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Risky Institutions: Political Regimes and the Cost of Public Borrowing in Early Modern Italy

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Introduction

In recent years, economic historians have revived the old argument that Italy's fall from grace during the early modern period was rooted in the loss of its medieval liberties.[1] New estimates of economic performance and standards of living point to the early modern period as witnessing a reversal of fortunes within Europe: it is during this time, the figures suggest, that Italy fell behind and the North-Western economies forged ahead (Allen 2001; Malanima 2011, 2013; Broadberry 2013). In the wake of the new institutional turn in economic history, the presence or absence of constitutional representation figures prominently as an alleged cause of this pattern. In this view, constitutional political systems played a key role in the "golden age" of the Dutch Republic and the rise of England after the Glorious Revolution. Southern

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[1] The old view can be traced back to de Sismondi's (1894) *A History of the Italian Republics*, written during the Risorgimento. It was, however, side-lined in the post-war years.

Europe, by contrast, went in the opposite direction: starting in the Renaissance the emergence and consolidation of absolutism implied that predatory rulers were no longer held to account and institutional quality worsened (North 1981; de Long and Shleifer 1993; Acemoglu et al. 2005; van Zanden et al. 2011).[2]

This article focuses on the cost of public borrowing in Italy, since this signals the extent to which rulers credibly committed to upholding property rights (North and Weingast, 1989), using a newly compiled dataset of interest rates. While previous studies have generally supported the claim that absolutism implied a worsening of the quality of Italy's institutions, important questions remain unanswered. David Stasavage (2007, 2011), in particular, finds that in pre-industrial Europe the cost of public borrowing was significantly lower for city-states than it was for principalities. However, he does not recognise that market yields on forced loans issued by Italian city-states in the Middle Ages were often much higher than official interest rates. Moreover, his heavy reliance on Italy for his sample of early modern autonomous cities may be problematic, too. Indeed, as Larry Epstein (2000a) and Oscar Gelderblom and Joost Jonker (2004, 2011) argue, capital abundance and comparatively developed secondary markets could have produced low interest rates there, regardless of the political regime. Within early modern Italy, Luciano Pezzolo's (1999, 2012, 2013) comparisons suggest that only some of the principalities borrowed at a higher cost than the republics, raising the question of what caused these differences?

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[2] In Italian historiography, the Renaissance refers to 1300 to 1494, , when the communes were weak and the *signoria* (lordship) became the predominant form of rule.

This article focuses on Italy after 1500, when primary markets became widespread, and draws on emerging perspectives on the political economy of public debt.[3] Two lines of recent work offer particularly important hypotheses in this regard. First, a number of scholars stress how fiscal centralisation reduces free-rider problems and improved revenues, thus reducing the risk of default (Velde and Weir 1992; Dincecco 2009, 2011; O'Brien 2011, 2012). In this view, Italian republics were at a disadvantage, given that they offered their subjuridictions greater autonomy and more decentralised fiscal systems than principalities. A second set of scholars emphasises the role of state monopolisation of violence. Here the argument is that security has economies of scale, and since jurisdictional fragmentation hinders the development of impersonal rule, it significantly increased transaction costs (Volckart 2002; North *et al.* 2009; van Zanden 2009; Zuijderduijn 2009). Comparatively low levels of feudalism and clerical influence in the Italian republics should thus be associated with low interest rates.

The results presented here do not support the hypothesis that absolutism reduced the credibility of Italian public finances. The analysis of trends in financial and fiscal variables shows that in early modern Italy public borrowing tended to be high, but revenues stagnated and the growth of the public debts was rendered sustainable by rapid and widespread falls in interest rates. Yet there were significant differences in the cost of public borrowing across regional states. The panel analysis finds that

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[3] The one quantitative analysis corroborating the hypothesis that fiscal centralisation significantly mattered (Dincecco, 2009, 2011) only begins in 1750, with Italy entering the sample only in the nineteenth century. The present study is also the first quantitative analysis directly addressing the role of state monopolisation of violence on the cost of public borrowing.

feudalism and clerical interference increased the cost of borrowing, while the parliaments, wars, and centralised fiscal institutions mattered little. It also suggests that the constitutional representation of creditors may have meant significant mark-ups for republican oligarchs.

The cost of borrowing

The analysis is based on nominal interest rates paid on public annuities: the ratio of the annual payment on an annuity to its capital value — the nominal yield at issue. While one might want to have real interest rates to compare over time, this is not so important in cross-section. Even in the early modern period, price shocks were transmitted quickly across Italian markets, and inflation rates were similar across cities (Malanima 2002; Chilosi *et al.* 2013). Hence, the real interest rate paid on perpetuities is estimated as the nominal interest rate minus the long-term rate of inflation in Central-Northern Italy.[4]

For the sake of comparability, I exclude short-term loans by professional money-lenders to princes.[5] Regardless of the identity of the borrower, publicly held debts commanded lower interest rates than such short-term loans. To give an example, in the 1540s the Apostolic Chamber of Rome borrowed from private bankers at 12 per cent (Bruscoli 2007: xxiv), while issuing annuities at almost half that rate, at 7.5 per

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[4] The price data are drawn from Malanima (2011). Long term inflation was computed using an Epanechnikov kernel over the period 1311-1850 to avoid boundary problems.

[5] Like Stasavage (2011), but differently from Epstein (2000a).

cent.[6] Early modern princes often relied on short-term loans alongside long-term bonds to absorb transitory shocks and gain the loyalty of international financiers, who typically offered their expertise to help princes engineer their financial systems (Bruscoli 2007; Pezzolo 2012, p. 278-79, 2013; Álvarez-Nogal and Chamley 2014, p. 198-201). High returns were also partly needed to compensate the lender for the taint of usury that was attached to short-term lending (Munro 2003). While these features vitiate direct comparison with public annuities, the fast growth seen in the size of princes' long-term debts in early modern Italy suggests that constraints on long-term borrowing were loose.[7] Hence, in this context, the exclusion of private short-term loans is not expected to significantly bias the analysis against finding that republics were more reliable borrowers than princes. Indeed, if a reliance on short-term loans by foreign bankers signaled under-developed domestic financial markets, there could be an opposite bias even if only long-term bonds are used.

For similar reasons, I also only include annuities voluntarily bought on the public market, leaving out forced loans issued by city-states in the Middle Ages.[8] Direct comparison of secondary yields paid on forced loans and on public annuities is expected to produce a negative bias in the estimated creditworthiness of city-states, given that default on voluntary purchases was less likely, as it would jeopardise future

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[6] Details on the sources of interest rates and the other variables used in the analysis are in the Appendix.

[7] See the next section.

[8] Forced loans were predominant until the beginning of the sixteenth century in Florence and Venice. From the fifteenth century until the beginning of the seventeenth century, Genoa was characterised by a mix: forced lending complemented voluntary lending (Sieveking 1905; Pezzolo 2005). Otherwise, only isolated instances of forced loans are observed in the early modern period.

sales (Tracy 1986, p. 110). That the inclusion of forced loans in previous studies has had the opposite effect reflects the faulty assumption that these were traded on the secondary market at par. In fact, available data from Florence, Genoa and Venice show that the average price was 55 per cent of par.[9] Matching average interest rates and average secondary prices suggests that the negative bias introduced by the assumption of par is almost 5 percentage points.[10] This figure compares with Stasavage's (2011, p. 85) estimation of city-states' advantage as 2 percentage points.

Both indirect and direct evidence shows that the assumption of par is much less demanding for publicly sold annuities than for forced loans. To begin with, coercion implied that forced loans could include both a loan and a tax, where the loan was the secondary market value of the certificates, and the tax was the difference between the market value and what the initial lender had to pay for it. There were also legal reasons for forced loans to carry low interest rates, as canon law jurists tended to place strict bounds on the interest rates forced loans could carry. In contrast, voluntarily bought annuities were considered usurious only if exorbitant rates were offered (Homer and Sylla 2005; Munro 2003, p. 523). One corollary of usury was that the incentive to conceal effective returns was stronger for forced loans than for public

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[9] Computation based on 192 yearly means.

[10] The precise figure is 4.72. Computations based on the 25-years interest rates means reproduced by Pezzolo (2005, p. 157); 17 matches were possible. The neglect of secondary yields is particularly problematic since both interest rates and secondary prices fell after the mid-fourteenth century, when the canonical legitimacy of forced loans came under scrutiny, and thus it implies a spurious down-ward trend.

annuities.[11] In fact, unless primary yields on forced loans were often significantly higher than the official rates it is difficult to understand why states found public annuities easier to sustain. On the one hand, payments became much more regular after the advent of primary markets in the 1520s than they were for forced loans (Pezzolo 1995, 2005). On the other hand, according to the official rates, in both Florence and Venice there were sudden and sustained significant increases in the rate of interest paid on the public debt, in the order of nearly twice as much.[12]

Such conjectures are supported by direct evidence showing that secondary yields tended to be relatively close to the official rates for public annuities. Thus, from the 1520s the average of the available yearly secondary prices of Genoese, Florentine, Roman and Venetian[13] annuities is 128 per cent of par. If one excludes the exceptional case of Genoa, where specific institutions led to inelastic demand on the secondary market,[14] the figure is 98 per cent of par.[15] The absolute difference between the yearly

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[11] Thus, in Florence, after the return on forced loans was reduced from 15 per cent to 5 per cent in 1345, the creditors regularly enjoyed a discount of one half to one third on primary issues, with the result that their effective yield remained unaltered, or suffered little (Barbadoro 1929, p. 670).

[12] Hence, it is likely that neglecting market yields implies a spurious up-ward shift in the interest rates after forced loans were abandoned. Sources: forced loans: Pezzolo (2005, p. 157); annuities: see the appendix.

[13] For simplicity, here and subsequently I use the name of the capital city to refer to the regional state (e.g. Rome stands for the Papacy).

[14] By the end of the eighteenth century, the great majority of the S. Giorgio's shares of Genoa's public debt were owned by local religious and philanthropic institutions (c. 69 per cent), or the Republic (c. 20 per cent), which automatically bought them on the secondary market (Cipolla 1965; Felloni 1998: p. 176). Partly for this reason these secondary yields have not been used in the analysis. In any case,

means of official rates divided by secondary prices and official rates is on average about 1 percentage point.[16] To be sure, from the later sixteenth century in both Genoa and Rome secondary prices were consistently above par by significant margins (on average, they were 156 per cent and 123 per cent of par, respectively). But there were also comparatively low interest rates in those cities, suggesting that if secondary yields were available for the whole sample, then the cross-sectional differences that I observe would be strengthened. This was the case in Palermo, too, where official rates tended to be comparatively high and in the late sixteenth century government securities were traded at 30 to 40 per cent of par (Koenisberger 1969, p. 134).

In early modern Italy, direct evidence on the primary prices of public annuities is scant. However, interest rates should differ from primary yields less than from secondary yields, given that significant discounts of primary issues should also show up in the secondary market, authorities had an incentive to issue bonds when the secondary market was buoyant, and above par prices on the primary market are rarely seen. The available evidence is consistent with this argument. Thus, papal bonds were typically sold at below par on the primary market (Piola Caselli 2012, p. 292). In Genoa, the one documented purchase from the seventeenth century was at par, and

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using the secondary yield on the S. Giorgio's shares instead of the interest rate paid on republican bonds does not change the results of the panel analysis.

