

THE IMPACT OF FORMAL MONITORING ON FINANCIAL INNOVATION: FROM DEBT TO EQUITY IN LATE MEDIEVAL VENICE

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Abstract

In late-medieval Venice the state regulated the ex-ante operation of trading voyages in a manner that facilitated the ex-post verification of merchants' reports. Specifically, colonial governors, convoy admirals, ship scribes, tax collectors and various other officials monitored merchants at all times, thereby producing information which investors could present as evidence in support of their claims to the court. Formal monitoring thus enhanced the legal protection of investors from expropriation by controlling merchants and eased the transition from the debt-like sea loan to the equity-like commenda contract. This paper investigates the distinctive nature of the Venetian institutions for contract enforcement, their efficiency and distributional implications, and their evolution over time.

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I. INTRODUCTION

“I ... have received from you ... 100 hyperpers, with which I ought to go on voyage to do business ... and I ought to give and deliver to you 125 hyperpers. However, this credit ought to be at your risk from either sea or people, if this will be clearly apparent.”
(Constantinople, December 1158. MRL 1940, # 134)

“I ... have received from you ... 8 Venetian pounds and 4 pence, with which I ought to go on voyage to do business and trade ... and I ought to give and deliver to you ... all your above mentioned capital with three quarters of all the profit the Lord will grant with a fair and true accounting, and I should retain to me one quarter of the profit. However, your aforementioned credit ought to be at your risk from either sea or people, if this will be clearly apparent.”
(Rialto, June 1226. MRL 1940, # 627)

As it was common during the mid-twelfth century, on December 1158, a Venetian merchant raised capital through a debt-like sea loan to undertake a very profitable but costly and risky trading voyage. Some decades later, on June 1226, another merchant typical of his time used instead a better risk-sharing, equity-like *commenda* contract. “The *commenda* was a medieval innovation of the highest importance and contributed greatly to the fast growth of maritime trade” (Lopez 1976, p. 76), which, in turn, had long lasting effects on the development of Western Europe (Greif 2006, Puga and Trefler 2014; see also Acemoglu et al. 2005 and Jha 2015). Yet, the enforcement of state-contingent and complex contracts like the *commenda* required a lot of information concerning trading profits and events. In the absence of such information, a merchant would have rendered a false account and misappropriate the difference, assumed high risks from which he was protected through limited liability and shirked. But, anticipating this, a prospective investor would have refused surrendering funds by means of a *commenda* contract, thereby foregoing mutually beneficial risk sharing. The *commenda*, however, became the dominant form to mobilize capital into risky investments in overseas trade by the late twelfth century. What institutional arrangements provided the information required to implement the new contractual form and ensured its profitability?

This paper finds that in late-medieval Venice tight regulations and administrative controls over trade reduced the measurement and agency costs of using better risk-sharing, equity-like *commenda* contracts by the broader Venetian public. Specifically, colonial

governors, convoy admirals, ship scribes, tax collectors and various other officials came to monitor merchants at all times, thereby generating the verifiable information required to prosecute them for profit diversion and reducing their opportunities and incentives to distort the profit through their choice of action and effort. Formal monitoring thus enhanced the protection of investors from expropriation by controlling merchants beyond the level that could have been achieved by private means and expanded the set of contracts that could be (legally) enforced. As a result, the better risk-sharing *commenda* contract replaced the sea loan as the dominant form to mobilize resources into long-distance trade.

This explanation for the development of new contractual forms is novel in various respects. First, since the transition from the sea loan to the *commenda* contract was a widespread phenomenon, occurring under plausibly different institutional regimes in Barcelona, Genoa, Marseille, Venice, and most other localities in the western Mediterranean, it is intuitive to attribute it to exogenous religious, economic, and/or information related changes (e.g. de Roover 1974; Lane 1966 and Lopez 1976; Williamson 2002). Yet, the evidence indicates that in late-medieval Venice contracts were shaped by endogenous institutional factors.¹

