Risky institutions: political regimes and the cost of public borrowing in early modern Italy

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ABSTRACT

This paper tests whether and how political regimes influenced the cost of public borrowing by comparatively and quantitatively examining a newly compiled dataset on public annuities in early modern Italy. The analysis finds that overall political regimes mattered a lot, but there were important differences across their dimensions. Fiscal centralisation, particularly in the eighteenth century, was not associated with significant decreases in the interest rates. Jurisdictional fragmentation was on the whole the most important variable, with feudalism and to a lesser extent clerical influence significantly increasing the cost of borrowing. Constitutional representation was even more important than jurisdictional fragmentation within republics, but a republican constitution had an ambivalent effect: while it decreased the risk of default it could also lead to an increase in interest rates, depending on the specific institutional setting, contingency and path-dependency.

1. Introduction

Increasingly, economic historians emphasise the centrality of transaction costs and capital markets for the performance of pre-modern economies (North, 1990; van Zanden 2009; Persson, 2010). North and Weingast's (1989) celebrated article on how the Glorious Revolution enabled the English monarchy to credibly commit to repay its debt was followed by a rapid expansion of the literature exploring the linkages between political regimes and the cost of borrowing. Still, there is no consensus on whether and how regime type influences interest rates on public borrowing.

Beginning with the sceptics, Clark (1996) finds that the decline in interest rates in eighteenth-century England had little to do with constitutional changes: there was no structural break in 1688. Likewise, Epstein (2000) claims that urban republics did not enjoy an automatic financial advantage over monarchies: long-term convergence (1350-1750) shows that initial disparities were due to different levels of development of financial institutions. Along similar lines, Sussman and Yafeh (2000, 2006) argue that in both nineteenth-century Japan and early modern England constitutional reform was not accompanied by a rapid fall in the cost of public borrowing; its dynamics were primarily shaped by geopolitics.

While now few are willing to accept North and Weingast's (1989) initial argument without qualifications, many continue to hold that the link between political regimes and interest rates is valid. In a series of books and articles, Stasavage (2003, 2007, 2011) explains away apparent anomalies in pre-modern European data by arguing that constitutional representation significantly decreased the cost of borrowing when capital-, rather than land-owners, were in power, their representation was intensive and polities were relatively small. Zuijderduijn (2009) and Dincecco (2009a, 2011) claim that constitutional representation is a major factor in explaining low interest rates, while holding that political centralisation is equally important. Still they stress different aspects of centralisation; where Zuijderduijn (2009) emphasises jurisdictional centralisation as a means to produce a homogeneous, transparent and predictable institutional framework,[2] Dincecco (2009a, 2011) highlights that fiscal centralization is needed to avoid free-riders problems and ensure a regular revenue stream. Velde and Weir (1992) go even farther in this direction: in their view the opposition of local parliaments to raising taxes, rather than the lack of constitutional representation, was the main factor behind comparatively high interest rates in eighteenth-century France.

This paper contributes to the debate on the impact of political regimes on the cost of public borrowing by quantitatively examining a newly compiled dataset on interest rates on public annuities in early modern Italy. The political fragmentation that characterised the peninsula, together with a relative abundance of relevant sources, implies that the influence of political regimes, or lack thereof, can be systematically explored. What is more, a focus on early modern Italy exhibits two distinctive advantages: firstly, the conditions of purchase of the annuities were relatively homogeneous, making interest rates particularly suitable for comparison; and, secondly,

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[2] On feudalism and transaction costs see also van Zanden (2009) and Volckart (2000, 2002a, 2002b, 2004).

considering only a few states allows an in depth examination of regime types, beyond the quantitative study of constitutional representation. Thus, this paper combines comparative and quantitative analysis, extends the quantitative analysis of fiscal centralisation of early modern political regimes, and offers the first quantitative analysis of the role of jurisdictional fragmentation.

In so doing, it argues that political regimes mattered a lot. Indeed, regime type explained most of the variation in the cost of public borrowing across states. Still, it is important to distinguish. At the time, fiscal centralisation mattered little, if at all; this emerges particularly clearly in relation to eighteenth-century fiscal reforms, which did not have any discernible effect on the cost of public borrowing. By contrast, jurisdictional fragmentation overall mattered the most; thus, feudalism in particular significantly increased interest rates. Constitutional representation mattered even more than jurisdictional fragmentation within republics, but its effect was ambivalent. While, on the one hand, a republican constitution, more effectively than a parliament, decreased the risk of default, on the other hand, it could also create scope for oligarchs to set interest rates above the cost-minimising level. Whether this opportunity was exploited depended on the specific institutional setting, contingency and path-dependency.

2. The cost of public borrowing

Following a standard approach in the cliometric literature (Clark, 1996; Stasavage, 2007, 2011; Sussman and Yafeh, 2006; Dincecco, 2009a, 2011), this paper measures the cost of public borrowing with the nominal interest rate paid on public annuities. Specifically, this refers to the proportion of the capital invested returned every year to the buyer of the annuity. Although the use of nominal, instead of real, interest rates is mainly dictated by the difficulty of finding reliable local price indexes, its use is relatively innocuous in studies where the focus is on cross-sectional variation, such as this one. This is particularly so in the light of the fact that price shocks were transmitted across Italian markets already in the early modern years (Chilosi et al. forthcoming); hence, inflation rates were bound to be similar across cities. Moreover, just like us, early modern investors lacked detailed information on price trends; hence, the extent to which they based their decisions on real as opposed to nominal interest rates remains open to questions (Pezzolo, 1995: 297).[3]

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[3] What is clear is that investors were aware that debasements could erode the real value of annuities. Informal institutions, such as the Venetian habit of prompting the mint officials to "diligently accept only … good [money], and not those which decline in goodness and weight" (ASV, Consiglio dei Dieci, Zecca, r. 3: 95), or the Piedmontese habit of denominating the value of annuities in gold currency (Stumpo, 1984: 199) mitigated this risk. In the Republic of Genoa, the right of creditors to keep the real value of their securities constant was sanctioned by law from 1637 (Felloni, 2007: 147). Judging from the story of the *Monte del Vino* issued by Bologna in 1540, formal institutions were quite effective, if not exactly speedy, at rectifying reductions in the real value of annuities resulting from monetary policies. Thus, in 1691 creditors challenged the authorities on the ground that they should receive "the right value of the gold *scudo* in gold current at all times"; eventually, at the end of 1739, the creditors' cause was backed by the Apostolic Chamber in Rome and they received compensation (Pradelli, 1968: 44). Still, the

Since interest rates depended on the particular conditions of purchase, it is important to compare like with like or else the analysis is vulnerable to the risk of detecting spurious associations between political regimes and cost of public borrowing. Regardless of the credibility of the borrower, publicly held debts tended to command lower interest rates than short-term loans made by professional money-lenders, as the latter were characterised by a high-risk of default, as well as the taint of usury (Munro, 2003; Drelichman and Voth, 2011). To make an example, in the 1540s the Apostolic Chamber of Rome borrowed from private bankers at 12 per cent, at the same time as it was issuing annuities at almost half that rate, at 7.5 per cent (Comune di Roma, 1920: 14, 1925: 14; Bruscoli, 2007: xxiv). Hence, comparing private loans with public securities implies a positive bias in the estimated creditworthiness of polities relying on the latter only.

Likewise, although the distinction between voluntary and forced purchases is not always clear-cut, it makes sense to compare only annuities voluntarily bought on the public market. On the one hand, voluntary purchases implied higher rates of return than forced loans, given the need to persuade the buyer of the worth of the investment. On the other hand, reputational effects implied the opposite: it was common for payments on forced loans to be defaulted and high rates of return were necessary to ensure compliance; by contrast, default on voluntary purchases was less likely as it was bound to jeopardise future sales (Tracy, 1986: 110).

In late medieval Italy, this ambivalence was embodied in comparatively low official interest rates and particularly high market rates for forced loans. Thus, in fourteenth-century Venice the official rate on forced loans was at 5 per cent, half of what was paid by Dutch cities on voluntarily bought annuities (*losrenten*) at the same time; and yet this hierarchy was often inverted by market rates: for the fourteenth-century Venetian securities these reached returns as much as almost five times the official rate (Pezzolo, 2005: 154-157; Zuijderduijn 2009: 283-284). In other words, relying on official interest rates on forced loans can be seriously misleading as a guide to the creditworthiness of the issuing authority. Indeed market rates, which reflect creditworthiness more accurately than official rates can lead one towards an opposite conclusion.

Excluding private and forced loans, however, takes care of only the most obvious source of heterogeneity: conditions of purchase varied also within the voluntary market for public annuities. Table 1 shows the sources and types of interest rates used in the analysis.

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reputation of the local currency was bound to influence the cost of borrowing across states. Fortunately, most Italian states in the early modern period, with the notable exception of the Tuscan one, where the currency was relatively stable, experienced debasement to a similar extent (Cipolla, 2001: 72). Hence, one can afford to neglect this issue in the comparison. A related issue is that for regularly defaulting cities the interest rate is a an imperfect measure of the actual cost of borrowing; yet, it is sufficient to assume that investors correctly assessed risk and preferred less risk to more risk for interest rates to accurately represent the hierarchy of the actual costs of borrowing.

The best-known difference is that between life annuities and perpetuities. Payments for the former ceased upon the death of the purchaser, whereas with the latter they continued in perpetuity. As a result, life annuities commanded a higher interest rate; usually, but not always, nearly twice as much (Munro, 2007: 34). Within early modern Italy, this issue, however, is not particularly serious. Life annuities (luoghi vacabili) were considerably less popular than perpetuities (luoghi non vacabili). In addition, more often than not, they were sold at around the same time as perpetuities, as, presumably, authorities sought to target different segments of the market. This makes it easy to normalise life annuities.

