 2002, 2005). Yet Acemoglu (2005) also shows that there is also a strong positive relationship between powerful states – where central governments raise hefty tax sums and play significant economic roles – and per-capita wealth levels. Indeed, fiscal fragmentation remains severe in poor parts of the world: Herbst for one (2000) finds a close link between divided fiscal authority and economic stagnation in Africa. This theme is more prominent in the political science literature than the economics one, however. Also see Migdal (1988), Wade (1990), and Bates (2001).

[2] It is unclear whether institutional changes resulting from the Glorious Revolution actually improved property rights protections. Clark (1996) argues that secure property rights existed in England from at least 1600. Similarly, O'Brien (2001) claims that England implemented the constitutional and administrative structures underlying its fiscal state in the 1640s. Also see Dickson (1967), 3-14, Jones (1972), 3-17, 311-331, Stone (1979), 1-17, and Hill (1980), 191-207, 235-248.

revenues. The second dimension derives from Epstein (2000). For him, economic and political fragmentation within polities rather than fiscal abuse by rulers was the main cause of economic distortions before the 1800s.[3] Centralized from early on, England was the exception to this rule.[4] Epstein rightly notes that, for historical accuracy and completeness, any inquiry into the political determinants of public finances in Europe over the 17th and 18th centuries must account for cross-country differences in institutional endowments, considering fragmentation as well as absolutism.

North and Weingast use 1600s England as evidence while Epstein relies heavily upon medieval Italy. The various sorts of polities and eras under consideration limit the generality of their respective findings. Indeed, many European countries succeeded by the start of World War I in striking an institutional balance that enabled central authorities to gather enough in tax revenues while at the same time constraining the fiscal powers of individual political actors. The goal of the present work is to fuse the arguments for centralization and parliamentary reforms into an integrated analysis of institutional change. A key feature is to adopt a systematic approach that examines the effects of structural reforms both within and across European sovereigns on public finances. To do so, my investigation builds upon qualitative case study texts by Hoffman and Norberg (1994), Bonney (1999), Bordo and Cortès-Conde (2001), and others.[5] By pursuing a panel method,

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[3] Epstein writes that "...absolutism was largely a propaganda device devoid of much practical substance (13)." Hoffman and Norberg (1994) also downplay the "...absolute in absolutism (393)." Similarly, Fritschy (2003) argues that a tax revolution (i.e. fiscal centralization) rather than a financial one (i.e. limited government) turned the Dutch Republic (1584-1795) into a great power. See Henshall (1992), Rosenthal (1998), and Dincecco (2007) as well.
[4] Brewer (1989), 3-7, Sacks (1994), 14-23, Epstein (2000), 1-37, and O'Brien (2001), 14-24.
[5] Some scholars have studied European fiscal history in a purely comparative way. Tilly (1990) and Bonney (1995) provide voluminous qualitative accounts. For an abridged version in this vein, see O'Brien (2001). More recently, Stasavage (2005) uses econometric techniques to evaluate the politics of sovereign borrowing from 1274-1785 while Dincecco (2007) tests the relationship between political regimes and sovereign credit risk from 1750-1913.

this paper is a natural complement to previous case histories.[6] The chosen period from 1650 to 1913 captures a clear pattern of economic and political transformations as polities moved from fragmented and absolutist regimes to centralized and limited ones.

Many scholars have examined the relationship between limited government and public debt since North and Weingast's article.[7] Most have neglected the direct impact of political changes on public revenues, a task undertaken here. Dincecco (2007) finds that centralized and limited regimes in Europe were associated with significant reductions in sovereign credit risk over the 18th and 19th centuries. Yet the mechanisms by which political reforms led to creditworthiness gains remains unclear. The current work considers one likely source: improvements in the sovereign's ability to gather tax revenues.

I first assemble a panel data set on per-capita revenues for eleven European countries. Long annual series of relevant fiscal data characterize the first group (England, France, the Netherlands, Prussia, and Spain), which were among the largest and/or most important players in Europe at the time. The second group of countries (Austria, Belgium, Denmark, Italy, Portugal, and Sweden) has shorter data runs. I next identify the timing of fiscal centralization and the rise of limited government within each polity. Centralization generally occurred on the Continent from 1789 to 1815 as a result of French conquest. Limited government was largely a 19th century phenomenon that took place decades after centralization. I then carry out a multivariate regression analysis of the effects of political regimes on per-capita revenues that controls for relevant economic and political factors.

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[6] There exists a similar cross-country literature on the political economy of bond markets from the 1870s to World War I. Most European sovereigns were already centralized democracies by the late 19th century, however. See among others Flandreau and Zumer (1994), Bordo and Rockoff (1996), Obstfeld and Taylor (2003), and Ferguson and Schularick (2006).
[7] Indeed, North and Weingast's work represents a valuable point of departure for many scholars. See for instance Frey and Kucher (2000), Sussman and Yafeh (2000, 2006), Quinn (2001), Stasavage (2003, 2005), Summerhill (2004), Bogart and Richardson (2006), and Dincecco (2007).

The results show that political transformations towards centralized and limited regimes were associated with significant increases in per-capita revenues. I supplement the panel regressions with structural change tests that assume no a priori knowledge of possible breaks, revealing close relationships between major turning points in the revenue series and political transformations.

The rest of the paper proceeds as follows. Section 2 dates fiscal centralization and limited government and characterizes the expected relationships between political regimes and per-capita revenue levels. Section 3 describes the data used and the sample countries selected. Section 4 uses the French and Dutch cases as evidence to argue that political regimes mattered to public finances. Section 5 introduces the two sorts of statistical tests, panel regressions and structural breaks. Section 6 presents the statistical results. Section 7 concludes.

2. Political Regimes in Europe, 1650-1913

2.1 From Divided Authority to Centralization

Most European countries were fiscally fragmented prior to the 19th century. In France, tax pressure was uneven across localities since the crown had to negotiate independently over tax amounts with powerful regional bodies. Whole towns and provinces often avoided certain duties. By the middle of the 15th century, for instance, nobles in central and northern France received exemptions from the Ancien Régime's most valuable direct tax, the *taille*. Farther south, nobles only paid the *taille* on certain

holdings.[8] Chief among rural grievances on the eve of the French Revolution were tax issues such as the wide variety of taxes levied at different local rates.[9]

In Ancien Régime Spain, tax agreements among the various kingdoms united under the crown were excruciating. 17th century efforts by Count-Duke Olivares failed, for instance. The sovereign thus had to implement new taxes on top of old ones rather than make much-needed structural changes. At the start of the 1700s, Bourbon reformers bargained with local authorities over an additional tax in Spain's eastern provinces. The effort was largely unsuccessful, however. Differences in names – the new tax was called the *catastro* in Catalonia, the *contribucìon ùnica* in Aragon, and the *equivalente* in Valencia – as well as rates remained at the end of the trying negotiation process.[10]

For these fragmented polities, local tax control was closely intertwined with political autonomy, prompting elites to resist fiscal reforms that threatened traditional rights. The result was a classic public goods problem. Each locality attempted to free ride on the tax contributions of others, resulting in low per-capita revenues collected by sovereigns. It is a familiar fact that 18th century absolutist regimes in France and Spain levied lower per-capita taxes than parliamentary-style ones in England or the United Provinces.[11] With undivided fiscal authority, sovereigns overcame the free-riding problem caused by fragmentation. Moreover, taxes were equalized at relatively high levels and so

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[8] Shapiro and Markoff (1998) write that the *taille* was "…in principle assessed with an eye on landed wealth, but which was hopelessly riddled with regional variations and so saddled with privileged exemptions that to be *taillable* was a mark of low status (384)."

[9] Brewer (1989), 5-7, Velde and Weir (1992), 6-8, Hoffman (1994), 229-240, Major (1994), 60-61, Sargent and Velde (1995), 482-485, Shapiro and Markoff (1998), 377-409, and White (2001), 66-80.

[10] As Tortella (2000) notes, "Attempts to modernize public finance go back to the 18th century, with the plan for a single tax (*contribucìon ùnica*) of the Marques de la Ensenada. But a century later things were even worse. Until 1845 the Spanish taxation system was a disorganized and unsystematic mosaic… (174)." Also see Elliot (1986), 245-277, Lynch (1989), 61-66, Tortella (2000), 173-192, and Tortella and Comìn (2001), 141-148, 150-160.

[11] Mathias and O'Brien (1976), Hoffman and Rosenthal (1997), 34, and White (2001), 62-66.

per-capita revenues rose. It is worth pointing out that, in stark contrast to the previous century, no French defaults occurred after 1800, suggesting that centralization may have reduced the attractiveness of non-payment by increasing tax collection.[12]

Fiscal centralization was a centuries-long process. In many European countries, however, it remained very incomplete through much of the 1700s. Key structural changes were imposed during French Revolutionary and Napoleonic times. Thus, a remarkable increase in the degree of centralization occurred between 1789 and 1815.

A simple definition makes systematic comparisons across countries possible. I define fiscal centralization to have been completed the year that the national government first secured its revenues through a tax system with uniform rates throughout the country.[13] Table 1 indicates that this political transformation took place swiftly and permanently throughout much of the Continent from 1789 onwards.[14] In France itself, a national tax system was introduced during the 1790s.[15] French conquest of Austria, Belgium, the Dutch Republic, and various Italian polities also led to substantial administrative reforms. Similarly, Prussia made quick fiscal and legal improvements after defeat in battle by France in 1806.

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[12] Pre-revolutionary defaults occurred in 1713, 1759, and 1770. Never total, nor random in nature, they involved suspension of reimbursement payments in times of crisis, reform that restored high interest rates back to the legal maximum of 5 percent, or repudiation that reduced nominal yields below the legal maximum. See Velde and Weir (1992), 5, 8-10, Sargent and Velde (1995), 480-491, and White (2001), 84-95.

[13] This does not imply that the national government gained a total monopoly over taxation after centralization. In the United States, for example, fiscal centralization occurred with the Constitution of 1788, which gave Congress the power to ensure that individual states complied with national tax standards. Under the Articles of Confederation, Congress could only request such funds. States maintained the ability to levy taxes after 1788, however. See Edling (2003).

[14] Also see Godechot, Hyslop, and Dowd (1971).

[15] Upon taking power in 1789, the National Assembly transformed the French tax system, eliminating old privileges and exemptions. After his coup in 1799, Napoleon completed the process of tax rationalization. See Bordo and White (1991), 314-316, and White (1995), 234-241, 250-252.

Some exceptions bear mention. On one hand, England possessed fiscally centralized institutions from very early on. On the other, French attempts to implement far-reaching reforms on the Iberian Peninsula failed and so fiscal centralization in Portugal and Spain came relatively late (i.e. the 1830s and 1840s). In Scandinavia, Denmark underwent fiscal centralization with the broad agrarian reforms of the 1780s. Fiscal change did not occur in Sweden until 1840, however. For additional details, please see appendix 1.