[15] Computations based on 328 yearly means and 52 yearly means, respectively.

[16] The precise figure is 0.97. Computation based on 186 differences. This is, of course, a crude method; in the analysis I use secondary yields only in those cases where I could match particular issues with particular prices. In practice, this means data from Florence and Venice. Neglecting secondary price from Rome is also advisable since partial coverage together with significantly above par secondary prices imply a risk of producing spurious trends.

primary short-term yields were closely aligned with interest rates on republican bonds (Peri 1682, p. 97; Cuneo 1842, p. 309-11).[17] Discounts have been observed in Naples in 1678 on bonds backed by risky tax flows, but those backed by reliable ones were sold at par (Bulgarelli Lukacs 1993, p. 49-50).

In short, nominal interest rates at issue are much better proxies of market yields for openly sold early modern bonds than they are for medieval forced loans. However, excluding private and forced loans takes care of only the most obvious source of heterogeneity: conditions of purchase also varied within the voluntary market for public annuities. Table 1 shows the sources and types of interest rates used in the analysis.

[Table 1 here]

To ensure comparability, the interest rates on annuities have been normalised to perpetuity.[18] More often than not, life annuities were sold at around the same time as perpetuities, as, presumably, authorities sought to target different segments of the

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[17] Dividends on the S. Giorgio's shares were paid with a variable delay, but could be cashed in by creditors at the *Casa* at the time when they were declared with a discount (Cuneo 1842, p. 121). The yearly yield implied by the discounting of the S. Giorgio's dividends has been computed with the same method used by Cipolla (1952); however, instead of assuming a constant delay of four and half years, variable delays kindly supplied to the author by Giuseppe Felloni have been used. On average, the difference between interest rates on republican bonds and short-term primary yields implied by the S. Giorgio's dividends was only 0.235 percentage points; the difference is not statistically significant.

[18] This is easier to implement for public annuities than for short-term and forced loans, as differences with rates on perpetuities are not as idiosyncratic.

market. This makes it easy to normalise them.[19] Across Milan, Naples, Piedmont and Venice, it was possible to compare sixteen yearly means of rates on tax alienations and perpetuities from the same year and place; there was a difference greater than 1 percentage point in only two cases. Given the close match, I made no adjustment to rates on tax alienations. The same rate of five per cent was paid on the deposits of the *Monte di Pietà* of Florence (which allowed Cosimo I to borrow at the same rate) and the first perpetuities issued by the city in 1599, as well as on the *Monte di Pietà* perpetuities sold in 1616. Hence, no adjustment was made in this case, too. A shorter term was preferable for the lender than a longer one. Accordingly, rates on annuities with terms below 10 years, which were popular in Venice, are normalised on the basis of the average ratio between rates on long- and short-term annuities in those years when both of them were issued.[20]

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[19] For example, between 1588 and 1592, the Papacy issued 13 annuities, 10 of which were life annuities. All these were sold at 10 per cent, while the three perpetuities were sold at 6.5 per cent in 1589, 1591 and 1592. The analysis treats all these issues as if they carried the same rate as the perpetuities (6.5 per cent). In the few cases where this approach was not viable, the rates paid on life annuities are normalised on the basis of the average ratio between rates paid on life annuities and perpetuities in a given place.

[20] In practice, this means that I divide rates on short-term annuities by 0.79. Although this figure is mainly based on sixteenth-century rates, the normalisation has no bearing on eighteenth-century interest rates, as 10 years term-annuities were popular at the time. Moreover, a comparison based on two sixteenth-century and eight seventeenth-century Venetian life annuities suggests that the risk and liquidity premia did not significantly change: on average, in the fifteenth century a life annuity commanded a rate 1.75 times greater than a long-term annuity and 2.17 times greater than a short-term annuity; the latter figure for the seventeenth century is 2.15, implying a normalising rate between short- and long-term annuities of 0.81. In neighbouring Verona in the seventeenth century the rate between short-term annuities (six months or five years) and longer term annuities (twelve years and perpetuities)

[Figure 1 here]

About 60 per cent of the interest rates I use were collected from primary sources. Figure 1 shows the geographical distribution of the observations. Although, unavoidably, the coverage is uneven, the dataset is significantly broader than those used in previous studies (Pezzolo 1999, p. 242, 2013, p. 280; Epstein 2000a, p. 20-23; Stasavage 2011, p. 30-31). The new data detail Palermo for the whole period, Rome from the second half of the seventeenth century, eighteenth-century Milan, and significantly increase the coverage of Florence and Turin, and to a lesser extent, Naples.[21] Primary sources were especially helpful for filling in gaps for Rome, Florence and Turin. Archival research also allowed improved precision for the republics: in Venice, as just seen, I take into account the term of the annuities; in Genoa, I rely on rates paid on republican bonds issued during the early modern period instead of the dividends of the S. Giorgio's shares, which were mostly issued between

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sold by the local *Monte di Pietà* also ranged between 0.75 and 0.8 (Pulin 1985, p. 116; Ferlito 2009, p. 154-57).

[21] Although some scattered figures for eighteenth-century Milan and the Papacy had already been published by Epstein (2000a, p. 22-23), these are estimated rates of return on the public debt based on the ratio between the size of the debt and annual expenditure on interest rates. For early modern Italy, where fiscal fragmentation was the rule, such estimates are bound to contain a significant margin of error (Felloni 1977, p. 22) and I do not use them in the analysis. As it happens, the figures often turn out to be significantly different from those mentioned both in the edicts and the ledgers of the time.

the fifteenth and the beginning of the seventeenth centuries and were in part forced loans.[22]

To wash out noise, the analysis is based on decadal means.[23] As annuity issues tended to be clustered in certain years, to limit the over-representation of these years, decadal means are computed from yearly means.[24] This addresses, but falls short of solving, the problem that since, as mentioned earlier, polities had an incentive to issue annuities at tranquil times, reliance on rates paid at the time of issue may introduce a negative bias in yields. Still, market volatility should be greater for unreliable borrowers than for reliable ones. Thus, while this bias might dampen differences, it should not change the hierarchy indicated by the interest rates. This is confirmed by data from the Papacy, Genoa and Venice, which can be considered as reliable borrowers. Logistic regressions find that in Rome the probability that there was an

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[22] The use of the interest rates paid on the debt directly managed by the republic also offers advantages in terms of identification, since the particular institutional setting found in sixteenth-century Genoa can be an important confounding factor. Indeed, Fratianni (2006) traces to the S. Giorgio's management of the public debt, rather than to a republican constitution, the comparatively low interest rates paid there.

[23] Running the regressions with yearly means produces very similar point estimates, but greater standard errors.

[24] With the exception of Genoa: there an almost unbroken series of paid interests has been gathered from creditors' ledgers. As the rate tended to fall over time due to conversions, the yearly minima capture the cost of public borrowing at a given time more accurately than the yearly means. The use of minima instead of means does not, however, change the results of the analysis; in practice, the two are very close. Elsewhere the great majority of quotations refer to the interest paid at the time of issue, and therefore the mean is the appropriate measure.

issue a given year is actually greater when the secondary price was lower;[25] even if the probability of an issue was higher for Genoese and Venetian bonds, the marginal effects are very small: an increase in the secondary price by 10 percentage points increases the probability that there were issues by just around 0.5 percentage points.[26] Frequent defaults are particularly well-documented in Milan (Pugliese 1924, p. 339-76; Felloni 1971, p. 304), and in years with a default the probability that bonds were issued is indeed lower than at other times. Nevertheless, the coefficient is not statistically significant and again the marginal effect is small: a default decreases the probability of issues in that year by around 5 percentage points.[27] All in all, this type of selection bias does not emerge as a serious concern.

In addition, years when rates cannot be observed are non-randomly distributed because issues were more frequent where the debt was growing quickly. If fast growth implied dear borrowing, this would mean that the analysis is biased against finding that those principalities that were catching up with the republics could borrow cheaply. Nonetheless, I find no evidence that the size of the debt was a major determinant of the cost of public borrowing, suggesting that the capital supply was

[25] The regression has been run on the 27 years for which secondary prices are available. In those years I recorded 14 issues. The marginal effect is 2.76 per cent and is significant at the 5 per cent level.

[26] The precise figures are 0.54 per cent and 0.43 per cent, respectively. These regressions are based on 160 years and 32 issues in Genoa and 21 observations and 4 issues in Venice. The marginal effect is significant at the 1 per cent level in Genoa, but it is not significant in Venice.

[27] The regression is based on 262 observations, from 1535, when the series begins, to 1796 when it ends. There are issues in 131 years and defaults in 69 years. The *P-value* of the marginal effect is 0.482.

very inelastic.[28] Moreover, most decades are covered: over 28 decades, only 23 per cent of the possible observations are missing; there are on average 21.5 observations per polity, ranging from a minimum of 16 in Florence and Turin to a maximum of 27 in Naples. As most principalities are present from the beginning there is no fear of selection bias from endogenous entry (Stasavage 2011, p. 88).[29] Having presented the sources, let us now compare trends in fiscal and financial variables across polities.

Financial evolution

Let us start with the size of the debt.[30] Table 2 presents summary statistics on the development of the consolidated debt in early modern Italian polities. The nominal per capita figures have been normalised by the price of a consumption basket for one year in Central-Northern Italy; to smooth short-term fluctuations in these prices, I use decadal means for both figures. Hence, the unit of measure is number of consumption baskets per capita. To put this measure into context, the price of a consumption basket was equal to just over half the GDP per capita in Central-Northern Italy.[31] The first

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[28] See the next section.

[29] All principalities are present from the 1520s or 1530s, with the only exception of Piedmont, for which the series begins in the 1620s. Still, the mean of rates on tax alienations issued by Piedmont between 1544 and 1638 is relatively low for those times (5.45 per cent, Einaudi 1908, p. 184), suggesting that, if anything, the omission of sixteenth-century data implies a positive bias in the estimated cost of public borrowing there.

[30] Although fiscal fragmentation and differences in accounting procedures across fiscal agencies imply that non-negligible margin of errors cannot be excluded both for the size of the debts and that of revenues, the order of magnitude of differences is much greater than for interest rates and thus should be reliable.

[31] To be precise, the ratio was 0.53 in the 1570s and 0.57 in the 1740s.

three columns show the capital city, the sample size and the decades covered; the following four columns show the estimated values at the beginning and at the end, the estimated maximum and the decade when this is observed; the final two columns present the yearly rate of change and the implied cumulated change.

[Table 2 here]

Three main groupings can be distinguished. First, the financial pioneers, Genoa, Florence and Venice, already had a large debt the beginning of the sixteenth century and it rose relatively little thereafter. Second, Milan, Naples, and Rome caught-up with the pioneers over time. The period when their debts expanded most rapidly was the seventeenth century, while the eighteenth century saw stable nominal values in the face of expanding populations and rising prices. Finally, Turin and Palermo lagged behind, even if in Piedmont the real value of the debt continued to expand in the first half of the eighteenth century.