¹ Although there is a consensus among economic historians that the new contract of *commenda* was “the linch-pin of the fantastic success of the Commercial Revolution in the Mediterranean from the eleventh to the thirteenth centuries” (Pryor 1983, p. 133), we know surprisingly little about the causes underlying its development. Beginning in the late nineteenth century, some scholars have argued that the *commenda* and other medieval contracts were invented or adopted as a strategy to circumvent the canonical prohibition on usury (for discussion, see Weber 2003[1889], pp. 137-139 and 170; Luzzatto 1958; Lane 1966, pp. 63-67; de Roover 1974, p. 185; Lopez 1976, pp. 76 and 104; Mueller 1997, pp. 573-575; Munro 2003, pp. 506-514; van Doosselaere 2009, pp. 124 and 166; Koyama 2010, pp. 421-428; and Rubin 2017, pp. 75-98). Yet, the prevailing view holds that “it would be a mistake to ascribe [the development of new contractual forms] solely to religious influence” (Lopez 1976, p. 73). According to Frederic C. Lane and Roberto S. Lopez, the rise of the *commenda* to prominence can be better explained in terms of risk sharing. Yet, lacking an adequate theoretical framework, Lane failed to appreciate the allocative efficiency and growth implications of the new form of investment. Specifically, he viewed the undertaking of some of the commercial risk by the investor under the *commenda* contract as a “concession” to the travelling merchant, whose “bargaining position” progressively improved because of “the ever-expanding volume of funds seeking investment” in Venice and thus faultily associated the shift from the sea loan to the *commenda* contract with “the [changing] economic conditions of the times” (Lane 1966, pp. 61-62). Lopez, in contrast, acknowledged the “advantage” of the *commenda* from a social point of view, but, lacking an adequate theoretical framework, left it unexplained why the “need for closer collaboration [in terms of] sharing of risks and profits between lender and borrower” was not met before (Lopez 1976, p. 76). More recently, Dean Williamson has documented a revival of the sea

Second, the Venetian institutional system differed from the private-order institutions highlighted by the literature as having surmounted various contractual problems during this period of time. Noting that a “merchant to whom others entrusted their savings could have easily disappeared with the capital or cheated in business conducted in far-off markets” (Cipolla 1993[1976], p. 128), economic historians have traditionally assumed that agency relations were confined to the family (e.g. Rosenberg and Birdzell 1986, pp. 123-124) or embedded in preferences for honesty which were conditional on other social ties (Cipolla 1993[1976], p. 128; Van Doosselaere 2009, pp. 68-69).² Yet, the Venetian data reveals that trust relations extended well beyond the boundaries of the family and other social control systems. More recently, Avner Greif has emphasized the role of informal monitoring and reputational concerns among or between self-regarding individuals in rendering honesty an equilibrium outcome. Self-enforcing beliefs in harsh economic retaliation following misconduct supported credible commitments to honesty and thus trust among the Maghribi traders and between the Genoese (e.g. Greif 2006).³ Influenced by Greif’s seminal work, Dean Williamson has conjectured that “informal information [also] gave [Venetian] merchants some capacity to detect cheating if not verify it ... and provided the basis for informal sanctions” (Williamson 2010, 2). This work, in contrast, finds that in late-medieval Venice the state functioned as an enforcement and information-generation mechanism. The companion piece of this paper explores how administrative and legal sanctions motivated merchants to comply with their verifiable contractual obligations (González de Lara 2008).

loan during the fourteenth century in Venetian Crete and has attributed it to exogenous disruptions in the flows of information caused by the Black Death (Williamson 2002).

² For the role of loyalty within natural groups and ethics towards society in enabling cooperation in other historical and contemporary episodes, see, for example, Landa 1994, Fafchamps 2004, and Greif and Tabellini 2010. Classical works in this area of enquiry are those of Weber (e.g. 1927) and Sombart (e.g. 1953). For a psychological and sociological analysis of identity economics that associates a person’s sense of self to different social categories and how people in these categories should behave, see Akerlof and Kranton (2010).

³ For a discussion of the substantive distinction between the lines of research that focus on preferences as underpinning trust and those that focus on beliefs, see Greif (2009). For the different origin, nature and implications of the collectivist and the individualistic cultural beliefs that rendered effective a multilateral and a bilateral reputation mechanism among the Maghribi and between the Genoese traders, respectively, see Greif (1994 and 2012).