2.2 From Executive Discretion to Parliamentary Control

Crown discretion over spending remained largely unchecked by the end of the Napoleonic era. Indeed, the consolidation of fiscal powers into the hands of monarchs from 1789 to 1815 may have aggravated concerns over executive control. We now turn to the second problem: effective constraints limiting the ways in which rulers could use public funds.

The 1815 constitution of the Kingdom of the United Netherlands granted absolutist powers to the monarch. Parliamentary budget authority came at 10-year intervals, rendering it ineffective. Though fiscal centralization had nearly doubled the size of the Dutch tax base and Europe remained politically stable, King Willem I (1814-1840) found it difficult to balance the national accounts. He spent heavily on military, infrastructure, and monarchy. Under Willem's reign, public debt increased to more than 200 percent of GDP, a ratio comparable to that of war-ridden Napoleonic times. The crown also used semi-legal, non-transparent means to keep the state of public finances hidden. Dutch fiscal troubles did not become well known until 1839. Parliament then vetoed the next decadal budget and the king was forced to abdicate. Afterwards, a constitutional amendment was passed that replaced 10-year budgets with 2-year ones and made information about

government finances widely available. The liberal era in the Netherlands, replete with a new constitution, culminated in the Year of Revolutions in 1848. From that point onwards, the Dutch crown had to submit annual budgets to parliament for approval. Since the reform firmly instituted a substantial check on executive spending, it became in the words of Van Zanden and Van Riel (2004) the cornerstone of parliamentary power.[16]

Though monarchs spent funds as they wished, representative bodies exercised considerable tax authority in tax matters, compounding conflicts over executive discretion. As might be expected, rulers tried to evade parliament in the quest for more funds. The example of King Charles I (1625-1649) is well known. One important revenue stream for Charles was loans under threat (i.e. "forced loans"), repaid in highly unpredictable ways and in terms altered from original agreements. He seized private goods such as bullion as well. Other measures to skirt parliament included customs impositions and the sale of monopolies, government lands, and offices. Charles also kept parliament in the dark about the state of public finances.[17] Predatory fiscal tactics by English kings continued until the times of the Glorious Revolution at the end of the 17th century.

Absolutist regimes thus found themselves locked in a vicious circle. In the absence of constitutional constraints, parliaments rightfully feared that kings would spend additional funds in reckless and wasteful ways. They therefore demanded limits as a precondition to provide new revenues. Unwilling to bend, rulers often resorted to fiscal predation to boost income. Yet misbehavior by rulers only reinforced parliament's notion that the crown could not be trusted in fiscal matters. Parliament thus resisted tax requests

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[16] Fritschy and Van Der Voort (1997), 64-66, 73-81, 85-87, and Van Zanden and Van Riel (2004), 32-51, 85-90, 96-110, 171-178.
[17] Ashton (1960), 31-67, 154-184, Stone (1979), Hirst (1986), 126-159, Cust (1987), 39-71, 99-149, North and Weingast (1989), 809-812, Velde and Weir (1992), 6, Hoffman and Norberg (1994), and Sacks (1994), 37-44, 53-65.

more fervently and so per-capita revenues collected by sovereigns remained low. The emergence of limited government, which generally occurred during the 19th century, strengthened parliament's right to levy taxes and reduced the ruler's ability to violate private rights to financial property. Parliament also controlled the sovereign's purse strings, reducing the likelihood of poor fiscal choices by the crown. In light of these twin developments, parliament was more willing to submit to tax requests by rulers. Hence, per-capita revenues rose.

2.3 Implications for Public Finances

Table 2 provides a summary of the public finance characteristics of the three possible political regimes: fragmented and absolutist, centralized and absolutist, and centralized and limited.[18] Revenues under centralized and limited regimes should have been higher than under fragmented and absolutist ones. Fiscal centralization implies an increase in revenues over fragmentation, because central governments resolved the problem of local tax free riding. Similarly, limited government implies an increase in revenues over absolutism, since rulers were able to make a credible commitment to honor property rights and spend funds on public services rather than on personal consumption, making parliament more willing to submit to tax requests.[19]

Revenues should have also increased under centralized and absolutist regimes in comparison with fragmented and absolutist ones, since fiscal centralization had taken place in the first case, solving the problem of local free riding. In turn, this suggests that revenues under centralized and limited regimes should have been higher than under

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[18] Examples of fragmented and limited regimes are rare in European history. There are none of them among sample countries.

[19] By curbing the personal consumption of rulers, however, limited government may have reduced revenues needs and thus levels, thereby partially offsetting this positive effect.

centralized and absolutist ones, since limited government addressed the problem of executive discretion as well.

2.4 Measurement

As discussed in section 2.1, fiscal centralization is easily identifiable as a structural shift that occurred from 1789 to 1815. Measurement of limited government poses a greater challenge, however. Because parliamentary control over sovereign finances increased gradually over time, a reasonable definition of limited government must capture parliament's real power to have acted rather than its mere presence. It must also be simple enough to apply similarly to all polities. Selecting the "right" date counts since a choice that is too early or too late may lead to false acceptance or rejection of the hypothesis that constitutional reforms mattered. With these factors in mind, I define limited government to have emerged the year in which parliament gained the stable constitutional right to control the sovereign's annual budget. To meet my criteria, parliament's power over public finances had to hold for at least two consecutive decades. I have also chosen years and regimes for which there is widespread academic consensus to make dating as objective as possible. In addition to the historical accounts cited throughout the text, my coding of limited regimes corresponds well with the classification systems used in Tilly (1990), De Long and Shleifer (1993), Acemoglu, Johnson, and Robinson (2005), and Jaggers and Marshall's (2005) Polity IV project, though none of those schemes fit the precise demands of this study.[20] By incorporating these three factors – a regular veto right, regime stability,

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[20] De Long and Shleifer employ three measures: a binary indicator of absolutist versus non-absolutist regimes; Putnam's 8-point constitutional scale; and Tilly's (1990) categories of "capital" versus "coercion." Regimes are coded at 150-year intervals, however. Acemoglu, Johnson, and Robinson use two measures: Polity IV categories of executive constraints and categories of "protection for capital," each coded at 100-year (1000-1700) or 50-year (1700-1850) intervals. Moreover, the computations use 40-year windows around each date (e.g. the 1800 value is the average of 1780, 1790, 1800, 1810, and 1820), reducing the precision of

and scholarly agreement – we can be confident that political arrangements were limited in a manner that closely replicates the standard that North and Weingast originally laid out for England.[21]

To bias against my hypothesis, I have always chosen an early date to define political regimes as either centralized or limited. Since per-capita revenues generally grew from the 17th to the 20th centuries, average revenue levels associated with both centralized and limited regimes will be lower than otherwise, meaning that the results will be more robust if I still find that centralized and limited regimes were associated with significantly higher per-capita revenues than fragmented and absolutist ones.

For instance, one might argue that limited government did not truly emerge in Germany until after World War II, implying that 19th century Prussia never possessed such a regime. One may also claim similarly that limited government did not emerge in Spain until after Franco's death in 1975. In these cases, the correct method would be to categorize data prior to the 20th century in absolutist regimes and those during the 20th century in limited ones. As per-capita revenues in Europe have risen over time, this classification would almost certainly strengthen any results that limited regimes were associated with increases in per-capita revenues.

During the 19th century, limited government on the Continent was at times shaky. For now, it is enough to recall that my definition ensures a minimum standard for stability by requiring that parliament's constitutional veto power held for at least two consecutive decades. It would not only be impractical to require that limited government was a

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individual point estimates. Jaggers and Marshall's Polity IV project classifies executive constraints for countries at yearly intervals. Their data set does not begin until the 19th century, though.

[21] I have not used suffrage measures to identify limited government regimes since I am concerned with effective checks on executive power rather than democracy per se.

"permanent" reform, but for reasons described above, pushing back the dates for limited government would likely reinforce any results that limited regimes led to improvements in public finances.

I now present a case study to illustrate my dating methodology. Following Napoleon's final defeat in 1815, the Bourbon regime in France was limited in name only. The next several years saw intense battles between royal and liberal forces. Charles X, whose notion of proper governance was hardly compatible with constitutional monarchy, acceded to the throne at the start of the 1820s. In 1830, he dissolved parliament, reduced the electorate in favor of the wealthy, placed the press under government control, and called for new elections. These ordinances incited the July Revolution on the following day. In turn, Charles' replacement, Louis Phillippe, agreed to adhere more closely to constitutional limits on his power. The 1830 regime endured for less than two decades, however, ending in revolution in 1848.[22] Just three years later, Napoleon III mounted a coup d'etat, establishing an authoritarian regime that lasted until 1870. The Third French Republic then came into existence, surviving until the German invasion of 1940.[23] This final arrangement best satisfies the triple criteria of regularity, stability, and consensus, and therefore I date the emergence of a centralized and limited regime to 1870.

Table 1 indicates that limited government reforms began during the 1830s and 1840s, several decades after fiscal centralization. A second wave occurred in the 1860s and 1870s. England was precocious in that its executive became limited nearly 150 years prior to any of the Continental countries. At the other extreme, Austria and Denmark did not

[22] Classification of the political regime in France from 1830-1847 as centralized and limited does not affect the regression results. Also see section 6.
[23] Jackson (1974), 143-144, 150-151, and Price (1993), 157-165, 177-179, 188-191.

manage to establish stable constitutional monarchies before World War I. For additional details, please refer to appendix 1.

Political risks and instability dominated the Iberian Peninsula during the 19th century, meaning that "liberal" political regimes there do not fit well with traditional notions of limited government. In table 1, I have dated a centralized and limited regime in Portugal to 1851 and in Spain to 1876. By doing so, I bias against my hypothesis that constitutional constraints mattered, since per-capita revenue levels for the Iberian polities remained relatively low over the 1800s. Classification of the Iberian regimes as absolutist ones would only strengthen any findings that limited government was associated with improvements in public finances.

3. Data and Sample Countries

I constructed a database on annual revenues and population from several secondary sources. Chief among them were Bonney's (1995) *European State Finance Database* for the 17th and 18th centuries and Mitchell's (2003) *International Historical Statistics* for the 19th and early 20th ones. For additional details, please see appendix 2.

The historical data are not without limitations. European countries did not keep detailed financial records during the 17th and 18th centuries, meaning that the time series under consideration may be imprecise. In fact, sovereigns could have calculated yearly revenues in several different ways.[24] One method was to use tax receipts for a given year based upon fiscal decisions that had been made over several preceding years. Another was to compute an annual budget with revenues that the crown intended to raise even if they did not actually enter its coffers until years later. Total income for the crown may have also

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[24] See Bonney (1995), 423-506.

included revenues from loans in addition to routine fiscal operations. I have done my best to stick to the first characterization that concerns income from taxation. When feasible, ordinary and extraordinary figures were added together and loan income was subtracted to determine total revenues. The various ways in which yearly revenue streams were tabulated prior to the 1800s suggest that crowns typically overestimated the amount of financial resources available to them. Hence, average revenue levels associated with fragmented and absolutist regimes should be larger than otherwise, meaning that the results will be more robust if I still find that political transformations towards centralized and limited regimes were associated with significant revenue increases.

