Wedded to the State: Elite Social Networks and Territorial Integration in Early Modern Venice [*]

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Abstract

We examine how states integrate peripheral elites by overcoming credible commitment problems that weaken taxation, public debt, and security provision. We argue that elite marriage networks can serve as an "exchange of hostages," binding central and peripheral elites through kinship ties that raise the costs of *ex post* opportunism and render fiscal and security promises credible. We test this mechanism in early modern Venice, where the 1630 plague and the fiscal demands of the War of Crete induced a previously closed nobility to admit wealthy mainland families. Using newly digitized family-level data on marriages, offices, and public debt holdings, we show that families integrated earlier into the noble marriage network were more likely to invest in public debt than later entrants. Integration is also associated with higher provincial tax revenues, increased military spending, and a stronger central institutional presence. These findings highlight the relational foundations of state territorial integration.

Keywords

State Building; Social Networks; Credible Commitment; Territorial Integration; Venice

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How do states integrate peripheral elites into a lasting system of rule? The integration of the political center and its territorial periphery is a central challenge of state development (Lipset and Rokkan, 1967). The extent to which this integration succeeds determines whether a state can realize the scale economies required to enforce authority, provide public goods, maintain order, and sustain economic development (Ziblatt, 2006; Kalyvas, 2006; Garfias and Sellars, 2021).

At the heart of center–periphery integration lies a problem of credible commitment. For integration to occur, peripheral elites must be willing to transfer resources to the center—by paying taxes, subscribing to public debt, and supporting the central war effort—in exchange for protection and investment in their territories; yet a state strong enough to defend its territory is also strong enough to default, expropriate, or reallocate public goods once resources have been transferred (Weingast, 1995). Where peripheral elites expect such opportunism, they rationally withhold cooperation, and efforts at integration can falter even when external threats should, in principle, push toward greater centralization (Tilly, 1992).

The dominant response to this commitment problem emphasizes formal political institutions. Canonical accounts argue that representative assemblies and constitutional constraints give elites "control rights" over executive decisions, allowing them to threaten rulers with dismissal or fiscal obstruction if promises are broken (North and Weingast, 1989; Blaydes and Chaney, 2013; Cox, 2016). When successful, such institutions create a self-enforcing equilibrium in which rulers find it optimal to honor public debts, respect property, and invest in public goods.

Scholars, however, have raised cautions that formal institutions are not sufficient to bring the desirable outcomes, and research should focus on the interests of the agents and power dynamics behind the institutions (Stasavage, 2002; Bates, 2014; Pincus and Robinson, 2014).

This article develops a complementary mechanism rooted not in formal rules but in social institutions. We argue that elite marriage networks can help sustain credible commitments between center and periphery by operating as an "exchange of hostages" in Williamson's (1983) sense. By marrying their children across regions, elites place assets they value highly—lineage continuity, inheritance claims, and dynastic futures—inside relationships that would be directly harmed by *ex post* opportunism. When central elites intermarry with peripheral elites, they embed peripheral families within kinship networks that overlap with political authority, shaping expectations about taxation, debt repayment, and the allocation of public goods. Anticipating that future decision-makers will internalize these intergenerational ties, peripheral elites can rationally view central promises as more credible and become more willing to invest in the state through public debt purchases and sustained fiscal cooperation.

Marriage networks are not the only way elites can be connected. Patronage, office rotation, shared debt holding, and clientelism can all link elites across political space, but these arrangements typically rely on contemporaneous benefits that can be revoked, reallocated, or renegotiated as political conditions change. Elite marriage networks differ in that they bind elites through durable intergenerational stakes rather than short-term exchange. By fusing family lines, dowries, inheritances, and future political careers into a single dynastic portfolio spanning center and periphery, marriage ties transform political commitments into obligations that extend beyond the current generation.

Our claim is not that social mechanisms substitute for formal institutions. Rather, kinship and other durable social ties help make the promises embodied in formal arrangements credible by embedding political authority in overlapping family networks: even where elites share a common parliament or legal framework, variation in the density and structure of their marriage networks can shape expectations about whether center–periphery bargains over taxation, debt, and protection will be honored. On this view, social institutions provide the relational infrastructure that allows formal institutions to function as effective commitment devices.

We investigate this mechanism in early modern Venice. In the early seventeenth century, a devastating plague sharply reduced the size of the patriciate and the membership of the Great Council, just as mounting external threats—notably the protracted and costly War of Crete—raised the Republic's demand for fiscal resources; under these twin pressures, a previously closed urban nobility began to sell noble status to wealthy mainland (*Terraferma*) families and to open its tightly policed marriage market to them. Because marriage networks and kinship structures are typically sticky, this episode offers an unusually sharp historical episode of elite social-network expansion.

To study this process, we undertook an extensive original data-collection effort in the Venetian State Archives. Despite the Republic of Venice's extraordinary tradition of record-keeping, no large-scale, systematic micro-level datasets existed that allowed us to trace the fiscal and institutional consequences of the opening of marriage and social networks. To address this gap, we assembled and linked multiple archival and secondary sources by hand, combining newly digitized records on patrician marriages, family characteristics, office holding, tax revenues and expenditures, institutional expansion, and individual ownership of public debt.

At the family level, using newly constructed data on locations, marriages, and public-debt subscriptions, we find a strong association between mainland families' integration into old-patriciate marriage networks and their investment in public debt. To address selection into integration, we restrict the sample to mainland families that eventually integrated and compare families that married into influential lineages earlier with those that did so later. The key implication of our argument concerns timing: debt could precede marriage as an entry signal, or marriage could precede debt by strengthening credible commitment. Across specifications and robustness checks, we find a clear pattern—marriage occurs *first*, followed by debt subscriptions—consistent with marriage ties enhancing commitment.

We then extend the analysis to the territorial level. Focusing on mainland provinces and taxes with uniform statutory rates, we exploit cross-province variation that plausibly reflects differences in compliance and local cooperation rather than formal tax rules. To account for pre-integration differences, we assign weights to the low-integration provinces to match the high-integration province on population, growth, and prior tax revenues. The results show a clear bifurcation in tax revenues between high- and low-integration provinces. Over the same period, Venice also expanded mainland-focused institutions and military spending in the *Terraferma*. These expansions tend to coincide with periods in which a larger share of high-level officeholders had direct marriage ties to the mainland.

Taken together, the patterns are consistent with an equilibrium shift. Long-standing social closure and limited territorial integration were destabilized by seventeenth-century demographic and fiscal shocks, giving way to broader elite incorporation and an expanded fiscal–administrative presence. In this transition, marriage ties, debt purchases, tax remittances, officeholding, and state investments are jointly endogenous and mutually reinforcing. We therefore interpret the evidence as disciplined support for the timing, sequencing, and patterns of association implied by this equilibrium logic, rather than as a reduced-form causal effect of any single parameter.

Our primary contribution is to offer a novel way to theorize state territorial integration. Much of the existing literature has analyzed state integration using what Levi (1981) calls "the predatory theory of rule," which emphasizes conquest and extraction (Tilly, 1992; Spruyt, 1994; Hui, 2005). We instead understand it through the lens of social contract.[1] Our focus on the credible commitment problem complements the extant research's emphasis on war. As we show in the Venetian case, even severe external threats did not automatically produce integration; war created pressure, but integration occurred only when mutual trust between core and periphery was established.

A second contribution is to scholarship on state capacity and center–periphery relations. Existing work on fiscal development highlights administrative reforms, electoral rules, legal innovations, and representative institutions as the main drivers of tax capacity and public-goods provision (e.g. Brewer, 1989; Besley and Persson, 2009; Dincecco, 2011; Stasavage, 2011; Mares and Queralt, 2015; Cox et al., 2025). We show that the structure of elite social networks forms an additional, often overlooked foundation of state capacity. Dense kinship ties are associated with more dependable extraction and greater peripheral investment; where such ties are thin or absent, even formally unified states can operate as loose empires marked by uneven authority and limited commitment. Our analysis thus positions subnational elite integration as a critical underpinning of the territorial extension of state power. In this respect, we contribute to a growing literature that foregrounds the role of social institutions and social actors in processes of state formation (Charnysh, 2019; Grzymała-Busse, 2024).

Lastly, we incorporate elite social networks into the analysis of institutions. As Padgett and Ansell (1993, 1310) argue, understanding state development requires looking "beneath the veneer of formal institutions ... to the relational substratum of people's actual lives." In the spirit of Putnam (1993), we examine how social ties sustain credible commitments. While social networks have been shown to facilitate cooperation in other settings—such as public goods provision in the Philippines

[1]For classic discussions of social contract, see Locke (1690) and Rousseau (1762). For modern theoretical treatment of social contract, see Levi (1988) and Besley (2020).

(Cruz et al., 2020), elite coordination in Haitian coups (Naidu et al., 2021), state-building coalitions in imperial China (Wang, 2022), and authoritarian co-optation in Paraguay (Bandiera et al., 2026)—we are, to our knowledge, the first to systematically theorize and empirically examine their role in territorial integration.

Historical Background

For much of its long history (697–1797), the Republic of Venice enjoyed prosperity and political stability. As an entrepôt between East and West, Venice thrived when the Mediterranean was the hub of intercontinental trade (Pullan, 2013). Venetian galleys imported spices and luxury goods from the East, exported European wool and gold, carried grain from the Black Sea, and transported wine from Mediterranean islands (Davis, 1962). Politically, Venice embodied a mixed constitution that combined elements of monarchy (the Doge), oligarchy (the Senate and Council of Ten), and broader elite participation (the Great Council), closely approximating Aristotle's ideal (Lane, 1973).

Beneath this long-standing stability, however, lay important discontinuities. Historians commonly distinguish two post-medieval phases of Venetian domestic politics: a Renaissance era (1450–1630) and an early modern era after 1630 (e.g., Finlay, 1980, 4). The watershed was the plague of 1630 (Ferraro, 2003, 31), which halved the city's population and recast the political formula of the Republic (Finlay, 1980, 282).

Before the Plague

The Venetian Nobility

Venice's principal legislative body was the Great Council. Created in 1142, it initially comprised elected members from noble and wealthy families. In 1297, the Great Council enacted a major constitutional reform—known as the *Serrata* ("closure")—which granted permanent membership to all who had served in the Council during the preceding four years while excluding new entrants (Davis, 1962, 16). Around the same time, the principle was established that all major government offices must be held by members of the Great Council. From then on, Venetian nobility, membership in the Great Council, and participation in governance became synonymous (Davis, 1962, 18).

By 1379, 70% of wealthy Venetians were nobles (Davis, 1962, 37). Over the following 265 years, entry into the ruling class became virtually impossible even for the wealthiest nonnoble citizens, turning the Great Council into an exclusive political caste (Davis, 1962, 18, 223). New ennoblements during this period were rare (Appendix Figure A3-2) and largely honorary (Raines, 2003; Domzalski, 1996; Pullan, 1971).

To preserve their dominance, the Venetian nobility maintained a tightly regulated and highly endogamous marriage network. In order to "avoid contamination by inferiors," noble families imposed strict marital rules (Davis, 1962, 15): children could enter the nobility only if their father was noble and their mother an approved member of the middle class (Davis, 1962, 67). These rules were meticulously enforced through birth and marriage registers recorded in the Golden Books (Davis, 1962, 15). By the mid-sixteenth century, the patriciate numbered roughly 2,700 individuals across 134 clans (Finlay, 1980, 83). Intergenerational marriage alliances among these clans sustained family influence, dampened factional conflict, and bound the patriciate together (Finlay, 1980, 87). Although offices were formally allocated by lot, nominations typically favored relatives and in-laws; as Finlay (1980, 91) notes, family relationships formed "the foundation of the Great Council's nominating procedure" and decisively shaped political outcomes.

Venice–Mainland Relations

Prior to the fourteenth century, Venice held no territories in northern Italy; its power was confined to a cluster of lagoon islands at the northwestern edge of the Adriatic Sea. During the fourteenth and fifteenth centuries, Venice fought a series of Italian wars and absorbed smaller city-states between the Alps and the Adriatic—including Bergamo, Brescia, Verona, Padua, Treviso, and Udine. By the late fifteenth century, it controlled a substantial mainland domain, roughly croissant-shaped (Figure 1) (Davis, 1975, 34).

In the early years of mainland rule, Venice maintained what contemporaries described as "a skeletal governmental apparatus" (Ferraro, 2003, 15). The Great Council appointed patricians as rectors (*rettori*) to preside over mainland cities. Larger cities received two rectors—a *podestà* over-

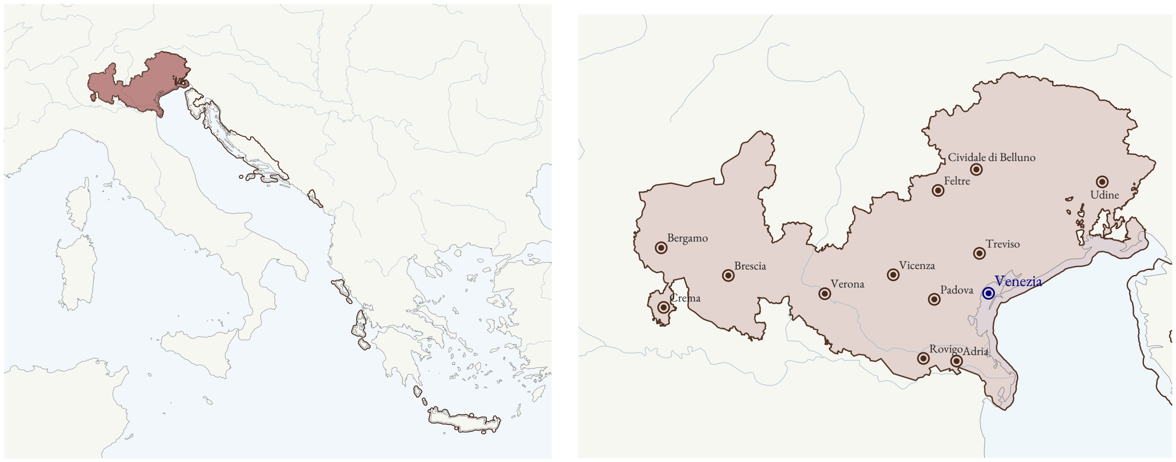


Figure 1: Map of the Most Serene Republic, 1572–1667

Notes: The *Terraferma* (mainland, filled) and the *Stato da Mar* (Mediterranean territories, contoured) are shown on the left; the right panel zooms in on the major cities of the *Terraferma*.

seeing civil and judicial affairs and a *capitano* responsible for military matters and finance—while smaller cities were assigned a single rector (Davis, 1962, 81–82). Most administrative functions nevertheless remained local, including taxation, courts, grain provisioning, charity, citizenship, and municipal law. These competencies were delegated to urban councils dominated by local elites, while Venetian patricians were excluded from municipal governance and mainland elites were barred from central legislative and executive decision-making (Ferraro, 2003, 16–17).