For example, between 1588 and 1592, Rome issued thirteen annuities, ten 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 (Comune di Roma, 1920: 92-110, 1925: 148-202, 172; Piola Caselli, 1988: 199; Colzi, 1999: 60). The analysis treats all these issues as perpetuities sold at 6.5 per cent. Only a handful of tontines, age-related or multiple lives annuities were issued in early modern Italy; these have been excluded from the analysis.

Long-term tax alienations, known as *arrendamenti* at Naples and *soggiogazioni* at Palermo, are potentially more harmful than life annuities for the accuracy of the analysis. This type of annuity was popular in the Spanish territories; like standard annuities, it entitled the holder to receiving an annual rate of the sum initially paid, but involved direct management of the tax revenue. This made default more difficult and even created scope for enjoying a greater return than that initially agreed, but, by the same token, tax alienations made creditors bear the risk of the tax return not being sufficient to cover the agreed rate. For instance, in Naples, the holders of the alienation of the duty on brandy at 7 per cent saw their actual return oscillate between 1.36 and 10.88 per cent in the space of only ten years between 1681 and 1691 (de Rosa, 1958: 252). In consequence, for example, in sixteenth- and seventeenth-centuries Milan, securities sold on the same day often commanded different rates depending on the reliability of the particular duty alienated (de Luca, 2007: 134).

Still, on average assets and liabilities tended to cancel themselves out: the rates on tax alienations tended to be the same as for perpetuities. Across Milan, Naples, Piedmont and Venice, it was possible to compare sixteen yearly means of rates on tax alienations and standard annuities from the same year and place; the majority of times the rate was identical; only twice was the difference greater than one percentage point. It is therefore legitimate to directly compare tax alienations and perpetuities.

The same does not hold for term-annuities, which were popular in Venice, though. The difference behind a usurious loan and a canonically legitimate annuity lied in the condition that only the borrower had a right to redeem the security before the term agreed (Munro, 2003). Then as today, other things being equal, a shorter term was preferable for the lender than a longer one: it implied greater liquidity and a lower risk that the seller exercised the "call option" (i.e. offer the creditor to either accept a lower interest rate, or get the capital back), or outright defaulted (Flandreau and Zumer, 2004: 105-105; Bailey, 2005; Nogués Marco and Vam Malle-Sabouet, 2007).

In practice, the length of the term can be neglected for long-term annuities. For example, in Venice on the 10th April 1571, the Council of Ten (the magistracy managing the Venetian debt at the time) decided to issue annuities returning an 8 per cent interest "until the Mint will return the capital" (ASV, Consiglio dei Dieci, Zecca, r. 3: 108-9); effectively, these were perpetuities. On the following 7th of July a new emission was approved for 15 or 20 years term annuities; the rate remained at 8 per cent (ASV, Consiglio dei Dieci, Zecca, r. 3: 113).

The situation, however, changes when the term of the annuity is short. For example, in 1570, the Venetian Mint sold fifteen years annuities at 8 per cent; at the same time, five years annuities regularly commanded a lower rate, 6 or 7 per cent (ASV, Consiglio dei Dieci, Zecca, r. 3: 90, 93, 95-96, 100). This difference is not captured by the internal rate of return often used to compare different types of annuity (cf. Weir, 1989; Velde and Weir 1992; Bell and Sutcliffe, 2010). To address this issue, following Flandreau and Flores (2009: 658), Venetian annuities with terms less than 10 years are normalised on the basis of the average ratio between long- and short-term annuities in years when both of them were issued.[4]

The liquidity and risk premium can be expected to be location-specific, depending on how developed the secondary annuity market was, the particular risk of conversion and default, or more simply on habit. The deposits of the *Monte di Pietà* of Florence, which represent the last type of annuity used, illustrate this point. This *Monte di Pietà* was founded in 1496 to lend money to the poor; it began accepting deposits at 5 per cent in 1533 to finance its operations, thereby relieving the city of Florence from this responsibility (Menning, 1993: 140). Helping to meet public expenditures was not the only way in which the deposits of the *Monte di Pietà* were similar to conventional annuities: from 1547 Cosimo I began to regularly borrow from the deposited funds at 5 per cent (Menning, 1993: 179).

Initially, creditors could withdraw money from the deposits at their will; thus these deposits were effectively loans. However, eventually, the usury prohibition began to bite; from 1609 restrictions on withdrawals were placed to keep the canonists happy; henceforth, creditors had to purchase *luoghi di monte*, instead of directly depositing money. Yet, this change did not result in an increase in the interest rate, which remained at 5 per cent (Menning, 1993: 266). The same rate of 5 per cent was paid on the first perpetuities issued by the city of Florence in 1599, as well as on the *Monte di Pietà* perpetuities sold in 1616 (ASF, Monte Comune o delle Graticole, parte I, pezzo 3: 260; Cantini, 1804b: 28; Goldthwaite, 2009: 503).

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[4] That is 0.79. Although this figure is mainly based on sixteenth-century rates, in practice, 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 life annuities suggests that the risk and liquidity premium did not significantly change during this time: on average, in the fifteenth century a life annuity commanded a rate 1.75 times greater than a long-term annuity and 2.17 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 the 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) sold by the local *Monte di Pietà* also ranged between 0.75 and 0.8 (cf. Pullan, 1985: 116; Ferlito, 2009: 154-157).

.About one third of the interest rate quotations refer to the interest rate paid, rather than the interest rate at the time of issue of the annuity. In other words, they refer to rates collected either from state balances or from ledgers listing creditors, such as those held in the Genoa's State Archive (cf. e.g. ASG, Banco di S. Giorgio, pandetta 18). On the one hand, a secular tendency towards declining interest rates implies that the inclusion of paid rates can introduce a positive bias in the measure of the cost of public borrowing. On the other hand, interest rates paid that were significantly greater than those that would be offered on new issues triggered reductions through the exercise of the call option. Furthermore, about 90 per cent of the paid quotations are from Genoa, where the cost of borrowing emerges as being significantly lower than in any other place and remarkably stable for over two-thirds of the period covered by the data. Hence, while the use of paid rates allows the systematic coverage of periods with few new issues, it is not expected to significantly affect the accuracy of the analysis.[5]

Instead of relying on the rates paid on the *luoghi di S. Giorgio* collected by Cuneo (1842) and elaborated by Cipolla (1952), as previously done by other studies of the cost of the Genoese debt (Braudel, 1987; Homer and Sylla, 2005; Fratianni, 2006; Stasavage, 2011), this analysis uses only rates paid on the debt directly managed by the Republic. In the sixteenth century all the Genoese debt was managed by the consortium of creditors, the *Casa di S. Giorgio*. From the first half of the seventeenth century, however, the Republic "came of age" and began to directly issue new annuities, like the *Monte S. Bernardo* perpetuity of 1625 (Felloni, 1998; 2007). Neglecting Cuneo's (1842) figures therefore implies losing out the sixteenth century, but is nevertheless advisable for the type of analysis carried out here. This is partly implied by the focus on political regimes, as the *sui generis* institutional setting found in sixteenth-century Genoa can be an important confounding factor. Indeed, Fratianni (2006) traces to this particular institutional arrangement, rather than to a republican constitution, the comparatively low interest rates paid there.

More importantly, one cannot exclude that the published *S. Giorgio*'s figures are marred by a significant margin of error. Cipolla (1952: 258) warns that his source "can only be trusted so much", and for the period 1625-1764 the figures collected from primary archival sources used here turn out to be on average nearly twice as big as those implied by Cuneo's (1842) data. This is despite the fact that, unlike the return on the republican debt, the *luoghi di S. Giorgio* had a variable interest rate and were paid with a delay ranging from a few months to over nine years (Felloni, 2010: 81). Both these features make this asset more rather than less risky than the republican securities. As stressed also by Homer and Sylla (2005), Cuneo's (1842) figures are astonishingly low, and, pending further research, they should be treated with caution.

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[5] Another source of noise is taxation. Typically, the urban governments specified that the buyers of annuities would enjoy their return exempt from taxes (Felloni, 1971; Pezzolo, 1995: 286-287)-, "without any retention", as the Florentine senate boasted in 1726 (ASF, Monte Comune o delle Graticole, parte I, pezzo 4: 7). Nonetheless, there were some exceptions to this rule. For instance, Genoa in 1769 retained 10 per cent of the return on the *Primo Impiego*, implying an effective return of 2.025 per cent instead of 2.25 per cent (Banco di S. Giorgio, pandetta 18, numero 610/2478). Regarding this issue, here it is assumed that unless otherwise specified, the return was free of tax.

As only little information is available on market annuity prices in early modern Italy, it is not possible to systematically control for discount rates applied to new issues to reflect a changing risk premium (cf. Sussman and Yafeh, 2006: 917). Nonetheless, both European and Italian data suggest that within an open market the use of official rates is not as problematic as for forced loans. Reliance on official rates implies a narrowing down of differences across states, rather than causing a change in the interest rates hierarchy: in an open market risky assets were bound to command comparatively high rates both officially and effectively.

Thus, in eighteenth-century Britain, where payments were regularly honoured and official and market rates can be systematically compared, these were mostly identical and only very occasionally did they exhibit significant differences (Sussman and Yafeh, 2006: 909). By contrast, in France between 1672 and 1710, significant gaps between market and official rates opened up at times of war, when the monarchy sought to conceal fiscal difficulties (Béguin, 2012: 247). Similarly, in Spain, a series of defaults implied that in the later sixteenth century the gap between official and market rates of *juros* issued by the crown suddenly and significantly widened (Grafe, 2012: 15).