Overall, public debts tended to be comparatively large, though hardly huge. Genoa's debt was the largest. At its maximum in the 1550s it was in the order of 2.5 times the national income. In the mid-eighteenth century, Genoa's debt per capita (1.51 kg of silver) was about as large as England's (1.45 kg), but it was much smaller than the Dutch Republic's debt per capita (4.50 kg) (Carboni 2000, p. 62, 103; Weingast 1997, p. 235; McEvedy and Jones 1985). Generally, the debts of most Italian states tended to be larger than those prevailing in elsewhere in Europe. For instance, by the 1740s the Papacy owed almost twice as much silver per inhabitant as France: 0.69 kg as compared to 0.36 kg (Carboni 2000, p. 77, 99; McEvedy and Jones 1985). Turning to

fiscal pressure, table 3 shows summary statistics charting its development, in revenue per inhabitant, using the same approach used for the size of the debt.

[Table 3 here]

In sharp contrast to what was happening elsewhere in Europe, the growth of the public debts was not accompanied by similarly impressive rises in fiscal pressure. Although taxes were higher in the North of Italy than in the South and the maxima were reached in the early eighteenth century in half of the cases, overall the increases in fiscal pressure were moderate. The one exception to this rule is Piedmont, where, assisted by early fiscal centralisation, revenues rose rapidly after the 1550s and overtook those of the other regional states. In fact, Piedmont and Milan were also the only states where fiscal pressure increased during the eighteenth century. Thus, differences within Italy were small in comparison to the widening gap between Italy and Western Europe. To be sure, fiscal pressure in Italy was initially high by European standards: at the beginning of the sixteenth century on average the fiscal revenue per capita was about 15.3 grams of silver, as compared to 11.4 in Castile, 4 in France and 6 in England. However, by the later eighteenth century it had become much lower than elsewhere in Europe: the average figure was 49.8 grams, as compared to 92 grams in Piedmont, 75 grams in France, 188 grams in England and 305 grams in the Dutch Republic (Carboni 2000, p. 62).

These trends in taxation raise the question of how were expanding debts serviced? The answer turns out to be rapidly falling interest rates. Figure 2 shows the decadal means of nominal interest rates normalised to perpetuity in the sample. The continuous line is the average in log-scale. The trend of this line is the yearly rate of

change and takes into account that as interest rates become lower, progress becomes more difficult.

[Figure 2 here]

The figure shows the well-known and widespread long-term trend towards falling nominal interest rates in this period (Homer and Sylla 2005). Still, there were clearly marked variations between regional states, with comparatively high rates in the Spanish territories (Milan, Naples and Palermo) and singularly low rates for Genoa standing out. Table 4 compares trends and levels in nominal and real interest rates; for the levels Rome is the baseline and I control for the secular decline in the variable. To facilitate interpretation, the table also reports the marginal effects implied by the coefficients for the sample average.

[Table 4 here]

Table 4 shows that all cities saw rapid falls in interest rates; the pace of decline was very similar across cities for nominal interest rates, and similar to a lesser extent for real ones.[32] In comparison to nominal interest rates, real ones declined more slowly in the sixteenth century, and more rapidly in the eighteenth century. Yet there were significant differences in the level across places. Thus, the marginal effects show that on average the spread of the nominal interest rate between Naples and Genoa was over four percentage points. In between the extremes of the Spanish territories and

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[32] As the panel is unbalanced, the transformation into real interest rates affects different cities differently.

Genoa, interest rates were relatively high in Turin and Venice and comparatively low in Florence and Rome. The coefficient of variation of the interest rates suggests that such differences did not significantly decrease over time: indeed, its yearly rate of change is positive, though small and statistically insignificant.[33]

A quick comparison suggests that Italian interest rates tended to be low by international standards: on average, they were about 1 percentage point lower than in early modern France and eighteenth-century Britain, and about 0.5 percentage points lower than in early modern Spain and higher than in seventeenth-century Holland. Rates in Genoa were by far the lowest in Europe.[34] Hence, a "fiscal revolution" was not necessary for borrowing costs to be low. Indeed, the one Italian state that did experience it (Piedmont) was also characterised by a singularly slow growth in the public debt and relatively high interest rates. In fact, within Italy one fails to detect any strong effects of the size of the debts in pushing up interest rates. To the contrary, states that could borrow cheaply tended to borrow more. Thus, Genoa stands out in this fashion with a very large debt and low interest rates. The correlation coefficients between interest rates and the size of the debt are negative, both for nominal (-0.61) and real interest rates (-0.48). High fiscal revenues were also associated with low interest rates, in spite of the fact that these implied low expenditure, but the correlation is weak: the coefficients are -0.38 for nominal interest rates and -0.25 for

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[33] Specifically, it is equal to 0.13 per cent; the *P-value* is equal to 0.210.

[34] Sources: Britain: Weir (1989, p. 100, 109, 114-17), Munro (2003, p. 557); France: Weir (1989, p. 155, 122), Velde and Weir (1992, p. 17, 23, 26), Pezzolo (1999, p. 252), Munro (2003, p. 540, 2007, p. 35); Holland: Tracy (1985, p. 45, 60, 89, 95, 133-34, 207, 209), Munro (2003, p. 557); Spain: Munro (2003, p. 535), Grafe (2012, p. 15).

real ones.[35] In short, fiscal variables are of little help in understanding why borrowing costs differed across Italian states.

Political regimes

To what extent were these differences determined by political regimes? To answer this question, I use panel data analysis where the dependent variable is the logarithm of the interest rate. The independent variables belong to three categories: financial development, war, and political regimes. There are six financial variables. *Urban potential* is the sum the population of Italian cities with at least 10,000 inhabitants weighted by distance to the polity of interest. Distances are weighted to take into account whether cities were connected by sea-, river-, or road- transport and were in the same state. This measure proxies for the supply of capital and I expect a higher *Urban potential* to reduce interest rates. *Urban potential growth* is the yearly growth in urban potential. It is aimed at capturing whether the economy is expanding or contracting, and thus the particular opportunity cost of investing in public bonds; hence, I expect its coefficient to be positively signed.[36] *Decade* is the time trend

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[35] Endogeneity implies that the role of size of the debt and revenues in determining interest rates cannot be investigated in the panel analysis. This is particularly so as the coverage of these variables is uneven and linear interpolation would imply that even more than usual lagged values would be poor instruments. Their inclusion was attempted, but it did not deliver any new conclusion and therefore the results are not presented here.

[36] Although these variables are bound to be endogenous to some extent, as implicitly done by previous studies here we assume that being just one factor behind economic growth the cost of public borrowing can be considered as exogenous. Indeed that such an assumption is reasonable is shown by the experience of early modern Italy, where the economy declined in spite of comparatively low and rapidly falling interest rates.

intended to capture the common factors behind the long-term decline in the interest rates; I expect its coefficient to be negative.[37]

Financial pioneer is a dummy variable that takes the value of 1 for Florence, Genoa and Venice. Liquidity premia and transaction costs should have been particularly low in these states since there was already a developed secondary market at the beginning of the sixteenth century. In consequence, at least in the early stages, the financial pioneers should enjoy an advantage and the coefficient of this variable is expected to be negatively signed. *Inflation* is the estimated long-term rate of inflation. It should have a positive effect on nominal interest rates insofar as price movements were anticipated by investors. Insofar as inflation was unanticipated, however, it should have a negative effect on real interest rates. *Debasement* measures the change in a currency's silver content in the present and past decade. Debasement could erode the real value of annuities, and the reputation of the currency was bound to influence perceptions of risk; so, I expect its coefficient to be negative.

War created sudden and inelastic demand for funds. Moreover, the uncertainty of the outcome created risk for investors. For these reasons, I expect the measures of warfare to be associated with higher interest rates. *War pressure* is an index that increases with the number of casualties per battle and populations of the adversaries; it decreases with their distance relative to the populations involved; it therefore allows the quantification of the pressure resulting from conflicts. It is nevertheless bound to be marred by non-negligible margins of errors. For robustness, as an alternative, *War*

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[37] That, as seen earlier, the trend was widespread implies that employing place-specific trends in the panel analysis is not worth the resulting loss in degrees of freedom.

years is also used. By construction, their range is similar and therefore the size of their coefficients is more or less directly comparable.

There are six political variables. Both *Republic* (equal to 1 in Genoa and Venice) and *Parliament* (equal to 1 in Palermo and Naples until the 1630s) are expected to foster credible commitment and reduce borrowing costs. However, the effect of *Parliament* is expected to be lower than that of *Republic*: indeed, the Neapolitan and Sicilian parliaments were less cohesive and powerful than the republican councils in Genoa and Venice. *Treasury* is a dummy equal to 1 in Naples, Rome, Turin, Florence (from the 1740s) and Milan (from the 1750s). It signals the presence of an institution responsible for compiling an annual budget and centrally coordinating the various fiscal agencies; *Fiscal reform* (equal to 1 in Florence from the 1740s, Milan from the 1750s and Turin from the 1720s) signals major fiscal reforms aimed at tightening the grip of centralised fiscal institutions during the "age of reason". Since these dummies signal the presence of centralised fiscal institutions addressing coordination failure and fiscal free-riding, their coefficients are expected to be negative. Jurisdictional fragmentation is expected to increase transaction costs. Since clerics and feudal lords had judicial prerogatives, they limited the extent to which the state conformed to a monopoly. *Church*, which is equal to 0 in Rome and to the number of dioceses per 1 million inhabitants in c. 1700 elsewhere, and *Feudalism*, which is an estimate of the share of the population under feudal rule, are intended to capture these effects.

By construction *Financial pioneer*, *Republic* and *Church* are time-invariant; *Parliament* and *Feudalism* change rarely, so that within estimation of their effects is imprecise; *Treasury* is a border-line case: this dummy changes twice over time. As

key variables of interest are time-invariant, fixed-effects estimation can be used only for some of the variables, and difference-in-difference estimation is not a viable option. The fixed-effects vector decomposition model produces unbiased fixed-effects estimators of the effects of time-varying variables, and a less biased estimator of the time-varying ones than pooled ordinary least squares (Plümber and Troeger 2007, 2011); it is therefore suitable for the task. The assumption that time-invariant variables, together with city-specific effects, explain all the cross-sectional differences due to factors unobserved by the time-variant variables is strong, but reasonable in a political economy context where institutional differences across polities are systematically controlled for, such as this one (Beck 2011, p. 121-22).

Table 5 shows the results of the panel data regression analysis. The second column reports the base-line results; the remaining five columns report robustness checks. The second specification addresses the high cross-sectional correlation between *Republic* and *Financial pioneer* by excluding the latter; the third specification addresses the high within correlation between *Treasury* and *Fiscal reform* by treating the former as time-invariant. The fourth and fifth specifications address potential errors in the measurement of the independent variable by using real, instead of nominal interest rates, and by using non-normalised rates for Venetian short-term annuities and excluding below par market rates from the same city, which may introduce a positive bias in the relative cost of public borrowing there. The last specification addresses potential measurement errors in the *War pressure* variable, by substituting it with *War years*.

[Table 5 here]

The adjusted R-squared signals a good fit under all the specifications, particularly when the dependent variable is the nominal interest rate.[38] All the financial and geopolitical variables have the expected sign and are mostly significant across specifications. Still, there are a few notable differences. Firstly, the size of the *Inflation* coefficient on nominal and real interest rates signals that price changes were at best poorly anticipated. Thus, inflation was a powerful determinant of real interest rates, but only a weak influence on nominal ones. Secondly, the opportunity cost of capital, measured by *Urban potential growth*, had a significantly greater influence on real than on nominal interest rates. This is as expected. Thirdly, the size of the coefficient of the war variable decreases when *War years* is used. This suggests that, if anything, measurement error of *War pressure* adds a positive bias in the estimated significance of war.