At times I have interpolated intermediate years since revenue data were missing in some years for some countries. With the exception of fiscal centralization during the Revolutionary and Napoleonic eras, most instances of fiscal change were gradual, meaning that the interpolated figures should provide reasonable estimates. The same logic applies to population data, which were also interpolated between census years. No major population shocks such as plague occurred for the period under consideration, suggesting that the interpolated figures should offer also decent approximates. Revenue data came in different currencies as well. To make calculations comparable across countries, I transformed all units into grams of gold.

I have divided the sample into two groups based on data availability and historical relevance. Annual data series of nearly two centuries or more covering per-capita revenues as well as a variety of controls exist for the five polities (England, France, the Netherlands, Prussia, and Spain) that comprise the first set. Group 1 countries were also among the largest and/or most important players in Western Europe at the time. Data were generally

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available for a minimum of fifty years both before centralized and absolutist regimes and after centralized and limited ones, providing enough observations to reasonably compare steady-state revenue levels.

Shorter published time series exist for the six countries (Austria, Belgium, Denmark, Italy, Portugal, and Sweden) in the second group. Revenue data for Belgium and Italy began after they were founded as constitutional monarchies in 1831 and 1861, respectively. Similarly, annual series for Portugal and Sweden did not start until after the establishment of centralized and limited regimes during the 1800s.[25] Neither Austria nor Denmark achieved stable forms of limited government by 1913, meaning that the two countries functioned as additional "absolutist" controls in the panel regressions.[26] Though data prior to political transformations was unavailable for this second set of countries, their inclusion expands the range of institutional experiences represented, enriching the overall sample.[27]

4. Political Regimes and Public Revenues

Table 3 displays the summary statistics for the revenue panel. In total, there are 1,482 observations, 378 for fragmented and absolutist regimes, 364 for centralized and absolutist ones, and 740 for centralized and limited ones.[28] What jumps out immediately is

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[25] The Portuguese revenue series became available in 1852 and the Swedish one in 1881. While the *European State Finance Database* lists Swedish revenue data from 1722-1809, there were no series available from 1809 onwards.

[26] Fiscal centralization in Austria, which occurred in 1805, may in theory have been identified since the Austrian revenue series began in the 18th century. Population figures did not become available until 1818, however. While the *European State Finance Database* lists revenue data for Denmark from 1710-1806, there were no series available from 1806-1840.

[27] While interesting, the inclusion of countries outside of Western Europe such as Japan or Russia is beyond the scope of the current study.

[28] Among group 1 countries there 1,121 observations, 378 for fragmented and absolutist regimes (mean per-capita revenues = 2.40 grams of gold), 230 for centralized and absolutist ones (mean per-capita revenues = 7.22 grams of gold), and 513 for centralized and limited ones (mean per-capita revenues = 13.87 grams of gold).

the significantly higher average per-capita revenues associated with centralized and absolutist regimes (9.55 grams of gold) and centralized and limited ones (12.94 grams of gold) relative to those of fragmented and absolutist ones (2.40 grams of gold), suggesting that political reforms improved public finances.

Before moving on to the statistical analysis, it is worthwhile to study France and the Netherlands, two sample polities for which long runs of data are available. Figure 1, which plots annual per-capita revenues over political regimes in France from 1650 to 1913, indicates that revenues remained low at less than 5 grams of gold per-capita under the fragmented and absolutist regime that lasted through the 1780s. The French Revolution (1789-1799) led to the establishment of a national tax system. Coinciding in time with the Revolutionary and Napoleonic wars, we observe a sharp increase in revenues through 1815, doubling to approximately 10 grams of gold per-capita. Over the next two decades, French revenues leveled out but never fell. Revenues again began to increase in the 1840s – albeit at a slower rate than during Napoleonic times –to almost 20 grams of gold per capita by the end of the 1860s.[29] With the establishment of a centralized and limited regime in 1870, we observe another sharp increase in revenues, doubling over the next four decades to 40 grams of gold per capita by the start of World War I.[30]

The Dutch Republic (1584-1795) was unique among Continental countries in that each of its seven provinces had separate systems of administration, representation, and taxation. Due to data unavailability, I have culled revenue and population figures for the 18th century from Holland, the wealthiest and most heavily populated province. Within Holland itself, the provincial government extended common taxes from urban areas to

[29] As a robustness check I eliminated the "abnormal" year of 1855 – where revenues jumped by roughly 10 grams of gold per capita – in the panel regressions. Also see section 6.
[30] For additional historical details, please refer back to section 2.

rural ones in 1574, marking the establishment of a centralized tax system. The province

greatly increased its collection of per-capita revenues following centralization, suggesting

that this reform reduced local free riding.[31] The Republic remained fiscally fragmented at

the national level, however.

The Dutch case well illustrates why it is difficult at times to draw meaningful

distinctions between the terms "limited" and "absolutist" before the 19th century. Though

constrained, Holland was not limited in the sense of a parliament that controlled the

province's annual budget.[32] [33] I have chosen to designate the political regime in Holland as

centralized and limited.[34] Figure 3, which plots annual per-capita revenues over Dutch

political regimes from 1719 to 1913, highlights the success of Holland's institutional

arrangement, indicating large revenues of around 15 to 20 grams of gold per head.[35] [36]

Fiscal centralization occurred at the national level in 1806. The Kingdom of the

United Netherlands emerged at the end of the Napoleonic era, investing King Willem I

with absolutist powers. As mentioned, data limitations meant that revenues through 1794

came from the province of Holland whereas revenues from 1803 onwards were for the

Netherlands as a whole.[37] We must thus take caution when comparing data for the 18th and

19th centuries. With that caveat in mind, it appears that revenues were nearly halved from

pre-1795 levels to roughly 10 grams of gold per capita with the shift from a centralized and

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[31] See t'Hart (1989), 666-670, t'Hart (1997), 14-16, Fritschy (2003), 67-74, and Van Zanden and Prak (2006), 129-135.

[32] To provide a credible commitment to repay debts, ruling elites invested heavily in government debts, aligning lender and borrower incentives. See t'Hart (1989), 678-679, Fritschy and Van Der Voort (1997), 70-75, 92, t'Hart (1997), 17-27, and Van Zanden and Van Riel (2004), 35.

[33] Another example is the "Age of Liberty" in Sweden from 1718-1772.

[34] Thanks to Wantje Fritschy, Marjolein t'Hart, and Jan Luiten Van Zanden for help on this point. This characterization also matches up with those of Tilly (1990), De Long and Shleifer (1993), Acemoglu, Johnson, and Robinson (2005), and Stasavage (2005).

[35] Also see Van Zanden and Prak (2006), 129-135.

[36] As a robustness check I eliminated the "abnormal" years of 1747-1748 and 1793-1794 – where revenues jumped by roughly 5-7 grams of gold per capita – in the panel regressions. Also see section 6.

[37] There is a gap in the data from 1795-1802.

limited regime to a centralized and absolutist one.[38] [39] The revolutions of 1848 saw the

establishment of a centralized and limited regime in the Netherlands. In turn, Dutch

revenues grew steadily, reaching approximately 15 grams per capita by the 1870s, a level

reminiscent of that of the centralized and limited regime in Holland during the previous

century.[40]

The evidence suggests that fundamental changes in political structures improved

public finances. It is not definitive, however. Economic and political factors besides

regime type may have also influenced public revenues from 1650 to 1913. To account for

such possibilities, I now turn to a more rigorous quantitative analysis.

5. Estimating the Effect of Political Regimes

The data set that I have assembled allows for statistical tests of the argument that

political transformations towards centralized and limited regimes were associated with

significant increases in per-capita revenues. There are two components of this analysis:

panel regressions and structural breaks. The regressions incorporate a relevant set of

control variables to test whether the positive effects of political regimes continue to hold.

Controls also help to account for potential regime misclassifications, since no matter how

diligently one tries, it is impossible to eliminate idiosyncratic elements from the dating

procedures.

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[38] Upon its establishment, the Kingdom of the United Netherlands included southern provinces like Belgium, which declared independence in 1831. To compute Dutch revenues, I netted out the contributions of such regions, resulting in the trough from 1816-1831 observed in figure 2. For additional details, please see appendix 2.
[39] In the Republic, all provinces were required to pay a quota amount to finance collective military expenditures. As the most important among them, Holland was responsible for almost 60 percent of the total burden, resulting in higher per-capita taxes. Indeed, Van Zanden and Van Riel (2004) argue that other provinces frequently shirked their financial obligations and free-rode on Holland's defense contributions.
[40] For additional historical details, please refer back to section 2.

Though the political transformations that I have identified correspond with exogenously given historical events, they are endogenous in the sense that I have chosen the precise years to mark regimes as centralized and as limited. As an alternative to the panel regressions, I employ structural breaks tests in the spirit of Willard, Guinnane, and Rosen (1996), Brown and Burdekin (2000), Sussman and Yafeh (2000), and Mauro, Sussman, and Yafeh (2002) that assume no a priori knowledge of possible major turning points. Hence, I am able to identify whether political transformations were associated with breaks in the revenue series.

5.1 Panel Regressions

Panel data estimations increase informative content by combining variations across time and place. The estimation technique used here – OLS with panel-corrected standard errors, or PCSE – is common for quantitative endeavors into comparative political economy.[41] I look to the coefficients on dummy variables for centralized and absolutist regimes and centralized and limited ones relative to fragmented and absolutist regimes to estimate the effect of political regime type on resulting per-capita revenue levels. Recall from the introduction that – though institutional reforms in Europe occurred gradually over time – an influential strand of the historical literature highlights two distinct transformations: fiscal centralization and limited government. I do not wish to estimate the magnitudes of changes in public revenue in the weeks and months following such structural shifts, but rather to capture steady-state yield levels associated with different

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[41] Running the regressions with feasible generalized least squares (FGLS) generated very similar results. Use of ln (per-capita revenues) as the dependent variable and ln (per-capita GDP) or urbanization rates as independent variables did not change the findings, either.

sorts of political regimes. The dummy variable approach is well suited for the present inquiry because it provides a clear and simple method to do so.

Presumably, economic growth increased tax bases, enabling sovereigns to collect larger revenues. Many studies of the late 19th century have employed measures of foreign trade as approximates of national output.[42] Systematic trade deficit and export series from 1650 onwards were not available for each of the sample countries considered here, however. Scholars such as Hohenberg and Lees (1985), Bairoch (1988), and Acemoglu, Johnson, and Robinson (2002, 2005) have argued that changes in urbanization rates and per-capita income within European countries coincided closely for the period under consideration. Following these authors, I proxied for per-capita GDP by constructing a variable that calculated the urban population as a percentage of the total population annually for each sample polity. As a robustness check, I made use of Maddison's (2003) per-capita GDP figures.