This paper supplementary investigates the regulatory process whereby formal monitoring enhanced verifiability.

Third, the paper relates to the literature on Law and Finance postulating that legal and regulatory institutions are essential parts of a broad system of corporate finance but it abstracts from the problems of judicial incompetence, corruption and bias that have dominated the literature so far (for an excellent survey and its update, see La Porta et al. 2008 and 2013).⁴ Although Venetian judges were not as skilled, motivated and impartial as the myth of Venice presumes (Queller 1986), the main reason why they initially failed to enforce complicated and state-contingent, equity-like contracts was not their inability or unwillingness to verify an observable breach, unlike in Lerner and Schoar (2005) and Gennaioli (2013). The reason was that neither judges nor investors could observe merchants' operations onboard and abroad. By regulating trade in a manner that made profits more readily observable and less sensitive to moral hazard, the state facilitated the legal enforcement of contracts otherwise characterized by asymmetric information.

To formulate and evaluate the conjecture advanced in this paper, I have borrowed Avner Greif's methodology, which combines induction from documented facts and theory-based deduction in an interactive way (Greif 1998 and 2006).⁵ First, I have conducted a careful analysis of all the available evidence to inductively identify the historical phenomena that need to be explained and to suggest a conjecture based on explicit documentary statements indicating its historical relevance. Second, after deductively evaluating the logical consistency of the suggested conjecture, I have constructed a context-specific theory

⁴ While recognizing the overlap, this literature often views litigation and regulation as substitutes and advocates for regulation by government agencies as an (efficient) alternative to judicial enforcement when courts are expensive, unpredictable and/or corrupt (Kessler and Shleifer 2010; Shleifer 2012). In late-medieval Venice, however, courts and other governing bodies had legislative, administrative and judicial powers and so there was no clear distinction between regulators and judges (González de Lara 2011b, pp. 109-112). Furthermore, Venetian regulations complemented rather than substituted for litigation and extended beyond those usually associated with desirable government intervention (González de Lara 2011a, pp. 101-102).

⁵ For the application of a similar methodology to Development Economics, see Mookherjee (2005). For the need of conducting an exploratory data analysis aimed at formulating a context-specific model before implementing the hypothetico-deductive method, as envisioned in the Haavelmo paradigm and the Popper falsificationist program, see Solow (1985), Romer (1994), Greif (1997), Heckman (2000), Rodrik (2010), Shiller (2010), and Lamoreaux (2015). For the need of theory to understand causal mechanisms, see Banerjee and Duflo (2009), Deaton (2010) and Sims (2010).

with sufficient explanatory power whose key assumptions correspond with the facts. By requiring theory and the conjecture it captures to be consistent with the historical context, this method lends support to the conjecture independently from the theory's predictive power and diminishes the risk that the researcher impose her own perception of the situation on the historical actors. Third, I have evaluated the conjecture based on evidence that I have not used in formulating it. Various predictions, related to but distinct from the phenomena to be originally explained, are theoretically deduced and then inductively tested. Historical confirmation of these predictions lends additional support to the paper's conjecture: formal monitoring enhanced the legal protection of investors from expropriation by controlling merchants and fostered the development of new contractual forms. Finally, confidence in this conjecture is further gained from the weakness of alternative explanations: I have found neither direct nor indirect evidence suggesting that informal monitoring shaped the transition from the sea loan to the *commenda* in late-medieval Venice.

A possible concern with these conclusions is that they are inferred from incomplete and potentially biased data. This historical institutional analysis is based on juridical sources of statutory and maritime law and notarial acts for the sea loan and the *commenda* contract. In the brief, codified form in which the juridical sources have survived, they cannot possibly have represented the entire law, as it would have been applied in the courts of the city. Court records could help here but only a few have been preserved prior to the fourteenth century. Notwithstanding their incompleteness, these sources clearly reveal that verifiability improved over time and that courts applied the law as it was laid down in the Civil and Maritime statutes, whose various compilations have been edited by Enrico Besta and Riccardo Predelli (1901), Roberto Cessi (1938), and Riccardo Predelli and Adolfo Sacerdoti (1936/1937).