Across the *Terraferma*, this arrangement produced hereditary council aristocracies that closely resembled the Venetian patriciate (Ventura, 1964, 68). Mainland elites consolidated power through marriage alliances and monopolized executive offices within their cities (Ferraro, 2003, 85–87). By the fifteenth and sixteenth centuries, every mainland city council was controlled by an exclusive hereditary elite (Ventura, 1964, 68).

Venice justified its authority over the mainland through what contemporaries described as a "pact," grounded in conquest and conditional privileges rather than mutual consent (Ventura, 1964, 41–42). Mainland cities were required to surrender and petition Venice to preserve local liberties (Ferraro, 2003, 16), yet these arrangements were frequently overridden. Venice "quite often violated" such pacts and "established procedures to overrule them" (Ventura, 1964, 43).

This lack of credible commitment repeatedly undermined mainland integration. After the Battle of Agnadello in 1509, Venice temporarily lost much of its mainland territory. Brescia, for example, fell successively to French and Spanish control between 1509 and 1516, dividing the local nobility between Venetian loyalists and supporters of foreign powers (Ferraro, 2003, 18). Venetian protection also proved unreliable during internal unrest. During a civil disorder in the Bresciano in 1611, a contemporary lamented that while "the Brescians would like to see more central government," "the Republic has forgotten them," leaving many "feeling alienated" (Ferraro, 2003, 133).

After the Plague

Venetian politics changed sharply in the early seventeenth century. "The great plague of 1630," according to Pullan (2013, 16), "struck a crippling blow" to the Republic's political and economic foundations. Population levels collapsed, and the patriciate was reduced by roughly half (Ferraro, 2003, 31). The shock was unusually severe. Although Venice had experienced a major plague in the 1570s, the pandemic of 1629–31 was more lethal, and unlike earlier episodes, it was not followed by a demographic recovery (Davis, 1962, 57). The crisis was compounded by the War of Crete (1646–1669), which further "struck hard at the patriciate and the economy" (Finlay, 1980, 282).

These shocks unfolded against a backdrop of long-term economic decline. The Portuguese discovery of the sea route to Asia shifted Europe's commercial center of gravity from the Mediterranean to the Atlantic, exposing Venice to growing competition from Dutch and English traders. By the early seventeenth century, Venetian overseas trade had "reached a low point from which it never recovered" (Davis, 1962, 38). Many patrician families withdrew from commerce to become landowners (Davis, 1962, 39), and widespread impoverishment among the nobility followed (Lane, 1973, 430).

The Venetian Nobility

In the aftermath of the plague, the Great Council faced a severe "manpower shortage" (Davis, 1962, 75), and "the number of nobles began to shrink alarmingly" (Lane, 1973, 430), even as the number of major government offices remained largely unchanged. By the early seventeenth century, it became increasingly difficult to staff key positions—including governorships, embassies, Senate committees, senior magistracies, and the Council of Ten—undermining effective governance and contributing to what contemporaries viewed as a period of Venetian "decadence" (Davis, 1962, 75).

During the 1630s, Venetian elites debated admitting aristocratic families from the mainland to replenish depleted lineages and ease shortages of officeholders (Davis, 1962, 106). Only in 1646—and with considerable reluctance—did the patriciate abandon its closed caste system (Davis, 1962, 76).

The immediate trigger was the threat posed by Ottoman aggression and the urgent need for wartime finance. Proponents of ennoblement emphasized its dual benefits: restoring the size of the ruling class and raising substantial funds through entrance fees. A bill passed on March 4, 1646 cited both the "continually diminishing" number of nobles and the need to elect capable officeholders (Davis, 1962, 107). Over the following seven decades, the Great Council admitted 127 new families (Lane, 1973, 430). Each admission required a special bill, and all entrants paid a uniform fee of 100,000 ducats (approximately $11 million today), a sum exceeding the annual income of even the wealthiest merchants and more than twice that of the richest old families, providing a major source of wartime revenue (Davis, 1962, 109–110).

Among those ennobled in the seventeenth and early eighteenth centuries, mainland families were the most readily accepted. Many claimed ancient lineage and highlighted military service to the Republic in wars against the Turks and Austria (Davis, 1962, 113). Despite their geographic distance, their incorporation was widely viewed as compatible with preserving the "purity" of the patriciate (Cowan, 2007, 3).

Venice–Mainland Relations

Following their admission to the Great Council, mainland noble families entered the Venetian aristocratic marriage market. Their incorporation addressed two problems created by the plague. First, demographic losses sharply reduced the pool of eligible spouses within the endogamous patriciate. Second, many mainland nobles were substantial landowners, embodying the landed ideal increasingly attractive to Venetian elites as commercial incomes declined.

Most marriages paired Venetian sons with mainland daughters and involved large dowries, in some cases equaling the groom's total taxable assets (Ferraro, 2003, 109).[2] Dowries typically included

[2] In the first four decades of the seventeenth century, dowries ranged from 8,000 to 42,000 lire (approximately $147K–770K today) (Ferraro, 2003, 118).

land, credit, real estate, and liquid assets (Ferraro, 2003, 118). As Venetian nobles shifted from trade to landholding, these transfers facilitated territorial consolidation and strengthened rural influence (Ferraro, 2003, 126–7).

Dowries also forged durable political alliances. Under Venetian custom, all children inherited equal shares of their mother's dowry (Ferraro, 2003, 122), tying the economic fortunes of natal and marital kin across generations. As Ferraro's study of the Fisogno family illustrates, such arrangements linked landholding families within the inner political circle through shared territorial interests (Ferraro, 2003, 128).

Marriage into Venetian families further opened access to central politics for mainland elites. Through kinship ties, new nobles gained patrons in the Great Council. As Davis (1962, 114–6) documents, these "new men" gradually advanced from minor committees to Senate posts, naval commands, and governorships; by 1775, they had held 312 such positions (Davis, 1962, 116). The most prominent example was Lodovico Manin (1725–1802), who rose from a Friulian mainland lineage to become doge in 1789 (Davis, 1962, 117).

The incorporation of mainland elites transformed Venice–mainland relations. As Ferraro (2003, 136) observes, the early seventeenth century marked a "fundamental shift" toward what Tilly (1992, 97) would call an "extraction–protection cycle," in which Venice increasingly relied on mainland resources while expanding its bureaucratic presence and fortifications in the *Terraferma* (Ferraro, 2003, 167–8, 191). Ferraro concludes that effective governance required not only fiscal and judicial control, but penetration of elite kinship networks themselves (Ferraro, 2003, 224).

Although the Republic fell in 1797, the integration of the *Terraferma* had lasting consequences. By the mid-sixteenth century, the mainland formed a compact territory of over 30,000 square kilometers and roughly 1.4 million inhabitants, anchoring Venice as the dominant territorial state in northeast Italy (Knapton, 2013, 86). These provinces later passed under French and Austrian rule and were incorporated into the Kingdom of Italy in 1866, leaving Venetian administrative boundaries and practices as a durable legacy (Laven, 2002).

Social Networks and Territorial Integration: The Argument

The Venetian experience highlights a more general problem of state building in territorially extended polities. Despite having formally annexed large mainland territories by the fifteenth century, Venice long refrained from deeply expanding central fiscal extraction, administrative capacity, and military investment in the *Terraferma*. As the historical record shows, this was not simply a matter of technological or organizational limits, nor can it be fully explained by uniform resistance from local elites (Tilly, 1978; Acemoglu et al., 2020; Garfias and Sellars, 2022). Rather, the Venetian case underscores a fundamental credibility problem: even when peripheral elites might have preferred deeper integration into a larger and more powerful state, they faced the risk that the center could extract resources without reliably delivering protection, public goods, or political incorporation in return.

We formalize this problem by defining "state expansion into the periphery" along three interrelated dimensions: (i) central fiscal extraction from peripheral territories, (ii) central expenditures and administrative institutions operating in those territories, and (iii) peripheral investment in central public debt, which we interpret as a revealed-belief measure of the center's credibility. Together, these dimensions capture the centralization of coercion, taxation, and public goods provision. In principle, such centralization generates collective gains through economies of scale. Yet, as Venice's long reliance on indirect rule illustrates, these gains are difficult to realize when peripheral actors doubt the center's commitment not to renege *ex post*. Even in the absence of overt opposition by local elites, nothing prevents a central government from retaining extracted resources while failing to honor its promises of protection and investment—a dilemma emphasized in the broader literature on credible commitment and state building (North and Weingast, 1989; Cox, 2016).

The existing literature offers a clear explanation centered on formal representative institutions. This logic, however, does not fit the Venetian case. Venice had long been an oligarchic republic with an elected prince, and it remained so throughout the early modern period. Yet the expansion of state presence, fiscal capacity, and public debt occurred without any major institutional reform.

We therefore develop an alternative mechanism grounded in historical evidence and game-theoretic intuition. We argue that elite marriage networks can complement representative institutions by mitigating commitment problems, and we derive testable implications from this logic. A simple formalization consistent with the historical narrative is presented in Appendix A1.

The Elites and Their Incentives

We begin by identifying the key actors in oligarchic state building: central elites, who monopolize political and military authority, and peripheral elites, who control local councils in the annexed territories. At their core, both groups share a common objective—survival—understood as the preservation of family lineage, social status, wealth, and political power.

In an oligarchic setting, elite survival is inseparable from the survival of the ruling caste as a whole. Patrician families thus care not only about reproducing their own lineage and securing private wealth, but also about maintaining a political order capable of sustaining elite rule. This concern can be framed as a problem of the optimal size of the ruling caste. Expansion dilutes individual influence and access to office, while excessive contraction risks administrative breakdown by undermining office-holding capacity, rotation across magistracies, and effective governance. Elites therefore face a collective-action problem: admitting outsiders reduces private rents but may be necessary to preserve the regime itself. Historical evidence suggests that this constraint was both salient and consequential. Contemporary debates over reopening the Great Council—especially following demographic shocks—explicitly invoked concerns about the state's ability to function (Davis, 1962; Raines, 2003).[3]

Conversely, peripheral elites likewise sought to ensure the survival and advancement of their lineages. This objective made upward social mobility through marriage highly attractive. Accordingly, we assume that when a member of the Great Council proposed a marriage alliance to a mainland noble family, the offer would be accepted.

The State

We think of the "state" as facing three core decisions: who controls public spending, how resources are raised, and how they are allocated across public goods. To capture decision-making, we assume

[3] Venetian elites themselves explicitly recognized this tradeoff between individual influence and collective functionality. For instance, in a 1645 address to the Great Council, Giacomo Marcello argued that the Republic's survival required maintaining a sufficiently large and cohesive patriciate, both to staff offices effectively and to sustain the social foundations of political order and defense (Todesco, 1989, 25).

that members of the central elite are randomly (or quasi-randomly) assigned to agenda-setting and implementation roles in key fiscal and administrative offices. Although stylized, this assumption reflects Venetian practice, where appointments to major offices combined voting with random selection to limit collusion and concentration of power.[4]

Next, consider state finance. Revenues can be raised through taxation or public debt, and both implicate the credible-commitment problem described above. For peripheral elites, investing in public debt entails uncertainty over whether the central state will honor repayment, while compliance with taxation—specifically, transferring revenues from the periphery to the center—raises doubts about whether the center will deliver the public goods that local authorities would otherwise provide.

We treat these two financing channels as analytically distinct. Investment in public debt is an individual decision: relatively risky for the investor but limited in its broader consequences. Tax compliance, by contrast, requires institutionalized extraction, and thus reflects a deeper and more diffuse belief in the state's capacity to keep its promises.

Overview of the relevant decisions

In sum, in our stylized model of an oligarchic, territorially expanding state, both central and peripheral elites make marriage choices with an eye to family survival and social prestige, while central elites also internalize concerns about the optimal size and functionality of the ruling caste. State revenues are raised through a combination of central and peripheral taxation and public debt purchased by individual investors. A randomly selected member of the central elite then determines how public resources are allocated between the center and the periphery.

We argue that these personal and governmental decisions interact in systematic ways, giving rise to two distinct equilibria: a *social closure–low state capacity* equilibrium and a *social integration–high state capacity* equilibrium. Once the polity settles into either configuration, actors' incentives align so that no group has an incentive to deviate, rendering each equilibrium self-enforcing.

[4]For example, the election of the Doge involved multiple alternating stages of random selection and voting within the Great Council, culminating in election by a supermajority of a randomly constituted final body.

Social Closure, Low State Capacity

Suppose the central elite is sufficiently large to staff public offices and faces no extraordinary demand for public goods at the center. In this case, we expect no social integration between center and periphery: no intermarriage, no peripheral investment in public debt, and no expansion of state capacity into peripheral territories. Tax revenues remain under local control, and the central government neither extracts resources from nor provides public goods to the periphery.

This outcome is sustained by strategic complementarities between social integration and state investment. Marriage ties, fiscal participation, and public-goods provision reinforce one another, so that unilateral deviation yields little return. When intermarriage is rare, a single family's decision to marry into the periphery does not alter the expected composition of future officeholders or the center's incentives to protect peripheral property rights. The credibility environment therefore remains unchanged, keeping the returns to integration low. Anticipating this, neither central nor peripheral elites have incentives to deviate, resulting in a self-reinforcing equilibrium of social closure and low state capacity.[5]

Social Integration, High State Capacity

Suppose intermarriage between central and peripheral elites becomes common. Abstracting for now from the forces that trigger this shift, peripheral elites invest in the central state, and state capacity expands into the periphery. As in the previous case, this configuration constitutes a self-reinforcing equilibrium: once established, no actor has incentives to deviate.

Intermarriage sustains this equilibrium by reshaping the credibility of central commitments through expectations rather than formal constraints. Marriage ties create dynastic portfolios spanning center and periphery—via dowries, inheritances, property claims, and the political incorporation of new families into the patriciate. Because access to key fiscal and administrative offices rotates across families and is subject to procedures that limit durable factional control, denser center–

[5] Consider each actor's incentives. A central elite family that unilaterally marries into the periphery gains little: absent credible protection of peripheral property rights, its offspring's wealth remains insecure, making intra-elite marriage preferable. Regime survival also does not require deviation, as the ruling caste is sufficiently large. Peripheral elites likewise avoid investing in public debt without social ties or credible repayment, favoring safer outside options, while central decision-makers lack both the means and incentives to expand public goods in the periphery—making local tax retention optimal.

periphery kinship ties increase the likelihood that future decision-makers internalize the long-run costs of expropriation or under-provision in the periphery. Expected policy therefore shifts toward protecting peripheral property rights and supplying public goods, making tax remittance and investment in public debt credible.[6]

Once initiated, these incentives reinforce one another. Greater social integration raises the expected alignment of future policymakers with peripheral interests, strengthening the credibility of central commitments and encouraging further intermarriage, fiscal integration, and administrative expansion—producing a cumulative process of rising state capacity.