Another factor affecting public revenues may have been international and domestic political conflicts. Studying financial markets, Ferguson (2006) claims that through 1880 political events mattered more to investors than economic ones because there was a greater amount of regular information available about them. He argues that both wars and revolutions decreased tax revenues.[43] That may not always be the case, however. Scholars such as Tilly (1990), Hoffman and Norberg (1994), Epstein (2000), O'Brien (2001), Rosenthal and Wong (2007), and others have argued that military competition between sovereigns fostered financial innovations that enabled them to raise greater and greater

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[42] See for instance Mauro, Sussman and Yafeh (2002), Obstfeld and Taylor (2003), and Ferguson and Schularick (2006).
[43] Sussman and Yafeh (2000, 2006) also find that financial markets responded quickly to civil unrest and wars in 18th century Britain and Meiji-era Japan.

revenue amounts. One might imagine that revenues would have returned to pre-war levels as soon as the conflict in question had ended. Yet structural changes brought about by innovations would have meant that revenues remained permanently higher. Whether a sovereign won or lost a war would have also influenced revenue levels. Presumably, the defeated country took more casualties, reducing its tax base. The same sorts of logic hold for domestic conflicts, although we might expect that then the consequences would have been more purely disruptive in nature.

Given these possibilities, I have chosen a clear and simple method to assess the impact of warfare on revenues, incorporating a dummy variable that identified each year(s) from 1650 to 1913 in which sample countries were engaged in European military conflicts. To measure the impact of political turbulence, I added a dummy variable that took a value of one for each year(s) of civil war, coup, or revolution within polities over the same period. Country-specific fixed effects were used to capture constant but unmeasured features of sovereigns and time fixed effects to capture the impact of common European (i.e. economic, political, social, and technological) events particular to certain years.[44]

Use of per-capita revenues as the dependent variable presents two problems. The first is that it does not control for serial correlation. The second is that urbanization may have facilitated tax collection by sovereigns, calling into question its value as an instrument to proxy for per-capita GDP on the right-hand side of the regression equation. To address such issues, the best solution would be to employ a yearly ratio of public revenues to GDP as the dependent variable. Yet reliable GDP figures are difficult to come by before 1820. I thus constructed a similar ratio using urbanization rates. For robustness, the second specification substituted Maddison's (2003) real per-capita figures into the

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[44] Including a time trend rather than yearly fixed effects did not significantly change any of the results.

denominator. Note that use of real GDP data further reduced the potential effects of inflation, which were already diminished by converting revenue figures into grams of gold.[45]

As a last point, we must remember that the regression analysis biases against finding any significant relationship between political regimes and public revenues by assuming that it is in fact possible to neatly disentangle such regimes from economic fundamentals and political conflicts. Theory suggests that regime type influenced all of these factors, however, meaning that the coefficients on the control variables rather than those on the regime ones themselves may capture some of the positive effects of political reforms. Hence, we should interpret the regime coefficients as downward estimates of the impact of political regimes on public finances.[46]

5.2 Structural Breaks Analysis

The procedure, based on Bai and Perron (2003), identifies multiple structural changes in means while allowing for serial correlation. It selects a maximum number of "best" breaks subject to a minimum number of observations between data segments.[47] As Willard, Guinnane, and Rosen (1996) discuss, there is always a trade-off in determining parameter values. A minimum space of two observations eliminates the chance of confounding effects but ends up analyzing blips rather than turning points.[48] On the other hand, extended spans increase the likelihood of missing important shifts. After some experimentation, I have selected the best four breaks with at least 20 observations (i.e. 20

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[45] Wage series were another possible control. While the Global Price and Income History Group website lists a wide array of such data, the coverage did not meet the precise demands of this study, however.
[46] For additional details about the control variables, please see appendix 3.
[47] The Bai-Perron approach thus improves upon the "moving windows" technique that relies on sequential single structural change methods. Both suggested similar break points, however.
[48] I did not analyze short-lived breaks since I am interested in persistent changes.

years) per segment. Though some level of arbitrariness was inevitable in this choice, the
findings are quite robust to changes in parameter values.

6. Statistical Evidence

Table 4, which displays the results of the panel regressions, reveals that centralized
and absolutist regimes and centralized and limited ones were associated with significantly
higher per-capita revenue levels than fragmented and absolutist regimes. The findings hold
whether I incorporate yearly ratios of public revenues to urbanization rates (specification
1) or per-capita GDP figures (specification 2) as the dependent variable. They also remain
robust if both sets of countries are included or just the first group.

What about the other control variables? Warfare was associated with significant
increases in per-capita revenues, suggesting that central governments intensified collection
efforts in times of international conflict. Civil wars, coups, and revolutions, on the other
hand, were associated with a decrease in revenues, suggesting that domestic turmoil made
it difficult for sovereigns to gather taxes. The regression results also hold for robustness
checks that eliminated "abnormal" years of data, restricted the sample to Continental
countries, and used alternative forms of regime dating.[49] [50]

Before moving to the structural breaks analysis, it is worthwhile to reconsider how
the particular way in which European history unfolded may have influenced the panel

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[49] An "abnormal" data year was one for which there was an increase in per-capita revenues of five or more
grams of gold from the previous year that was not sustained over the next five years. In particular, these were
France, 1855, the Netherlands, 1747-1748 and 1793-1794, and Austria, 1867.

[50] I have dated limited regimes in two variations on the benchmark definition. Taxpayers may have been
unsure at the outset about how long a newly established liberal regime would last. Indeed, one might argue
that individuals required time to see whether the crown would actually honor its "credible" commitment. The
first alternative thus lagged the start years for centralized and limited regimes by five and ten years,
respectively. The second classified "borderline" political regimes in France (1830-1847) and Denmark
(1848-1865) as centralized and limited rather than as centralized and absolutist. Also see section 2 and
appendix 1.

findings. The rise of limited government often took place after the start of the Industrial Revolution on the Continent, which was associated with a rapid increase in per-capita incomes during the 19th century.[51] Indeed, centralized and limited regimes existed when Europe was at its wealthiest over the sample period. I have controlled for possible income effects in the regressions by using revenue ratios with urbanization rates or per-capita GDP figures in the denominator as dependent variables and yearly fixed effects as independent ones.

Though it might also be useful to run the same set of regressions from 1650 to 1799, thereby reducing the impact of the Industrial Revolution, the vast majority of regime shifts occurred during the 1800s, making this approach impractical. A second glance at the transformations that occurred prior to the 19th century proves helpful in this regard, however. Recall from section 4 that per-capita revenues increased dramatically in the years that followed fiscal centralization in France in 1790 (also see figure 1). Another look at the Dutch case is valuable as well, since the Netherlands was the only sample country for which there was a shift from a centralized and limited regime "back" to an absolutist one. Figure 2 suggests a sharp drop in per-capita revenues associated with this political change, which occurred at the start of the 1800s. The English case is also instructive. Figure 3, which plots annual per-capita revenues over political regimes in Britain from 1650 to 1750, indicates that revenues roughly doubled in the years following the establishment of limited government in 1688. In total, the pre-1800 evidence further suggests that political regimes had important effects on public revenues independent of per-capita income growth associated with the Industrial Revolution.

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[51] See Mokyr (1984).

Due to the imperfect nature of the data, we should interpret the structural change findings cautiously. With that said, table 5 displays the results of individual breaks tests that regress the annual revenue-to-GDP ratio on yearly lags of the dependent variable, revealing close relationships between major turning points and political events.[52] The structural analysis thus supports the results of the panel regressions that institutional transformations mattered. In England, the break that occurred in 1688 coincided with the Glorious Revolution and the establishment of limited government. Other turning points were associated with warfare (1711) and the start (1796) and end (1816) of the Napoleonic era. In France, the best breaks were associated with the ascension of Louis XVI (1774), fiscal centralization (1793), the end of the Napoleonic era (1818), and limited government (1869). In Prussia, we observe turning points with warfare (1713 and 1773), fiscal centralization (1813), and limited government (1847).

As described in section 4, data limitations meant that the Dutch per-capita revenue series was comprised of data for Holland through 1794 and for the Netherlands as a whole from 1803 onwards. The resulting gap (1795-1802) divides the sample and makes it impossible to identify a potential turning point around the time of fiscal centralization in 1806. Hence, I performed separate tests for the best one to two breaks that occurred during the 18th and 19th centuries each. Table 5 displays turning points associated with warfare and political turmoil (1745) during the 1700s and the Belgian Revolution (1830) and limited government (1850) during the 1800s.

There is a similar lack of data in Spain from 1789 to 1812. I thus restricted structural tests to the best three breaks over the 19th century, when both Spanish political

[52] Tests that used ln (per-capita revenues) or annual revenue-to-urbanization ratios as dependent variables delivered similar results.

transformations occurred. Table 7 indicates a turning point in 1838 that preceded fiscal

centralization in 1844, another with the collapse of the government and subsequent

Glorious Revolution during the 1860s, and a third in 1883 after the establishment of

limited government in 1876.[53]

7. Conclusion

This paper examines the relationship between political regimes and public revenues

in European countries from 1650 to 1913. Fiscal centralization resolved the problem of

local free riding by granting undivided tax authority to sovereigns. Limited government

enabled crowns to make credible commitments to sound policies by reducing executive

discretion over spending. The results indicate that political regimes mattered. I find

significant increases in per-capita revenue levels associated with both centralized and

limited regimes relative to fragmented and absolutist ones, even after controlling for

economic factors and political risks. Structural breaks tests that assume no a priori

knowledge of possible turning points in the revenue series support these conclusions.

The rise in per-capita revenues that we observe after limited government suggests

that European sovereigns faced serious issues of trust. In this sense, the results concur with

the conventional wisdom that limited government counts by enabling rulers to make a

credible commitment to sound fiscal policies.[54] Yet the findings also highlight the role of

fiscal centralization. States are not necessarily born strong, as much of the current literature

assumes. Indeed, in Europe fragmentation created just as many headaches as absolutism,

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[53] I have selected the best single breaks for group 2 countries since in these polities fiscal centralization and/or limited government either took place before systematic data series became available or did not occur at all through the start of World War I. These turning points were Austria, 1867; Belgium, 1850; Denmark, 1893; Italy, 1892; Portugal, 1890; and Sweden, no break.
[54] For a list of relevant citations, please see section 1.

suggesting that centralization is also necessary to develop efficient systems of public

finance. One interesting topic for future study would be a detailed quantitative analysis of

the effects of tax variations and free riding within Ancien Régime European polities.[55]

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[55] To complement the work on revenues, my current research examines the relationship between political regimes, gross expenditures, and spending patterns in Europe for the same period.

Appendix 1. Political Regimes

I define fiscal centralization to have been completed the year that the national government first secured its revenues through a tax system with uniform rates throughout the country. Similarly, I define limited government to have emerged the year in which parliament gained the stable constitutional right to control the sovereign's annual budget. To meet my criteria, parliament's power had to hold for at least two consecutive decades. For additional details, please see section 2 of the text.