Among the political variables, only the jurisdictional variables are statistically significant at conventional levels in some of the specifications. Comparatively high standard errors are expected for the time invariant variables, as the second stage of estimation is based on only eight cross-sections. Low statistical power means that there is a high risk of failing to reject a false hypothesis, and it is therefore advisable to check that statistical significance agrees with quantitative significance. At the same time, the little statistical precision with which the coefficients of the time invariant variables are estimated implies that caution is needed in interpreting their sizes, too.[39]

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[38] While much of the variation is accounted for by the time trend (adjusted R-squared equal to 0.509) the controls significantly improve the fit. Thus, under the baseline specification, the city-effects only add 3 percentage points to the adjusted R-squared, as compared to 29 percentage points for the other controls.

[39] It is nevertheless reassuring in this respect that the sizes hardly change across specifications.

Table 6 presents the shares of the sum of the absolute values of the difference with the mean predicted by each independent variable.[40] The last line shows the overall contribution of political variables. Using absolute values makes it easy to compare the relative importance of the various factors since their effect often offset one another. The approach is analogous to that underlying the decomposition analysis of the variance. However, it has the advantages of allowing me to focus on the sources of cross-sectional difference and to compare the impact of the various factors across cities. The computations are based on the results of the baseline specification of the panel data analysis.

[Table 6 here]

Reassuringly, there is substantive agreement between the estimated levels of statistical and quantitative significance: from both perspectives *Feudalism* and to a lesser extent *Church* emerge as the most important political variables. Thus, cross-sectional differences, the figures suggest, were to a large extent associated to jurisdictional fragmentation through feudalism and the church (40 per cent, on average).[41] This help explain why interest rates were high in the Spanish territories: jurisdictional variables

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[40] Hence, the formula used to measure, for instance, the importance of *Republic* is $|\beta_{Republic}*(Republic_i - Republic_{average})|/(|\beta_{Decade}*(Decade_i - Decade_{average})| + ... + |\beta_{Feudalism}*(Feudalism_i - Feudalism_{average})| + |\alpha_i - \alpha_{average}|)$, where the βs are the coefficient, the αs are the city-effects and the suffix i refers to the average value of each variable in place i. For all cities, the errors account for a negligible share and therefore their contributions are not presented.

[41] *Urban potential* and, to a lesser extent, *Financial pioneer*, emerge as the most important financial determinants of cross-sectional differences, confirming that abundant capital and liquid secondary markets were of key importance for borrowing cheaply.

take particularly high values there. It is possible that to some extent these variables capture financial market under-development in those states due to other factors. Yet the Spanish territories did not face the protracted difficulties in establishing liquid secondary markets sometimes seen elsewhere in early modern Europe. Secondary markets were facilitated by public banks: the *Tavola di Palermo* (1551), the *Banco dei Poveri* at Naples (1573), and the *Banco di S. Ambrogio* at Milan (1593) emerged at around the same time as public banks elsewhere in Italy and earlier than in North-Western Europe (De Marco 1988; Felloni 2008). Even in the provinces of the Kingdom of Naples increasingly thick secondary markets have been observed (Bulgarelli Lukacs 2007, p. 343-44). While precise figures for Palermo and Naples are lacking, in Milan a thick secondary market can be detected from the mid-sixteenth century: as much as 42 per cent of the securities issued there in 1559 were sold in the secondary market within only five years, with similar figures obtaining for subsequent issues. In fact, at the time, the commissions paid for the exchange of bonds were lower in Milan than in Bologna and Rome (de Luca 2007, p. 137). In short, liquidity premia should not have been particularly high in the Spanish territories.

Conversely, it makes sense to see the high return of their bonds as stemming primarily from high risk: even if little is known about when Palermo actually defaulted, frequent defaults are documented in both Milan and Naples from the seventeenth century (Pugliese 1924, p. 339-76; Felloni 1971, p. 304-11; Calabria 1991, p. 128-29). It is, of course, not possible to completely isolate the effect of *Feudalism* and *Church* on the risk of default via jurisdictional as opposed to fiscal fragmentation. Yet, in the South in particular, feudal lords only unofficially and indirectly controlled local taxation; their prerogatives were primarily judicial (Rao 2000, p. 100; Hanlon 2008, p.

309). Moreover, that differences in fiscal pressure between Italian states tended to be relatively low,[42] and that the presence of centralised fiscal institutions explained little of cross-sectional differences both also suggest that fiscal fragmentation was not the main channel. The modest contribution of war supports the point, too. It does not look as if particularly strong resistance of the local bodies to increased taxation was the main reason why bonds in the Spanish territories were so risky, as compared to those issued by the other Italian states.

The results of the panel are consistent with the new institutional perspective that feudal institutions, more markedly than those associated with the church, implied personal rule that was conducive to costly and unstable exchange relationships (van Zanden 2009, p. 56-57). They are also consistent with qualitative evidence. In the Spanish territories, the protection of the property rights of the investors in the public debts was uneven and personal: different interest rates were paid depending on the importance of the lender, and it was common in cases of partial defaults to treat different creditors differently. Only those creditors with strong ties to the ruling class could expect regular payments (Marsilio 2008; Pezzolo 2012, p. 278-279, 2013, p. 199). By contrast, both in the republics and other Italian principalities, transparent and impersonal rules prevailed (Pezzolo 2012, 2013; Piola Caselli 2012).

Republic does not have the expected sign. Moreover, the explanatory power of the model is comparatively low for the two republics, albeit for opposite reasons: interest rates were particularly low in Genoa, but unexpectedly high in Venice. These results suggest that constitutional representation of the creditors was not the main factor

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[42] See the previous section.

behind the very low cost of Genoese bonds. Rather, its financial specialisation from the sixteenth century had produced a particularly high capital supply and liquid secondary market. The relatively low estimated contribution for parliaments in reducing the risk of Neapolitan and Sicilian bonds further supports this interpretation.

High returns on Venetian bonds can be partly traced to risk due to the conspicuous presence of foreign investors that obtained in the course of the seventeenth century: by 1673, the Genoese probably owned as much as almost a third of the Venetian debt. This share was much higher than in any other place and may have been even bigger than that owned by the local patricians. In the intervening period, Venetian bonds were also traded on the secondary market at par or below, as delays of payments and partial defaults increasingly put off the Genoese from further investing there (Felloni 1971, p. 138-149). However, Venetian interest rates were also relatively high in the preceding period, when payments were regular (Pezzolo 2012, p. 279). In Genoa, the high prices of the S. Giorgio's shares reviewed earlier suggest that the local oligarchs enjoyed large profits on the secondary market.[43] Although secondary prices of the Venetian bonds are lacking for the sixteenth and most of the seventeenth-centuries, the edicts of the time signal recurrent excesses in the demand (Pezzolo 1995, p. 309)

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[43] As implied earlier, in the Papacy, too, new annuity issues were sold at below par to big bankers, who sold them at above par on the secondary market, but there secondary prices were not as high as in Genoa. In modern financial parlance, systematic differences between primary and secondary prices of assets are called Initial Public Offering discounts. These were a regular feature of nineteenth-century European bonds' markets and are seen as the product of monopsonistic power, which implied rents or mark-ups (Flandreau and Flores 2009, p. 653-54).

and therefore mark-ups for primary buyers.[44] The incentive faced by republican rulers to offer advantageous conditions to the local patricians is neatly captured by Frèdèric Lane (1973, p. 315) for sixteenth-century Venice: 'the well-to-do paid less in taxes than they were paid in interest and redemption of the principal … its rulers work[ed] out a system of loans and taxes which tended to reinforce the wealth of the rich'.[45] Hence, constitutional representation of the creditors may have contributed to increase the cost of public borrowing for the republics, thus off-setting remaining advantages in terms of risk. [46]

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[44] To make an example, on the 28th July 1570, the Council of Ten deliberated that: "[s]eeing that a lot of particulars of this city readily compete to deposit money in the mint at 7 per cent and having already collected all the one-hundred thousand ducats from the last issue on the 20th of June … and even some more money than that … let … the mint accept one-hundred thousand ducats more at 7 per cent per year with the same conditions" (Archivio di Stato di Venezia, Consiglio dei Dieci, Zecca, r. 2, p. 96). In other words, this instance illustrates, when the demand exceeded the supply the magistracy did not respond by lowering interest rates on existing issues through conversion, as a cost-minimiser agent would do, but by selling more issues at the same rate.

[45] In both Genoa and Venice, regressive distribution through the public debt was favoured by heavy reliance on indirect taxation. Discounting for simplicity for the small share of taxation that cannot be classified as either direct or indirect, in 1550, 96 per cent of taxation of the Republic of Genoa was indirect (Felloni 1998, p. 288); this compares with 90 per cent for the Republic of Venice in 1580 (Piola Caselli 1997, p. 193). Although these shares declined somewhat in the intervening period they remained well-above those observed in the other regional states. With the notable exceptions of the Papacy and the Kingdom of Sicily, in the principalities the tax burden tended to be more or less evenly distributed between direct and indirect sources.

[46] Even using the lower bound of the 95 per cent confidence interval for the estimated coefficient of *Republic* does not alter the conclusion that a republican constitution did not matter much in this context. The contribution of the variable in explaining cross-sectional differences remains comparatively low: it is estimated as being 11 per cent, on average.

Conclusion

The case of early modern Italy does not support the claim that the growth of absolutism implied that the quality of institutions markedly deteriorated: at the time, constitutional representation did not significantly affect the risk of public debt repudiation and the capacity to raise long-term borrowing. Indeed, that cross-sectional differences in the risk of bonds were to a large extent associated with jurisdictional fragmentation suggests that the problem with Italian institutions was that some regional states had not become absolutist enough.[47] At the same time, there is evidence that the republics might have suffered from old vices: the hypothesis that a republican constitution implied particularly high mark-ups for their oligarchs agrees with the old critique that the republics were less socially inclusive than the principalities.[48]

This analysis also casts doubts on the extent to which low institutional quality in Italy was at the root of the peninsula's economic decline. Italy was not distinguished by faltering capital markets, but by stagnating fiscal revenues. This pattern also suggests that, in contrast to the predictions of the literature on the rise of the fiscal state (O'Brien 2011, 2012) decentralised fiscal systems and low growth in taxation need not translate into poor protection of property rights. It is, however, consistent with the

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[47] In this respect, the results agree with Epstein's (2000a) claim that sovereignty, rather than constitutional representation, was at the root of low transaction costs. At the same time, it refutes his argument that the cost of public borrowing was somehow exempt.

[48] This argument can be traced back to Guicciardini (1965), writing in the early sixteenth century, and has been recently revived by Epstein (2000b).

predictions that in the age of mercantilism fiscal policies were primarily determined by military rather than economic needs, and that low fiscal capacity was bound to make Italian capitalism increasingly ill-equipped to compete with those of the growing national states for international market shares.[49] From this angle, if "capital intensity" (Tilly 1992) and "good" institutions allowed the Italian states to survive military conflicts by developing large public debts without expanding their revenues much, their initial economic and political advantages hampered their long-term growth.[50]

To what extent are these results representative of wider European trends? The political map of Italy in the early modern period, in sharp contrast to that of the Renaissance, was characterised by remarkable stability. Evidently, the conflicts of Renaissance Italy set the stage for financial development in the early modern principalities: proximity to the city-states pioneering financial innovations meant that unless the principalities had put their "house in order", eventually they would have fallen prey to conquest and annexation. This survival bias implies that more marked differences in the cost of public borrowing between polities with constitutional representation and others can be expected in other contexts.