Shocks and Transition Dynamics

Under what conditions does the polity transition from one equilibrium to the other?

Our answer lies in the interaction of demographic and fiscal shocks. Severe demographic contraction threatens both administrative capacity and the long-run survival of elite lineages, increasing incentives to seek marriage partners outside the existing caste. At the same time, revenue shocks—such as the fiscal demands of warfare—heighten the need to expand state finances, including through public debt.

We conceptualize the transition as a process of social innovation (Greif, 2006). Early movers undertake actions that can be carried out individually rather than collectively: initially, some families invest in public debt; as repayment becomes credible, local councils subsequently redirect tax revenues to the center. As social integration deepens and a larger share of officeholders acquires ties to the periphery, the state expands administrative institutions and public-goods provision in peripheral territories.

Social norms play a critical role in this transition (see, e.g., Axelrod, 1986). Moving to the high-integration equilibrium requires that intermarriage with outsiders—specifically, nobles from other towns—become socially acceptable. As with broader cultural shifts, such norm change is most likely

[6]From the perspective of a central decision-maker, high intermarriage implies a high probability of holding property or kinship ties in the periphery, making protection and investment there privately optimal. Anticipating that future officeholders face similar incentives, peripheral elites remit taxes and invest in public debt. With sustained revenues, the center expands administrative institutions and public-goods provision in the periphery, further securing peripheral wealth and increasing the returns to intermarriage for central families.

to be initiated by wealthier, higher-status families within the ruling elite, with others following once new practices become legitimate.

Scope Conditions

Our argument does not imply that elite marriage networks universally underpin territorial integration. Rather, it applies under a specific set of institutional and social conditions. Political authority must be concentrated in a relatively small, hereditary elite, so that kinship ties have durable political consequences. Marriage must function as a key instrument of alliance-building, with families able to coordinate matches across regions and thereby reshape elite networks. The central state must depend on peripheral elites for taxation, credit, and local governance, such that cooperation cannot be replaced by coercion or windfall resources. The assets at stake—land, offices, and public debt claims—must be durable and territorially anchored, so that *ex post* opportunism imposes long-run costs on kin groups spanning the center–periphery divide. Where these conditions hold, intermarriage can operate as an intergenerational commitment device; where elites are more fluid, marriages less controllable, or coercion more readily deployed, kinship-based mechanisms should play a more limited role.

Data

With more than 1,100 years of continuous existence, the Republic of Venice was a pioneer in systematic record-keeping. The Venetian State Archives alone are estimated to span 70–90 kilometers of shelf space. Yet despite this extraordinary documentary record and a rich historiography, large-scale, systematic micro-level datasets that jointly capture elite social integration, political incorporation, and fiscal capacity remain scarce. The principal exception is the collection of patrician marriage records compiled by the archivist Giuseppe Giomo from the *Avogaria di Comun* and digitized by Puga and Trefler (2014).

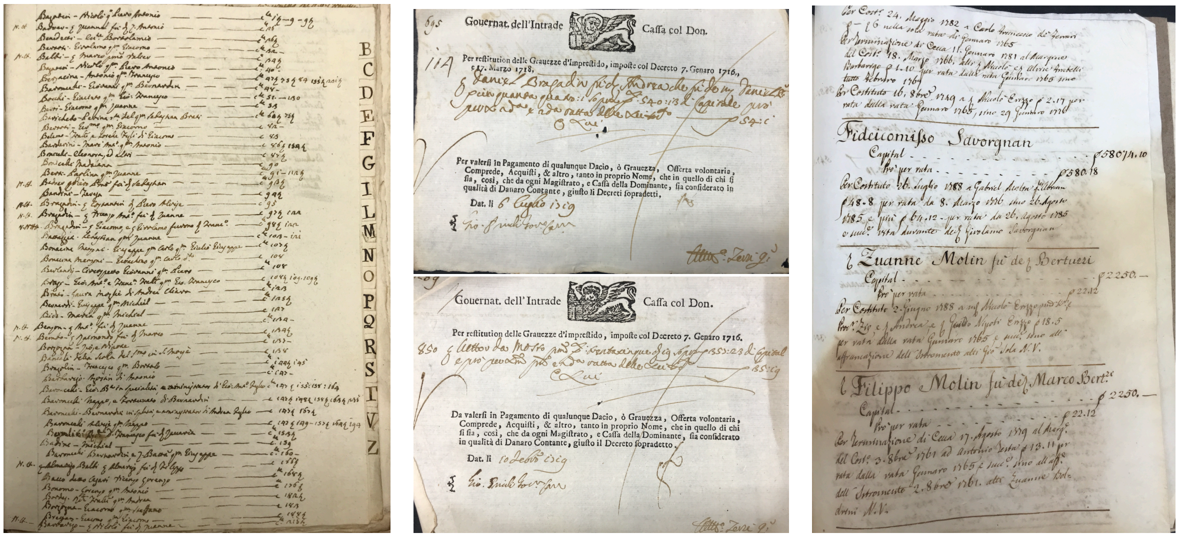
Our analysis draws on an extensive original data-collection effort that combines published historical series with hand-collected archival records from the Venetian State Archives. For aggregate fiscal benchmarks, we rely on Pezzolo (2006), who reports nominal and real public-debt levels (pp.

12, 89) and interest payments (pp. 90–91). We complement these series by digitizing all surviving *Bilanci Generali della Repubblica di Venezia* (General Budgets) from the *Documenti Finanziari della Repubblica di Venezia* (Financial Documents of the Republic of Venice) which record revenues by tax source and describe the territorial allocation of expenditures for a number of years,[7] allowing us to identify military spending in the mainland and tax flows from it.

An empirical contribution of the paper is a new individual-level dataset on ownership of Venetian public debt. To our knowledge, no previous work has systematically examined the identities of debt holders. We therefore conducted a comprehensive search of financial records across three institutions responsible for debt issuance and servicing—the *Zecca e Banco Giro* (Mint and Giro Bank), the *Governatori delle Entrate* (Governors of Revenues), and the *Savio Cassier* ("Cashier Sage")—and manually digitized registers of interest payments, refund receipts for extraordinary loans, and alphabetical lists of outstanding claims at the fall of the Republic in 1797. Figure 2 shows sample images of archival records in these three institutions. We focus on marketable state debt (*Depositi*), issued by decree of the Senate and held by individuals, and exclude discretionary institutional contracts (*Capitali Instrumentati*), which functioned more like compulsory levies than transferable debt claims (Felloni, 1971).

We link these fiscal data to information on elite demography and political power. Population trends for Venice and the mainland are taken from Beltrami (1954), while counts of male nobles come from Davis (1962) and Domzalski (1996, pp. 35–36). Officeholding careers and control over key fiscal and administrative magistracies in the seventeenth and eighteenth centuries are drawn from Domzalski (1996, A8–A108), and we classify offices serving the *Terraferma* using the archival catalog compiled by Andrea da Mosto. Finally, we recover family origin, antiquity, and mid-eighteenth-century wealth from the *Libro d'Oro dei Nobili Veneti* (the "Golden Books") and Giacomo Nani's contemporary assessment of patrician fortunes (Domzalski, 1996, pp. A2–A7). Nani reports categorical values describing the wealth of families: 5 = "assai ricchi" (very wealthy), 4 = "che hanno più del loro bisogno" (who have more than they need), 3 = "che hanno il loro bisogno" (who own what they need), 2 = "che hanno meno del loro bisogno" (who have less than what they need), and 1

[7] Specifically, the records were collected and survived for the years 1587, 1602, 1610, 1621, 1633, 1637–38, 1641, 1670, 1679, 1736–1755.



(a) Mint and Giro Bank (b) Governors of Revenues (c) Treasury Office

Figure 2: Sample Images of Archival Records

Notes: The figure displays sample archival records from institutions involved in the administration and payment of public debt in the Venetian Republic: the Mint and Giro Bank (left), the Governors of Revenues (center), and the Treasury Office (right).

= "che hanno niente" (who have nothing). Detailed source descriptions, coding rules, and archival examples are reported in Appendix A2.

Empirics

In this section, we lay out the testable implications of our argument and evaluate them using newly assembled family- and regional-level datasets.

Testable Implications

Our theory yields three sets of empirically testable implications, corresponding to population shocks, elite integration, and the expansion of state capacity.

First, large demographic contractions among the central elite should weaken social closure and be followed by a sustained increase in intermarriage between central and peripheral nobility. This opening is expected to be gradual and selective, with the most influential and established families acting as early adopters of cross-regional marriage ties.

Second, social integration between central and peripheral elites should be associated with increased peripheral investment in the state. Peripheral elites who become connected to the central elite—particularly through marriages to wealthy, influential, and well-connected families—should be more likely to invest in central public debt, with such investment following social integration rather than preceding it. As the perceived credibility of repayment expands, public debt should be sustained at lower rates of return. Beyond individual financial decisions, provinces whose elites are connected to Venice through marriage should also exhibit higher tax compliance, reflecting greater willingness to remit revenues to the center.

Third, as social integration between central decision-makers and peripheral elites deepens, the central state should expand its administrative presence in the periphery and reorient strategically relevant expenditures toward peripheral territories. This shift should be reflected in the creation of new institutions with mainland jurisdiction and an increase in military investment in the periphery.

Demographic Shocks and Marriages

The first implication of our argument is that severe demographic contraction weakens elite social closure and increases intermarriage between central and peripheral nobility. Figure 3 plots the share of noble marriages occurring exclusively within the old patriciate—families represented in the Great Council since the *Serrata*—versus marriages involving newly aggregated noble families or non-nobles. From the fifteenth century through the early seventeenth, the share of noble marriages occurring within the old patriciate remained remarkably stable at roughly 80%. Beginning in the second quarter of the seventeenth century, however, this share declines steadily, reaching approximately 50% by the end of the Republic.[8]

Figure 4 illustrates the gradual integration of the new nobility (solid red circles) into Venice's marriage network. Prior to the mid-seventeenth century, outsiders are largely absent from the network core; in the decades following the plague, they become increasingly embedded. Consistent with this shift, network density declines over time, indicating a loosening of the patriciate's previ-

[8] Appendix Figure A3-1 shows male Venetian noble population trends before and after the plague for all years with reliable records. The figure documents a sharp demographic contraction around the plague, followed by a recovery in the late seventeenth century as newly aggregated noble families and offspring of mixed marriages are included.

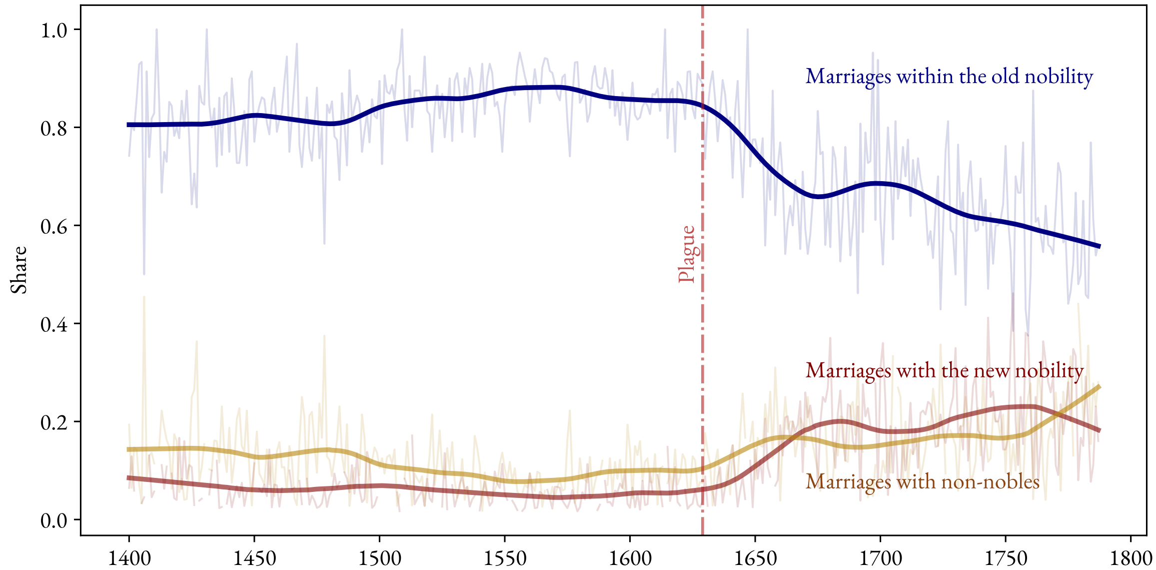


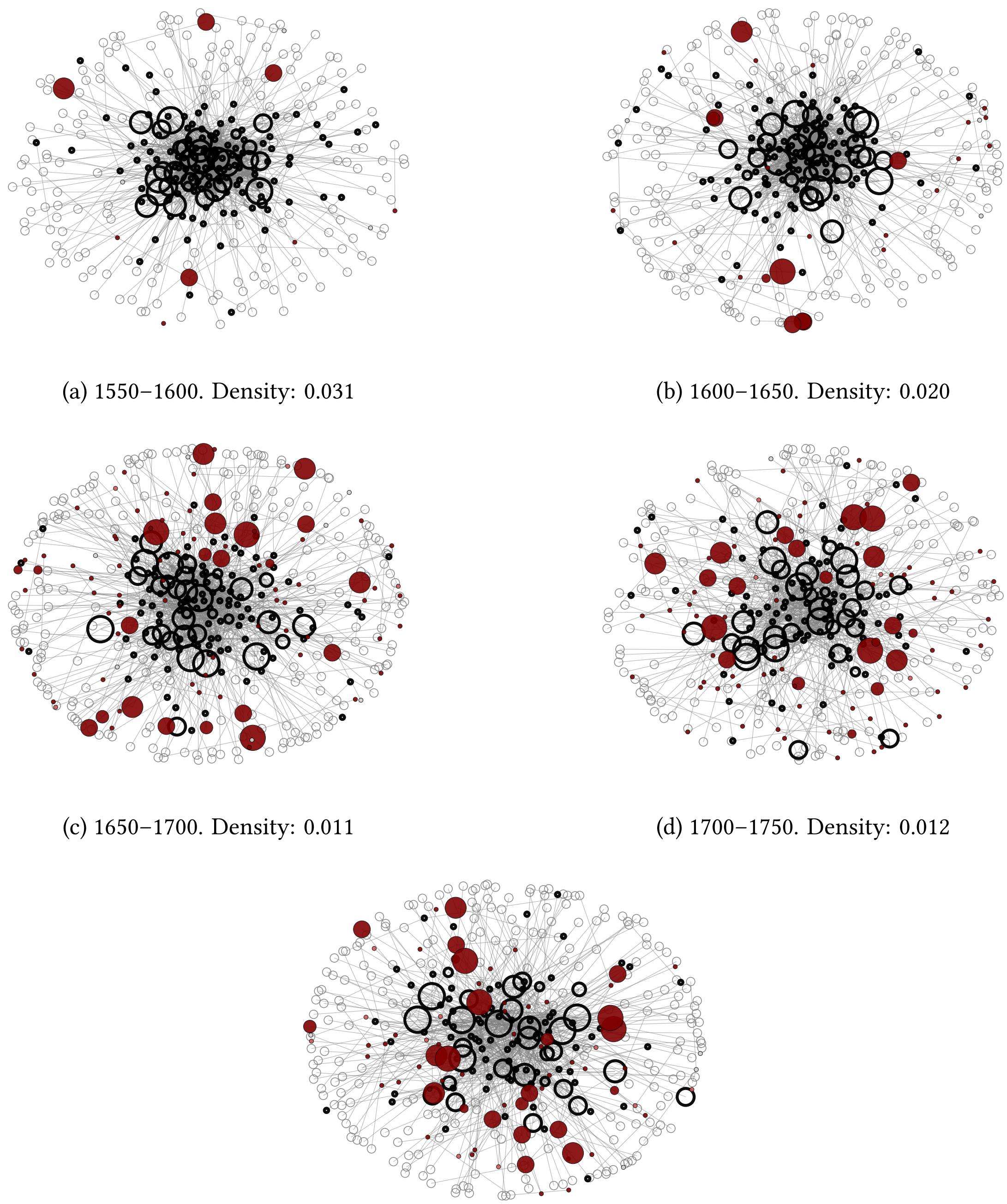
Figure 3: Marriages within the Old Patriciate over Time

Notes: The figure plots the share of noble marriages occurring exclusively within the old patriciate (blue line)—families represented in the Great Council since the *Serrata*—versus marriages involving newly aggregated noble families (red line) or non-nobles (yellow line).

ously rigid social closure.