Turning to Italy, at Rome, despite pronounced short-term fluctuations, the secondary market price of Papal annuities between 1577 and 1611 was on average only eight per cent points above par (Colzi, 1999: 116; Pezzolo, 1999: 239-240). In fact, such rates understated the actual cost of borrowing for the public coffers: new annuity issues were sold at below par to bankers, who sold them at above par on the secondary market (Piola Caselli, 2012: 292). Still, they suggest that in Rome official rates can be considered as a reliable guide of effective rates. Likewise, at Florence, with remarkably little foresight and in apparent disregard of what was taking place beyond the Alps, between 1793 and 1796 the *Monte Comune* investors bought perpetuities in the secondary market at the following average rates of their official value: 99 per cent, 98¼ per cent, 97½ per cent and 97¼ (ASF, Nuovo Monte Comune, Pezzo 383).[6]

In contrast, at Palermo and Naples, where, as seen later (cf. section 4), official rates tended to be considerably higher than at Rome and Florence, gaps between official and market rates could be significant indeed. For example, in late sixteenth-century Palermo government securities were traded at thirty to forty per cent of par (Koenisberger, 1969: 134). Likewise at Naples, in April 1678, tax alienations had to be sold at 38 per cent of par to find buyers, implying an effective return of over 20 per cent instead of the official rate of 7 per cent (Bulgarelli Lukacs, 1993: 49-50).

The birth of the Italian primary market for public annuities is usually dated to the 1520s (Pezzolo, 1995; Munro, 2003). There are examples of voluntarily-funded public debt in Italy from the fifteenth century, such as the seven per cent dowry fund established by Florence in 1425, and the annuities issued by the city of Ancona in 1454 at 5 per cent (Kirshner and Molho, 1978; Palermo, 2007); the *Monti di Pietà* of Pistoia and Vicenza also accepted paid deposits as early as 1475 at 7.5 per cent and 1493 at 4 per cent, respectively (Capecchi and Gai, 1976: 73; Pulin, 1986: 113).

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[6] The interest rates implied by these four figures have been included in the dataset.

But these remained isolated instances. The earliest record of a sale of a perpetuity aimed at financing deficit spending by the Kingdom of Naples dates back to 1520; its interest rate was probably 10 per cent, although it may have been higher (Calabria, 1991: 104; 143-145). Amidst difficulties with raising further funds through the sale of offices, the Papacy began issuing perpetuities at a 10 per cent yearly interest in 1526 (Piola Caselli, 2003; Carboni, 2009). Two years later the Venetian mint accepted voluntary subscriptions to deposits with a yearly interest of 16 per cent; 1528 is thus seen as marking a break with the republican tradition of relying on forced loans to fund wars and other public expenditures (Pezzolo, 1995, 2003a; Munro, 2003).[7]

Hence, both data availability and historical reality make the 1520s the natural starting point. To keep the task manageable, the analysis ends in 1796, when a young Napoleon made a name of himself by leading the Italian campaigns, radically altering the political landscape of the peninsula and beyond in the process. Figure 1 shows the geographical distribution of the observations.

Although, unavoidably, the coverage is uneven, the dataset is sufficient for the econometric analysis of the determinant of the cost of public borrowing across eight major Italian regional states spread across the peninsula.[8] Even if, as highlighted above, it was not possible to eliminate all sources of noise, the exclusion of private and forced loans and the normalisation to perpetuity of other assets render the comparison between early modern Italian interest rates comparatively accurate. Having presented the dependent variable, the next section turns to the independent ones.

3. Political regimes, war and financial development

The controls used in the panel data regression analysis of the determinant of the cost of public borrowing together with their expected sign from a neo-institutional perspective are summarised by table 2. The characterisation of political regimes can be grouped under three headings: constitutional representation, fiscal centralisation and

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[7] In fact, both the unusually high interest rate for what was effectively a four months term annuity and the language of the edict, suggest that the 1528 Venetian issue was at least partly forced: "summon … all the inhabitants … demand them to lend money, gold and silver for the greatest sum that each of them can" (Reale Commissione, 1903a: 211). Compare this with, for example, the language used for the life annuities sold by the Venetian mint in 1538: "we propose … to accept in deposit for life … declaring that all who … deposit … shall have … 14 p c° … all … life" (ASV, Consiglio dei Dieci, Comune, r. 12, p. 152) (for this reason the interest rate of this particular short-term annuity has not been normalised). Still, according to documents held by the Venetian archive, the local mint was accepting deposits on twenty years term annuities at 8 per cent already in 1524. Thus, in February 1544 the Council of Ten noted that: "On the XI of the month of next June will end the XX years for which was alienated the duty of the depositors at 8 per c°″ (ASV, Consiglio dei Dieci, Zecca, r. 1: 79-80); analogous remarks were made in May, June, and August 1544 in relation to twenty years deposits at 8 per cent coming to maturity in July, August and September 1544 (ASV, Consiglio dei Dieci, Zecca, r. 1: 85, 87, 90).

[8] Since unbalanced panels imply biased estimates of the standard errors (Baltagi, 1995: 151), like that of Stasavage (2011), the analysis is based on decadal, rather than yearly means. As annuity issues tend to be clustered in certain years, to limit over-representation of these years, decadal means are computed on the basis of yearly means.

jurisdictional fragmentation. The three remaining independent variables control for war pressure and financial development.

Constitutional representation

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, 1973a). 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 (Constantini, 1997: 23). 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.

As well as communal liberties, the high middle-ages had also seen the flourishing of representative parliaments in feudal territories, like Piedmont, Sardinia, Sicily and Naples. Only a few of these 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, but their representation was less intensive than that enjoyed by republican oligarchs.

Thus, 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. Although ultimately sovereignty lied with the Spanish crown, the Neapolitan parliament was consulted over taxation, and at times it successfully resisted fiscal demands from Madrid (Koenigsberger, 1986: 44-46). The Sicilian parliaments were probably the earliest secular assemblies in Europe. Their members 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 to vote donatives (tax), and occasionally for exceptional taxes. It met only once under Savoyard rule, but was revived under the Habsburgs and the Bourbons (Koenigsberger, 1986: 37-44).

The only elective Italian principality was, of course, the Papacy. However, after more than a century of declining influence, by the later sixteenth century the College of Cardinals had lost any power to constitutionally limit the actions of the Pope, to become only an elective body and an instrument of papal absolutism (Prodi, 1968: ch. 4). In this latter respect, it was similar to the Florentine, Piedmontese, Mantuan and Milanese senates. These institutions were modelled after medieval parliaments and republican

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councils: they were meant to act as constitutional restraints to the authority of the prince (Symcox, 1983: 55; Sella and Capra, 1984: 37; Litchfield, 1986: 67-68; Carpanetto and Ricuperati, 1987: 59).

Yet, despite the early modern constitutionalists' best intentions, appointment by the prince of a carefully selected few, even when mitigated by institutions like the life appointment of the Florentine senators (Litchfield, 1986: 67-68), unavoidably restricted the scope for resisting his authority. Thus, by 1723, it had become so clear that the Piedmontese senate had been transformed into a clog in Victor Amedeus II's government machine that it was also formally stripped of its traditional prerogative of approving royal legislation, what was known as *interinazione* in the legal jargon of the time (Quazza, 1957: 78-79; Symcox, 1983: 58).

Fiscal centralisation

Turning to fiscal centralisation, applying Dincecco's (2009a, 2009b, 2011) yardstick, a uniform tax-rate within the state, is not a viable option in early modern Italy. Old regime Italian regional states were characterised by fiscal fragmentation and a resilient web of urban, clerical and feudal fiscal jurisdictions; these autonomies were finally eroded only by the Napoleonic reform of 1800, after the end of the period analysed (Fasano Guarini, 1995; Dincecco, 2009b: 82).

Nonetheless, the "fiscal state" (Bonney, 2004) had been a long time in the making, and the process developed unevenly across polities. Of key importance here is Enrico Stumpo's (1979, 1984) study of the early origin of a fiscal centralization in Piedmont: in sixteenth-century Italy, he stresses, it was only in Piedmont, the Papacy, and the Kingdom of Naples that there existed an institution responsible for compiling an annual budget and coordinating the various tax flows: 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). In contrast, the Venetian and Genoese Republics, but also the Grand Duchy of Tuscany and, to a lesser extent, the Duchy of Milan and the Kingdom of Sicily were characterised by multiple and overlapping fiscal agencies only loosely coordinated (Sella and Capra, 1984; Stumpo, 1984; Giarizzo and D'Alessandro, 1989: 206-207; Felloni, 1998; Pezzolo, 2003b).

By the second half of the eighteenth century, the failure to reform meant that an obvious gap in fiscal capacity had opened up between the Republics and the principalities that had developed centralised fiscal systems (Capra, 2002, 2004; Pezzolo, 2012). In the "century of the enlightenment", major processes of rationalisation of the fiscal administration were carried out in some regional states, but notably not in the Republics. The most far-reaching fiscal reforms were implemented by Victor Amedeus II in 1717. The Council of Finance was given systematic oversight of the whole fiscal organization of Piedmont and the other territories of the kingdom, thus creating the conditions for significantly eroding long-standing areas of fiscal privilege and eliminating waste (Quazza, 1957; Symcox, 1983; Capra, 2002, 2004). Within eighteenth-century Italy, only the Lorena's reforms from 1737 in the Grand Duchy of Tuscany and Pallavicino's reforms of 1749 in the Duchy of Milan had a comparable scope (Sella and

Capra, 1984: 272-273, 285; Carpanetto and Ricuperati, 1987; Capra, 2002, 2004). In consequence, in the aftermath of the reforms, Piedmont and Milan could muster a fiscal pressure similar to that of Britain, which was by a long shot the highest in Europe, and over twice as high as in the Republic of Venice (Grafe, 2012: 8-9; Pezzolo, 2012: 283).