Austria. Defeat by France in 1805 led to the replacement of Old Regime fiscal structures in Austria, though Napoleonic-era administrative reforms were more comprehensive for neighbors such as Prussia.[56] The Austrian government became increasingly reactionary from 1815 onwards and a liberal revolution failed in 1848. The years 1860 and 1861 saw progress towards a constitutional monarchy. Fundamental change was hindered by conflicts between western elites in Germany and eastern ones in Hungary, however. The status quo regime, characterized by a strong executive, remained in place until the demise of the Empire in 1918.[57]

Belgium. The First French Republic invaded and annexed Belgium in 1795. Thereafter, fiscal centralization proceeded under Napoleon as for the rest of France. In 1830, Belgium – then part of the Kingdom of the United Netherlands, established at the Napoleonic era's end – declared independence from Dutch rule. Founded as a constitutional monarchy, Belgium became an independent sovereign in 1831.[58]

Denmark. Public finances were centralized during the great agrarian reforms of the 1780s.[59] King Frederick VII declared himself a constitutional monarch in 1848 and a liberal constitution took effect the following year. The 1848 regime endured for less than two decades, however.[60] In 1866, the constitution was amended and absolutism was restored. For one, the crown was able to appoint one-fourth of parliament's members. The revised constitution remained in force until 1915.[61]

England (Britain). [62] Fiscal centralization occurred during medieval times in England: both Brewer (1989) and Sacks (1994) argue that England possessed strong national institutions by the end of the 12th century. I thereby date fiscal centralization to the arrival of the Normans (1066), which greatly contributed to the establishment of uniform rule by undercutting provincial authority.[63] Following North and Weingast (1989), the Glorious Revolution (1688) established parliament's power of the purse, granting it a regular veto over crown expenditures along with the right to monitor spending.[64] For additional details, please see sections 1 and 2 of the text.

France. Please see text, sections 2 and 4.

Italy. Sovereign borders changed considerably over time on the Italian peninsula. Indeed, "Italy" was a geographical rather than political expression well through the 19th century.[65] Fiscal fragmentation was a matter of jurisdictional divisions within independent polities as well as external ones between them.[66] Administrative reforms including fiscal centralization were carried out by Napoleon at the start of the 1800s. Decades later, attempts to implement limited government met with varying degrees of success. Bids to enact liberal constitutions in 1848 in Naples and the Papal States failed, for instance. King Carlo Alberto succeeded in establishing a constitutional monarchy in Piedmont, however, which was to form the institutional basis for the Kingdom of Italy in 1861. Unification of public finances also followed the establishment of the Kingdom.[67]

The Netherlands. Please see text, sections 2 and 4.

Portugal. Though Napoleon invaded Portugal in 1807, he was unable to implement wide-reaching economic and political reforms. A liberal revolution in 1820 failed, and it was not until 1832 that comprehensive changes including fiscal centralization were achieved. The Revolutionary era, which lasted for 31 years, was brought to an end with the establishment of a relatively stable constitutional monarchy in 1851.[68] For a list of 19th century Portuguese revolutions, coups, and civil wars, please see appendix 3.

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[56] Godechot, Hyslop, and Dowd (1971), 180-181, 227-228, Breuilly (2002), 3, and Beller (2006), 86-104, 110-116.

[57] Macartney (1978), 152-156, Sked (2001), 89-118, 177, 182, Breuilly (2002), 65, and Beller (2006), 115, 126, 136.

[58] Holtman (1967), 100, Sutherland (1986), 344-346, and Cook (2002), 49-50.

[59] Following Jespersen (2004), I use the year 1786. See page 133.

[60] Classification of the political regime in Denmark from 1848-1865 as centralized and limited did not affect the regression results. Also see section 6.

[61] Jones (1986), 36-37, 60, and Jesperson (2004).

[62] Acts of Union assimilated England with Wales in 1536, with Scotland in 1707, and with Ireland in 1800. In 1921, Ireland was partitioned into two states, the Irish Free State and Northern Ireland, which remains part of the United Kingdom. Brown (1991), 13-16, and Daunton (1995), 271-273. For additional details, please see appendix 2.

[63] Brewer (1989), 3-7, 143-154, and Sacks (1994), 14-23.

[64] North and Weingast (1989) base their hypothesis on a variety of secondary works. See among others Dickson (1967), 3-14, Jones (1972), 3-17, 311-331, Stone (1979), 1-17, and Hill (1980), 191-207, 235-248. Note that O'Brien (2001) makes a convincing argument that the crucial juncture in English financial history was the civil war of the 1640s rather than the Glorious Revolution. Also see Clark (1996), who claims that secure property rights existed in England from at least 1600.

[65] During the 18th century, the Peninsula was divided into the following autonomous polities: the Duchies of Massa and Carrara, Modena, Parma, and Tuscany, the Kingdoms of Lombardy, Naples, Piedmont, Sardinia, and Sicily, the Papal States, and the Republics of Genoa, Lucca, and Venice. See Hearder (1983), 309, Carpanetto and Ricuperati (1987), 337, and Toniolo (1990), 49.

[66] For instance, in Piedmont the monarch ruled separately over the duchies of Savoy, Aosta, Saluzzo, Monferrat, the principalities of Oneglia and Piedmont, the county of Nice, and later the Kingdom of Sardinia. See Woolf (1979), 63-66.

[67] Godechot, Hyslop, and Dowd (1971), 181, Hearder (1983), 51-52, 60-61, 101-102, 113-114, 130-134, 147-148, 232-236, 244-246, and Toniolo (2000), 45-56.

[68] Birmingham (1993), 104-105, 125, Feijo (1993), 6, 10-11, 14-16, 23, and Mata and Valerio (1993), 142-143.

Prussia. Following French defeat in the Battle of Jena-Auerstedt in 1806, the Prussian government hastened to carry out economic and political reforms including fiscal centralization.[69] Pressure to furnish a liberal constitution grew over the first half of the 19th century, which King Freidrich Wilhelm IV granted during the Year of Revolutions in 1848. Tilly (1966) claims that the Prussian executive faced binding constraints thereafter. As elsewhere on the Continent, however, the young constitutional regime was imperfect. In the 1860s, for instance, the Prussian government operated without legislative approval of the military budget.[70]

Spain. In the early 1700s, Bourbon reformers strengthened the power of the crown in Castile, imposing new taxes on Spain's eastern provinces. Tax rates varied across regions, however, depending upon the particular bargain made. Thus, I view the Bourbon tax reforms as another example of tax particularism rather than fiscal centralization.[71] Napoleon invaded Spain in 1808, attempting to convert it into a satellite state. The French were unable to generate modern laws and administrative practices, however. Fiscal centralization did not occur until 1844 amidst a "moderate" decade of institutional reforms. From 1808 to 1876, civil unrest created political chaos in Spain. After decades of failed constitutional initiatives, a stable constitutional monarchy was established in 1876, lasting until a military coup in 1923.[72] For a list of 19th century Spanish revolutions, coups, and civil wars, please see appendix 3.

Sweden. An anachronistic tax system remained in Sweden through the mid-1800s. Indeed, final repeal of ancient land taxes did not occur until 1903. I date fiscal centralization to the far-ranging "departmental" reforms of 1840 that strengthened the central government.[73] The constitution of 1809 which was intended to limit the power of the monarch did not bring fundamental change. The king retained absolute veto power and parliament met only once each five years. Nor were liberal reforms implemented during the Year of Revolutions in 1848: Sweden remained cautious and conservative through the 1860s. I date limited government to 1866, when Prime Minister De Greer led a successful effort to dissolve the Diet of Estates and introduce a bicameral legislature.[74]

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[69] Even prior to fiscal centralization, contemporaries considered the Prussian tax system one of the most efficient in Europe. See Kiser and Schneider (1994).

[70] Tilly (1966), 486-493, Godechot, Hyslop, and Dowd (1971), Woolf (1991), and Breuilly (2003), 131-132.

[71] For additional details, please see section 2 of the text.

[72] Carr (1966), Vicens Vive (1969), Lynch (1989), Tortella (2000), 27-32, 173-192, and Tortella and Comìn (2001), 155-165.

[73] Scott (1988), 396, and Magnusson (2000), 57, 73, 188.

[74] Oakley (1966), 203, Scott (1988), 379, 388, Magnusson (2002), 67-70, and Nordstrom (2002), 66-67.

Appendix 2. Data Sources

Revenue figures concern income from taxation collected by sovereigns. Loan income has been subtracted whenever possible. Intermediate years for revenues and populations were linearly interpolated. For additional details, please see section 3 of the text.

Austria. REV1 is central government revenue, 1781-1913, from Mitchell (2003). The series covers Austria-Hungary through 1866 and Cisleithania from 1867 onwards.[75] Total yields are for fiscal receipts only to 1864 and ordinary receipts from 1865-1875. From 1876 onwards they include certain extraordinary receipts. Loan proceeds are never included. The series of Austrian central government revenues consists of REV1: 1818-1910. Years 1857-1858 and 1872-1873 were interpolated.

POP1 is population of Austria for 1818, 1821, 1824, 1827, 1830, 1834, 1837, 1840, 1843, 1846, 1851, 1857, 1869, 1880, 1890, 1900, 1910, from Mitchell (2003), 3. Figures are for the civil population of Cisleithania. POP2 is population of Hungary for 1817, 1843, 1846, 1850, 1857, 1869, from Mitchell (2003), 4. Figures are for Transleithania. The Austrian population series consists of POP1 + POP2: 1818-1867, POP1: 1867-1910.[76]

The gulden became the general monetary unit in Austria after the War of Austrian Succession and was set at the Convention of 1753 with one gulden equal to sixty kreuzer. Austria-Hungary decimalized in 1857, adopting a system of one gulden to one hundred kreuzer. I have converted Austrian revenues into grams of gold as follows. First, revenues in gulden were converted into revenues into kreuzer by multiplying by 60. Second, revenues in kreuzer were transformed into revenues in silver by multiplying by this exchange rate, provided courtesy of Giovanni Federico. Third, revenues in silver were transformed into revenues in gold by dividing by the silver for gold price ratio according to Officer (2006). Lastly, I have divided by the Austrian population to find per-capita Austrian revenues in grams of gold. The kreuzer-silver exchange rate series ended in the 1850s and the kroner-pounds one began. Hence, I have converted Austrian revenues into grams of gold from 1857 onwards as follows. First, revenues in kronen were transformed into revenues in pounds by multiplying by the yearly exchange rate, provided courtesy of Giovanni Federico. Second, revenues in pounds were transformed into revenues in grams of gold by dividing by the market price of gold in ounces. Third, revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35. Lastly, I have divided by the Austrian population to find per-capita Austrian revenues in grams of gold.

Belgium. REV1 is central government revenue, 1831-1912, from Mitchell (2003). Data are unavailable for 1913. The series of Belgian central government revenues consists of REV1: 1831-1912.

POP1 is population of Belgium from Mitchell (2003), 3. The Belgian population series consists of POP1: 1816, 1831, 1846, 1856, 1866, 1880, 1890, 1910. All other years have been interpolated.

Belgium adopted the French monetary system during French Revolutionary and Napoleonic times with one Belgian franc equal to one French franc.[77] Hence, I have used the Paris market price of gold in francs per gram courtesy of Jean-Laurent Rosenthal.