The notarial acts have their own methodological problems. As cartularies did not stand as legal proof until 1242, none has been preserved for the period of analysis. All the documentary evidence available to us consist on 969 notarial deeds for the period 1021-1261 that, deposited for their safe keeping in monasteries or within the *Procuratori di San Marco*, survived fires, floods, rats, and human apathy until they were rescued by the *Archivio di Stato di Venezia* and later transcribed by Raimondo Morozzo della Rocca and Antonio Lombardo (1940) and Antonio Lombardo and Raimondo Morozzo della Rocca

(1953), henceforth MRL (1940; 1953). This source contains civil records, such as wills and dowries, court cases, testimonies of reliable witnesses, real estate transactions, consumption loans and a great variety of commercial agreements among which the sea loan and the *commenda* contract played a leading role. On the basis of this evidence, I have constructed a database of 125 sea loans and 263 *commenda* contracts for the period 1122-1261 and codified each of them according to various proxies for formal monitoring and the socio-economic status of the contracting parties. Even though these data constitute but a tiny sample, they provide a wealth of information regarding Venetian commercial life and, in particular, clearly show a shifting preference for the *commenda* contract in response to formal monitoring and a series of transactions that could not have been governed by kinship or other social ties or by reputation concerns among or between traders, but that are consistent with legal contract enforcement.

Notarial acts, though, might fail to reflect informal relations of trust between relatives or close associates, thereby biasing the results. A notary had to be paid; so if no legal complication was anticipated, there made little sense to notarize an agreement. Also, Venetian brothers legally constituted a fraternal partnership by default and hence did not need to formalize their contractual obligations within the *fraterna*. Yet, notarization proved useful to trustworthy relatives and associates for transferring credits to third parties and recovering debts in case of liquidation. Furthermore, Venetian merchants during this period of time typically divided their *fraterna* soon after their father died and their sisters were dowered (González de Lara 2008, 258-259). Indeed, one observes notarial acts registering a loan by a widow to her granddaughter “for the needs of her home,” an investment by a widowed nun in her son’s voyage, a *commenda* made by the “beloved mother” of a merchant to whom he had granted full attorney powers while he did business abroad, and several *commenda* contracts between brothers (e.g. MRL 1940, # 146, 356, 550, 588, 785). The Venetian notarial evidence thus appears to be biased only to a degree. Furthermore, the mere fact that the Venetians left behind legal documents, rather than informal letters as the Maghribi traders did, reflects that legal enforcement indeed mattered to them (Greif 2012, p. 465).

The organization of the paper is as follows. Section II sets the context and elaborates on the transition from the debt-like sea loan to the equity-like *commenda* contract. Section III provides direct and indirect evidence on formal monitoring and its impact on contract

choice. Section IV evaluates the efficiency and distributional implications of the Venetian institutional system for contract enforcement and studies the extent to which formal monitoring facilitated the informal enforcement of contracts. Section V concludes and sets an agenda for future research.

II. CONTRACTUAL INNOVATION IN LATE-MEDIEVAL VENICE

The spectacular economic growth of Venice during the late medieval period (1050-1350) was based on the expansion of its trade along the Mediterranean and beyond (Cipolla 1993; De Roover 1963; Lane 1973; Lopez 1976).⁶ This trade required large amounts of capital and involved high risks. A commercial round-trip voyage from Venice to Constantinople, the Crusader States, or Alexandria took six to nine months and overlapping sailing seasons precluded financing it with retained earnings from a previous voyage.⁷ Fitting costs were further increased due to the need of carrying a large armed crew, sailing in convoy with naval protection, and securing merchants' property rights abroad (Lane 1973, pp. 23-49, 68-85 and 124-131). These protective measures notwithstanding, the *risk of the sea and people*, as the Venetians referred to the possibility of loss through shipwreck, piracy or confiscation of merchandise by foreign rulers, remained high (Ibid., p. 77; De Roover 1963, pp. 44-46). The commercial risk was also high: The profit or loss varied widely depending on the tariffs and bribes paid in customs, the transportation and storage fees, the rates of conversions applied to various weights, measures and currencies, fluctuations in prices, the conditions of the goods upon arrival, and so forth (Lane 1967, pp. 95-111; Lopez 1976, pp. 96-7; Greif 1989, pp. 860-861). Trade in ordinary goods within Europe or the East did not set such high capital requirements as trade in luxuries between the two regions but was less profitable and still involved high risks (Lopez 1976, p. 95).