Jurisdictional fragmentation

The debate over feudalism in early modern Italy has been dominated by the question of "refeudalisation". The current consensus is that there was continuity amidst change, with feudal lords continuing to enjoy significant jurisdictional and fiscal autonomies, particularly in the south; the sale of fiefs in principalities during the sixteenth and the seventeenth centuries was of relatively little practical significance, as it resulted in more feudal lords dividing up a more or less constant pie, so to speak (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),[9] 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; however, by 1806 it was only 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.

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 per cent of the population was under feudal rule (Chittolini, 1986: 17; Vivoli, 1994: 339). In all likelihood the significance of feudalism was lower still in the republics, which, as implied earlier, did not participate in the sale of fiefs; there small, at times tiny, fiefs were found only in certain areas, like Friuli in the Venetian *Terraferma*, and alongside the Ligurian Appenines, close to the northern border of the Republic of Genoa (Vitale, 1955; Muto, 1986: 37; Pezzolo, 2012: 272).[10]

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). 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). A similar statistic shows that in the Papacy in 1704-1706 36 per cent of the communities in which the state was divided for fiscal purposes were feudal (Caravale and Caracciolo, 1978: 443). This figure

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[9] Specifically the data refer to 1505, 1548, 1570, 1593, 1616, 1623, 1636, 1651, 1681, 1714, 1747 and 1806.
[10] In the absence of detailed information, here it is assumed that the in the Republics the share of the population under feudal rule was half that of the Grand Duchy of Tuscany.

is in line with other estimates of the feudal population there (Chittolini, 1986: 18; Sella, 1997: 65).

After the Counter Reformation, church-state relationships in seventeenth- and, especially, eighteenth-centuries Italy were characterised by a progressive decline in the extent to which the Pope challenged secular supremacy in the legal realm (Prodi, 2000). Secularisation was the one field where enlightened despotism made relatively significant progress, as manifested, for instance, in educational reforms (Carpanetto and Ricuperati, 1987). Yet in this as in other areas, 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 by such dynamics.

To measure these differences, the analysis employs the number of dioceses per million of inhabitants in c. 1700.[11] These are in remarkable agreement with the qualitative evidence. Thus, the lowest figure, 9, is found in the Republic Venice, where the clergy had little fiscal exemptions and was strongly subordinated to secular authorities (Lane, 1973a; 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, 14, 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: 23. 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 provided a blueprint for bureaucratic absolutism (Prodi, 1968, 1987),[12] 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 44 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 (11), where the Spanish monarchy was in a much stronger position vis-à-vis the church than in the Kingdom of Naples (Sella, 1997: 174).

War pressure

Notoriously, financing wars was one of the main objectives of public debts; at the same time as the exigencies of war created sudden and inelastic demands of funds, the uncertainty of the outcome was bound to increase the risk of default. The suddenness implied by the concept of a "military revolution" (Parker, 1996) has recently underwent criticism; still, there is no denying that in Italy as elsewhere the use of gunpowder, the drill and discipline of troops and the growing sizes of armies meant that the scale of military conflicts during the early modern period significantly increased (Pezzolo, 2006a).

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[11] Sources: dioceses: Hanlon (2000: 109-110); population: Cipolla (1965); Bellettini (1987); Felloni (1998); Ligresti (2002).
[12] For this reason the value of *Church* is set to 0 in Rome.

To take into account such developments the cliometric literature relies on the casualty figures published by Clodfelter (2008), offering two distinct approaches. Dincecco (2009b) controls for estimated number of deaths in conflict year and populations of the opponents. Karaman and Pamuk (2011) develop an index of war pressure which increases with the number of casualties and populations of the adversaries weighted by distance relative to the populations involved. On the one hand, the latter approach has the merits of parsimony and relevance, since it controls for the size of the allied forces and the distance from the "centre of gravity" of the conflict. Thus, one can expect the pressure on the Republic of Venice resulting from the War of Cyprus to be significantly higher before it was joined by the Holy League; similarly, the Thirty Years War should cause significantly more pressure on the Duchy of Milan than on the Kingdom of Sicily.

On the other hand, both approaches suffer from the drawback that later conflicts are much better documented, with the result that comparable casualty figures for all of the early modern wars are not available. Simply adding the documented deaths or casualties is bound to significantly bias the pressure resulting from earlier conflicts downwards. In addition, the different elements of Karaman and Pamuk's (2011) index are measured in different units. Hence, two corrections are implemented here. Firstly, to take into account developments in military technology the analysis relies on the average number of casualties per battle, instead of total casualties per capita per war-year.13 Secondly, 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.[14]

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 significant margins 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 1.2 times between the sixteenth and the seventeenth centuries, and by about 1.5 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, 2006a). Within the sample, the highest average war pressure was by far that experienced by the Duchy of Milan (0.18) and Piedmont (0.16), whereas the same value is particularly low for the Republic of Genoa (0.02) and Tuscany (0.01). Again these figures agree with expectations. Hence, all in all, this index seems to offer substantial advantages as compared to the use of war-years.

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[13] An average of 9 battles per war is considered.
[14] Sources: casualties: Clodfelter (2008); population: Cipolla (1965); Helleiner (1967); Symcox (1983); McEvedy and Jones (1985); Bellettini (1987); Braudel (1987); Felloni (1998); Corritore (1999); Ligresti (2002); Tacitus (2012). In a few cases, extrapolation of population figures has been used.

Financial development

The best available measure of commercial and financial development (and hence supply of capital) before the nineteenth century is urbanisation (Persson, 1988). In the Italian context, although state-level population data are available, perhaps even more than elsewhere in Europe they are bound to be marred by significant measurement errors; given the choice it is therefore preferable to work with city-level data only. This makes sense also because it looks as if residents of the city rather than of the state were the main purchasers of urban annuities.[15] Thus, as late as 1726, about 68 per cent of the Florentine debt was in the hands of Florentine creditors, while only about 13 per cent of it was held by other Tuscan residents (Stumpo, 2007: 149). Similarly, the Venetian patricians and Venetian religious institutions at around 1673 accounted for about 60 per cent of the holders of the annuity issued the previous year, as compared to less than 6 per cent of it being held by subjects of the *Terraferma* (Felloni, 1971: 145).

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). In addition, to take into account that commercial and capital flows were bound to be hindered by state borders, an additional weight of 1.25 is imposed on the distance between cities in different states.[16]

Typically, foreign investment was explicitly endorsed by the urban authorities. For instance, on the 14th of March 1599, the Florentine senate declared that: the "buyers … can be … subjects as well as foreigners … of whatever fate, grade or condition" (ASF, Monte Comune o delle Graticole, parte I, pezzo 3: 261). However, foreign investors faced a higher risk than locals due to exchange rate fluctuations, and, probably more importantly, the habit of being discriminated against in case of defaults. To make one illustrative example, in 1640 Naples did not pay any interest on the perpetuities held by foreigners, while the locals were paid two thirds of the sums due (Calabria, 1991: 128).

In the Italian context, the use of urban potential is made complicated by the fact that many towns in the south were in fact "agro-towns", with the majority of population employed in agriculture. In consequence, in southern areas urbanisation is a poor proxy of commercial and financial development. This feature vitiates direct cross-sectional comparison across northern and southern areas (Malanima, 2005a). To mitigate this issue, following Bosker et al. (2008), the analysis only consider cities with at least 10,000 inhabitants, instead of 5,000 as in de Vries (1984). In addition, the quantitative analysis 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

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[15] The prevalence of investors from the city also implies that it makes sense, as Bosker et al. (2008) also suggest, to not weighting the local population when computing the urban potential measure.

[16] 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.

of 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).

Time is a residual variable capturing other factors behind an obvious long-term decline in the interest rates in the course of the early modern era. At the time the Italian economy was stagnating (Malanima, 2010), and, likely enough, increases in the demand and supply of capital due to population growth offset one another. Hence, the decline was probably mainly due to decreases in the cost of financial transactions. This, in turn, can be traced to such factors as the development of secondary markets for annuities, the growth of networks of financial intermediaries, the expansion of credit facilities, and rising financial literacy.[17] A detailed investigation of the role of these institutions is a task for further research; the next section begins presenting the results of this one, by taking a glance at the interest rates data.

4. A glance at the data

Figure 2 shows the decadal means of perpetuity normalised nominal interest in the sample. The continuous line is the average in log-scale; its values are shown on the y-axis at right hand side. The trend of this line is the yearly rate of change; this takes into account that as interest rates become lower progress becomes more difficult.[18]

The figure shows an evident and widespread long-term trend towards falling nominal interest rates;19 in fact, that the cost of capital tended to fall more or less

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[17] Felloni's (1971: 81-101) overview of the early modern Italian annuity secondary market remains unsurpassed. As in all the cities in the sample there were public banks from the sixteenth century (De Marco, 1988; Felloni, 2008), a dummy variable for this institution is ill-suited to explain cross-sectional variation. Equally, using presence of a university as a proxy for human capital was considered, but decided against in the light of the poor correspondence between presence of a university and schooling enrolments that can be observed. Thus, by the beginning of the nineteenth century, when enrolment statistics become available, elementary schooling was much more widespread in Lombardy than in any other Italian region but Veneto, whilst there was no university at Milan and Venice; by contrast, Naples and especially Turin lagged behind despite the fact that universities were founded there as early as 1224 and 1404, respectively (cf. Davies, 1997: 1248; Chilosi, 2007: 419-421).

[18] For the same reason, the log of interest rates is taken also in the panel data analysis.