Figure 5 shows the changing geographic origins of families marrying into the Venetian nobility. While the total number of marriages remains roughly constant, marriages within Venice decline sharply—from over 2,000 to about 600—while matches increasingly span a wider range of mainland provinces.[9]

[9]Among Great Council families that married outside the patriciate, early adopters include the Contarini, Bembo, and Corner—among the oldest, largest, and most prominent Venetian lineages. This pattern is consistent with our interpretation of outside marriage as social innovation, in which norm change is initiated by influential elites before diffusing more broadly.



(a) 1550–1600. Density: 0.031

(b) 1600–1650. Density: 0.020

(c) 1650–1700. Density: 0.011

(d) 1700–1750. Density: 0.012

(e) 1750–1797. Density: 0.010

Figure 4: Integration of Newly Ennobled Families into the Venetian Marriage Network

Notes: The figure displays the marriage network among Venetian elite families across periods. Each circle represents a family and each edge a marriage tie. Solid red circles denote newly ennobled families, while hollow grey circles denote old patrician families (aggregated before 1600), with darker shading indicating the most prominent lineages. Circle size is proportional to family wealth. Node positions are generated using a force-directed spring layout (Fruchterman–Reingold) and held constant across periods to facilitate comparison.

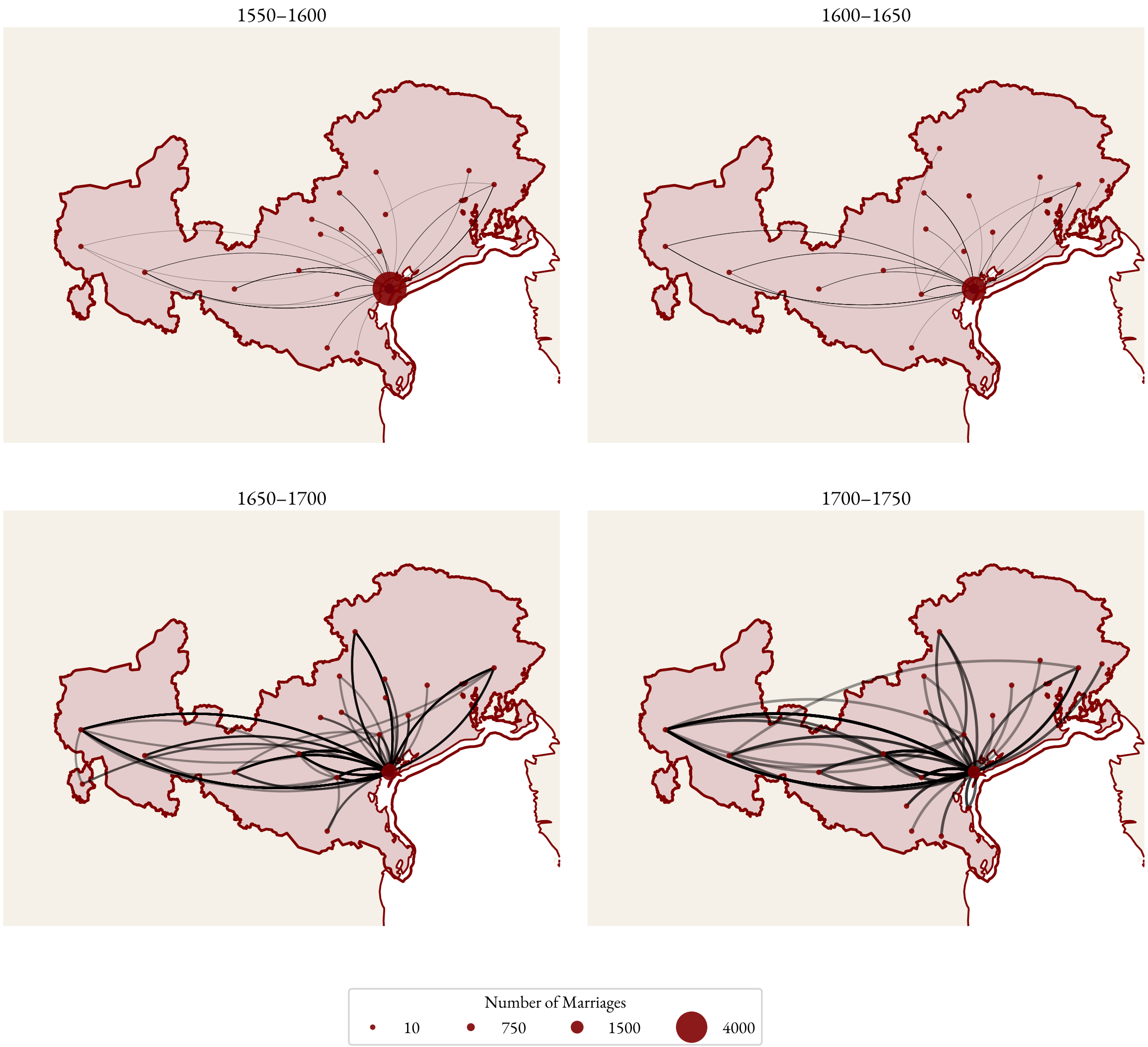


Figure 5: Spatial Expansion of Marriage Ties into the Venetian Nobility

Notes: The figure illustrates the spatial expansion of marriage ties among the Venetian nobility from 1550 to 1750. Each circle represents a locality and each edge a marriage tie. Circle size is proportional to number of marriages. Edge width is proportional to number of ties.

Marriages and the Periphery's Investment

A second implication of our argument is that social integration between central decision-makers and peripheral elites is associated with peripheral investment in the state. We examine this implication through two channels: investment in public debt and tax compliance across mainland provinces.

Public Debt

We begin by testing a core implication of our argument: whether elite marriage ties and social integration increase the credibility of public-debt repayment. Appendix Figure A3-3 shows a positive correlation between the number of marriages to the old nobility and the share of mainland families buying public debt.

While this correlation is consistent with our theory, it is not decisive. A competing interpretation is that outsider families first purchased public debt as an entry strategy and only later gained access to elite marriage networks. Our argument instead predicts the opposite sequencing: marriage ties should precede debt investment by altering expectations about the state's commitment to repayment. Disentangling these sequences requires exploiting within-family timing variation, which we do using a family–period panel dataset.

Our research design focuses on families that *eventually* integrate into elite networks—either by entering the nobility or by marrying into influential patrician lineages. Within this set of "eventual integrators," families differ in the *timing* of integration, which allows us to examine whether debt investment rises after social incorporation rather than before. Restricting the sample in this way accounts for selection into integration attempts, holding the intention to integrate fixed and exploiting within-family variation in timing.

We thus compare earlier and later integrators who ultimately make similar integration choices. To the extent that timing reflects contingent match-making among otherwise comparable families, the estimates can be read as the association between earlier integration and subsequent debt participation. Even absent that interpretation, the sequencing is informative for our argument, which predicts that debt purchases should follow—rather than precede—the forms of social integration most relevant for credibility.

We estimate the following specification with our family-level panel data:

$$y_{it} = \beta\,\mathrm{Post}_{it} + \alpha_i + \gamma_t + \varepsilon_{it},$$

where y_{it} is an indicator for whether family i subscribes to a public loan issued in period t. The indicator Post_{it} switches on after a family experiences a focal event—admission to the nobility or a first marriage to a specified type of patrician family, which we describe in detail below. α_i are family fixed effects, and γ_t are loan-issue (period) fixed effects. Family fixed effects absorb time-invariant lineage characteristics (e.g., origin, baseline wealth, and a general propensity to participate in state finance), while period fixed effects capture common shocks to the debt market (e.g., wartime financing needs, changes in interest rates, or shifts in the overall market for Venetian debt). Because our mechanism concerns durable social incorporation rather than a transitory shock, the post indicator is designed to capture a persistent change in the credibility environment relevant for debt investment. We cluster standard errors at the family level.

Table 1 Panel A examines events that are institutionally salient but only loosely connected to our mechanism. We find suggestive evidence that admission to the nobility is associated with a higher likelihood of purchasing public debt (column 1). Interpreting this association requires caution. Although newly aggregated nobles gained seats in the Great Council and greater exposure to patrician social circles, historians agree that noble status alone did not confer meaningful influence over Venetian decision-making until very late in the Republic (Domzalski, 1996; Raines, 2003; Pullan, 1971). The pattern is therefore consistent with debt purchases reflecting social incorporation—entry into elite networks and kinship ties—rather than direct policy influence.

By contrast, we find no significant relationship between marriages to the old nobility *per se* and public-debt investment (column 2). This accords with our expectation that not all marriages function as credible hostages. By this period, patrician families differed sharply in wealth and political importance (Domzalski, 1996), and many lineages held only minor offices with limited fiscal relevance. A generic marriage tie thus need not connect peripheral families to elites capable of shaping or credibly backing state commitments.

Finally, as a placebo test, we examine marriages to relatively poor patrician families and find

Table 1: Marriages and Public Debt: OLS Estimates

	(1)	(2)	(3)
Panel A	*Dependent Variable: Buying Public Debt (0-1)*		
Nobility	0.086^{**}		
	(0.041)		
Any Marriage with Old Nobility		0.009	
		(0.009)	
Marrying the Poor (placebo)			0.002
			(0.077)
Family FE	✓	✓	✓
Period FE	✓	✓	✓
Clustering	Family	Family	Family
Unique families	292	921	191
Sample Mean	0.159	0.072	0.188
Coefficient p-value	0.038	0.334	0.979
Permutation p-value	0.034	0.216	0.471
R^2	0.273	0.245	0.150

	(1)	(2)	(3)
Panel B	*Dependent Variable: Buying Public Debt (0-1)*		
Marrying Wealthy	0.173^{**}		
	(0.072)		
Marrying Influential		0.146^{**}	
		(0.065)	
Becoming Well-Connected			0.242^{**}
			(0.095)
Family FE	✓	✓	✓
Period FE	✓	✓	✓
Clustering	Family	Family	Family
Unique families	136	178	166
Sample Mean	0.165	0.183	0.217
Coefficient p-value	0.017	0.027	0.012
Permutation p-value	0.023	0.034	0.005
R^2	0.299	0.286	0.213

Notes: Estimation is by OLS. The unit of analysis is the family–period. The sample includes mainland families that were eventually exposed to the regression-specific social integration event. The sample period spans 1667–1797 (see the Data Section for the specific years). Standard errors are clustered at the family level. Significance levels: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

no association with debt purchases (column 3). This result helps rule out the possibility that cross-family marriage or social mobility alone mechanically predicts participation in public debt markets.

Table 1 Panel B focuses on events that map closely onto our mechanism: marriages that connect peripheral lineages to families most likely to influence, administer, or internalize the costs of fiscal opportunism. We find strong positive associations for (i) marrying wealthy families (based on Nani's wealth category 5; column 1), (ii) marrying influential families (defined by the offices they held;[10] column 2), and (iii) becoming well connected in the marriage network (column 3), measured by eigenvector centrality.[11] Across all three measures, the estimated effects are positive and statistically significant, with the largest association for network centrality. Taking estimates from column 1, for example, marrying a wealthy Venetian family is associated with a 17.3–percentage-point increase in the probability of investing in public debt—an effect roughly equal to the sample mean. We find associations of the comparable magnitudes for the other two measures. Consistent with our argument, the forms of social integration that matter are those most likely to shift expectations about the center's willingness and ability to honor its fiscal commitments.

A natural alternative interpretation is that the association between marriage integration and public-debt purchases reflects a pure wealth channel: marriages brought large dowries that mechanically enabled mainland families to invest in state debt. Two considerations make this explanation unlikely. First, although our archival sources do not record the direction of asset transfers, historical evidence indicates that most cross-regional marriages paired Venetian sons with mainland daughters, implying that dowries typically flowed out of mainland lineages rather than into them (Ferraro, 2003, 109). Second, even in the minority of cases in which mainland sons married Venetian daughters and received dowries, additional liquidity alone cannot account for debt purchases. Venetian public debt was widely regarded as risky for outsiders, and windfall wealth could instead be placed in safer local assets or alternative investments.

As a placebo test, Appendix Table A3-4 reverses the temporal ordering. If the sequence ran in the

[10] We operationalize influential families as those holding seats in the Council of Ten, the Republic's *de facto* ruling body, during the period under study.

[11] Eigenvector centrality captures integration into the network core—connections to other well-connected families—rather than attachment through isolated ties. We operationalize 'becoming well connected' with an indicator for being in the top decile of the distribution of Eigenvector centrality at a given point in time.

opposite direction—such that families first purchased public debt and only subsequently achieved social integration—then future network connectedness should predict current debt purchases, or early debt purchases should predict later marriages. Panel A provides no support for this alternative: future eigenvector centrality does not predict earlier debt investment in the full sample (column 1), nor within the post-loan windows of 1716–1760 for the 1667 loans (column 2) and 1760–1788 for the 1758 loans (column 3). Panel B likewise shows no evidence that loan purchases in 1667 (column 2), 1716 (column 3), or 1760 (column 4), or across periods (column 1), predict subsequent marriages. These null results are inconsistent with interpretations in which debt purchases serve as an entry ticket into elite marriage networks or merely proxy for persistent family characteristics.