Denmark. REV1 is central government revenue, 1853-1913, from Mitchell (2003). Figures include the Duchies of Schleswig, Holstein, and Lauenburg from 1853-1864. The series of Danish central government revenues consists of REV1: 1873-1913.[78]

POP1 is the population of Denmark from Mitchell (2003), 3. The Danish population series consists of POP1: 1769, 1787, 1801, 1834, 1840, 1845, 1850, 1855, 1860, 1870, 1880, 1890, 1901, 1906, 1911. All other years have been interpolated.

I have converted Danish revenues into grams of gold in the following way. Denmark joined the Scandinavian Monetary Union in 1872 and adopted the gold standard in 1873 at 1 Pound Sterling = 18.1595 Kroner. I first transformed kroner into pounds by dividing by 18.1595. I then transformed Danish revenues in pounds into Danish revenues in gold by dividing by the London market price of gold in pounds per fine ounce taken from Officer (2006).[79] Lastly, I have divided by the Danish population to find per-capita Danish revenues in grams of gold.

England (Britain). REV1 is total revenue to the English crown, 1650-1824, from O'Brien (1995). REV2 is net receipts of the public income for Great Britain, 1692-1801, from Mitchell (1988). REV3 is central government revenue for Great Britain, 1750-1801, and for the United Kingdom, 1802-1913, from Mitchell (2003). The series of British central government revenues consists of REV1: 1650-1691; REV2: 1692-1749; REV3: 1750-1913. Years 1654 and 1660 have been interpolated.

POP1 is population of England, from Mitchell (1988), 7-8.[80] POP2 is population of Wales for 1701, 1751, 1781, 1801, 1831, from Deane and Cole (1967), 103. POP3 is population of Scotland. The 1650 figure is from De Vries (1984), 36; the 1701 figure from Brown (1991), 33; and the 1755 figure from Mitchell (1988), 8. POP5 is the estimated mid-year home population of the British Isles, from

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[75] Lombardy is included through 1858 and Venetia through 1865.

[76] Revenue data for Austria covers Austria-Hungary through 1866 and Cisleithania thereafter. Hence, to compute per-capita figures I have divided by the sum of the populations for Austria and Hungary from 1818-1866 and by the population for Austria (i.e. Cisleithania) from 1867-1913.

[77] Morys (2006), 38-44.

[78] While the *European State Finance Database* lists revenue data for Denmark from 1710-1806, there were no series available from 1806-1840.

[79] Danish revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35.

[80] These figures do not include Wales. See Wrigley and Schofield (1981), 10.

Mitchell (1988), 11-13. The British population series consists of POP1: 1650-1691; POP1 + POP2: 1692-1700; POP1 + POP2 + POP3: 1701-1800; POP5: 1801-1913.[81]

The British official price of gold is given in pounds per fine ounce, 1650-1717, and the London market price of gold in pounds per fine ounce, 1718-1913, are taken from Officer (2006).[82] With the exception of French Revolutionary and Napoleonic times, both series are nearly identical.

France. REV1 is ordinary revenues of the French monarchy, 1650-1695, from Bonney (1995b). REV2 is total royal revenue in France from various sources converted into livres tournois, 1660-1775, from Bonney (1995c). REV3 is French ordinary revenue, 1727-1814, from Bonney (1995d). REV4 is French revenue, 1650-1870, courtesy of Francois Velde. REV5 is ordinary central government revenue, 1815-1913, from Mitchell (2003). REV6 is extraordinary central government revenue, 1815-1890, from *Annuaire Statistique* (1966). The series of French central government revenues consists of REV1: 1650-1656, 1662; REV2: 1661-1703, 1705-1715, 1727-1750, 1757-1758, 1761, 1763, 1773-1774; REV3: 1751-1754, 1764-1765, 1768, 1780-1781, 1788-1796, 1806-1813; REV4: 1716-1726, 1759-1760, 1766-1767, 1769, 1772, 1775-1779, 1782-1787, 1791-1793, 1796-1805, 1814; REV5 + REV6: 1815-1890; REV5: 1891-1913. Years 1657-1660, 1755-1756, 1762, and 1770-1771 have been interpolated.

POP1 is population of France from Dupaquier (1988), volume 2, 60. POP2 is population of France from Mathias and O'Brien (1977). POP3 is population of France from Blayo and Henry (1975), 97. POP4 is population of France at censuses from Mitchell (2003). The French population series consists of POP1: 1650, 1670, 1680, 1690, 1710; POP2: 1715, 1725, 1730, 1735; POP3: 1740, 1745, 1750, 1755, 1760, 1765, 1770, 1775-1776, 1780-1781, 1785-1786, 1790-1791, 1795-1796, 1800-1801, 1805-1806, 1810-1811, 1815-1816, 1820-1821, 1825-1826, 1830-1831, 1835-1836, 1840-1841, 1845-1846, 1850-1851, 1855-1856, 1860-1861; POP4: 1866, 1872, 1876, 1881, 1886, 1891, 1896, 1901, 1906, 1911. All other years have been interpolated.

The Paris market price of gold in francs per gram, 1650-1913, is courtesy of Jean-Laurent Rosenthal.

Italy. REV1 is central government revenue, 1862-1913, from Mitchell (2003). Annual data are unavailable for 1884-1885. The series of Italian central government revenues consists of REV1: 1862-1913.

POP1 is population of Italy from Mitchell (2003), 6. The Italian population series consists of POP1: 1861, 1871, 1881, 1901, 1911. All other years have been interpolated.

The lira was adopted as the monetary unit of Italy in 1862 with one lira equal to one French franc.[83] Hence, I have used the Paris market price of gold in francs per gram courtesy of Jean-Laurent Rosenthal.

The Netherlands. Due to data unavailability, public revenues for the Dutch Republic have been culled from Holland, 1719-1794.[84] For additional details, please see section 4 of the text. REV1 is public revenue in Holland, 1668-1794, from Fritschy, Horlings, Liesker, and Van Der Ent (1995). REV2 is income of the Batavian Republic and its successors, 1803-1810, 1814, from Van Zanden and Van Riel (2004), 49. REV3 is income during the reign of Willem I, 1814, 1821, 1826, 1831, 1836, 1840, from Van Zanden and Van Riel (2004), 99. Years 1816-1830 include the Southern Netherlands (i.e. Belgium and Luxembourg), income shares of which may be found in Van Zanden (1996), 69. I have calculated total revenues for the Netherlands over this period by subtracting the percentage contribution of Southern provinces. REV4 is central government revenue, 1845-1913, from Mitchell (2003). The series of Dutch central government revenues consists of REV1: 1719-1794; REV2: 1803-1810; REV3: 1814-1840; REV4: 1845-1913. Years 1841-1844 have been interpolated.

POP1 is population of Holland courtesy of Jan Luiten van Zanden. POP2 is population of the Netherlands from De Vries (1984), 36. POP3 is population of the Netherlands from Mitchell (2003). The Dutch population series from 1650-1913 consists of POP1: 1650-1794; POP2: 1800; POP3: 1816, 1829, 1839, 1849, 1859, 1869, 1879, 1889, 1899, 1909. All other years have been interpolated. Consistent with the revenue figures, population numbers exclude the Southern Netherlands.

The Dutch market price of gold in guilders per gram, 1719-1913, is courtesy of W.L. Korthals Altes. Years 1749 and 1759 are missing.

Portugal. REV1 is effective central government revenue, 1852-1913, from Mata (1993). Figures do not include revenues received from loans.[85] The series of Portuguese central government revenues consists of REV1: 1852-1913.

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[81] We must distinguish between institutional innovations in England itself and for Britain as a whole. I have used the population for the relevant political entities when calculating per-capita figures to control for such differences. As discussed in appendix 1, Acts of Union assimilated England with Wales in 1536, with Scotland in 1707, and with Ireland in 1800. From 1650-1691, revenue data for the English crown was used since British data was unavailable. To convert into per-capita terms, I have divided by only the English population. Due to data unavailability, neither Wales nor Scotland was included, though at the time the English crown collected revenues from both domains. By making the pre-1692 population denominator smaller than it actually was, both decisions bias against the hypotheses that limited government resulted in an increase in revenues. Revenue data are for Great Britain (i.e., England, Scotland, and Wales) from 1692-1801 and for the United Kingdom (i.e. Great Britain and Ireland) from 1802-1913. Accordingly, population figures were used for England, Scotland, and Wales from 1692-1801, and England, Scotland, Wales, and Ireland from 1802-1913.

[82] British revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35.

[83] See the Global Financial Database.

[84] In turn, I have divided by Holland's population to compute per-capita revenues over this period.

[85] This data was supplied courtesy of Rui Esteves. Figures are for fiscal years 1851-1852, 1852-1853, and so on. Hence, I have taken an average of the two surrounding fiscal years to compute annual revenues.

POP1 is population of Portugal from Mitchell (2003), 7.[86] The Portuguese population series consists of POP1: 1841, 1854, 1858, 1861, 1864, 1878, 1890, 1900, 1911. All other years have been interpolated.

I have converted Portuguese revenues into grams of gold from 1852-1913 in the following way. First, revenues in contos were transformed into mil-reis by multiplying by 1000. Second, revenues in mil-reis were transformed into revenues in pounds by dividing by this exchange rate. Yearly averages of monthly exchange rates were used. Third, revenues in pounds were transformed into revenues in grams of gold by dividing by the market price of gold in ounces. Fourth, revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35. Lastly, I have divided by the Portuguese population to find per-capita Portuguese revenues in grams of gold.

Prussia. REV1 is net revenues, 1688-1806, from Korner (1995). For 1688-1713, revenue figures are derived from the military treasury only. REV2 is total ordinary revenues, 1807-1913, from Mauersberg (1988), 125.[87] The series of Prussian central government revenues consists of REV1: 1688-1806; REV2: 1821, 1829, 1841, 1847, 1850, 1855, 1860, 1867, 1868, 1870, 1874, 1875, 1880, 1885, 1890, 1900, 1905, 1910. All other years have been interpolated.

POP1 is population of Prussia courtesy of Peter Brecke. Note that these figures incorporate Prussian territorial changes over the 17th to 19th centuries as best as possible. POP2 is population of Prussia from Mauersberg (1988), 127. The Prussian population series consists of POP1: 1688-1865; POP2: 1870, 1874, 1875, 1880, 1885, 1890, 1895, 1900, 1905, 1910. All other years have been linearly interpolated.

I have converted Prussian revenues into grams of gold as follows. Thaler units were first transformed into silver ones by multiplying by 16.667.[88] I then transformed revenues from silver units to gold ones by dividing by the silver for gold price ratio found in Officer (2006). Lastly, I divided by the Prussian population to find per-capita revenues in grams of gold. Note that revenues were given in marks from 1857-1913, where one mark was worth one-third of a thaler following de Vanssay (1999). Hence, for this period I transformed mark units into thaler ones by dividing by 3 before proceeding through the steps just described.