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[49] This conclusion has been reached also by Pezzolo (2007), in his analysis of Mediterranean trade in the seventeenth century.

[50] This conclusion is similar to that of Stasavage (2011) in that public debts are seen as being bad for growth in the long-term. It however differs from it both in respect to the capacity of principalities of developing "good" institutions and the channels, emphasising political weakness rather than crowding-out of private investment.

Another issue is that borrowing could act as a viable substitute for rises in fiscal revenue only because the early modern Italian states came to accept a peripheral role in the struggles for hegemony in early modern Europe. The political economy of early modern warfare (Hoffman and Rosenthal 1997; Rosenthal 1998) predicts that the willingness to engage in risky military conflicts increases with the degree of control of the sovereign over fiscal revenues. This was conspicuously low in most Italian states, and the perspective is also consistent with the contrasting pattern observed in Piedmont, where a rigorous form of absolutism emerged. In short, the Italian results can be seen as the product of a peculiar blend of constitutional and financial developments and decentralised fiscal systems. One should therefore be wary of generalising. At the same time, early modern Italy highlights that one should be equally careful to generalise from the experience of the "winners": depending on the particular features of the broader institutional context the same institutions can produce very different outcomes.

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Tables

Table 1
Observations by annuity type and source type

Source type:	Edict	Ledger	Secondary market	Historian	Total
Annuity type:					
Alienation	36			289	325
Life annuity	65			22	87
Monte di pietà				10	10
Perpetuity	163	518	4	225	910
Term annuity	156			68	224
Total	420	518		614	1556

Sources: see the Appendix.

Table 2: Size of the consolidated debts in early modern Italy (in consumption baskets per capita)

City	N	Decades	Debt beginning	Debt end	Debt maximum	Decade maximum	Average	Rate of change (*100)	Cumulated change (*100)
Florence	9	1500s-1780s	0.91	0.73	2.13	1720s	1.15	0.036	10.59
Genoa	7	1500s-1780s	2.86	2.77	4.84	1550s	3.36	-0.003	-0.74
Milan	8	1530s-1780s	0.09	0.75	1.70	1720s	0.74	0.994***	1100.47
Naples	10	1550s-1790s	0.05	0.67	1.65	1720s	0.60	1.179***	1592.28
Palermo	13	1560s-1680s	0.16	0.17	0.18	1610s	0.13	0.737**	142.21
Rome	10	1520s-1780s	0.27	1.12	2.73	1720s	1.39	0.856***	825.76
Turin	6	1680s-1780s	0.26	0.44	0.58	1760s	0.41	0.537*	71.14
Venice	13	1500s-1790s	1.17	0.71	2.25	1720s	1.05	0.251	106.96

Notes: N = sample size; * = significant at the 10 per cent level; ** = significant at the 5 per cent level; *** = significant at the 1 per cent level.
Sources: see the Appendix.

Table 3: Fiscal revenues in early modern Italy (in consumption baskets per capita, in percentage)

City	N	Decades	Revenue beginning	Revenue end	Revenue maximum	Decade maximum	Average	Rate of change (*100)	Cumulated change (*100)
Florence	12	1490s-1790s	12.07	6.83	12.82	1730s	9.66	0.039	12.30
Genoa	7	1490s-1790s	7.57	9.91	20.10	1550s	11.01	0.060	19.71
Milan	26	1490s-1790s	14.66	14.44	14.66	1490s	8.52	0.119	42.72
Naples	14	1490s-1790s	5.57	6.06	11.71	1630s	6.95	0.181*	71.93
Palermo	16	1500s-1700s	3.03	6.15	7.21	1570s	5.34	0.144	33.42
Rome	24	1490s-1790s	7.18	4.52	13.08	1720s	7.01	0.093	32.31
Turin	24	1490s-1780s	3.68	19.59	20.78	1740s	13.60	0.738***	749.37
Venice	21	1490s-1790s	13.90	8.62	15.44	1710s	10.20	-0.005	-1.40

Notes: N = sample size; * = significant at the 10 per cent level; ** = significant at the 5 per cent level; *** = significant at the 1 per cent level.
Sources: see the Appendix.

Table 4: The cost of public borrowing in early modern Italy: nominal and real interest rates (in percentage)

| | N | Decades | Nominal interest rates | | | Real interest rates | | |
			Rate of change (*100)	Level	Marginal effect	Rate of change (*100)	Level	Marginal effect
Decade*100				-0.341***	-1.809		-0.380***	-1.647
Florence	16	1530s-1790s	-0.221***	-0.045***	-0.240	-0.143	-0.078***	-0.337
Genoa	17	1620s-1780s	-0.411***	-0.450***	-2.385	-1.243***	-0.505***	-2.187
Milan	25	1530s-1790s	-0.350***	0.298***	1.579	-0.331***	0.376***	1.630
Naples	27	1520s-1790s	-0.323***	0.358***	1.895	-0.341***	0.424***	1.836
Palermo	21	1520s-1780s	-0.363***	0.303***	1.607	-0.351***	0.357***	1.548
Rome	25	1520s-1790s	-0.456***			-0.530***		
Turin	16	1620s-1790s	-0.339***	0.196***	1.038	-0.682***	0.303***	1.313
Venice	25	1520s-1780s	-0.280***	0.131***	0.693	-0.191	0.161***	0.700
N				172			172	
R-squared				0.823			0.586	

Notes: N = sample size; * = significant at the 10 per cent level; ** = significant at the 5 per cent level; *** = significant at the 1 per cent level.
Sources: see the Appendix.

Table 5: Political regimes and the cost of public borrowing: panel data regression analysis

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	5.794	5.738	5.694	9.856	5.516	5.675
	(11.00)***	(11.33)***	(11.39)***	(10.65)***	(13.95)***	(11.2)***
*Decade*100*	-0.255	-0.255	-0.255	-0.498	-0.238	-0.248
	(-8.96)***	(-9.28)***	(-10.4)***	(-9.65)***	(-10.97)***	(-9.01)***
Urban potential	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003
	(-2.54)**	(-2.52)**	(-3.14)***	(-1.20)	(-3.60)***	(-2.43)**
Urban potential growth	0.012	0.012	0.012	0.120	0.008	0.021
	(0.4)	(0.38)	(0.41)	(2.19)**	(0.35)	(0.69)
Inflation	0.030	0.030	0.030	-0.336	0.037	0.028
	(3.10)***	(3.41)***	(2.71)***	(-19.52)***	(5.03)***	(2.94)***
Debasement	-0.244	-0.244	-0.244	-0.514	-0.309	-0.307
	(-3.31)***	(-3.52)***	(-3.62)***	(-3.93)***	(-5.62)***	(-4.03)***
Financial pioneer	-0.146		-0.020	-0.162	-0.179	
	(-0.62)		(-0.09)	(-0.39)	(-1.01)	
War pressure	0.304	0.304	0.304	0.266	0.325	
	(11.7)***	(16.74)***	(10.69)***	(5.02)***	(15.44)***	
War years						0.114
						(8.76)***
Treasury	-0.028	-0.028	0.074	-0.067	-0.038	-0.021
	(-0.44)	(-0.35)	(0.92)	(-0.41)	(-0.65)	(-0.33)
Fiscal reform	-0.045	-0.045	-0.045	0.156	-0.057	-0.075
	(-1.05)	(-0.99)	(-0.88)	(1.41)	(0.152)	(-1.82)*
Parliament	-0.081	-0.074	-0.035	-0.041	-0.097	-0.090
	(-0.94)	(-0.88)	(-0.39)	(-0.27)	(-1.50)	(-1.06)
Republic	0.104	0.026	0.096	0.080	0.045	0.092
	(0.56)	(0.21)	(0.57)	(0.24)	(0.32)	(0.51)
Church	0.007	0.006	0.006	0.006	0.009	0.007
	(1.46)	(1.23)	(1.09)	(0.63)	(2.25)**	(1.45)
Feudalism	0.009	0.010	0.010	0.010	0.009	0.008
	(1.72)*	(2.25)**	(2.05)**	(1.14)	(2.32)**	(1.62)
Florence	0.000	-0.055	0.142	0.000	0.000	0.000
Genoa	-0.483	-0.474	-0.331	-0.571	-0.419	-0.478
Milan	-0.041	-0.053	-0.001	-0.040	-0.049	-0.023
Naples	0.059	0.071	0.038	0.065	0.060	0.054
Palermo	-0.040	-0.045	-0.013	-0.042	-0.049	-0.041
Rome	-0.033	-0.037	-0.080	-0.051	-0.008	-0.047
Turin	0.068	0.132	0.080	0.087	0.050	0.072
Venice	0.329	0.322	0.464	0.388	0.437	0.325
Adj. R-squared	0.828	0.829	0.828	0.774	0.815	0.828
N	172	172	172	172	170	172

Notes: N = sample size; * = significant at the 10 per cent level; ** = significant at the 5 per cent level; *** = significant at the 1 per cent level. Fixed effects vector decomposition model estimation. Clustered standard errors allow for arbitrary within city correlation; the *t-statistics* are in parentheses.
Sources: see the Appendix.

Table 6: Political regimes and the cost of public borrowing: Regression decomposition analysis (in percentage)

Variable	Florence	Genoa	Milan	Naples	Palermo	Rome	Turin	Venice	Average
Decade	1.31	7.32	5.66	1.99	9.04	6.01	13.63	2.49	5.59
Urban potential	23.60	13.52	4.05	33.33	12.85	5.43	27.06	4.42	14.87
Urban potential growth	0.24	0.16	0.44	0.35	0.19	0.30	0.04	0.20	0.26
Inflation	0.14	1.24	0.60	0.38	1.46	0.89	1.33	0.05	0.72
Debasement	0.04	0.55	1.09	0.15	0.11	0.39	0.07	0.43	0.38
Financial pioneer	14.85	7.68	10.95	4.20	9.79	12.64	5.54	10.76	9.50
War pressure	3.72	1.76	6.23	0.36	0.30	5.33	2.84	0.15	2.58
Treasury	1.07	0.97	1.72	1.35	2.43	4.05	1.78	1.36	1.90
Fiscal reform	0.70	0.31	0.73	0.34	0.79	1.02	2.11	0.44	0.76
Republic	3.89	6.23	5.64	2.16	5.04	6.51	2.86	8.73	5.23
Parliament	2.40	1.24	3.48	1.75	13.09	4.01	1.76	1.74	3.72
Feudalism	38.81	20.08	39.26	28.98	34.05	7.65	26.85	25.64	27.34
Church	9.23	0.53	10.93	19.61	2.89	37.40	6.44	7.00	12.98
Place	0.00	38.41	9.21	5.06	7.98	8.37	7.68	36.60	14.15
Political variables	56.10	29.37	61.76	54.19	58.29	60.64	41.79	44.91	51.95