[19] The real interest rate can be estimated as the average nominal rate minus the average rate of inflation in a given decade, as yearly price indexes are available for central and northern Italy (Malanima, 2010). The "price revolution" (c. 1550-1650) implies that the fall in real interest is slower than that in nominal ones, with a yearly rate of change of -0.0017 as compared to -0.0038. Moreover, price fluctuations imply that the fall is not as consistent: the coefficient is not

continuously in the early modern period is well-known (Homer and Sylla, 2005). Still, clearly, there were marked variations across regional states. In particular, the comparatively high rates in the Spanish territories and the singularly low ones paid at Genoa stand out. Eye-balling is confirmed by formal analysis. Without loss of generality, table 3 compares nominal interest rates in Italian cities with those in Rome, while controlling for the secular decline in the variable. To facilitate interpretation, the second column shows the marginal effects implied by the coefficients for the sample average.

The marginal effects show that, for instance, on average the spread between annuities sold in the same decade at Milan and Rome was 1.595, while that between Genoa and Venice was 2.816. It is easy to associate comparatively high interest rates in the Spanish territories to a high risk of default. Thus, at Milan, during the period under analysis partial or total defaults are documented in 69 years; otherwise put, the city defaulted at least every four years or so (Pugliese, 1924: 339-376; Felloni, 1971: 304). The marginal effects also signal that at Venice interest rates were significantly higher than at Florence and Rome, and nowhere near the Genoese levels. The striking contrast between the two republics of Genoa and Venice is puzzling from a neo-institutional perspective and warrants detailed comparison.

The Genoese series shows that at the beginning of the seventeenth century the cost of the republican debt was still in line with that of other Italian states. It is only between the 1620s and the 1670s that a significant gap developed. It follows that particularly low interest rates at Genoa were not simply the legacy of its pioneering role in the development of financial services in the high and late middle-ages (Felloni and Laura, 2004). Beside, Genoa shared this feature with Venice and to a lesser extent Florence (Fratianni and Spinelli, 2006). Indeed, until the fifteenth century Venice was the leading financial market not only in Italy but in Southern Europe as a whole (Spufford, 2006), and hence was comparatively well-endowed with financial services at the beginning of the period under analysis. Similar remarks apply to the role of credit facilities developed during the "century of the Genoese" (1527-1627), when local capitalists pulled the strings of European credit transactions (Braudel, 1987: 157): it is only in its aftermath that interest rates became very low. All in all, financial development does not take one very far.

The perspective that the attractiveness of private investment contributed to keeping interest rates high at Venice has a certain plausibility for the sixteenth century, when increases in industrial production made up for shrinking international trade: at the time, the interest on private loans was about two percentage points higher than that on the Venetian debt (Pezzolo, 2003c: 15). However, the argument has less force from the seventeenth century onwards. The Republic of Venice was hit hard by the seventeenth-century crises: telling in this respect is the case of wool-cloths, the production of which fell by 90 per cent between 1611-1615 and 1721-1723 (Pezzolo, 2003b: 167). At the same time, figures from the area around Bergamo suggest that returns from rural investments were significantly falling, too, and remained well-below of those enjoyed by the creditors of the Republic: on average in the seventeenth century the spread was

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significant at the 10 per cent level for real interest rates, while it is significant at the 1 per cent level for nominal interest rates.

about 2 percentage points. Analogous remarks apply to data from the silk industry at the same time (Pezzolo, 1995: 310-311).

If the seventeenth-century crises contributed to making the Genoese debt an obvious target for employing capitals, thus depressing local interest rates (Felloni, 2007: 147), economic recession was hardly limited to the Republic of Genoa. Despite its fading fortunes, the Republic of Genoa remained one of the most commercially advanced states of the peninsula, and interest rates remained comparatively low in the eighteenth century, too, when commerce at the port revived (Malanima, 2002: 184, 342-346). At the same time, Genoese financiers were lending money to foreign private investors at consistently and significantly higher rates than those commanded by the local republican debt (cf. Felloni, 1971: 523-650).

Moreover, if it were private investment that was crowding-out investment in public securities and driving the Venetian interest rates up, one should observe equally high yields elsewhere in the Republic. As it happens, between the mid-sixteenth and the mid-seventeenth centuries interest rates paid on the deposits of the *Monte di Pietà* of Bergamo, Brescia, Udine and Verona were on average 1.32 percentage points lower than those paid on the Venetian public debt.[20] In sharp contrast, in the Republic of Genoa, at Savona in 1749 and 1766 the yield on the local debt was almost twice as high as that of Genoa.[21]

While Cipolla (1952) argues that Genoese interest rates suddenly dropped as a result of inflows of American silver from Spain from the later sixteenth century, the figures presented here detect decline only somewhat later. Moreover, as stressed by Fratianni (2006), a sudden capital inflow should only temporarily lower interest rates, and institutional explanations have greater explanatory power in relation to persistently

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[20] Sources: Bergamo: Pulin (1985: 122); Brescia: Montanari (2001: 103); Udine: Tagliaferri (1969: 169, 180-181); Venice: see the appendix; Verona: Ferlito (2009: 154-157); Pulin (1985: 166).

[21] The spread observed within the Republic of Venice was high also compared to those found in other regional states. Even in the Duchy of Milan, where, as seen earlier, the capital serially defaulted, in the seventeenth century the cost of provincial debt was on average only 0.74 percentage points lower than that of the state debt. This difference, being at 0.52, was lower still in the Grand Duchy of Tuscany in the seventeenth and the eighteenth centuries. In the Savoyard State perpetuities sold at Casale Monferrato in 1731, at Chambery in 1735, at Cuneo in 1706 and 1745, and at Nice in 1623 had the same rate as those sold at Turin at the same times. In fact, 1622 data from Caramagna and Pinerolo, where the rate was 1 percentage point greater than at Turin in 1627, suggest that the weak position of small communities vis-à-vis creditors could imply higher interest rates than in the capital. Similarly, in the Papacy, at Finale Emilia between 1617 and 1639 the cost of the debt was on average 2.53 percentage points higher than at Rome; by contrast, the rate at Bologna between 1516 and 1754 was 0.42 percentage points lower than at Rome, while that at Ferrara between 1630 and 1753 was only 0.25 percentage points higher. Sources: Republic of Genoa: Genoa: see the appendix; Savona: Felloni (1971: 110, 2007: 137); Duchy of Milan: Como: Caizzi (1955: 50); Cremona: Jacopetti (1961: 44-46); Milan: see the appendix; Vigevano: Caizzi (1955: 371-371); Granduchy of Tuscany: Florence: see the appendix; Pisa: Bernardini (1974: Appendix); Berti (1988: 316); Siena: Mengozzi (1913: 280). Savoyard State: Caramagna: Abrate (1985: 47); Casale Monferrato: Duboin (1818-1868a: 303); Cuneo: Einaudi (1908: 201); Duboin (1818-1868c: 404-407, 531, 557); Chambery: Duboin (1818-1868a: p. 292-301); Duboin (1818-1868b: p. 1335); Nice: Duboin (1818-1868a: 292); Pinerolo: Abrate (1985: 47); Turin: see the appendix; Papacy: Bologna: Vietti (1884: 137); Nanni (1968); Pradelli (1968); Felloni (1971: 182); Ferrara: Vietti (1884: 143, 149); Felloni (1971: 194-195); Finale Emilia: Cattini (1988: 200); Rome: see the appendix.

low levels. However, the evidence is that Fratianni (2006) overstates the importance of the *Casa di S. Giorgio*: the debt directly managed by the Republic exhibited very low interest rates, too. Indeed, the fall in interest rates was correlated with the growth of the republican debt.

Furthermore, it looks as if oligarchic control over the debt was an effective means of limiting the risk of default at Venice, too. Delays of payments at times of financial difficulties due to the cost of neutrality between 1700 and 1714 and a partial default in 1767 (Felloni, 1971: 139, 141) are possibly the only documented cases of public default on voluntary annuities in the Republic of Venice in the early modern years. As a rule the Republic of Venice could credibly commit to repay its dues. So much so that when in 1577 the Senator Zuan Francesco Priuli persuaded the Venetian Senate to extinguish the public debt to fight parasitism and stimulate productive investments, in a matter of seven years creditors were returned every ducat they had invested (Pezzolo, 1995: 288, 2003b: 90-97).

Instead than to risk, relatively high interest rates in Venice can be traced to the vested interest of the local oligarchs in receiving returns above the cost minimising level. This incentive is neatly captured by Frèdèric Lane (1973b: 315): "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". Returns above the cost-minimising level should imply an excess of demand for the Venetian bonds. Although prices on the secondary market are not available, corroborating evidence come from the Venetian edicts. In Luciano Pezzolo's (1995: 309) words: "skimming through the issuing edicts of the deposits in the Venetian mint one gets the impression … that the response to the demand of public credit was swift, and that at times the emissions were the results of the needs of the investors … for example … an issue of 200000 ducats … in 1639 … was sold out within only six days".

To make another 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" (ASV, Consiglio dei Dieci, Zecca, r. 2: 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, as a cost-minimiser agent would do, but by selling more issues at the same rate.[22]

Naturally, regressive distribution through the public debt was favoured by Venice's republican oligarchic constitution and, related to this, its heavy reliance on

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[22] Although this strategy may be a rational from a cost-minimising perspective if drops in demand are expected for future issues, the size of the second issue seems to be in excess of what would be predicted by this argument. Related to this point, the extent of the excess in the demand makes it difficult to argue that the Council of Ten expected a fall in the popularity of Venetian assets at the time. Rather, secular trends imply that probably the expectation was that future issues would have been sold at a lower rather than higher rate. In fact, over the following years the rate decreased until, as mentioned earlier, in 1577 the Senate decide to extinguish the debt.

indirect taxation. However, the contrast with Genoa, which shared both features,[23] highlights that these conditions were not sufficient. As summarised by table 4, the different effects of a republican constitution on interest rates at Genoa and Venice can be explained by the specific institutional settings, contingency and path dependency.