Spain. REV1 is ordinary and extraordinary revenues, 1703, 1713, Lynch (1989), 61. REV2 is ordinary and extraordinary revenue categories to the Spanish crown, 1753-1788, from Gelabert (1995). REV3 is Ingresos Totales del Estado, 1801-1842, Carreras and Tafunell (2006). REV4 is Derechos Reconocidos y Liquidados Totales, 1845-1913, Carreras and Tafunell (2006). The series of Spanish central government revenues from consists of REV1: 1703-1713; REV2: 1753-1788; REV3: 1801-1842; REV4: 1845-1913. Years 1714-1752 have been interpolated.

POP1 is population of Spain from De Vries (1984), 36. POP2 is population of Spain from Nogal and Prados de la Escosura (2006), 76. POP3 is population of Spain from Lynch (1989), 8, 116-117. POP4 is population of Spain from Mitchell (2003). The Spanish population series consists of POP1: 1650, 1700, 1850; POP2: 1750, 1787; POP3: 1717, 1797; POP4: 1768, 1857, 1860, 1877, 1887, 1897, 1900, 1910, 1920. All other years have been interpolated.

The Spanish market price of gold or silver is not available over the 16th to 19th centuries because buying and selling bullion outside the Spanish mint was forbidden.[89] Hence, I have converted Spanish revenues into grams of gold as follows. First, the pounds for pesos exchange rate was transformed into pounds for pesetas by multiplying by 5.[90] Second, revenues in pesetas were transformed into revenues in pounds by dividing by this exchange rate. Yearly averages of monthly exchange rates were used. Third, revenues in pounds were transformed into revenues in grams of gold by dividing by the market price of gold in ounces. Fourth, revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35. Lastly, I have divided by the Spanish population to find per-capita revenues in grams of gold.

Sweden. REV1 is central government revenue, 1881-1913, from Mitchell (2003). The series of Swedish central government revenues consists of REV1: 1881-1913.[91]

POP1 is the population of Sweden from Mitchell (2003), 7. The Swedish population series consists of POP1: 1750, 1760, 1770, 1775, 1780, 1785, 1790, 1795, 1800, 1805, 1810, 1815, 1820, 1825, 1830, 1835, 1840, 1845, 1850, 1855, 1860, 1870, 1880, 1890, 1900, 1910. All other years have been linearly interpolated.

I have converted Swedish revenues into grams of gold from 1881-1913 in the following way. As for Denmark, Sweden adopted the gold standard in 1873 as part of the Scandinavian Monetary Union with 1 Pound Sterling = 18.1595 Kronor. I first transformed kroner into pounds by dividing by 18.1595. I then transformed Swedish revenues in pounds into Swedish revenues in gold by dividing by the London market price of gold in pounds per fine ounce taken from Officer (2006).[92] Lastly, I have divided by the Swedish population to find per-capita Swedish revenues in grams of gold.

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[86] The Azores and Maderia are included from 1841 onwards.
[87] This data was supplied courtesy of Mark Spoerer.
[88] Thanks to Giovanni Federico for alerting me to this conversion.
[89] Thanks to Pilar Nogues for alerting me to this fact.
[90] To do so, the London Pound for Madrid Peso (1698-1913) data set from the Global Financial Database was employed. Yearly averages of monthly exchange rates were used. Since the Spanish revenue data are in pesetas, I had to make the following conversion: 1 peso = 20 reales and 1 peseta = 4 reales, meaning that 1 peso = 5 pesetas. See Vicens Vive (1969), 582-583, 713-715, and Tortella (2000), 158, for details on conversions involving pesos, reales, and pesetas.
[91] While the *European State Finance Database* lists Swedish revenue data from 1722-1809, there were no series available from 1809 onwards.
[92] Spanish revenues in ounces of gold were transformed into revenues in grams of gold by multiplying by 28.35.

Appendix 3. Regression Variables

For additional details, please see sections 5 and 6 of the text.

Dependent variable 1 is the ratio of annual per-capita revenues to urbanization rates. Please see below for additional details about the urbanization variable.

Dependent variable 2 is the ratio of annual per-capita revenues to Maddison's (2003) per-capita GDP figures. Please see below for additional details about the per-capita GDP variable.

The dummy variable for fragmented and absolutist political regimes takes a value of 1 for each year that a sample country possessed a fragmented and absolutist regime from 1650-1913. The dummy variable for centralized and absolutist political regimes takes a value of 1 for each year that a sample country possessed a centralized and absolutist regime from 1650-1913. The dummy variable for centralized and limited political regimes takes a value of 1 for each year that a sample country possessed a centralized and limited regime from 1650-1913.

The urbanization variable calculates the urban population as a percentage of the total population for each sample country annually. All urban population figures are from De Vries (1984). In particular, figures for 1650, 1700, 1750, and 1800 are from appendix 3, 305-337, and figures for 1850, 1890, and 1980 are from table 3.8, 44-47, for cities with populations of at least 10,000 inhabitants through 1850, with at least 20,000 inhabitants in 1890, and with at least 100,000 inhabitants in 1980.[93] All intermediate years have been interpolated. With the possible exception of French Revolutionary and Napoleonic times (1789-1815), no major population shocks (e.g. plague) occurred over the period under consideration, suggesting that the figures are reasonable approximates of urbanization.[94] For population sources, please appendix 2.

The per-capita GDP variable, taken from Maddison (2003), measures per-capita GDP in 1990 international Geary-Khamis dollars for sample countries from 1650-1913. Data are available for 1600, 1700, and 1820-1913. All intermediate years have been interpolated.[95]

The war dummy variable takes a value of 1 for each year(s) in which a sample country was engaged in a European military conflict from 1650-1913, according to Winks and Kaiser (2004) and the Encyclopedia Britannica (2007). First Anglo-Dutch War, 1652-1654 (Britain, Netherlands); Anglo-Spanish War, 1654-1660 (Belgium, Britain, Spain); First Bremian War, 1654 (Sweden); Northern Wars, 1655-1661 (Denmark, Sweden); Restoration War, 1640-1668 (Portugal, Spain); Second Anglo-Dutch War, 1665-1667 (Britain, Netherlands); Second Bremian War, 1666 (Sweden); War of Devolution, 1667-1668 (Belgium, Britain, France, Netherlands, Spain); Third Anglo-Dutch War, 1672-1674 (Britain, Netherlands); Franco-Dutch War, 1672-1678 (Belgium, France, Netherlands, Spain); Scanian War, 1675-1679 (Denmark, Sweden), War of the Reunions, 1683–1684 (Belgium, France, Netherlands, Spain); War of League of Augsburg, 1689-1697 (Austria, Belgium, Britain, France, Netherlands, Portugal, Spain); Great Northern War, 1700-1721 (Denmark, Prussia, Sweden); War of the Spanish Succession, 1701-1714 (Austria, Belgium, Britain, France, Netherlands, Portugal, Prussia, Spain); Austro-Turkish War, 1716-1718 (Austria); War of the Quadruple Alliance, 1718-1720 (Austria, Belgium, Britain, France, Netherlands, Spain); War of the Polish Succession, 1733-1738 (France, Prussia, Spain); War of the Austrian Succession, 1740-1748 (Austria, Belgium, Britain, France, Netherlands, Prussia, Spain); First Russo-Swedish War, 1741-1743 (Sweden), Seven Years' War, 1756-1763 (Austria, Belgium, Britain, France, Portugal, Prussia, Spain, Sweden); War of the Bavarian Succession, 1778-1779 (Austria, Prussia); Fourth Anglo-Dutch War, 1780-1784 (Britain, Netherlands); Lingonberry War, 1788-1789 (Denmark, Sweden); Second Russo-Swedish War, 1788-1790 (Denmark, Sweden); War of the First Coalition, 1792-1797 (Austria, Belgium, Britain, France, Netherlands, Portugal, Prussia, Spain); War of the Second Coalition, 1799-1802 (Austria, Belgium, Britain, France, Netherlands, Prussia); War of the Oranges, 1801 (France, Portugal, Spain); War of the Third Coalition, 1805 (Austria, Belgium, Britain, France, Netherlands, Prussia, Spain); First War Against Napoleon, 1805-1810 (France, Sweden); Gunboat War, 1807-1814 (Britain, Denmark); War of the Fourth Coalition, 1806-1807 (Belgium, Britain, France, Netherlands, Prussia, Spain, Sweden); Peninsular War, 1808-1813 (Belgium, Britain, France, Netherlands, Portugal, Prussia, Spain); War of the Fifth Coalition, 1809 (Austria, Belgium, Britain, France, Netherlands); War Against England, 1810-1812 (Britain, Sweden); War of the Sixth Coalition, 1812-1814 (Austria, Britain, Belgium, France, Netherlands, Prussia, Sweden); War of the Seventh Coalition, 1815 (Austria, Belgium, Britain, France, Netherlands, Portugal, Prussia, Spain, Sweden); Belgian-Dutch War, 1831-1839 (Belgium, Netherlands); First Italian War of Independence, 1848 (Austria, Italy); First War of Schleswig, 1848-1851 (Denmark, Prussia, Sweden); Crimean War, 1854-1856 (Britain, France); Second Italian War of Independence, 1859 (Austria, Italy);Second War of Schleswig, 1864 (Denmark, Prussia); Austro-Prussian War, 1866 (Austria, Italy, Prussia); Franco-Prussian War, 1870-1871 (France, Prussia); Turco-Italian War, 1911-1912 (Italy). Belgium was ruled by Spain from 1581-1713, Austria from 1713-1794, and France from 1795-1815. Hence, I have included Belgium in any war fought by Spain, Austria, or France when controlled by one of these countries. Similarly, the Netherlands was ruled by France from 1795-1813 and so it has been counted in any war that France fought over this period.

The dummy variable for civil wars, coups, and revolutions takes a value of 1 for the year(s) during any civil war, coup, and revolution within sample countries from 1650-1913, according to Winks and Kaiser (2004) and the Encyclopedia Britannica (2007). Austria: Year of Revolutions of 1848. Belgium: Brabant Revolution of 1789; Belgian Revolution of 1830. England (Britain): 3rd English Civil War, 1649-1651; Glorious Revolution 1688. Denmark: Year of Revolutions of 1848. France: French Revolution, 1789-1799; Napoleonic coup of 1799; Restoration of 1815; July Revolution of 1830; Year of Revolutions of 1848; French coup in 1851; Fall of 2nd empire in 1870. Italy: No civil war, coup, or revolution from 1861-1913. Netherlands: Batavian Revolution of 1785; Restoration of 1814-1815; Belgian Revolution of 1830; Year of Revolutions of 1848. Portugal: Revolution of 1808; Revolution of 1820; First Civil War of

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[93] De Vries provides urbanization and population figures for Germany rather than for Prussia and for Scandinavia rather than for Denmark or Sweden. Urbanization and population figures for Austria include Bohemia.
[94] Also see Hohenberg and Lees (1985) and Bairoch (1988).
[95] As for the urbanization variable, a lack of data has led me to substitute Maddison's (2003) German per-capita GDP figures for Prussia.