Notes: the average is weighted by the number of observations.
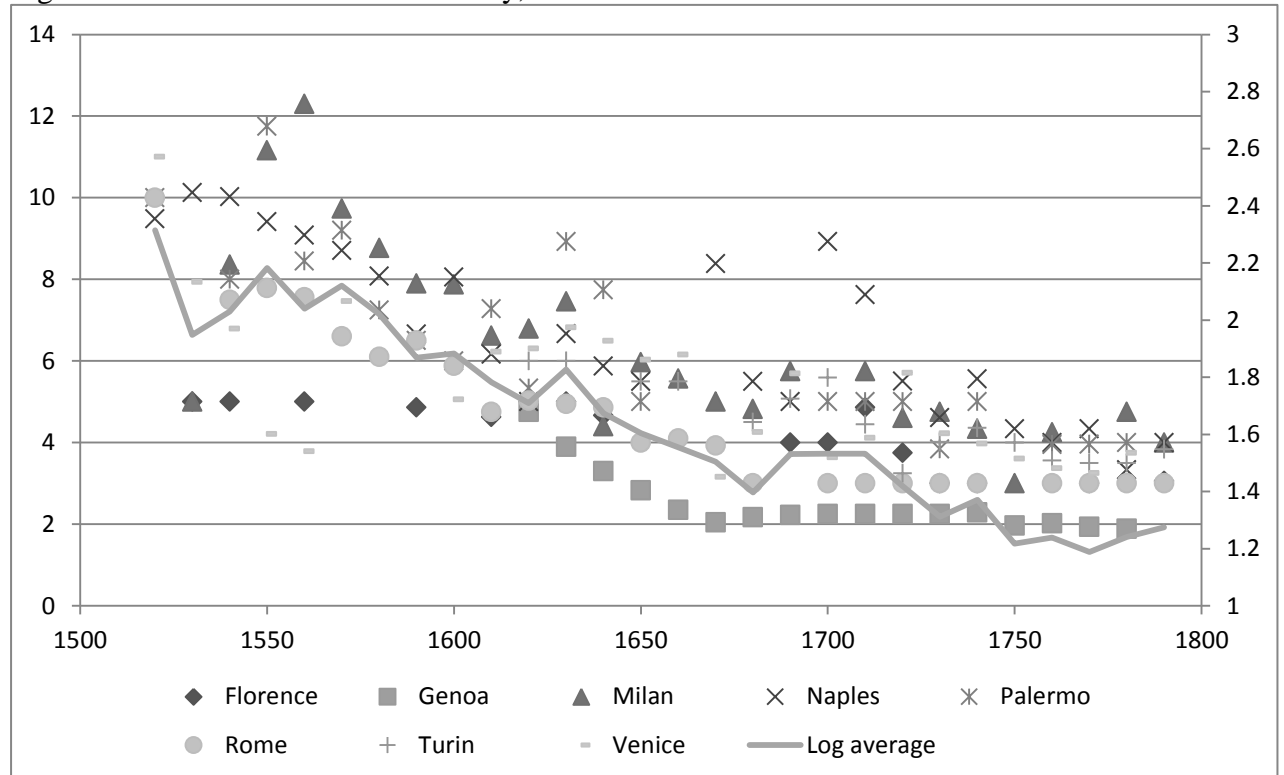*Sources*: see the Appendix.

Figures

Figure 1: Interest rates observations, 1520-1796: Spatial distribution
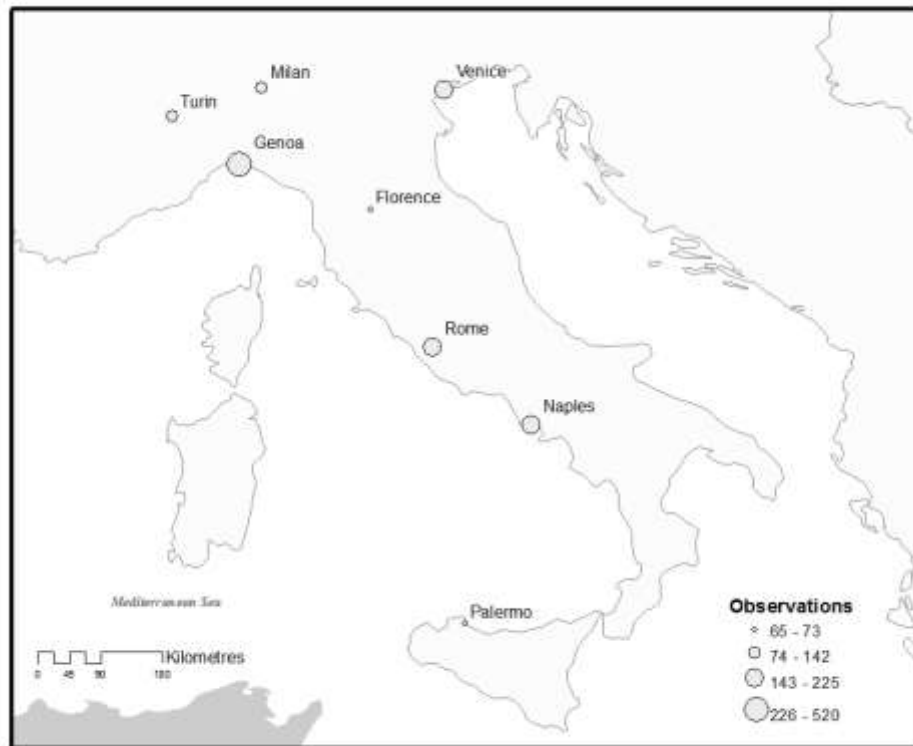
Sources: see the Appendix.

Figure 2: Nominal interest rates in Italy, 1520s-1790s

Notes: interest rates are normalised to perpetuity.
Sources: see the Appendix.

Appendix: data sources

1. Interest rates

Florence: ASF,[51] Monte Comune o delle Graticole, parte I, pezzo 3: 260; ASF, Monte Comune o delle Graticole, parte I, pezzo 4: 20; ASF, Monte del Sale, Pezzo 1; ASF, Monte del Sale, pezzo 2: 7, 15, 19, 24; ASF, Monte di Pietà, Pezzo 3; ASF, Monte di Sussidio Vacabile e Non Vacabile, Pezzo 2; ASF, Monte di Sussidio Vacabile e Non Vacabile, Pezzo 3; ASF, Monte di Sussidio Vacabile e Non Vacabile, pezzo 142: 359-361; ASF, Monte di Sussidio Vacabile e Non Vacabile, pezzo 143: 2-3; ASF, Nuovo Monte Comune, Pezzo 383; Cantini (1804a: 255, 1804b: 28, 1805a: 247, 1805b: 272, 1806a: 174, 1806b: 21, 1806c: 146, 227, 262, 1807a: 352, 1807b: 7, 53, 113, 144); Cochrane (1973: 198-199); Dal Pane (1965: 10); Felloni (1971: 284); Menning (1993: 140, 144, 149, 280-285); Stumpo (1984: 223).

Genoa: ASG, Antica Finanza, Pandetta 38, numero 322; ASG, Antica Finanza, Pandetta 38, numero 344; ASG, Archivio Segreto, 9/1026; ASG, Banco di S. Giorgio, Pandetta 17, numero 3081: 55-57; ASG, Banco di S. Giorgio, Pandetta 17, numero 3082; ASG, Banco di S. Giorgio, Pandetta 17, numero 3083: 5; ASG, Banco di S. Giorgio, Pandetta 17, numero 3084; ASG, Banco di S. Giorgio, Pandetta 17, numero 3085: 5, 278; ASG, Banco di S. Giorgio, Pandetta 17, numero 3086; ASG, Banco di S. Giorgio, Pandetta 17, numero 3087: 3-4, 8, 12, 17; ASG, Banco di S. Giorgio, Pandetta 17, numero 3088; ASG, Banco di S. Giorgio, Pandetta 17, numero 3089: 26-27; ASG, Banco di S. Giorgio, Pandetta 17, numero 3090; ASG, Banco di S. Giorgio, Pandetta 17, numero 3091: 26, 97; ASG, Banco di S. Giorgio, Pandetta 17, numero 3092; ASG, Banco di S. Giorgio, Pandetta 17, numero 3093: 25; ASG, Banco di S. Giorgio, Pandetta 17, numero 3094; ASG, Banco di S. Giorgio, Pandetta 17, numero 3095; ASG, Banco di S. Giorgio, Pandetta 17, numero 3111: 1, 444, 448, 460, 462, 471, 474, 483, 493-494, 535, 559; ASG, Banco di S. Giorgio, Pandetta 17, numero 3112: 115, 244, 279, 453; ASG, Banco di S. Giorgio, Pandetta 17, numero 3113: 50, 132, 141, 213, 288, 306, 347; ASG, Banco di S. Giorgio, Pandetta 17, numero 3114: 17, 29, 38, 59, 104, 123, 209, 275, 574, 622, 765; ASG, Banco di S. Giorgio, Pandetta 17, numero 3115: 63, 127, 161, 215, 272, 311, 328, 402, 462, 509; ASG, Banco di S. Giorgio, Pandetta 17, numero 3116: 9, 10, 29, 261, 306, 336, 539, 631, 682, 717; ASG, Banco di S. Giorgio, Pandetta 17, numero 3177; ASG, Banco di S. Giorgio, Pandetta 17, numero 3135; ASG, Banco di S. Giorgio, Pandetta 17, numero 3137; ASG, Banco di S. Giorgio, Pandetta 17, numero 3138; ASG, Banco di S. Giorgio, Pandetta 17, numero 3140; ASG, Banco di S. Giorgio, Pandetta 17, numero 3142; ASG, Banco di S. Giorgio, Pandetta 17, numero 3144; ASG, Banco di S. Giorgio, Pandetta 17, numero 3181; ASG, Banco di S. Giorgio, Pandetta 17, numero 3182; ASG, Banco di S. Giorgio, Pandetta 17, numero 3184; ASG, Banco di S. Giorgio, pandetta 18, numero 610/2464; ASG, Banco di S. Giorgio, Pandetta 18, numero 610/2471; ASG, Banco di S. Giorgio, Pandetta 18, numero 610/2472; ASG, Banco di S. Giorgio, pandetta 18, numero 610/2473; ASG, Banco di S. Giorgio, pandetta 18, numero 610/2474; ASG, Banco di S. Giorgio, Pandetta 18, numero 610/2475; ASG, Banco di S. Giorgio, Pandetta 18, numero 610/2476; ASG, Banco di S. Giorgio, Pandetta 18, numero 610/2477; ASG, Banco di S. Giorgio, pandetta 18, numero

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[51] ASF stands for Archivio di Stato di Firenze; similarly, in what follows ASG stands for Archivio di Stato di Genova and ASV stands for Archivio di Stato di Venezia.

610/2479; ASG, Banco di S. Giorgio, pandetta 18, numero 610/2480; ASG, Camera Finanze, 827; ASG, Camera Finanze, 1093; Giacchero (1979: 139, 288, 291, 293, 336, 343, 347, 359, 427, 437, 536, 539, 551-552).

Milan: Caizzi (1968: 152-153, 169, 191-192); Cova (1970: 15; 1972: 331); De Luca (2003: 185-186, 2007: 127, 2008: 49); Felloni (1971: 213); Pugliese (1924: 360-363, 365, 367, 374); Treccani (1959: 153); Vietti (1884: 87-88, 99, 102-106).