More markedly than at Genoa, the Venetian nobility was a closed and cohesive body, with direct influence on the elected magistracies. Thus, save very rare exceptions, as mentioned earlier (cf. section 3), only Venetian residents with an aristocratic father could sit in the Great Council, but all the Venetian nobility shared this privilege. In consequence, the Venetian aristocracy developed a particularly strong sense of superiority towards the outsiders and equality within its ranks. Moreover, election to both agencies setting the interest rates, the Senate and the Council of Ten, lasted one year only, which naturally implied a high degree of accountability (Lane, 1973a).

Short-term appointment characterised also the Genoese Senate and Chamber: one fourth of their members was renewed every six months with random draws. However, the Genoese nobility was both more open and factionalised than the Venetian one,[24] with periodical new entries from the middle-classes and recurrent distributional conflicts between segments of the nobility. Factionalism was reduced but not eliminated after the 1528 oligarchic constitution, as the 1576 civil war testifies (Felloni, 1998: 277; Hanlon, 2000: 50; Bitossi, 2007a; 2007b: 82-83). Crucially, random draws for both the low and high councils restricted the scope for clientelism (Felloni, 1998: 278). Such institutions made collusive behaviour (deliberate or otherwise) difficult to sustain. In this respect, Satasavage's (2011) emphasis on the end of factionalism in the aftermath of 1528 seems misplaced: in fact, the contrast with Venice suggests that its relative persistence favoured the assertion of a policy of low interest rates at Genoa.

In the middle-ages, across the Italian city-states of the centre and the north, credits of the public debts were locally concentrated in the hands of the wealthy and charitable institutions; as in early modern Venice, servicing the public debt through indirect taxation implied a steady upward circulation of wealth. This dynamic was well-known, and fostered periodical popular revolts like that of Boccanegra at Genoa in 1259 and the Ciompi at Florence in 1378 (Molho, 1995: 107-108; Goldthwaite, 2009: 327-329; Stasavage, 2011: 119-120). Clearly, the system whereby the local patricians tended to invest locally and interest rates were kept artificially high was a self-reinforcing one.

At Genoa, too, most of the bonds were locally held: as late as 1629, 92 per cent of the S. Giorgio's securities belonged to local citizens and institutions (Pezzolo, 2005: 156). However, from around this time, the Genoese oligarchs distinguished themselves

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[23] In 1550, 95.60 per cent of taxation of the Republic of Genoa was indirect (Felloni, 1998: 288); this compares with 90 per cent for the Republic of Venice in 1580 (Piola Caselli, 1997: 193). Although these shares declined somewhat in the intervening period they remained well-above those observed in the other regional states, with the partial exception of the Papacy. Sources: Duchy of Milan: Piola Caselli (1997: 193); Grand Duchy of Tuscany: Litchfield (1986: 99-100); Kingdom of Naples: Calabria (1991: 59-63); Piola Caselli (1997: 193); Papacy: Piola Caselli (1997: 193); Piedmont: Stumpo (1979: 33); Symcox (1983: 59).
[24] This difference is noticed also by Greif (2006: 172-177) for the middle ages. The analysis presented here suggests that in contrast to Greif's position, the economic consequences of a factionalised ruling class were not necessarily negative.

by clearly departing from the pattern of mostly investing in local annuities, as they began to heavily invest in the debts of Rome, Milan, and especially Venice, as well as elsewhere in Europe (Felloni, 1971, 1998: 664-665, 2007: 135).[25]

This movement occurred in strict correlation with a sudden inflow of capital after the defaults by Philip II, Philip III and Philip IV's of 1596, 1607 and 1627. These episodes tested the Genoese's financiers taste for risk, and led them to severing their links with the Spanish crown, bringing the loaning capital back home (Felloni, 1998: 665, 2007: 135). This capital inflow can be seen also in the fall in Genoese interest rates from the 1620s noticed earlier, which, in turn, stimulated investment elsewhere in the peninsula. In consequence, another self-reinforcing strategy crystallised itself: the more oligarchs invested in foreign annuity markets, the weaker the incentive to keep local interest rates high. In summary, different effects of a republican constitution goes a long way in explaining apparent anomalies on the Venetian and Genoese markets. The next section systematically examines the causes of cross-sectional variation across Italy.

5. The panel

Table 5 shows the results of the panel data regression analysis.[26] The first specification, models political regimes only in terms of constitutional structure; the second one includes also fiscal variables; the third one introduces jurisdictional variables; the last specification allows a republican constitution to have a different effect in Genoa and Venice, by letting the republican dummy interact with a Venetian dummy.[27]

Under the first two specifications a republican constitution is associated with comparatively low interest rates, but only inconsistently so. In consequence, the coefficient is not statistically significant. In other words, the results suggest that excluding private and forced loans implies that the advantage of pre-modern oligarchic constitutions over princely ones is less consistent than found by previous studies (cf.

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[25] The *S. Giorgio*'s ledgers record that at the beginning of the eighteenth century the interest payments for Genoese investors on Venetian securities were in the order of over four times those on the Papacy's and the Austrian's securities, which followed them in importance (cf. Felloni, 1971: 509-519). This, too, demonstrates that the Venetian bonds were unusually attractive for investors.

[26] Heavy reliance on time-invariant variables renders a fixed effects vector decomposition model (Plümber and Troeger, 2007, 2011) suitable for the estimation. In particular, by construction *Republic*, *Republic*Venice*, and *Church* are time-invariant; *Parliament* and *Feudalism* are only rarely-changing, so that a fixed-effects estimation of their effect is inefficient: it would consider only their effect on Naples' and Palemo's interest rates, respectively. The results presented here are robust to a number of alternative specifications, including: using random-effects, taking the log of continuous variables, controlling for inflation in central and northern Italy, controlling for state urbanisation, treating *Treasury* as time-invariant, not adjusting for short-term annuities at Venice, assuming that in the Republics the feudal population was the same as in Tuscany instead of half of it, and using war-years instead of the war pressure index.

[27] Effectively this is equivalent to allow the republican variable explaining the peculiarities of the Venetian and Genoese markets not accounted for by the other variables. Although this may introduce a positive bias in the estimated significance of the variable, as there are only two time-invariant republican regimes, this is the best feasible measure. Moreover, as argued at length (cf. section 4) the assumption that a republican constitution was the key distinguishing factor underlying the cost of public borrowing at Venice and Genoa is justified.

Stasavage, 2007, 2011). Moreover, the third specification suggests that the negative association is partly due to omitted variable bias. Once one takes into account that republics tended to suffer comparatively little from feudalism and clerical influence, their advantage disappears. Under the fourth specification a republican constitution matters again, and this time the relevant coefficients are highly significant. This finding shows that even after systematically controlling for other factors, the hypothesis that a republican constitution had a different effect in the two Republics is accepted: the size of the interaction coefficient implies that a republican constitution decreased interest rates at Genoa, but increased them at Venice, by about the same amount.

Turning to the other variables, including controls for jurisdictional fragmentation also implies that the sign of *Parliament* becomes negative. This is as expected and suggests that a positive sign in the two other specifications is due to omitted-variable bias. The coefficient becomes highly statistically significant under the last specification, although its size remains significantly lower than that of *Republic*. In fact, a role for parliament in limiting the risk of default, albeit not as effectively as a republican constitution, agrees with qualitative evidence. Thus, in 1566 the Sicilian parliament successfully resisted the king's attempt to forcibly reduce the interest rate on government bonds from 10 to 6 per cent (Koenigsberger, 1969: 134). While throughout the sixteenth century Naples regularly paid creditors, it partially defaulted to a progressively increasing extent between 1622 and 1641, and outright defaulted in 1642 (Felloni, 1971: 304; Calabria, 1991: 128-129). In the same year, as mentioned in section 3, the Neapolitan parliament was dissolved for good. In the aftermath, more defaults and compulsory withdrawal of funds from the creditors followed (Felloni, 1971: 304-311).

Under all specifications, fiscal centralisation did not matter much; this result holds even after controlling for the fact that fiscally centralising princely states tended to having to cope with marked feudal and clerical fiscal immunities. All in all, it seems that urban autonomy in the fiscal realm was not particularly harmful in terms of increasing the risk of default. In fact, this finding sits well with: firstly, low interest rates in early modern Italy in general, where urban communities tended to be particularly powerful;[28] and, secondly, particularly low interest rates in Genoa, where the republican model of contractual union of autonomous communities found a paradigmatic embodiment.

Furthermore, if anything, early centralisation mattered more than fiscal reform in the eighteenth century, whose coefficient does not even have the expected sign. This is surprising in light of the fact that more clearly than former the latter resulted in obvious increases in state revenues. Yet, inspection of the data confirms that, for example, interest rates on annuities sold at Turin in 1758 were no lower than in 1688, being both

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[28] A quick comparison suggests that on average, the Italian rates 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. Souces: Italy: see the appendix; Britain: Weir (1989: 100, 109, 114-117), Munro (2003: 557); France: Weir (1989: 155, 122), Velde and Weir (1992: 17, 23, 26), Pezzolo (1999: 252), Munro (2003: 540, 2007: 35); Holland: Tracy (1985: 45, 60, 89, 95, 133-134, 207, 209), Munro (2003: 557); Spain: Munro (2003: 535), Grafe (2012: 15).

at 4 per cent (Einaudi, 1908: 209; Prato, 1908: 402).[29] In other words, interest rates had not declined at Turin after the end of the War of Austrian Succession (1740-1747), despite the fact that by then the Savoyard State conformed more closely than any other early modern Italian regional state to the ideal type of the "fiscal-military state" (cf. Storrs, 2009).