The development of a financial system that enabled the pooling of savings and the diversification of risk was therefore crucial to the Venetian success (Luzzatto 1954, pp. 59–

⁶ For recent attempts to document a Commercial Revolution in Europe during the Middle Ages, see, for example, Bolt and Van Zanden (2014) and Cantoni and Yutchan (2014). Some scholars, though, still believe that no sustained increases in income per capita occurred before 1800 (e.g. Clark 2007).

⁷ For Venetian patterns of trade and trading routes, see Lane (1973, 68–73); Lopez (1976, pp. 95; 1982, pp. 314, 389, 393); and Luzzatto (1952, 90–3). After c. 1290, however, technological progress in navigation and in market organization enabled the undertaking of two voyages a year (Lane 1973, pp. 119–23).

80 and 89–115; Lane 1966, pp. 56–66).⁸ As documented in Gonzalez de Lara (2008, pp. 253–255 and 274), the Venetians indeed amalgamated capital from disparate savers for investment in overseas trade and diversified their portfolios across trade centers, ships and merchants, and over time. Travelling merchants, however, could not diversify the human capital invested in the ventures they managed.⁹ Risk-sharing contracts could thus provide them better risk diversification and affect their decisions on how to trade and whether to trade in the first place. Furthermore, risk-averse merchants would be willing to pay a higher expected return on capital in exchange for bearing fewer risks, thus benefitting investors.¹⁰ By making trade investments more attractive to potential suppliers of funds, risk-sharing instruments also had the potential to foster savings and induce a portfolio shift towards risky projects in overseas trade with higher expected net present value. Finally, risk sharing could also reduce the cost of contract enforcement in the presence of high downside risks. Credit agreements in which investors bore the risk of (any) loss of capital reduced the likelihood of involuntary default and hence the costs of debt recovery.

Risk-sharing instruments thus could and actually did contribute to trade expansion and hence growth. As indicated in figure 1 and table 1 (row 1), the sea loan was the dominant form to mobilize resources into long-distance trade for most part of the twelfth century but progressively lost its prominence in favor of the better risk-sharing *commenda*

⁸ For the general importance of financial development to late medieval economic growth, see Byrne (1917, pp. 135 and 169); Lopez (1976, p. 72); Pryor (1984, p. 438) and Cipolla (1993, p. 164). For a review and critique of current theoretical and empirical research on the relation between finance and growth, see Levine (2005).

⁹ Besides, significant indivisibilities and aggregate risk in overseas commerce limited the degree of risk spreading that the economy could achieve and prevented investors from effectively becoming risk neutral. Specifically, the length, sailing technology, and high start-up costs of trading voyages precluded the undertaking of a sufficiently large number of them and made those actually taken on subject to aggregate risk (Lopez 1976, p. 107). Trading convoys, for example, presented a concentrated target at sea and exposed all merchants to the same market conditions in each port of call (Lane 1973, pp. 68–77).

¹⁰ Because investors were presumably also risk-averse, sharing contracts provided a more efficient allocation of risk. Had investors been well diversified, a fixed salary scheme in which the investor absorbed all the risks at his own loss or profit would have been Pareto superior (in the absence of measurement and agency costs).

contract, which in its unilateral form prevailed by the third decade of the thirteenth century.¹¹

(INSERT FIGURE 1 AROUND HERE)