Because the number of loan-issue periods is limited and several specifications rely on small subsamples, we complement clustered standard errors with two additional robustness checks. First, we conduct permutation inference by repeatedly reshuffling the timing of the focal event within the estimation sample, re-estimating the same specification as above, and comparing the observed coefficient to the resulting reference distribution. This yields permutation p-values that do not rely on large-sample approximations and are well suited to settings with few time periods. Second, we report leave-one-out diagnostics that re-estimate the main specifications while omitting each family in turn, assessing whether the results are driven by a single influential lineage. Both exercises are reassuring: the main findings remain unlikely under permutation (Appendix Figure A3-4), and the estimates are not driven by any one family (Appendix Figure A3-5).

Summing up, the key empirical regularity is related to timing: outsider families tend to invest in public debt after marrying into the Great Council—particularly after forming ties to wealthy, influential, and well-connected families most capable of credibly backing repayment.

This timing-based interpretation also helps reconcile aggregate fiscal patterns. Our theory predicts that as perceived repayment risk declines, returns on public debt should fall. Consistent with this prediction, public debt expands sharply after the onset of the War of Crete even as interest rates decline (Appendix Figures A3-6 and A3-7). Absent an improvement in perceived credibility, this combination would be difficult to explain. The estimates in Table 1 are consistent with a mechanism in which kinship ties broaden perceived repayment credibility, helping reconcile expanding debt with falling yields.

Tax Capacity

Interpreting tax compliance as an investment in the central state, our theory predicts higher tax revenues from provinces where local elites become more socially integrated with Venice. To proxy for compliance, we focus on taxes with statutory rates that are uniform across provinces, thereby minimizing mechanical rate differences and shifting attention to enforcement and willingness to remit revenues, conditional on economic activity.

To test this implication, we construct a comparison group for the province with the highest level of social integration ("High Marriages") by assigning non-negative weights to "Low Marriages" provinces.[12] The weights are chosen to match the high-marriage province as closely as possible in the pre-integration period, based on population levels and trends, growth, and prior tax revenues.[13] The outcome of interest is provincial tax revenue, measured in ducats.

Figure 6 plots the resulting series. In the pre-integration period, the high-marriage province and the weighted low-marriage provinces track one another closely, indicating a good pre-period fit. After local elites integrate into Venice's marriage network, revenues in the high-marriage province diverge upward.[14]

This divergence may reflect at least two mechanisms. Tax compliance could rise because public-goods provision increases, or because locally embedded elites become more willing to cooperate with Venice and to supervise tax collection more effectively—for example, by improving oversight of tax farmers or reducing local diversion. Although we cannot directly observe the micro-mechanism, the secondary literature is more consistent with the latter interpretation. In strategically important

[12] "Low-marriage" provinces are those recording fewer than ten marriages with (i) wealthy families (Nani category 5), (ii) influential old-patriciate families (those holding seats on the Council of Ten), or (iii) families in the top 10% of the eigenvector-centrality distribution in a given period. The "high-marriage" province is the province with the highest number of marriages to wealthy, influential, or central families, defined using the same criteria.

[13] We follow the synthetic-control approach of Abadie et al. (2010).

[14] The value of the weighted comparison is that it furnishes a pre-integration benchmark: the convex combination of comparison provinces is chosen to match the high-marriage province's pre-period revenue trajectory and observable predictors. The close pre-integration fit supports using this benchmark to summarize how the high-marriage province evolves once social integration intensifies, while accounting, as far as possible, for economic and population growth. At the same time, the historical record is coarse—revenues and population are observed only in selected years—and the seventeenth century was a period in which multiple margins likely shifted simultaneously. We therefore interpret the post-integration divergence as disciplined descriptive evidence consistent with an *equilibrium* shift.

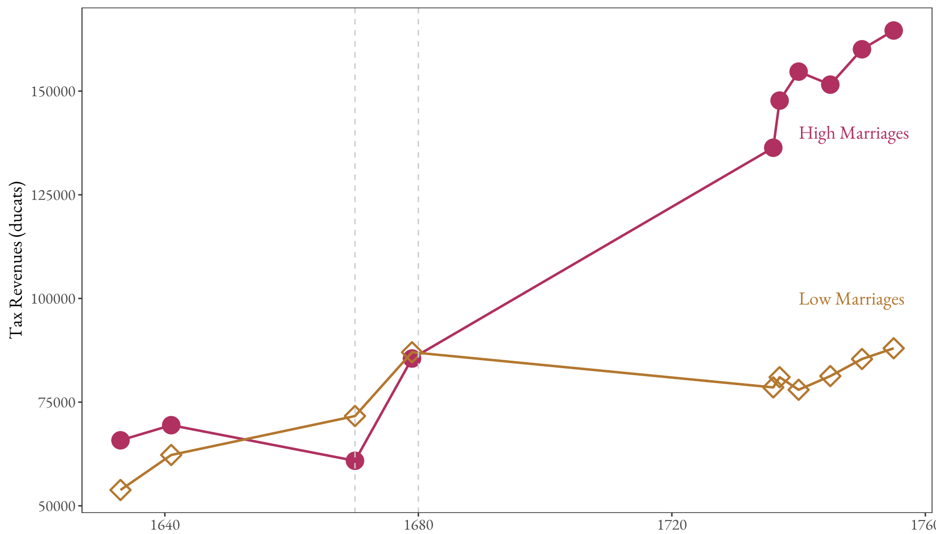


Figure 6: Tax Revenues in High- versus Low-Marriage Provinces

Notes: The figure plots provincial tax revenues (in ducats) for the province with the highest level of elite marriage integration (High Marriages) and a convex combination of non-integrated comparison provinces (Low Marriages), with weights chosen to match the high-marriage province's pre-integration population and revenue trajectory.

regions such as Friuli, defense spending was high yet revenues remained low, while documented cases of embezzlement were often uncovered through reports by local noblemen. Given that tax collection and the appointment of tax farmers were largely local, provincial elites possessed both the information and institutional leverage to influence enforcement and reported revenues (Zannini, 1994). We therefore interpret the post-integration divergence as suggestive of increased elite cooperation with central fiscal extraction.

Public Good Provision

Our third prediction is that intermarriage between central and peripheral elites should be associated with greater administrative expansion and public-good provision in the *Terraferma*. Although we cannot directly observe changes in policymakers' preferences, we provide indirect evidence consistent with this implication by linking (i) the accumulation of kinship ties to the mainland among top office-holding families and (ii) the timing of the creation of central institutions with explicit mainland jurisdiction.

Institutions Serving the Mainland

We focus on families occupying Venice's most consequential councils and offices and construct, for each period, a measure of their social connectedness to the mainland nobility. Specifically, for each office-holding family we count marriages to *Terraferma* noble lineages between 1646 and 1797, including ties formed by the family in the current and preceding generation to capture kinship links plausibly salient for contemporaneous policy decisions. We then aggregate these measures by period and compare their evolution to the timing of the creation of central institutions and administrative bodies with explicit mainland jurisdiction.

As discussed in the historical background, Venetian rule over the *Terraferma* long relied on indirect governance: the center appointed a *Rettore* with oversight authority while leaving most policy and administration to local councils dominated by provincial elites. In the early modern period, however, Venice increasingly created dedicated bureaucratic bodies with mainland jurisdiction—such as institutions overseeing grain provisioning, criminal justice, and military administration. We interpret the emergence of these bodies as an expansion of the state's administrative presence and provision of locally relevant public services.

Figure 7 plots cumulative distributions over time (normalized to sum to one) for (i) newly created institutions with mainland jurisdiction (red line with squares) and (ii) the aggregate number of mainland marriages among top office-holding families (blue line with triangles). The two series closely track one another: periods of increasing kinship integration among decision-makers coincide with periods of institutional expansion in the mainland.

For a counterfactual comparison, the figure also plots the timing of new institutions created for Dalmatia and Istria (grey line with circles). Although geographically proximate, these territories—unlike the *Terraferma*—did not experience elite integration into Venice's marriage network.[15] Consistent with this difference, we observe no comparable institutional expansion over time. Because the curves are cumulative shares, an earlier rise in the grey series indicates that a larger fraction of the limited institutional creation occurred early, with little subsequent growth relative to the main-

[15] The local nobilities of Dalmatia and Istria were generally excluded from the canonical registers of Italian noble lineages, making noble status harder to document and more likely to be discounted by the *Avogaria di Comun* in the registration of male nobles. This administrative practice may have limited the scope for marital integration (Cowan, 2007).

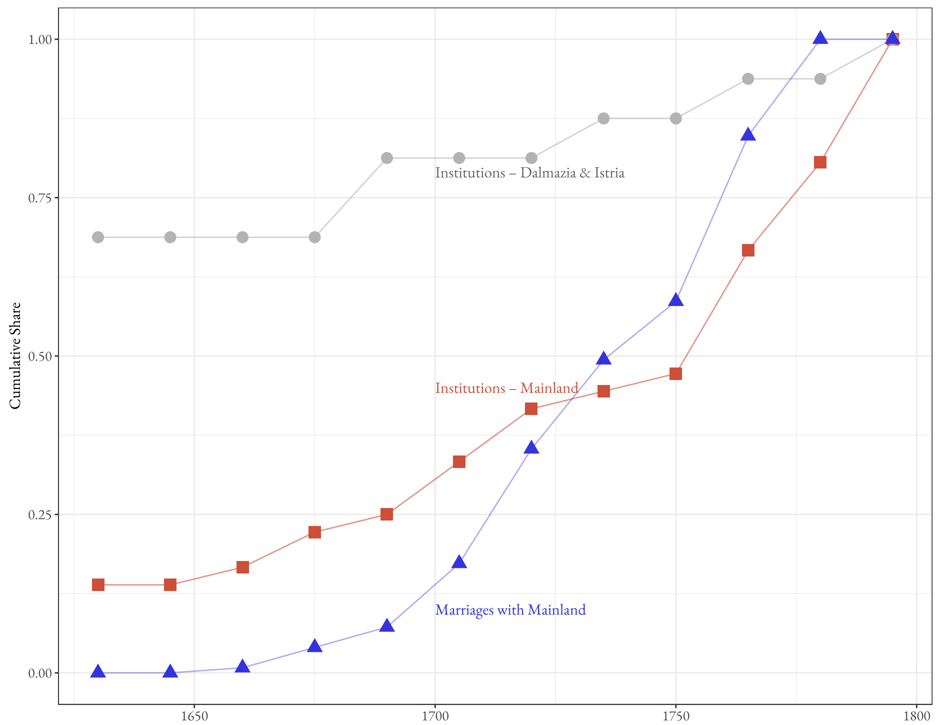


Figure 7: Marriages and New Institutions

Notes: The figure plots cumulative shares (by period) of newly created institutions with jurisdiction over the mainland (red line with squares), the number of marriages to mainland noble families among lineages occupying Venice's most important councils (blue line with triangles), and newly created institutions with jurisdiction over Dalmatia and Istria (grey line with circles).

land. While descriptive, the contrast reinforces the link between elite integration and the expansion of state administrative reach in the periphery.

Military Expenditures

Our theory further predicts a reorientation of strategically relevant public spending toward the mainland as elite marriage ties expand geographically. We interpret mainland-focused military spending as potentially consistent with an extraction–protection logic. We therefore examine military expenditures—the dominant public good provided by the Venetian state during this period.[16]

Figure 8 shows a pronounced increase in military expenditures devoted to the mainland (red)

[16] Military expenditures accounted for roughly half of total public spending, with approximately 35% devoted to public debt servicing.

relative to the center (blue).[17] While this pattern indicates increased strategic attention to the *Terraferma*, it should not be interpreted as evidence of coercive control over subject territories. Contemporary military investments on the mainland were oriented primarily toward external defense—most notably against the expansionary ambitions of European powers such as Austria—rather than toward internal repression or territorial aggrandizement (Perini, 1998). This interpretation is reinforced by Venice's formal stance of neutrality toward its immediate neighbors during much of this period, which limited offensive military ambitions.

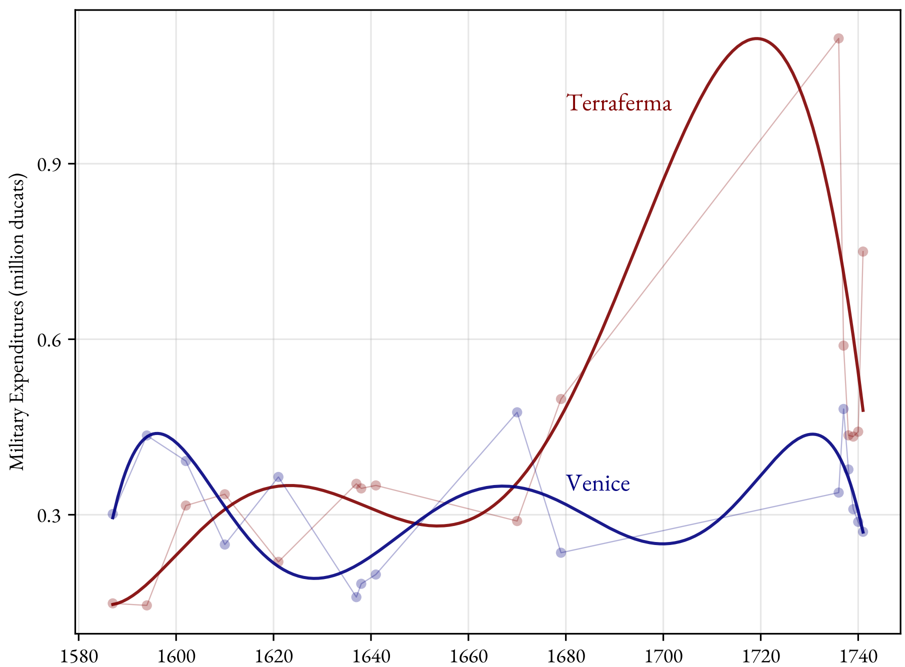


Figure 8: Military Expenditures in Venice and the *Terraferma*

Notes: The figure plots annual military expenditures (in million ducats) for the city of Venice (blue) and the *Terraferma* (red), along with polynomial trend fits.

[17] We cannot disaggregate military expenditures at the provincial level, as we do for tax revenues, for two reasons. First, armies were highly mobile, making it difficult to assign spending to specific provinces. Second, the placement of fixed investments such as fortresses and defensive works reflects strategic geography rather than administrative boundaries (Perini, 1998). Because Venice itself required naval defense and derived little benefit from land-based forces, it is nonetheless possible to distinguish expenditures directed primarily toward the center from those oriented toward the mainland.