The little relevance of fiscal structures that can be observed may owe something to the particular early modern conditions: at the time information on the state finances were not publicly available. However, difficulties with the model whereby heterogeneous tax rates embody free-riders problems (cf. Dincecco, 2009a, 2009b, 2012) need to be stressed, too. Although the tax-burden was unevenly distributed across the various communities forming Italian regional states, typically, the total sum to be collected through direct taxation (the *mensuale* at Milan, the *tasso* in Piedmont, the *gravezze* in the Republic of Venice, the *fiscali* at Naples) was centrally decided (Bulgarelli Lukacs, 1993: 81-112).

Needless to say, an element of bargaining in setting the overall fiscal burden, as well as in apportioning the shares, was involved, but this characterised also to systems relying on coercion to a comparatively high extent, such as the Piedmontese one (Vester, 2000, 2001; Pezzolo, 2012). Hence, fiscal fragmentation implied iniquities and waste, which were only partly mitigated by centralised fiscal agencies. But, across the Italian states, heterogeneous tax rates did not in itself entail particular vulnerability to prisoner's dilemma like sub-optimal overall levels of taxation; in fact, at times, as in the Kingdom of Naples before Masaniello's revolt of 1647, the level was unsustainably high (Pezzolo, 2012: 283).

Statistically significant and positively signed coefficients for *Feudalism* and *Church* suggest that the high costs of the debt in the Spanish territories were associated with jurisdictional fragmentation. This can be partly traced to social conflict, as bonds were concentrated in the hands of the middle-class, who was competing for power and influence with feudal lords, whose wealth was based on land. Thus, as shown by Luigi de Rosa's (1958) meticulous study, public securities at Naples were disproportionately in the hands of the local bourgeoisie. According to Rosario Villari's (1978: 265) classical study, in seventeenth-century Naples, this was a source of tension with the barons, who resented the political influence gained by the bourgeoisie by investing in the public debt: the "traditional aristocracy … sense[s] the threat and conducts a struggle against the attempts of this <<bourgeoisie>> to conquer … social, economic and political power … There is a struggle against financial speculations, against the manoeuvres of the tax-farmers".

Although the picture was less clear-cut elsewhere in the Kingdom of Naples, with feudal lords owning a high proportion of the provincial debts (Zilli, 1997), in other feudal states the social origin of investors resembles that found in the capital. Thus, at Milan between the sixteenth and the early seventeenth century, most of the purchasers of tax alienations were from the local urban middle-class and patriciate (De Luca, 2007:

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[29] The overall average in the 1680s was only 0.5 percentage points higher than in the 1750s, which being at 4 per cent remained significantly higher than the average figure for Italy at the same time, 3.4.

133). In Piedmont, too, the traditional ruling class accounted for only a minority of the buyers of annuities; these were mostly in the hands of the bourgeoisie and recently appointed nobility of office (Stumpo, 2007: 162). That across these and other markets religious orders were active participants matches a less consistent effect for *Church* than for *Feudalism*.

As predicted by neo-institutional literature, similarly to France (Béguin, 2012), territories like Milan and Naples where feudal lords and clerics significantly fragmented judicial power were characterised by uneven and personal protection of property rights: 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, at times in an openly fraudulent manner (Marsilio, 2008; Pezzolo, 2012: 278-279). For example, in 1651, amidst pressure form the Sicilian viceroy, interest payments owed by Milan to Genoese investors were re-directed towards Palermo (Marsilio, 2008: 169). Such dynamics were bound to significantly increase risk for the investors and transaction costs on the market. The next section offers an insight into the actual relevance of these costs by quantifying the impact of jurisdictional fragmentation and the other variables.

6. The roots of difference

Table 6 measures the importance of political regimes and other factors in accounting for variations in interest rates across early modern Italy. The columns show the share of the total predicted difference explained by financial development (*Time and Urban Potential*), war (*War Pressure*), constitutional representation (*Republic and Parliament*), fiscal centralisation (*Treasury* and *Fiscal reform*), jurisdictional fragmentation (*Feudalism* and *Church*), and other place-specific factors (the city specific fixed-effect).[30] The last row shows the average contributions weighted by number of observations. The computations are based on the results of the fourth specification of the panel data analysis, the one that allows a republican constitution to have an ambivalent effect.

There is little doubt that political regimes mattered a lot for the cost of public borrowing: on average, altogether political regimes accounted for over two-thirds of the variation, as compared to about one fifth for financial development. Clearly, however, not all dimensions of political regimes were equally important. Fiscal centralisation did not matter much in accounting for cross-sectional variation. The highest value, c. 6 per cent, is found in Rome, where early fiscal centralisation contributed to keeping interest rates at a comparatively low level. Elsewhere, however, the contribution is significantly lower, and on average its value is only about 2 per cent.

In all places except for the Republics, jurisdictional fragmentation is the single most important factor, its significance being particularly high in Milan and Naples, where feudalism was comparatively strong and jurisdictional fragmentation accounts for two-thirds of the variation. While both feudalism and clerical influence emerge as

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[30] Specifically, the figures are the shares of the sum of the absolute values of the difference predicted by each group of independent variables. Using absolute values makes it easy to compare the relative importance of the various factors since their effect often offset one another. In all cases, the error explains only a negligible share of the difference.

significant factors, the effect of the latter was significantly stronger than that of the former: on average, over twice as much. This result is consistent with the perspective that feudal institutions, more markedly than those associated to the Church, implied fragmented patchworks of rule that were not conducive to stable exchange relationships (van Zanden, 2009: 56-57). In the Republics, a republican constitution emerges as the most important factor: there, about half of the variation is accounted for by the constitutional variables, with the republican variables being responsible for the lion's share of this contribution.

Although wars consistently increased interest rates and the bigger the war the higher the increase, on the whole war mattered relatively little; only 4 per cent on average. Partial exceptions are found in Milan and Rome, for opposite reasons. Thus, particularly high war pressure helps explaining comparatively high interest rates at Milan. By contrast, relatively peaceful conditions significantly contributed to keeping the cost of public borrowing low for the Papacy. Yet, all is all, even allowing for a negative bias in the estimated significance of war resulting from neglecting that actual interest rates were higher during wars than official figures suggest, and that war could imply higher interest rates also four neutral states, war emerges as looking a lot more like a temporary incident than a game-changer.

Altogether the model performs pretty well: on average only c. 5 per cent of the variation is explained by unobserved city-specific factors. It is noteworthy that in this respect the Papacy is in line with the general result. This is despite the fact that there the burden of the debt was significantly and consistently higher than in the other states (Pezzolo, 1995: 329-330; Stumpo, 2007: 157). In a comparison with France, credible commitment of the Papacy has been associated to its peculiar status as perpetual institution (Pezzolo, 1999). However, within the Italian context, this feature was shared by the other states, with the city being usually the body officially responsible of repaying the public debt. The present analysis casts a new light: low interest rates paid by Rome were associated to a centralising, instead of fragmenting, role for the clergy; the role of canon law as a particularly effective means of contract enforcement (cf. Zuijderduijn, 2009: 135) also deserves to me mentioned in this respect.

The explanatory power of the model is comparatively low for Florence and Turin. The sign of the fixed effects imply that on the basis of the other variables interest rates should have been higher in Florence and lower in Turin than observed. Probably in Florence the legacy of republican traditions and institutions played a role in fostering credible commitment and low interest rates, not least because there was a marked continuity in the families from which the state personnel was drawn (Litchfield, 1986). This was seen also in the fact that, as mentioned earlier, the local currency remained particularly stable in the early modern years, which contributed to reducing the risk of Florentine securities, too.[31] A comparatively low debt had to be another contributing factor.

And yet, the weight of the debt was lower still in Turin – in fact, at the beginning of the eighteenth century it was about half as much as in Florence (Stumpo, 2007: 157).

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[31] As shown by Chilosi and Volckart (2010), city-states tended to debase the currency for fiscal reasons less than princely states.

Unexpectedly high interest rates paid by Turin may be partly due to the fact that the figure used to measure the influence of feudalism there is too low. They are also associated with singularly low levels of urbanisation in Piedmont,[32] whose commercial development lagged behind that of the other regional states. Still, they further strengthen the finding that the development of the "fiscal-military state" was not particularly significant for reducing the risk of default.

7. Conclusion

This paper has shown that in early modern Italy political regimes mattered for the cost of public borrowing; indeed, altogether they mattered significantly more than financial development in accounting for cross-sectional variations. In other words, the analysis refutes the sceptical perspective that institutions mattered little, and the cost of public borrowing was mainly determined by development of financial services and geopolitical stability. However, it is important to distinguish: not all dimensions of political regimes mattered to the same extent.

Fiscal centralisation, particularly in the eighteenth century, was not associated with significant decreases in the interest rates. Difficulties with applying to early modern Italy the model whereby uneven taxation was associated with sub-optimal fiscal pressure have been highlighted, thus inviting a re-assessment of the actual significance of fiscal centralisation also in other contexts. Related to this point war consistently increased interest rates, but uneven war pressure is of relatively little help in explaining variations in interest rates across regional states. In short, the Italian data examined here suggest that the literature may be making too much of the development of the "fiscal-military" state as a determinant of the performance of early modern economies.

Jurisdictional fragmentation was on the whole the most important factor in accounting for different interest rates across regional states, with feudalism and to a lesser extent clerical influence significantly increasing the cost of borrowing. This has been traced to social conflict, as the middle-classes tended to own a high proportion of the public debt, and uneven and personal protection of property rights. As predicted by neo-institutional literature, transparency and predictability of the institutional framework were of key importance in determining transaction costs. While these findings corroborate those of other similar studies, they also offer a novel insight into the actual quantitative significance of jurisdictional fragmentation for transaction costs: these emerge as being very large indeed.