Naples: Banco di Napoli (1972: 69, 74, 95); Bianchini (1971: 276); Bulgarelli Lukacs (1993: 49-50, 53; 2007: 340); Calabria (1991: 143-145); Capasso (1876: 69, 73, 75-78, 83, 85-86, 89, 91); Caracciolo (1988: 217-218, 220, 223); Coniglio (1955: 65, 151, 199); Demarco (2000: 103, 110, 112, 114-116, 125-126); De Rosa (1958: 11, 17, 24, 30-31, 34, 43-47, 57-60, 64-66, 68-69, 76, 181-182, 188, 213-214, 235-237, 246); Felloni (1971: 303); Malanima (1977: 101); Placanica (1982: 231); Romano (1976: 38); Sabatini (2008: 102); Tortora (1890: 193); Zilli (1994: 94).

Palermo: Aymard (1972: 995, 997-998, 1002); Bianchini (1841: 247, 277, 282-283, 286); Coniglio (1955: 103-104); Cusumano (1974: 185, 318, 338-339, 343, 350, 369, 423); Favarò (2007: 349); Felloni (1971: 314-315, 317-318); Giarizzo and D'Alessandro (1989: 230); Giuffrida (1976: 319-323, 333, 337); Giuffrida (1999: 256, 266-270); Koeningsberger (1969: 134); Mack Smith (1968: 174); Marrone (1976: 21); Titone (1974: 104).

Rome: Colzi (1999: 60); Comune di Roma (1920: 14, 24, 48, 51-52, 57, 68, 72, 74, 77, 84, 86-87, 92, 95, 98-99, 104, 110, 120, 124, 132-133, 134, 144-146, 1925: 14, 15, 31, 34, 40, 43, 51, 66, 72, 92, 100, 129, 142-143, 148-149, 154, 157, 172, 178, 184, 189, 201-202, 213, 221-222, 225, 235, 248-249, 28, 261-262, 1930: 11, 16, 20, 29, 42, 69-70, 84, 150, 217, 220, 223, 232; 1932: 35, 66, 89-90, 120, 169, 189-190, 1934: 53, 67, 70, 1956: 8, 35, 39, 235, 247, 303, 1958: 66, 104, 113, 137, 181); Felloni (1971: 164-165, 168); Gross (1990: 154); La Marca (1988: 389); Piola Caselli (1988: 199, 1993: 35, 51, 1997: 242, 2003: 93); Strangio (1994: 175, 177-179, 191-194, 1999: 175-177, 179-180).

Turin: De Luca (2008: 46); Duboin (1818-1846a: 293, 1818-1846b: 1247-1250, 1253-1259, 1266, 1289-1294-1295, 1300, 1318-1319, 1324, 1327-1329, 1332-1333, 1337, 1345, 1349, 1351-1352, 1357, 1818-1846c: 333-336, 347-348, 350-351, 354-355, 370, 372-374, 376-378, 386-388, 396, 402-403, 423-427, 430, 433, 438, 445-449, 454-455, 457, 460, 464, 471-472, 481, 483, 489-490, 492, 495, 498, 511-512, 516, 524, 526, 528, 530, 534-535, 537, 539, 542, 545, 550, 552, 557, 565, 582, 584, 611-612); Einaudi (1908: 67, 180, 195-198, 200-201, 208-211, 229, 236, 443, 445, 447-448); Felloni (1971: 332, 334); Prato (1908: 402, 1916: 84); Stumpo (2007: 164); Storrs (1999: 95); Symcox (1983: 201).

Venice: ASV, Consiglio dei Dieci, Comune, r. 12: 152, 158-159, 190, 201; ASV, Consiglio dei Dieci, Zecca, r. 1: 6-8, 10, 12, 14-16, 18-19, 23-24, 27-29, 31, 33, 36-37, 39, 43, 45-46, 47-49, 50-53, 79-80, 85, 87, 90, 114, 131; ASV, Consiglio dei Dieci, Zecca, r. 2: 51-53; ASV, Consiglio dei Dieci, Zecca, r. 3: 90, 93, 95-96, 100, 107-110, 113, 115-118, 121-124, 126-127, 129-131, 134-148, 151, 153-154, 157-159, 161-166, 171-172, 174, 181-182, 189, 200; ASV, Senato, Zecca, 1608-1626: 101-108, 110, 115-117, 122, 126, 132-134, 145; ASV, Senato, Zecca, 1622-1626: 194; ASV,

Senato Zecca, 1636-1637: 48; ASV, Savio Cassier, busta 587, decreto 7 Maggio 1787, proclama 23 Maggio 1789; Einaudi (1907: 173-175); Felloni (1971: 138-139, 146, 148, 154); Pezzolo (2003a: 84, 2003b: 45-47, 49, appendix, 2006a: 90-91); Pullan (1971: 140); Reale Commissione (1903a: 210-212, 550, 555-557, 1903b: 90-108, 191, 256, 433, 435, 456, 478, 482, 485-486, 495-496, 501, 532, 555-558, 575); Vietti (1884: 129, 131-132).

2. Secondary prices

Florence: ASF, Nuovo Monte Comune, Pezzo 383; Conti (1984: 12-13, 34); Genoa: Cuneo (1842: 309-311); Sieveking (1905: 64, 69-70); Marengo et al. (1911: 48-50); Cipolla (1952: 270); Heers (1961: 630); Rome: Strangio (1994: 188); Pezzolo (1999: 257); Colzi (2007: 194-195); Piola Caselli (2012: 292); Venice: Gallicciolli (1795: 91); Luzzatto (1963: 129-131, 271-272); Felloni (1971: 148); Ippolito (1996: 45); Homer and Sylla (2005).

3. Public debts

Nominal size of the debt: Florence: Felloni (1977: 22), Stumpo (2007: 149, 157); Genoa: Felloni (2007: 133); Milan: Pugliese (1924: 370): Felloni (1977: 22), De Luca (2007), Naples: Felloni (1971: 301), Felloni (1977: 22), Calabria (1991); Rome: Felloni (1977: 22), Piola Caselli (1997: 242); Turin: Felloni (1977: 22); Stumpo (1979: 309-310, 2007: 157); cost of servicing the debt: Palermo: Giuffrida (1999: 254), Ligresti (1997: 902, 906, 911, 916, 921, 923, 932-933), Ribot García (1978: 425); interest rate: Palermo: see interest rates; silver equivalent of the money of account: Florence: Felloni (1971: 502-503), Malanima (2002: 409); Genoa: Malanima (2002: 409); Milan: Malanima (2002: 409); Naples: de Rosa (1955: 33-36), (Calabria (1991: xiii-xiv), Bianchini (1971); Palermo: della Rovere (1964), Giuffrida (1999: 280); Rome: Londei (1990); Turin: Promis (1841: 490-491), Felloni (1968: 23), Stumpo (1979: xviii); size of the debt in silver: Florence: Pezzolo (2008: 19, 2013: 215); Venice: (Pezzolo, 2006a: 88); populations: Granduchy of Tuscany: Bellettini (1980, 1987), Cipolla (1965), Felloni (1977), Doveri (1999); Duchy of Milan: Romani (1955), Beloch (1961); Cipolla (1965), Felloni (1977), Sella (1979), Sala (1980), Bellettini (1980, 1987); Kingdom of Naples: Cipolla (1965), Felloni (1977), Bellettini (1980, 1987), Ligresti (2002); Kingdom of Sicily: Felloni (1977), Ligresti (2002); Papacy: Cipolla (1965), Felloni (1977), Bellettini (1980, 1987), Doveri (1999); Principality of Piedmont: Cipolla (1965), Felloni (1977); Republic of Genoa: Felloni (1977, 1998); Republic of Venice: Cipolla (1965), Felloni (1977), Schiaffino (1980), Bellettini (1980, 1987), Fornasin and Zannini (1999); before the mid-sixteenth century (with the exception of the Kingdom of Sicily), the state populations are extrapolated on the basis of the Italian trend, as estimated by Bellettini (1987), price of a consumption basket in Central-Northern Italy in grams of silver: Malanima (2010).

4. Revenues

Nominal size of the revenue: Florence: D'Addario (1963: 437), Dal Pane (1965: 64-65), Cochrane (1973: 173), Capra (2002: 312), Felloni (1996: 76), Stumpo (1984: 216-217; 2007: 157), Piola Caselli (1997: 311); Genoa: Felloni (1976: 795), Felloni (1996: 76), Felloni (2009: 340-343); Milan: Pugliese (1924: 476), Piola Caselli (1997:

311), Capra (2002: 312-313), Felloni (1996: 76), Agnoletto (2000: 195-196), Stumpo (2007: 157); Naples: Bulgarelli Lukacs (1993: 73), Pezzolo (1995: 330), Felloni (1996: 76), Capra (2004: 434); Palermo: Ribot García (1978: 415-416), Ligresti (1997: 931-932); Rome: Felloni (1996: 76), Pezzolo (1995: 330; 1999: 244), Piola Caselli (2012: 300); Turin: Einaudi (1908), Canina (1924: 633), Quazza (1957: 175), Stumpo (1979: 393-405), Felloni (1996: 76), Storrs (2009: 217); Venice: Felloni (1996: 76); silver equivalent of the money of account: Venice: Pezzolo (2006a: 12); others: see public debts; size of the revenue in silver: Milan: Matteo Di Tullio (private database kindly provided to the author, based on the work of Maffi and other published and unpublished sources); Venice: Pezzolo (2006a: 38-40). Populations: see public debts; price of a consumption basket in Central-Northern Italy in grams of silver: Malanima (2010).

5. The independent variables

Urban potential. The best available measure of commercial and financial development (and hence supply of capital) before the nineteenth century is urbanisation (Persson, 1988). The standard city-level measure of urbanisation is the so-called "urban potential". This measure is equal to the sum of the local and other cities' populations weighted by distance; in turn, distances are weighted to take into account whether cities were connected by sea-, river-, or road-transport (de Vries, 1984; Bosker et al. 2008).[52] In addition, to take into account that commercial and capital flows were bound to be hindered by state borders (not least because foreigners were regularly discriminated against in cases of partial defaults), an additional weight of 1.25 is imposed on the distance between cities in different states.[53] As "agro-towns" in the South vitiate cross-sectional comparison across northern and southern areas (Malanima, 2005a), following Bosker et al. (2008), the analysis only consider cities with at least 10,000 inhabitants and it is based on within-city variations only.

Like Bosker et al. (2008), in the economy of the work, only the populations of Italian cities are included (drawn from Malanima, 2005b). This implies an only little loss of

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[52] The Roman roads are from Scarre (1995: 23); the main ports are from du Jourdin (1993).

[53] Like the other weights, this particular weight is arbitrary. Nonetheless, it has the desirable property of preserving the ratio between the highest and lowest weight at 2.

accuracy: investments from beyond the Alps were relatively rare. There were exceptions; for instance, in the 1560s Venice attracted substantial funds from Geneva (Pezzolo, 1995: 287) and the 1570 Venetian issue was specifically aimed at German investors: 'Having understood that some Germans would deposit … in the mint … a good sum of money … let … [the mint] accept … talers from those who wish' (ASV, Consiglio dei Dieci, Zecca, r. 3: 95). However, most investors were from the peninsula, with the Genoese being particularly active from the beginning of the seventeenth century (Felloni, 1971, 1998, 2007). Thus, despite the transnational nature of the Papacy's financial links, in 1684-1689 less than 4 per cent of the investors in the *Monte di San Pietro* came from outside Italy (Masini, 2007: 205).