Conclusion

We have argued that social institutions—specifically elite marriage networks—can function as relational infrastructure for state building. In early modern Venice, territorial integration was not achieved through coercion or formal representation alone, but through the formation of a unified social elite spanning center and periphery. The demographic shock of the 1630 plague plausibly contributed to the Venetian patriciate's decision to open its marriage market to the *Terraferma* nobility, a shift that we argue may have operated as an "exchange of hostages" in Williamson's (1983) sense—embedding intergenerational stakes across center and periphery and thereby easing the credible–commitment problem central to early state development.

Our empirical analysis supports this mechanism at both the family and regional levels. Mainland families that integrated earlier into Venetian marriage networks were more likely to invest in public debt, while provinces with higher elite integration exhibited greater tax compliance. Subsequently, the center expanded military protection and administrative institutions in the mainland, shifting from an equilibrium of limited extraction to one of reciprocal investment.

These findings refine existing accounts of state formation by showing that warfare and external threat, while important, were insufficient to generate durable integration absent credible commitments. In Venice, marriage networks supplied that credibility by embedding center–periphery relations in enduring kinship ties, complementing formal institutions.

More broadly, the analysis highlights elite social structure as a consequential but understudied determinant of state capacity. Where kinship linked central and provincial elites, fiscal cooperation and administrative expansion followed; where such ties were absent, formally unified polities resembled loose empires. Tracing marriage networks over more than two centuries thus reveals how demographic shocks and geopolitical pressures reshaped elite strategies—and, in turn, the trajectory of state building.

The Venetian experience also carries implications beyond early modern Italy. Many historical and contemporary states confront the problem of integrating powerful regional elites whose cooperation is indispensable for taxation, order, and development. Our analysis suggests that such integration is more likely where central leaders possess reliable relational "hooks" into provincial societies—whether through kinship, partisan organization, business partnerships, or other durable ties that raise the cost of reneging. At the same time, the Venetian story is a reminder that such arrangements can be deeply exclusionary. The social contract that bound Venice and the *Terraferma* was, in important respects, a contract among oligarchs, and the very networks that stabilized fiscal and military cooperation also helped entrench a narrow ruling class.

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Online Appendix
Wedded to the State: Elite Social Networks and Territorial Integration in Early Modern Venice

A1 Theoretical Appendix

Model Set Up

Consider two representative agents: an insider (i), i.e., a member of the center's nobility who is part of the central government, and an outsider (o), who is part of the periphery's nobility, and has decision making power at the local level, but not in central government. The insider can decide whether to make a marriage proposal to another insider, thus keeping the government to its current size, or to make the proposal to the outsider, expanding the size of the government. The outsider can decide whether to invest in the central government's public debt, with the risk of not being repaid, or in an outside option. He can also decide to increase the share of tax revenues collected at the local level in the periphery to be taken over by the central government. The decision-maker within the government decides whether to provide public goods in the periphery. The sequence of play is as follows:

1. Nature chooses the demographic size of the central government's members (the hereditary nobility members), N.
2. The insider i offers a marriage proposal to another insider or an outsider o.
3. The outsider chooses whether to invest in public debt or in an outside option. He then decides whether to divert tax revenues from the periphery to the central government.
4. A decision-maker is randomly selected among the members of the central government.
5. Public debt is repaid or not; the decision-maker decides the allocation of public spending between the center and the periphery.

Payoffs

The insider and the outsider face several choices. First, whether to marry another insider or an outsider. Second, whether to invest in public debt, whether to send more tax revenues to the central government, and whether to invest in public goods in the periphery. We describe the payoffs for each choice in what follows. For the ease of the reader, Table A1-1 provides an overview of the variables and their short description. Table A1-2 provides an overview of the payoffs for each choice.

Insider: Marry an insider or an outsider, size of government. The insider i faces the choice of marrying an insider or an outsider. The first consideration in the choice is around the size of government. The number of members of the central elites affects, on the one hand, the bureaucratic capacity of the state—the more the members, the higher the possibility of public good provision, $G(\cdot, N)$ where $\frac{\partial G}{\partial N} > 0$. On the other hand, the more the members of government, the lower the rents to each individual member: $P(N)$, where $\frac{\partial P}{\partial N} < 0$.
Suppose the insider marries another insider. The size of government stays the same, meaning i's payoff from the size of government is: $P(N) + G(\cdot, N)$. If he marries an outsider, bureaucratic capacity increases with a loss in rents from power: $P(N + 1) + G(\cdot, N + 1)$.

Using a Taylor approximation for both functions, and ignoring second and higher terms, the insider has an incentive to marry an outsider as long as:

$$P'(N+1) + G'(N+1) > 0$$

The intuition is simple: as long as the benefit from the marginal additional bureaucratic capacity is higher than the marginal cost (decrease in personal rents from power), given by the first negative term, the insider has an incentive to marry outsiders. Records of debates in the Great Council show that both issues were salient to the elites (Raines, 2003). The survival of the elites and the functioning of the government was especially salient in times of demographic shocks. However, the history of the Venetian nobility and its 300-yearlong closure to new members suggests that this incentive alone was not enough to marry outsiders, we will hence assume baseline incentives for exclusion: $P'(N+1) + G'(N+1) < 0$.

Outsider: Investment in public debt. The outsider faces the decision on where to invest its wealth. We assume there exists an outside option, with fixed rate of return $\bar{r}$. The payoff from the outside option is hence $\bar{r}I$, where I is the size of the outsider's investment. We assume that there is no uncertainty around the returns of this investment. Alternatively, he can invest in public debt, which has rates of return r, hence it has payoff rI. However, this investment comes with risk, as historians have pointed out (Felloni, 1971). Define ρ_L the baseline probability of debt being repaid to outsiders, i.e., if the outsider is not married to an insider. If the outsider is married to an insider, he has access to the insider's influence and social network, thus increasing the probability of debt repayment by p. Additionally, if main decision-makers within the government are married to outsiders—happening with probability π, see below—this further increases the chances of debt being repaid. Define ρ_H as the chance of repayment to an outsider within the insiders' social network, this is given by:

$$\rho_H = \min\{\rho_L + p + \pi, 1\}$$

Based on historians' reports and to capture the credible commitment problem, we assume Venice's public debt to be too risky without further guarantees, $\rho_L \cdot r \cdot I < \bar{r} \cdot I$. The outsider will not buy public debt because of its perceived risk.

An outsider married to an insider may instead be willing to invest in public debt instead of the outside option as long as:

$$(\rho_L + p + \pi) \cdot r > \bar{r}$$

that is, when the additional guarantees (at the personal p and institutional π level) make the expected repayment more attractive.

The insider married to the outsider investor will internalize this investment into his payoff in two ways: at the state level, the investment I raises public revenues, and hence indirectly affects his payoff. At the personal level, he will consider the bequest left to his children if the debt is repaid. This is a key assumption for assuming that the insider will use his personal connections to make sure the debt to the outsider is repaid by the state. The returns on the outsiders' investment from public debt will enter the insider's payoff if paid back. For simplicity, we assume $\rho_H \cdot r \cdot I$ as an addition to the insider's payoff directly without discounting.[18]

[18] Adding a discount factor to take into account the next-period timeline of the bequest would not significantly alter our results.

Insider: Allocation of public spending. Given public goods $G = G(T, N)$, a function of total public revenues and bureaucratic staff capacity, the decision-maker needs to decide whether to allocate public spending G entirely in the center (G_c), or split it between the center and the periphery (G_p). We assume that without any further incentives, the selected decision-maker will invest in the center only, $G = G_c$. With probability π, the selected decision-maker is married to an outsider from the periphery. In this case, the decision-maker has incentives to invest in public good provision in the periphery, such as to protect the property he acquired through marriage. For instance, if he has a Cobb-Douglas utility function of the form $G_c^{1-\beta}G_p^{\beta}$, he will invest a share β of total revenues G in the periphery. Then the probability of investment by the central state in the periphery is a positive function of π, the share of insiders married to outsiders, and β, which we can interpret as the relative share of property of the decision-maker in the periphery versus the center. To ease notation, define G_p^* as the public spending for the periphery if the decision-maker decides to invest in state capacity there, and define G_c^* the remaining share of public spending dedicated to the center. For given total spending G, $G_c^* < G_c$. The latter case (G_c), in which the decision-maker invests only in the center, happens with probability $(1 - \pi)$, i.e., when he is not married to the outsider.[19]

Outsider: Tax revenues to the central government. The outsider is part of the peripheral government, which provides local public goods $\bar{G}_p$. The latter is the outsider o's outside option when he decides whether to send tax revenues to the central government. If he decides to do so, the central government's revenues are $2T$. The periphery will receive a G_p^* share of total revenues with probability π, i.e., if the central government's decision-maker is married to an outsider; otherwise, he gets 0 with probability $(1 - \pi)$. We assume that because of economies of scale, the central government is more efficient at providing public goods than the local government, so generally: $G_p^* > \bar{G}_p$. The central government will provide public goods in the periphery only if it receives the additional source of revenues from the periphery.

Summing up, the insider's payoff is given by the sum of three elements: (1) rents from power, (2) public good provision in the center, and (3) the additional increase in wealth to be left to his children, given by investments in public debt or property in the periphery if the latter is protected by the central state:[20]

$$U_i = P(n) + G_c(t, n) + \rho I + G_p(t, n)$$

The payoffs of the outsider will be the sum of (1) the returns on his investment and (2) the provision of public goods in the periphery:[21]

$$U_o = \rho I + G_p(t, n)$$

[19]The public goods production function $G(T, N)$ is a function both of the bureaucratic capacity given by number of public officials (N) as well as total state revenues. This could be either the baseline revenues collected in the center (T), or by revenues collected in the center and sent from the periphery by the outsider, if he so chooses ($2T$), and another potential factor is the investment in public debt (I), if the outsider decides to invest in it. For simplicity, we abstract from dealing explicitly with public debt repayment—that comes generally from the output of public goods production.

[20]Depending on different decisions made by the players, the following are the possible values: $n = \{N, N+1\}$, $t = \{T, T+I, 2T, 2T+I\}$, $\rho = \{0, \rho_L r, \rho_H r, \bar{r}\}$, and $G_p = \{0, G_p^*\}$.

[21]with the following possible values: $n = \{N, N+1\}$, $t = \{T, T+I, 2T, 2T+I\}$, $\rho = \{\rho_L r, \rho_H r, \bar{r}\}$, and $G_p = \{0, \bar{G}_p, G_p^*\}$.

Variable	Description
N	Population size
T	Central government's revenues
$G(t, N)$	Public goods production function
$P(N)$	Rents from power
I	Investment by the outsider
$r, \bar{r}$	Returns from public debt and from outside option
ρ_L	Baseline probability of debt repayment for outsiders
p	Influence of the insider
π	Share of insiders married to outsiders
$\bar{G}_p$	Public goods provided by the periphery's government
G_c^*, G_p^*	Allocation of public goods in center and periphery if the decision-maker has connections to periphery

Table A1-1: Overview of variables.

Equilibria

We can think of two main scenarios: one in which the state starts with no to very low previous intermarriages in the periphery ($\pi \to 0$) and one in which there has already been a significant amount of intermarriages.[22]

Scenario 1: low π. Let us start with the scenario in which there are no previous marriages between insiders and outsiders, and hence π is close to 0. The immediate implication is that the outsider will never divert tax revenues to the central government, since $\bar{G}_p > \pi G_p^*$. If the insider has married another insider, then the outsider will not invest in public debt, as: $\rho_L r \cdot I < \bar{r} \cdot I$. If the insider has married an outsider, the latter will invest in public debt as long as:

$$(\rho_L + p) \cdot r \cdot I > \bar{r} \cdot I$$

The outsider will invest for sufficiently high levels of personal guarantees p, and high rate of return on public debt compared to the outside investment option.

Under which conditions would the insider choose to marry the outsider? If he 'marries in', he gets payoff: $P(N) + G_c(T, N)$, while if he 'marries out', he gets payoff: $P(N+1) + G_c(T, N+1)$ if the outsider does not invest. As explained above, between these two, marrying in $(P(N) + G_c(T, N))$ provides the higher payoff. The insider hence will not marry an outsider without the increase in public revenues and personal bequest.

On the other hand, he gets additional wealth and utility from increased state capacity $(P(N+1) + G_c(T+I, N+1) + (\rho_L + p) \cdot r \cdot I)$ if the outsider does invest in public debt. Thus, for low levels of π, only an insider with high influence p will consider marrying an outsider. The trade-off between marrying in and out for the highly socially connected insider will be resolved in favor of marrying the outsider if:

$$G_c'(T+I) + G_c'(N+1) + (\rho_L + p) \cdot r \cdot I > -P'(N+1) \quad (1)$$

[22] The case in which there is close to perfect social integration ($\pi \to 1$) does not provide further insights for our purposes, and is not described in detail.

where $P'(N+1)$ is a negative term. The marginal value of additional state capacity (fiscal and bureaucratic) and personal financial gains (returns from investment) need to compensate the marginal loss in rents from power. We can see that depending on the relative levels of N, r, p and I, there are two possible equilibria in this setting.

Equilibrium 1: Social Closure. With no previous social integration between center and periphery (π), with a historically normal population size of the central elites, the insider will marry another insider, the outsider will not invest in public debt, and will keep local tax revenues within the peripheral government.

Equilibrium 2: Low Social Integration. With no previous social integration between center and periphery (π), a demographic shock can lead the insider to marry an outsider, if the marginal benefit of the increase in revenues and bureaucratic capacity of an extended government justifies the marginal loss in rents from power. The marginal benefit from public revenues would be especially salient in times of war. Intermarriage will occur if the insider expects the outsider to invest in public debt, thus raising public revenues for public goods provision, as well as increasing the bequest of the insider. We hence expect the insider to marry the wealthiest among the outsiders at first (I high enough). The outsider is expected to invest in public debt if the return on public debt (r) are high enough and if the insider has sufficiently influential connections p, which reduce the risk of reneging on public debt. We thus expect the most socially connected insiders to marry first.

Scenario 2: high π. Now suppose that some social integration between the center and the periphery has occurred.[23] This has two implications: a decrease in risk around public debt, as $\rho_H = \rho_L + p + \pi$, and the possibility of the outsider diverting tax revenues from the local to the central government, as possibly $\bar{G}_p < \pi G_p^*$.

Suppose the insider has married another insider. The outsider will still not invest in public debt, and will divert taxes to the central government only if the expected public goods in the periphery are high enough ($\bar{G}_p < \pi G_p^*(2T, N)$). If the outsider diverts taxes, the insider will get additional fiscal revenues ($P(N) + (1-\pi)G(2T, N) + \pi G_c^*(2T, N)$), and his baseline ($P(N) + G_c(T, N)$) if the outsider does not divert taxes.

Now suppose the insider has married an outsider. The outsider will invest in public debt, as now the trade-off for investment is much more favorable, $(\rho_L + p + \pi) \cdot r \cdot I > \bar{r} \cdot I$. He will divert taxes as above, if the expected additional public goods are sufficiently high compared to what can be provided locally $\bar{G}_p < \pi G_p^*(2T + I, N + 1)$.