Parliaments helped mitigating the impact of jurisdictional fragmentation in increasing the risk of default in Southern Italy, but were not as effective as republican institutions. Republican constitutions were even more important than jurisdictional fragmentation in explaining the local cost of public borrowing within republics, but they had an ambivalent effect: although they decreased the risk of default, they could also lead to interest rates being set above the cost-minimising level. Whether such a policy was implemented depended on institutions, as it was favoured by closed and cohesive

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[32] Sources: city-populations: Malanima (2005b); state-populations: Cipolla (1965).

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oligarchies directly monitoring the agents managing the public debt, contingency, as external shocks could suddenly lower local interest rates, thus promoting inter-city investments, and path-dependency, as locally concentrated investments strengthened the incentive to keep local interest rates high. As well as being the most original finding of the paper, this result highlights that creditors' management of the public debt is risky, rather than inevitably welfare increasing.

Appendix 1: sources of the interest rates

Florence: ASF, 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 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, 154); Pezzolo (2003b: 84, 2003d: 45-47, 49, appendix, 2006b: 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).

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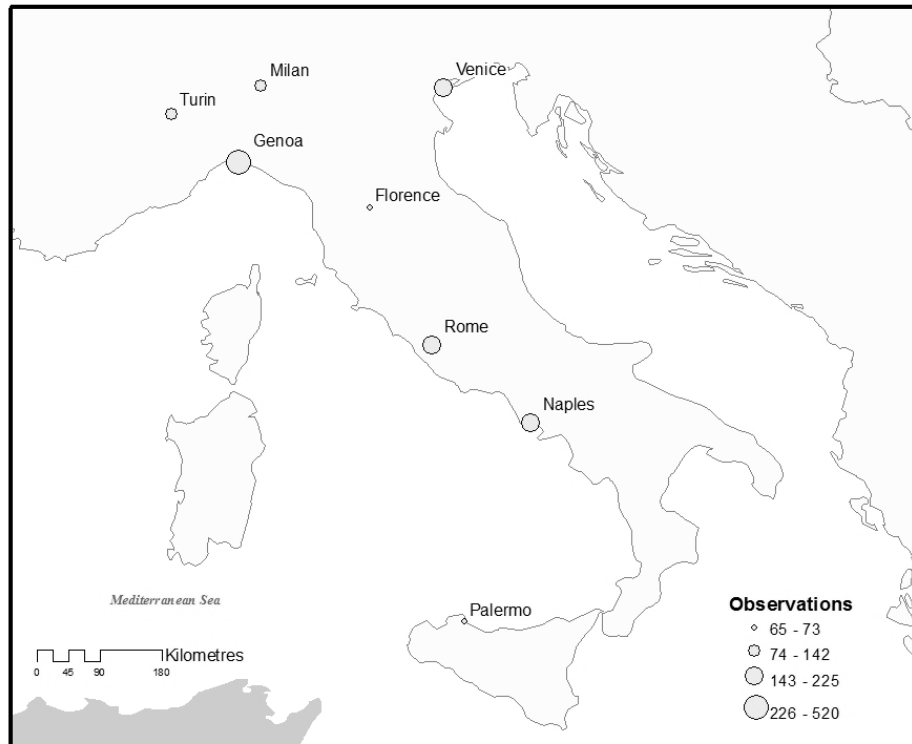
Sources: see the appendix.

Figure 2: Nominal interest rates in Italy, 1520s-1790s
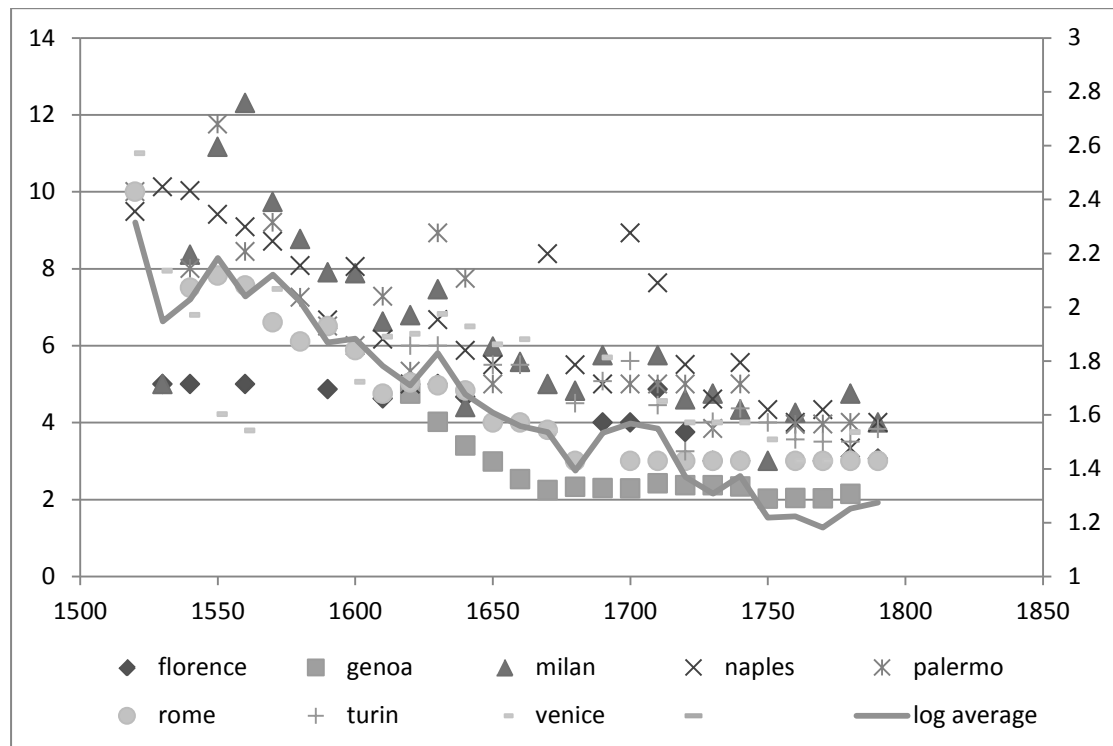
Note: Interest rates are normalised to perpetuity.

Sources: See the appendix.

Table 1: Observations by annuity type and source type

Source type: Annuity type:	Edict	Ledger	Secondary Market	Historian	Total
Alienation	36			289	325
Life annuity	65			21	86
Monte di pietà				10	10
Perpetuity	160	518	4	225	907
Term annuity	157			38	195
Total	418	518		583	1523

Sources: see the appendix.

Table 2: The independent variables

Variable	Expected sign
Time	-
Urban potential	-
War pressure	+
Republic	-
Parliament	-
Treasury	-
Fiscal reform	-
Church	+
Feudalism	+

Table 3: The cost of public borrowing in Italy (comparison with Rome), 1520s-1790s: Ordinary least squares regression analysis

	Coefficient	Marginal effect
Constant	7.181***	38.190
Time	-0.003***	-0.018
Florence	-0.043***	-0.229
Genoa	-0.400***	-2.126
Milan	0.299***	1.595
Naples	0.360***	1.913
Palermo	0.305***	1.622
Turin	0.200***	1.061
Venice	0.130***	0.690
R-squared	0.826	
N	170	

N = Sample size.
*** = Significant at the 1 per cent level.
Notes: Clustered standard errors allow for arbitrary within city correlation.
Sources: See the appendix.

Table 4: A tale of two republics

	Genoa	Venice
Institutions	Open, factionalised oligarchy, indirect control (random draws)	Closed, cohesive oligarchy, direct control (election)
Contingency	Spanish bullion & defaults	
Path-dependency	International investment, low local interest rates	Local investment, high local interest rates

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

	(1)	(2)	(3)	(4)
Constant	6.866***	6.875***	6.415***	6.403***
Time	-0.003	-0.003	-0.003***	-0.003***
Urban potential	-0.003	-0.003	-0.003***	-0.003***
War pressure	0.249***	0.253***	0.253***	0.253***
Republic	-0.284	-0.294	0.078	-0.378***
Republic*Venice				0.779***
Parliament	0.262	0.259	-0.092	-0.107***
Treasury		-0.019	-0.019	-0.019
Fiscal reform		0.015	0.015	0.015
Church			0.007*	0.009***
Feudalism			0.010***	0.010***
Adj. R-squared	0.832	0.830	0.828	0.827
N	170	170	170	170

N = Sample size.
* = Significant at the 1 per cent level.
** = Significant at the 5 per cent level.
*** = Significant at the 10 per cent level.
Notes: Fixed effects vector decomposition model estimation (Plümber and Troeger, 2007, 2011). The following variables are classified as time-invariant: Republic, Parliament, Church and Feudalism. Clustered standard errors allow for arbitrary within city correlation.
Sources: See the text and the appendix.

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

	War	Financial Development	Constitution	Fiscal centralisation	Jurisdictional Fragmentation	Place
Florence	3.93	31.06	0.89	1.29	45.90	16.94
Genoa	2.22	6.58	48.42	0.90	41.87	0.01
Milan	12.27	22.24	2.14	3.16	59.81	0.38
Naples	0.37	32.36	4.14	1.13	60.33	1.67
Palermo	0.43	23.08	21.36	1.44	49.33	4.36
Rome	8.17	22.65	2.17	5.92	55.37	5.72
Turin	3.85	16.41	0.86	0.82	58.64	19.41
Venice	0.39	0.35	51.53	0.88	46.84	0.01
Average	4.14	20.58	16.66	2.15	54.72	5.28

Sources: See the text.

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