The sea loan was a credit instrument known since Antiquity whereby an investor made a contingent loan to a merchant on which he took the risk of a capital loss on account of shipwreck, piracy or seizure (e.g. MRL 1940, # 134).¹² The sea loan thus provided limited liability to the merchant against *the risk of the sea and people* but it placed all the commercial risk on him. As a distinctively maritime form of debt financing, the sea loan differed from a standard debt contract, “which requires a fixed repayment when the firm is solvent, requires the firm to be declared bankrupt if this fixed payment cannot be met and allows the creditor to recoup as much of the debt as possible from the firm's assets” (Gale and Hellwig 1985, 648). If a Venetian merchant failed to restitute the capital and the interest agreed upon because of misfortune at sea or at the hands of the enemy, he would not be in default because the investor had contractually waived his rights. But, if the cargo arrived safe and sound to port, the merchant had to pay off the debt in full and would remain in debt for his entire life, no matters whether the venture made a commercial profit or a loss. Indeed, unlike today’s entrepreneurs under most bankruptcy regimes, a medieval merchant in default could not fill for bankruptcy and have his debts substantially reduced or discharged at the cost of the creditors (Noonan 1957, pp. 129-131).¹³

¹¹ Economic historians generally agree that risk sharing played a key and beneficial role in determining the choice of medieval trading contracts (e.g. Hoover 1926, pp. 528-529; Udovitch 1962, p. 198; Lane 1966, pp. 61-62; Lopez 1976, p. 76; Pryor 1983, p. 133). The Church’s rising doctrine against usury might have played a role as well (Lopez 1976, pp. 76 and 104). Yet, commercial credit and government funding at interest was neither stigmatized nor prosecuted in late-medieval Venice (Luzzatto 1958, p. 193; Lane 1966, 64; Mueller 1977, 573). For the need to study the role that different financing instruments can play to pool and diversify risk today, see Zingales (2000, pp. 1628-9).

¹² For the origins of the sea loan and the connection between the ancient and the medieval forms of the contract, see Hoover (1926, pp. 495-497); de Roover (1963, p. 55) and (1969, p. 17); Lopez (1976, p. 76); and van Doosselaere (2009, p. 129). Sea loans are to be distinguished from the very few straight loans preserved in the Venetian records whereby an investor provided funds to a travelling merchant in exchange for a fixed return *without taking any risk*, that is, considering the capital plus the interest to be *saved on land* and payable *on every occasion* (e.g. MRL 1940, # 171).

¹³ The sea loan differed from today’s standard debt contracts not only in the allocation of cash flow rights but also in that it did not transfer control rights from the borrower to the creditor in a default

The *commenda* contract, known as *collegantia* in Venice, was a medieval innovation whereby the investor assumed liability for any loss in proportion to his capital investment and shared the commercial profits and risks with the merchant.¹⁴ There were two types of *commenda* contracts. In the standard bilateral form, the merchant provided one-third of the capital, bore one-third of the capital loss, and was entitled to one-half of the net profit in return for his entrepreneurship and risky investment (e.g. MRL 1953, # 53). In the standard unilateral *commenda*, the merchant did not supply any capital, assumed no liability for a capital loss, and received one-fourth of the net profit (e.g. MRL 1940, # 627). Unlike in most Western localities, where the *commenda* was a partnership, in Venice it was recognized as a credit instrument under which a merchant operated an overseas venture as a sole proprietorship and an investor participated in the profits or losses by contributing his capital (González de Lara 2017). Hence, the Venetian contract of *commenda* is to be regarded as a

state (Hart and Moore 1998). In the archetypal agreement, a travelling merchant received funds from an investor to undertake a trading voyage, after the safe completion of which he himself ought to sell the return cargo and then pay back his debt (Hoover 1926, 507-508). The merchant took possession (and ownership) of the venture's assets for the whole duration of the agreement and had complete latitude to do business as he saw fit, so long as he did not violate the specific terms of the contract, that is, he held residual rights of control (except in matters concerning the ship's company as a whole). If he defaulted on his contractual obligations, the creditor would obtain a priority claim over all his present and future assets but would not take control over the by-then dissolved venture: When bankruptcy could be declared, there remained no more decisions to be taken regarding the venture in question.