What are the payoffs for the insider? Regardless of the outsider's tax decision, he will lose in rents from power but gain in personal wealth, $P(N+1) + \rho_H \cdot r \cdot I$. If the outsider sends additional tax revenues to the central government, he will get additional fiscal capacity and possibly additional public goods of interest:

$$(1-\pi)G_c(2T + I, N + 1) + \pi[G_c^*(2T + I, N + 1) + G_p^*(2T + I, N + 1)]$$

and if the outsider does not, he will get additional public goods in the center: $G_c(2T + I, N + 1)$.

Suppose π, $\bar{G}_p$ and G_c^* are such that the outsider does not increase tax revenues towards the central government (say, $\bar{G}_p > \pi G_p^*(2T + I, N + 1)$). For these still relatively low levels of social

[23] Specifically, assume that $\frac{\bar{r}}{r} - \underline{p} - \rho_L < \pi < \frac{\bar{r}}{r} - \rho_L$, where $\underline{p}$ is the minimum level of social integration of an insider.

integration, the condition for marrying an outsider is similar to inequality (1)—the difference being that now even relatively less influential central elites may marry an outsider, as π gives additional security for debt repayment. This would be an equilibrium similar to Equilibrium 2, with a lower threshold for p for the insider to marry the outsider and for the outsider to invest in public debt.

Now suppose that $\bar{G}_p < \pi G_p^*(2T, N) < \pi G_p^*(2T + I, N + 1)$—the outsider will divert taxes no matter if he is married to an insider or not.[24] The insider faces the trade-off of marrying an insider or an outsider, and will marry the outsider as long as:

$$\begin{aligned} -P'(N+1) < (1-\pi)[G'(2T+I)I + G'(N+1)] + \\ \pi[G_c^{*\prime}(2T+I)I + G_c^{*\prime}(N+1) + \rho_H r I + \pi[G_p^*(2T+I, N+1)] \end{aligned} \quad (2)$$

This condition is likely to hold: the loss in rents from power from an additional member of government are offset by an increase in state revenues both through public debt and tax revenues, as well as an increase in bureaucratic staff. Additionally, marrying an outsider comes with increased bequests for one's children, as well as the potential for property in the periphery that will be protected with probability π. This is the main condition for our third equilibrium.

Equilibrium 3: High Social Integration. If there is already a substantial level of social integration between the center and the periphery's elites (π), the insider will marry the outsider, who will invest in public debt, and increase tax revenues from the periphery to the central government. The central government is more likely to invest in institutions and public goods in the periphery.

[24] If $\pi G_p^*(2T, N) < \bar{G}_p < \pi G_p^*(2T + I, N + 1)$, the outsider will divert tax revenues to the center only if he is married to an insider, making the insider even more likely to marry the outsider. If inequality (2) holds in the case we are considering, it will hold also in this case.

Table A1-2: Overview of payoffs

Decision	Payoff for insider i: if i married i	Payoff for insider i: if i married o
Insider:		
1. Marry insider	$P(N) + G(T, N)$	
2. Marry outsider		$P(N+1) + G(t, N+1)$
Outsider:		
1. Invest in public debt		$t = T + I;\ (\rho_L + p + \pi)rI$
2. Invest in outside option		
Outsider:		
1. Tax revenues kept locally	$G_c = G(T, N)$	$G_c = G(T, N+1)$
2. Tax revenues to the central government	$(1 - \pi)G_c(2T, N) + \pi G_c^*(2T, N)$	$(1 - \pi)G_c(2T, N + 1) + \pi[G_c^*(2T, N + 1) + G_p^*(2T, N+1)]$

Decision	Payoff for outsider o: if i married i	Payoff for outsider o: if i married o
Insider:		
1. Marry insider		
2. Marry outsider		
Outsider:		
1. Invest in public debt	$\rho_L rI$	$(\rho_L + p + \pi)rI$
2. Invest in outside option	$\bar{r}I$	$\bar{r}I$
Outsider:		
1. Tax revenues kept locally	$\bar{G}_p$	$\bar{G}_p$
2. Tax revenues to the central government	$\pi G_p^*(2T, N)$	$\pi G_p^*(2T, N+1)$

Note on the interpretation: payoffs are cumulative. For instance, if the insider marries the outsider and the outsider invests in public debt and keeps taxes locally, the insider gets payoff: $P(N+1) + G(T+I, N+1) + (\rho_L + p + \pi)rI$.

A2 Data Construction and Sources

This appendix provides detailed documentation of the sources, coding decisions, and archival procedures used to construct the datasets employed in the analysis.

Public Debt and Fiscal Aggregates

Pezzolo (2006) collected data on the levels of public debt in absolute terms (p. 89), making it comparable in real terms by accounting for the price of grain and silver (p. 12), as well as on interest on public debt (pp. 90-91).

From the *Documenti Finanziari della Repubblica di Venezia* (Financial Documents of the Republic of Venice), we extracted and digitized all the existing *Bilanci Generali della Repubblica di Venezia* (General Budgets). Those exist for the years 1587, 1602, 1610, 1621, 1633, 1637, 1638, 1641, 1670, 1679, 1736-1755, and even though they are naturally aggregated, they entail the revenues coming from different sources of taxation, as well as a general description on how the resources were spent. From this, we gathered information on military expenditures, as well as tax collection coming from the periphery.

To get a sense of the numbers, we see that in 1679, roughly 156,000 ducats came in revenues from Padova, 137,000 from Vicenza, and so forth; in 1736, roughly 230,000 ducats were spent on the Venetian Arsenal (its famous complex of shipyards and armories), 15,000 on fortresses, 30,000 on weapons, including weapons for ships, etc.

Individual Ownership of Public Debt

We need information on public debt records, specifically on who bought public debt. To the best of our knowledge, none had systematically recorded the buyers of public debt.[25] We looked for these records by systematically inspecting the files of the three institutions (or Fondi – archival sections) that were most likely to have kept a copy of issuance or payments: *Zecca e Banco Giro* (Mint and Giro Bank), *Governatori delle Entrate* (Governors of Revenues), and *Savio Cassier* ("Cashier Sage"). The first, *Zecca e Banco Giro*, administered interest payments on public debt. We found, collected, and digitized the records in archival sections 1308, 1322, 1394, 1432, 1625, 1674.[26] From these records, we also have a registry organized alphabetically of those with outstanding payments as of 1797, i.e., the year of the fall of the Republic. Within the records of the *Governatori delle Entrate*, we found copies of the receipts of refunds for extraordinary loans to the state in 1716-18 (archival section 368). The *Savio Cassier* would have provided the treasury supply of interest payments, and we digitized the entirety of section 649.[27]

For readers familiar with Venetian finances, a clarification of what we mean by "public debt" is in order. Within the Republic, there were two principal forms. The first, *Depositi*, constituted the official state debt: it was issued by decree of the Senate, typically named after the tax earmarked

[25] This suspicion was confirmed by the fact that, for some of the sources described in the following, it seemed that it was the first time they had been opened since the time they were written in the early 1700s, and the section of the archives related to financial records is more of a labyrinth than a systematic collection of records, per the archivists' description

[26] These do not refer to years, but to the section of the archives within the institution's collection

[27] The records we collected from the different sections of the archives (and different collections within these sections); each had a different format and a different handwriting. Automating the digitization would not have been feasible. Furthermore, Venetian handwriting follows its own rules, such as for abbreviations. We hired an expert in digitization of Italian historical documents to ensure the accuracy of the transcription.

for its service (e.g., *Depositi Macina ed Olio*, funded by the mill and oil tax), and issued for a fixed term. These instruments were generally purchased by individuals and, historically, predominantly by Venetians themselves (see Felloni (1971) for a discussion of the Genoese panic).

The second form, *Capitali Instrumentati*, consisted of contracts between the central government and the wealthiest corporate bodies in the Republic – such as Scuole, Arti, and Camere (religious charities and confraternities, guilds, and related institutions). Repayment in this case was discretionary, both in timing and in amount. Because these arrangements functioned more like compulsory levies on institutions than marketable public debt held by individuals, we exclude them from our analysis.

Demography and Elite Population

Demographic historian Beltrami (1954) has collected population trends for Venice and the mainland. The estimates for the population for the towns of the mainland [p.63] have been compiled from city-specific sources. The number of male nobles comes from Davis (1962) and Domzalski (1996, pp. 35-36).

Officeholding and Central Institutions

Domzalski (1996, A8-A108) provides us with information on the top public officials of the Republic for the 17th and 18th centuries. Specifically, the source entails for each public office which families held it, and for individuals within families, which position they had throughout their lifetimes. These include the offices elected from the Great Council, reggimenti (elected from the Great Council), representatives for the major cities within the Terraferma, the Quarantia (Council of Forty, similar to a supreme court), the Council of Ten (the main governing body), officials elected by the Council of Ten, the Senate (or Pregadi, the main deliberative body, smaller than the Great Council), as well as officials elected by the Senate. In other words, for all offices that would have had enough power to make decisions to expand state capacity, we have information on which families were actually in charge of decision-making at a given time.

Next, we need information on the institutions and offices that were part of the central government that were serving the Terraferma, as opposed to lo Stato da' Mar (the colonies in the Mediterranean), the Dominante (Venice), as well as our "counterfactual" region of Istria, which is also close to Venice, but with which no intermarriages occurred. We retrieve this information from the extensive catalog compiled in 1940, as a way to organize the archives themselves, by archivist Andrea da Mosto.[28] Note that the list of public offices, institutions, councils, ad-hoc positions, etc. entails more than 1000 entities, with an estimate of roughly 300-500 institutions or public offices being active at a given time.

Family Characteristics and the Golden Books

Next, even though the names of those involved in marriages had been digitized, there was no other existing information readily available related to the families. We therefore resorted to the *Libro d'Oro dei Nobili Veneti; La nobilita' Veneta - O' Sia Tutte le Famiglie Patrizie con le figure de suoi Scudi e Arme*, the aforementioned "Golden Books" in which the patrician families were recorded with a

[28] The reader may not be surprised to hear "da Mosto" was also a prominent patrician family in the times of the Republic.

short description of the family history. From these descriptions, we gathered the information on the age of the nobility (i.e., when it was first admitted to the Council), as well as the origin of the family. Two examples of old and new families are below:

Valmarana	**Morosini**
Triffone, Steffano e Benedetto fratelli. Valmarana, Nobilissimi Cavalieri e Conti Vicentini, offerirono dell'opulento patrimonio al pubblico nelle necessità della guerra di Candia i 100 mila ducati, e furno in ricompensa inclusi nella Nobiltà dal Senato [...] 1658, 23 giugno.	*Vennero da Mantova, dalle cui ruine fuggirno ne' tempi delle devastazioni d'Italia. Furno di nobilissima stirpe, del Consiglio prima del 700, de' principali del Governo e dei dodici Elettori del primo Doge. [...] Di questa illustre famiglia vi sono sinora stati quattro Dogi: Domenico (1147), Marino (1248), Michele (1382), Francesco (1688).*

Table A2-3: Example of entries from the Golden Books of the Venetian patriciate.

The first family, Valmarana, was part of the nobility of Vicenza (one of the towns of the Terraferma, see Figure 1), who bought the nobility title and access to the Great Council in 1658 for 100,000 ducats. The second family, Morosini, was one of the most prominent families in Venice for centuries, reporting to having escaped Mantua after the fall of the Roman Empire, and being one of the few families in Venice to elect the first Doge (i.e., the prince), as well as having had four of their members elected as Doge. We code similar cases as beginning their patrician status as 1297 (the year of the Serrata, the closure of the Council), and their geographical origin to be Venice.

The information on the wealth of the families for the year 1750 comes from Giacomo Nani, specifically from his *Saggio politico del Corpo aristocratico della Repubblica di Venezia*, reported in Domzalski (1996, pp. A2-A7). Nani was himself a member of a patrician family, deeply connected to the rest of the nobility who, beside his own observations, referred to the 1741 Redecima, with information on taxation on real estate, to assess noble families' financial situation. He reports categorical values describing the wealth of families: "assai ricchi" (very wealthy), "che hanno più del loro bisogno" (who have more than they need), "che hanno il loro bisogno" (who own what they need), "che hanno meno del loro bisogno" (who have less than what they need) and "che hanno niente" (who have nothing). His assessment for his own family is, for instance, category 3, as having enough for their needs.

A3 Empirical Appendix

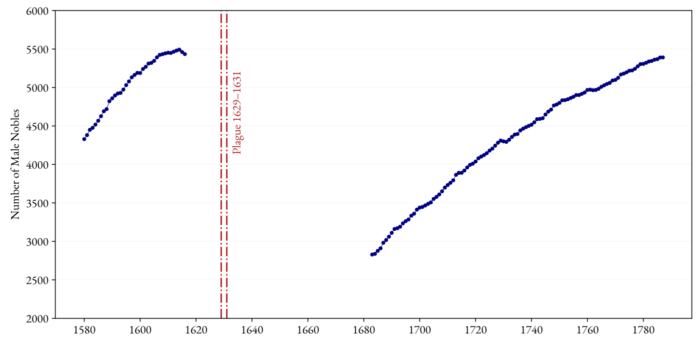


Figure A3-1: Number of Venetian Noblemen, 1587–1797.

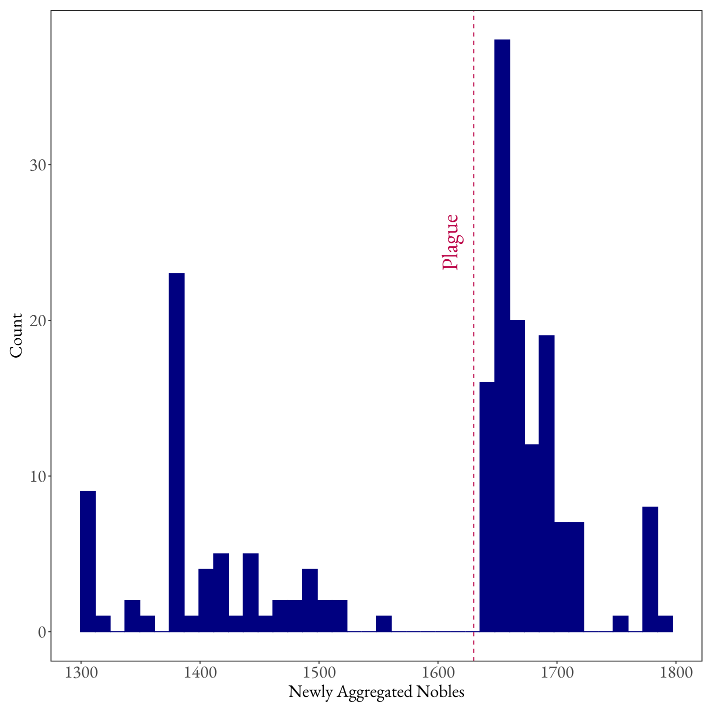


Figure A3-2: Number of newly aggregated families to the Great Council.