Debasement. This measure of monetary stability has been constructed as follows. Firstly, data on the silver equivalent of the money of account in grams of silver has been collected (for the sources, see public debts and revenues); secondly, indexes (1510=1) have been computed; and, thirdly, the total changes in each decade and the previous one in the index have been computed (for instance, in the 1520s, this is equal to the value of the index in 1529 minus the value of the index in 1510). The value of this variable is set to zero in Genoa, since there the intrinsic value of bonds and their dividends was not denominated in current Genoese *lire*, but in *lire di numerato*, and their intrinsic value had been fixed since 1602, whilst our series starts in the 1620s.

Financial pioneer. In the absence of precise figures, this dummy is a proxy for cross-sectional differences in secondary market development, which should affect liquidity premia, in particular. In Genoa, Florence and Venice secondary markets for bonds can

be traced as far back as the Early Middle Ages.[54] Typically, in the Middle Ages there were restrictions on foreigners' participation in the secondary market and bonds were mostly traded locally. In the other states, long-term borrowing and secondary markets for their bonds grew from the sixteenth century (Sieveking, 1905; Pezzolo, 1995, 2005; Fratianni and Spinelli, 2006).

War pressure. Like in Karaman and Pamuk (2011), war pressure is measured with an index which increases with the number of casualties and populations of the adversaries and decreased with their distance relative to the populations involved. However, two corrections are implemented here. Firstly, since comparable casualty figures for all of the early modern wars are not available, the analysis relies on the average number of casualties per battle, instead of total casualties per capita per war-year.[55] Secondly, to take into account different units of measurement, the three remaining elements of the index, that is average number of casualties per battle, sum of the populations of the opponents weighted by distance, and the total population involved in the conflict, are normalised to take values between 0 and 1 before, instead of after, they are multiplied.

The use of decadal means ensures that one controls for the greater pressure on the public purse caused by longer wars. Although, needless to say, uncertainty about the underlying figures implies that, unavoidably, the index is bound to suffer from a non-negligible margin of error, the results of the estimation exercise turn out to be eminently plausible. On average, the pressure resulting from a year of war is estimated as increasing by about 1.19 times between the sixteenth and the seventeenth

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[54] I owe this dating to an anonymous reviewer.
[55] An average of 9 battles per war is considered.

centuries, and by about 1.44 times between the sixteenth and the eighteenth centuries. Reassuringly, these figures are in the same order of magnitude as changes in the number of casualties per battle, as well as in the size of Italian armies during the "military revolution" (cf. Pezzolo, 2006b). Within the sample, the highest average war pressure was experienced by the Duchy of Milan (0.190) and Piedmont (0.126), whereas the same value is particularly low for the Republic of Genoa (0.018) and Tuscany (0.016). Again, these figures agree with expectations.[56]

Republic and Parliament. In the early modern period little was left of the communal liberty that characterised the city-states of central and northern Italy in the high middle-ages. By 1555, when the Republic of Siena had fallen prey to the Duchy of Tuscany, Venice, Genoa and Lucca were the only surviving republics of the peninsula. The Venetian constitution placed sovereignty in the Great Council, which was formed by all adult male nobles residing in Venice; the magistracies responsible for day-to-day administration, like the Senate and the Council of Ten, were elected by and accountable to it (Lane, 1973). Similarly, in Genoa the 1528 oligarchic constitution prescribed that magistracies and officials were accountable to the Major and the Minor Councils, whose members, in turn, were randomly drawn from the local aristocracy (Bitossi, 2007). In short, the Venetians and Genoese constitutions ticked all the boxes of Stasavage's (2011: 54-69) taxonomy: fiscal decisions were taken by bodies representing geographically concentrated urban patricians.

The High Middle Ages also saw the flourishing of representative parliaments in feudal territories, like Piedmont, Sardinia, Sicily and Naples. Only a few of these

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[56] Sources: casualties: Clodfelter (2008); populations: see public debts, Helleiner (1967), Symcox (1983), McEvedy and Jones (1985), Braudel (1987); Felloni (1998), Corritore (1999), Tacitus (2012). In a few (non-Italian) cases, extrapolation of population figures has been used.

parliaments survived into the early modern era, though: the Piedmontese estates met for the last time in 1560; thereafter, within our sample, only the Neapolitan and the Sicilian parliaments continued to play an important role (Marongiu, 1962; Koenigsberger, 1986). The constituencies represented in these Italian parliaments were both socially and geographically wider than that of early modern republican institutions, and their representation was less intensive than that enjoyed by republican oligarchs. The Neapolitan parliament regularly met every three years or so until 1642 when it was dissolved; it had representatives of the towns and the feudal lords, but, peculiarly, not the clergy. It was consulted over taxation, and at times it successfully resisted fiscal demands from Madrid (Koenigsberger, 1986: 44-46). The members of the Sicilian parliaments were drawn from the three estates (nobility, clergy and cities) and had powers on taxation, legislation and war. Similarly to its Neapolitan counterpart, in the sixteenth century the Sicilian parliament was summoned every three years. It met only once under the short-lived Savoyard rule (1713-1720), but was revived under the Habsburgs and the Bourbons (Koenigsberger, 1986: 37-44).

Treasury and Fiscal reform. Old regime Italian regional states were characterised by fiscal fragmentation and a resilient web of urban, clerical and feudal fiscal autonomies (Fasano Guarini, 1995). However, within princely states, coordination failure was addressed by the development of central fiscal institutions. In the sixteenth century only in Piedmont, the Papacy, and the Kingdom of Naples there existed an institution responsible for compiling an annual budget and centrally coordinating the various fiscal agencies: the *Camera dei Co*nti at Turin (founded in 1555), the Apostolic Chamber at Rome (dating back to the high Middle Ages) and the *Sommaria* at Naples

(founded in 1444) (Stumpo, 1979, 1984). In the "century of the enlightenment", major processes of rationalisation of the fiscal administration tightening the grip of central government over the state finances were carried out in Piedmont (in 1717), Tuscany (from 1737) and the Duchy of Milan (in 1749) (Quazza, 1957; Symcox, 1983; Sella and Capra, 1984: 272-273, 285; Carpanetto and Ricuperati, 1987; Capra, 2002, 2004).

Church. Secularisation was the one field where enlightened despotism made relatively significant progress (Carpanetto and Ricuperati, 1987). Yet, the terms of the "throne-altar alliance" were renegotiated, rather than being outright challenged, and it is unlikely that differences in the influence of Rome across regional states were significantly altered. To measure these differences, the analysis employs the number of dioceses per million of inhabitants in c. 1700. These are in remarkable agreement with the qualitative evidence. Thus, the lowest figure, 11, is found in the Republic Venice, where the clergy had little fiscal exemptions and was strongly subordinated to secular authorities (Lane, 1973; Sella, 1997: 166). This can only be partly traced to a republican constitution: in the Republic of Genoa, where loyalty to the Pope was consistently upheld, and the bishops enjoyed ample powers and privileges (Ruffini, 1974: 257-261; Sella, 1997: 165), the figure, 19, is significantly higher than in the Republic of Venice. In Tuscany, the Medici's close family ties with the Papacy implied strong links with Rome (Sella, 1997: 165); consistently, the figure is higher still: 28. By contrast, in Piedmont where Gallicanism created scope for asserting secular supremacy (Sella, 1997: 166), the figure is relatively low: 12.

With the obvious exception of the Papacy, where the clergy did not fragment authority,[57] the Kingdom of Naples is usually seen as the regional state where the Church wielded the greatest influence (Sella, 1997: 171). This is confirmed by the figure there, which being 51 is significantly higher than anywhere else in the peninsula. One should be wary of generalising to the Spanish territories: the figure was not as high in Sicily (22), and was considerably lower in the Duchy of Milan (13), where the Spanish monarchy was in a much stronger position vis-à-vis the church than in the Kingdom of Naples (Sella, 1997: 174).

Feudalism. The current consensus is that, in the wake of the "refeudalisation" in the sixteenth and seventeenth centuries, in the early modern years there was continuity amidst change, with feudal lords continuing to enjoy significant jurisdictional autonomies, particularly in the south (Fasoli, 1973; Chittolini, 1986; Muto, 1986; Ago, 1994; Sella, 1997). Such claims are corroborated by Sicilian official statistics on the share of the population under feudal rule (Ligresti, 2002: 61),[58] the measure of the significance of feudalism employed here. These data show that the proportion of the population under feudal rule declined from 57.3 per cent in 1505 to 44.9 per cent in 1593, to rise thereafter; by 1806 it was 4 percentage points greater than at the beginning of the period. Elsewhere frequent snapshots are hard to come by, but the Sicilian pattern suggests that the available data can be considered as representative of the significance of feudalism for the early modern period as a whole for the purposes of the analysis.

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[57] For this reason the value of *Church* is set to 0 in Rome.
[58] Specifically the data refer to 1505, 1548, 1570, 1593, 1616, 1623, 1636, 1651, 1681, 1714, 1747 and 1806.

This is particularly so as the cross-sectional variation of the proportion of the population under feudal rule, unlike its temporal variation within Sicily, was huge. In the Granduchy of Tuscany in 1640 only 4.3 per cent of the population was under feudal rule (Chittolini, 1986: 17; Vivoli, 1994: 339). The significance of feudalism was low also in the republics. In 1777 in the Republic of Genoa, jurisdiction was shared with local lords in 5.2 per cent of the territory of the *terraferma* (Felloni, 1972); as this accounted for 82 per cent of the population (the rest was living in the capital) (Felloni, 1998: 280), the share of the population under feudal rule there can also be estimated as being about 4.3 per cent. In the Republic of Venice, in the early modern period the fiefs were concentrated in the Friuli (Zamperetti, 2007), where, in 1567, 57 per cent of the jurisdictions in which the territory was divided were feudal (Povolo, 1980: 177). As, at the time, the Friuli accounted for about 12 per cent of the total population of the Venetian *terraferma* (Beloch, 1961: 40), the share of the population under feudal rule in the republic can be estimated as being about 6.8 per cent.

At the other end of the spectrum, in the Kingdom of Naples in 1796 over 70 per cent of the population was ruled by feudal lords (Berengo, 1971: 30-1). Though less powerful, feudalism was widespread also in the Duchy of Milan, where in seventeenth century about half of the population was under feudal jurisdiction (Sella, 1997: 65). A precise estimate is afforded statistics showing that in as late as 1757, 53.9 per cent of the communities were feudal; however, by 1782, after the Theresian and Josephian reforms, the same figure was probably about 40.9 per cent (Romani, 1957: 49-50). Despite being usually characterised as a feudal land, at the beginning of the eighteenth century the proportion of the Piedmont's territory classified as feudal for the purposes

of taxation, 7 per cent, was relatively low (Einaudi, 1908: 66). The statistics reported by Prato (1908: 32, 187) on population by province and shares of feudal territories in the middle of the eighteenth century make it possible to estimate that the population under feudal rule fell from 8.3 per cent to 3.6 per cent after Victor Amedeus' *perequazione* in 1720. A fiscal statistic shows that in the Papacy in 1704-1706 36 per cent of the communities in which the state was divided were feudal (Caravale and Caracciolo, 1978: 443). This figure is in line with other estimates of the feudal population there (Chittolini, 1986: 18; Sella, 1997: 65).

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