Portuguese Revolution, 1820-1823; Coup of 1823; Second Civil War of Portuguese Revolution, 1832-1834; Coup of 1836; Third Civil War of Portuguese Revolution, 1846-1848; Coup of 1851. Prussia: Year of Revolutions of 1848. Spain: Coup of 1820; Restoration of 1823; 1st Carlist War, 1833-1839; Moderate coup of 1843; Matiners (2nd Carlist) War, 1847-1849; Rebellion of 1854; Government collapse of 1863; Glorious Revolution, 1868-1870; 3rd Carlist War, 1872-1876 (encompassing the Restoration of 1874). Sweden: Coup of 1772; Assassination of Gustav III, 1792; Coup against Gustav IV, 1809.

The country dummy variable takes a value of 1 to identify individual sample countries.

The year dummy variable takes a value of 1 to identify individual years from 1650-1913.

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Table 1. Timeline of Political Transformations for European Sovereigns

		Fiscal Centralization	Limited Government
	England	1066	1688
	France	1790	1870
Group 1	Netherlands*	1806	1848
	Prussia	1806	1848
	Spain	1844	1876
	Denmark	1786	None
	Belgium	1795	1831
Group 2	Austria	1805	None
	Portugal	1832	1851
	Sweden	1840	1866
	Italy	1861	1861

I define fiscal centralization to have been completed the year that the national government first secured its revenues through a tax system with uniform rates throughout the country. Similarly, I define limited government to have emerged the year in which parliament gained the stable constitutional right to control the sovereign's annual budget. To meet my criteria, parliament's power had to hold for at least two consecutive decades. For additional details, please see section 2 of the text and appendix 1.

*Data for the Dutch Republic (1584-1795) was culled from Holland, characterized by a centralized and limited political regime. For additional details, please see section 4 of the text and appendix 2.

Table 2. Public Finance Characteristics of Political Regimes

Regime	Per-Capita Public Revenues
Fragmented + Absolutist	**Low** due to local free-riding and lack of credible commitment
Centralized + Absolutist	**Increase** due to resolution of local free-riding but still no credible commitment
Centralized + Limited	**High** due to resolution of local free-riding and credible commitment

For additional details, please see section 2 of the text.

Table 3. Summary Statistics of Per-Capita Revenue Data

	Obs.	Mean	St. Dev.	Min	Max
All Regimes	1482	9.42	7.88	0.26	42.04
Fragmented and Absolutist	378	**2.40**	1.39	0.26	6.27
Centralized and Absolutist	364	**9.55**	7.70	1.01	34.59
Centralized and Limited	740	**12.94**	7.54	0.83	42.04

For additional details, please see section 3 of the text and appendix 2.

Table 4. Regression Results for Per-Capita Public Revenues

Independent Variables	Dependent Variables			
	Per-Cap Revs / Urbanization Rate		Per-Cap Revs / Per-Cap GDP	
	Group 1 Only	*Groups 1 and 2*	*Group 1 Only*	*Groups 1 and 2*
Centralized and Absolutist Regimes	9.720*** (4.16)	13.397*** (4.18)	0.0017*** (8.31)	0.0020*** (7.55)
Centralized and Limited Regimes	24.984*** (10.78)	8.634*** (3.08)	0.0049*** (21.68)	0.0036*** (12.97)
Warfare	7.665*** (2.57)	7.462*** (2.68)	0.0005* (1.87)	0.0005** (2.28)
Civil Wars, Coups, Revolutions	- 5.102 (1.24)	- 5.377 (1.03)	- 0.007* (1.89)	- 0.0007 (1.53)
Constant	- 0.437 (0.03)	3.707 (0.55)	- 0.0005 (0.34)	- 0.0002 (0.29)
Country Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	1121	1482	1121	1482
R^2	0.623	0.644	0.709	0.630
Wald χ^2	8771.22	54441.66	7101.69	41578.75

Group 1: England, France, the Netherlands, Prussia, and Spain. Group 2: Austria, Belgium, Denmark, Italy, Portugal, and Sweden. Z-statistics in absolute values are in parentheses. For additional details, please see sections 3, 5, and 6 of the text and appendix 3.

***Significant at 1 percent level, **Significant at 5 percent level, *Significant at 10 percent level

Table 5. Structural Breaks in Revenue-to-GDP Series for Group 1 Sovereigns

	Year	Sign	Event
England	1688	+	Limited government (1688)
	1711	+	War of the Spanish Succession (1701-1714)
	1796	+	French and Revolutionary Wars (1792-1815)
	1816	-	End of Napoleonic Era (1815)
France	1774	+	Ascension of Louis XVI (1774)
	1795	+	Fiscal centralization (1790) / French and Revolutionary Wars (1792-1815)
	1818	+	End of Napoleonic Era (1815) / Restoration of Bourbon Monarchy (1815)
	1869	+	Limited government (1870)
Netherlands	1745	+	War of the Austrian Succession (1740-1748) / Reinstatement of Stadtholder (1748)
	1830	+	Belgian Revolt (1830) / Belgian-Dutch War (1831-1839)
	1850	+	Limited government (1848)
Prussia	1713	+	Great Northern War (1700-1721) / War of the Spanish Succession (1701-1714)
	1773	-	End of Seven Years' War (1756-1763)
	1813	+	Fiscal centralization (1806) / French and Revolutionary Wars (1792-1815)
	1847	+	Limited government (1848)
Spain	1838	+	Fiscal centralization (1844)
	1863	+	Government collapse (1863) / Glorious Revolution (1868-1870)
	1883	+	Limited government (1876)

The "Sign" column indicates whether the difference in mean per-capita revenue-to-GDP ratios was positive or negative over the 20 years following the structural break in question as compared to the 20 years preceding it. For additional details about the structural breaks tests, please see sections 5 and 6 of the text.
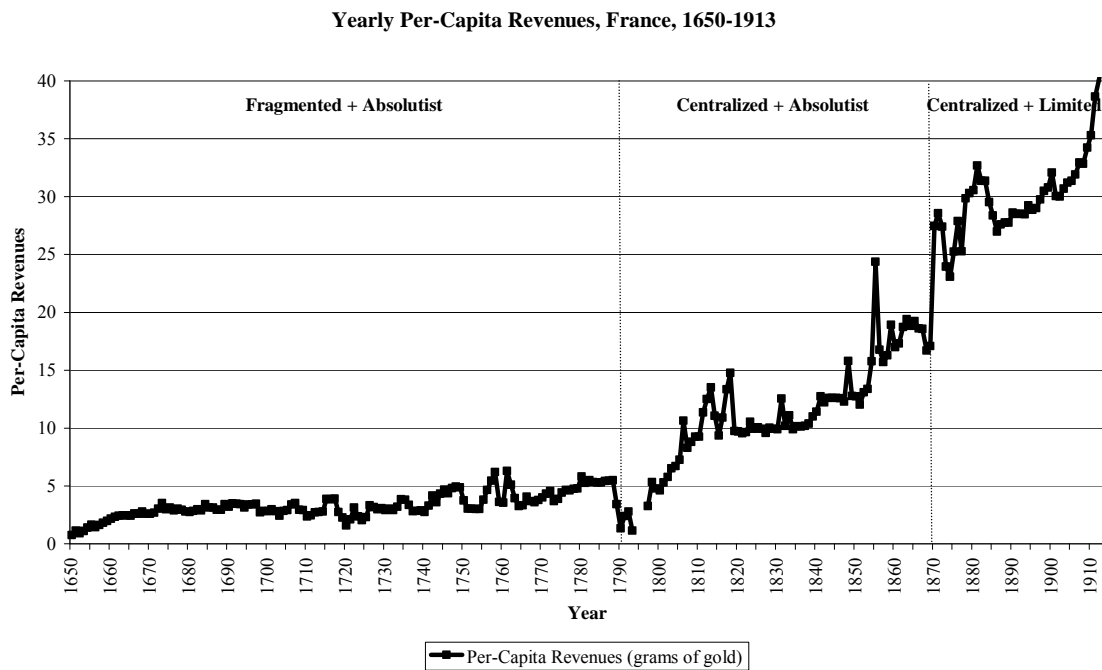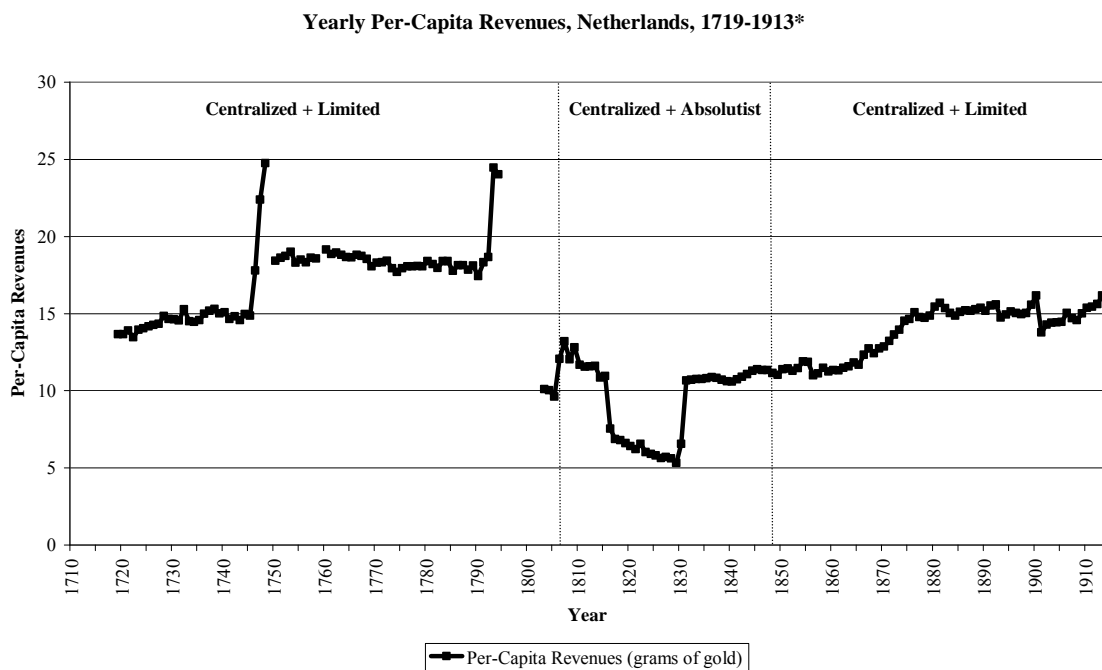
Figure 1.

Yearly Per-Capita Revenues, France, 1650-1913

Figure 2.

Yearly Per-Capita Revenues, Netherlands, 1719-1913*

*Data for the Dutch Republic (1584-1795) was culled from Holland, characterized by a centralized and limited political regime. For additional details, please see section 4 of the text and appendix 2.

Figure 3.

<div align="center">

Yearly Per-Capita Revenues, Britain, 1650-1750

</div>