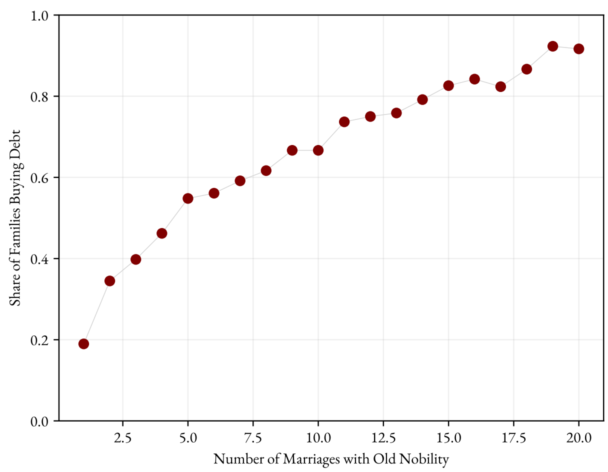
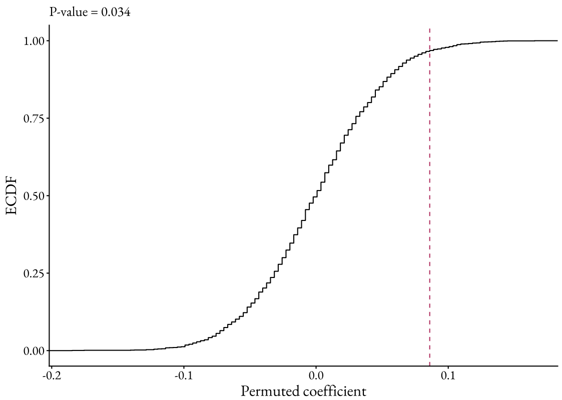
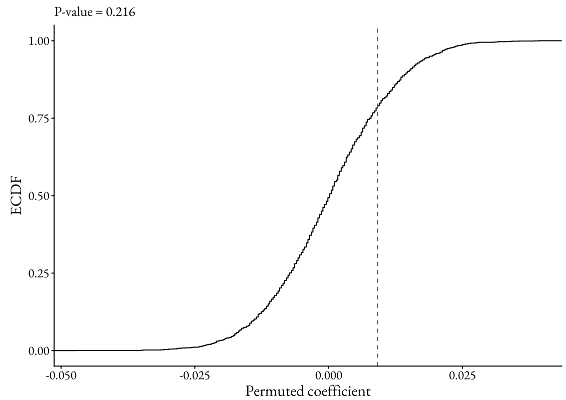


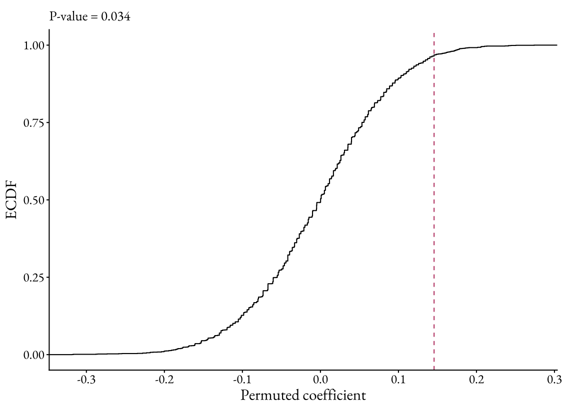
Figure A3-3: Correlation between number of marriages with central nobility and probability of investing in public debt, 1667-1796.



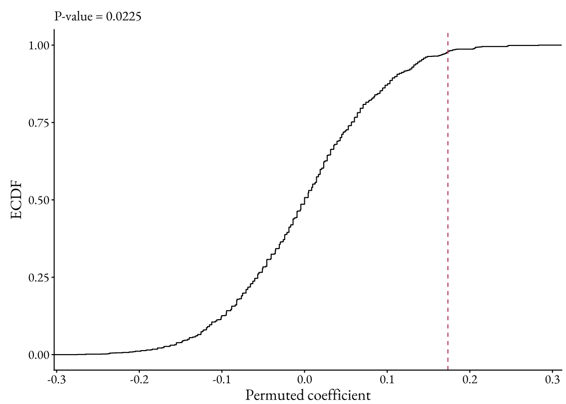
(a) Nobility timing



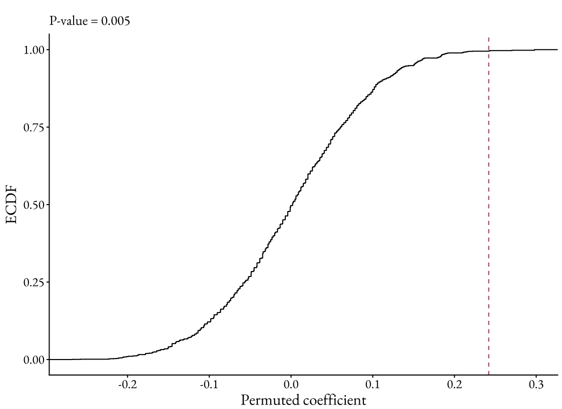
(b) Marriage timing



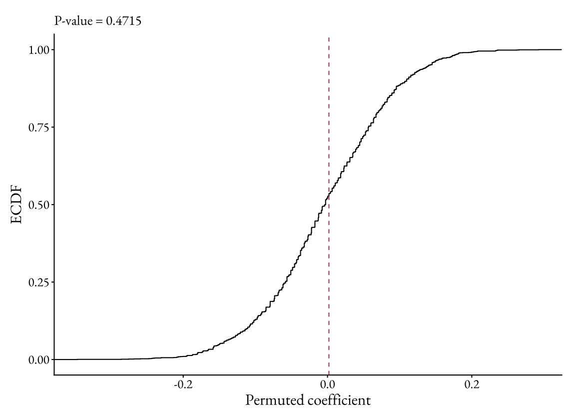
(c) Influential families



(d) Marrying rich nobles

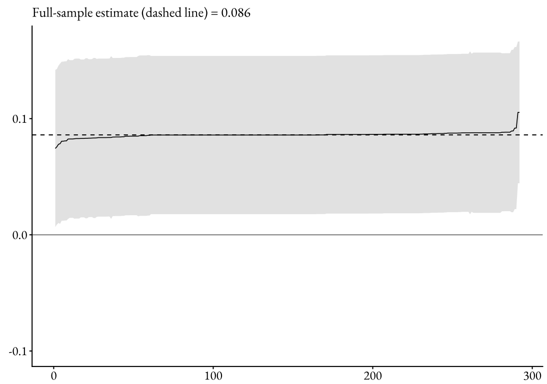


(e) Eigenvector centrality

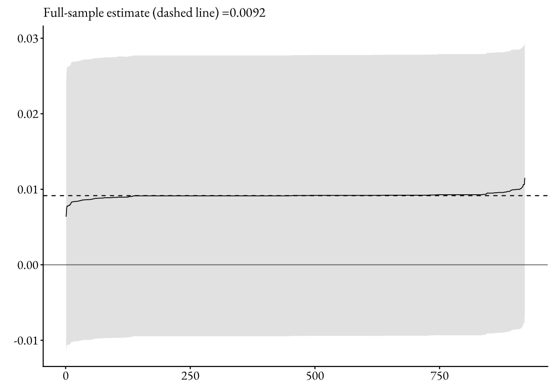


(f) Marrying poor nobles (placebo)

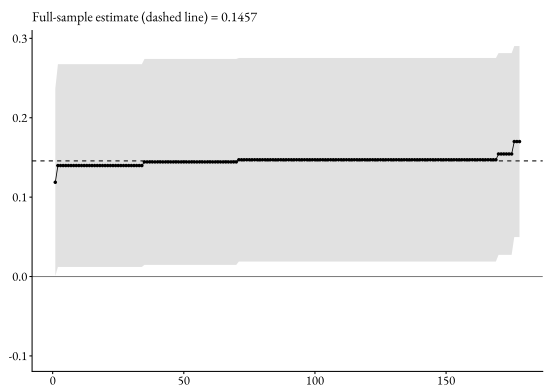
Figure A3-4: Permutation tests. Each panel shows the empirical cumulative distribution function of placebo treatment effects obtained by randomly permuting treatment assignments. The dashed vertical line indicates the observed estimate.



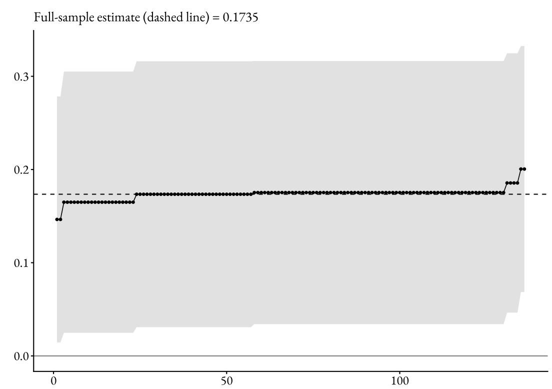
(a) Nobility timing



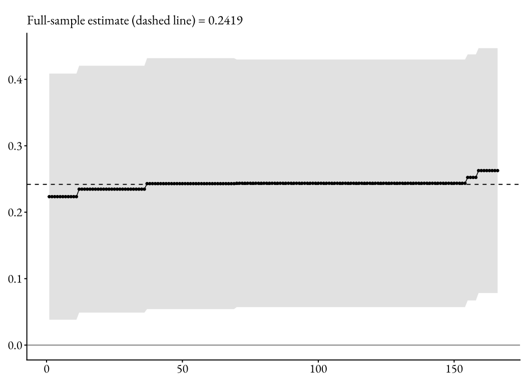
(b) Marriage timing



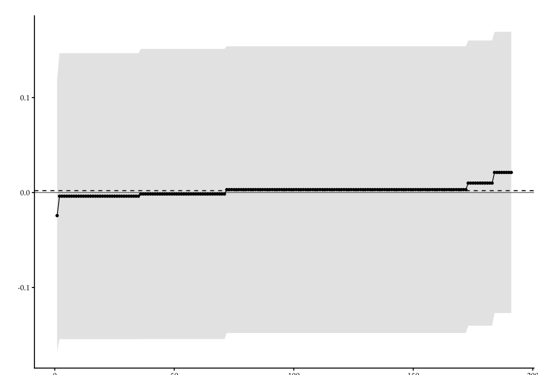
(c) Influential families



(d) Marrying wealthiest families



(e) Eigenvector centrality



(f) Marrying poor families (placebo)

Figure A3-5: Leave-one-out robustness checks. Each panel reports the estimated treatment effect when excluding one family at a time; the dashed line shows the full-sample estimate.

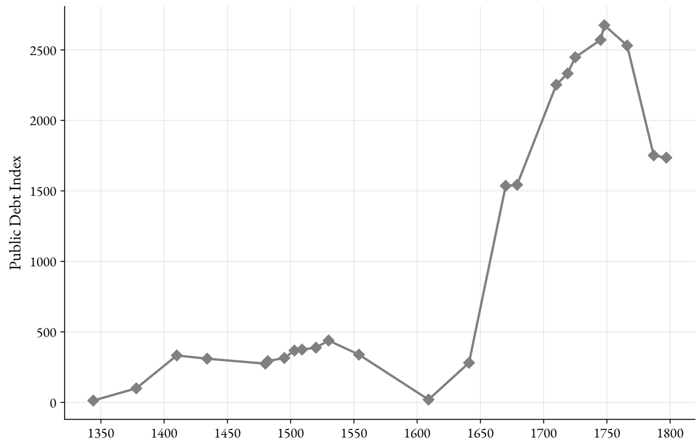


Figure A3-6: Public debt index (accounting for inflation), reported in Pezzolo (2006, p.88), where the index is set at 100 for the values of 1378.

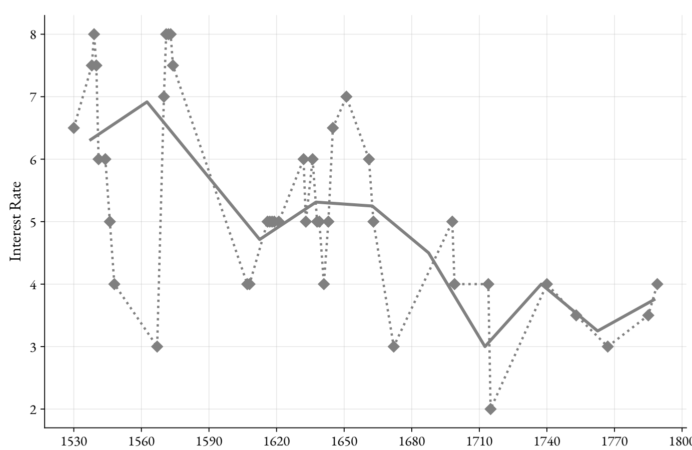


Figure A3-7: Nominal interest rate on *Zecca* deposits (public debt). (Pezzolo, 2006, pp. 90-91). The dotted line indicate interest rates, the full line indicates 25-year periods averages.

Table A3-4: Testing Reverse Causality of Marriages and Public Debt: OLS Estimates

	(1)	(2)	(3)	(4)
Panel A	*Dependent Variable: Buying Public Debt (0-1)*			
Future eigenvector centrality (all periods)	0.010			
	(0.199)			
Future eigenvector centrality 1716–1760		-0.006		
		(0.210)		
Future eigenvector centrality 1760–1788			-0.014	
			(0.260)	
Family FE	✓			
Period FE	✓			
Clustering	Family			
Coefficient p-value	0.959	0.978	0.958	
Unique families	921	921	921	
Sample Mean	0.062	0.051	0.074	
R^2	0.000	0.000	0.000	
Panel B	*Dependent Variable: N of Marriages*			
Loans bought (all periods)	-0.261			
	(0.224)			
Loans bought in 1667		1.217		
		(1.784)		
Loans bought in 1716			2.324	
			(1.429)	
Loans bought in 1760				1.046
				(0.888)
Family FE	✓			
Period FE	✓			
Clustering	Family			
Coefficient p-value	0.246	0.497	0.107	0.242
Unique families	186	186	186	186
Sample Mean	1.790	3.560	3.710	2.970
R^2	0.004	0.005	0.025	0.016

Notes: Estimation is by OLS. The unit of analysis is the family–period in column (1) and the family in columns (2)–(4). Column (1) pools periods and includes family and period fixed effects, with standard errors clustered at the family level. Columns (2)–(4) report single-period cross-sectional specifications; fixed effects are omitted because these regressions contain no within-family temporal variation. The sample comprises mainland families eventually exposed to the regression-specific event. The overall period spans 1667–1797, although the "future centrality" specifications begin later due to the construction of the forward-looking network measure (see Data Section for details). Significance levels: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.