¹⁴ For the origins of the Western *commenda* contract, see Astuti (1933), Udovitch (1962), and Pryor (1977). The *commenda* probably had its roots in Middle Eastern trade practices and Islamic law although the possibility that it developed independently in Europe cannot be ruled out. The oldest reference to it comes from the late tenth-century testament of the Venetian Dogaresse Waldrada (Pryor 1977, p. 13) and the first extant notarial act dates from 1073 in Venice (MRL 1940, # 13). The connection between the Venetian *commenda* contract or *collegantia* and the sea loan seems obvious from the equal phraseology in which they were framed (e.g. MRL 1940, # 134 and 627) and their identical juridical and economic nature. Unlike in mid-twelfth-century Genoa, where the *commenda* stood as a partnership and formalized agency relations by which a few large-scale operators employed the labor of other merchants in their service to act simultaneously across geographically dispersed markets (van Doosselaere 2009, 106; Greif 1994, 928-930), in Venice both the sea loan and the *commenda* were credit instruments, whereby an independent travelling merchant put other people's money into his use, offering fellow citizens from various means, ranks and occupations a lucrative but risky form of investment (Luzzatto 1954; Lane 1966; Pryor 1977; Gonzalez de Lara 2008). For further discussion, see González de Lara (2017, pp. 7-12). The term *collegantia* was used by Venetian notaries to refer to the bilateral *commenda* only (the unilateral *commenda* was given no name at all) but the municipal statutes used the term for both forms of the contract (Pryor 1977, pp. 10-11).

form of trade credit and risk-sharing investment distinct from equity, a form that recalls today's *cuentas en participación*, *associazione in partecipazione*, *société en participation* and *stille Gesellschaft* (Mignone 2005). Yet, in terms of cash flows, it was like equity financing.

In sum, the *commenda* contract exempted the merchant from repayment not only in case of loss at sea or at the hands of hostile people, a contingency equally contemplated by the sea loan, but also in case of an unsuccessful commercial operation, and shared the commercial profit and risk between the contracting parties. Beyond these differences in the allocation of cash-flow rights, the Venetian *commenda* contract was almost identical to the sea loan. First, both types of contracts were recognized as credit instruments by notarial practice (e.g. MRL 1940, # 134 and 627) and statutory law (Besta and Predelli 1901, St. Enr. Dand., 30-33, St. Ran. Dand., 16, St. Tiep., 1229, 16; Cessi 1938, St. Nov., III, 1-3). Accordingly, travelling merchants under both a sea loan and a *commenda* contract acquired complete property rights over the assets of the funded venture, had exclusive managerial authority, and held residual rights of control (except in matters concerning the ship's company as a whole).¹⁵ Investors, on the other hand, bore no liability for loss beyond the sum or merchandise they had initially contributed and committed their capital only for the duration of a voyage or at most for a limited period of time (Sacerdoti 1899, pp. 14-15; Cessi 1917, pp. 19-20, 28, and 41; Luzzatto 1954, pp. 68-72; Pryor 1977, pp. 13-14 and 21).¹⁶ Second, unlike an ordinary partnership, which was consensual, both the sea loan and the *commenda* were real contracts under which, once a merchant had taken possession of the capital from an investor, the former was bound to undertake the voyage agreed upon and the latter was compelled not to withdraw funds before the expiration of the agreed upon term (Pryor 1983, p. 137; Pryor 1977, p. 20).¹⁷ Furthermore, the capital remained locked in

¹⁵ For the importance of ownership and control in determining business organizational choice in other historical episodes, see Goldberg (2012). For a the theory of incomplete contracting based on asset ownership as a way to allocate residual control rights, see, for example, Hart (2016).

¹⁶ For an analysis of the historical development of limited liability, see Hansmann et al. (2005) and Gelderblom et al. (2013). For the role of an enterprise's finite term as a device to limit exploitation of creditors and minority shareholders by those who are in control of the firm, see Guinnane et al. (2007, p. 695).

¹⁷ For a model explaining the choice between alternative forms of business organization based on a simple tradeoff between shareholder oppression, which is reduced by the right to withdraw funds at will, and untimely dissolution, which is reduced by the lock-in of capital, see Lamoreaux and Rosenthal (2006). For its historical relevance in the context of successful industrializing countries

even when the investor died or went bankrupt, thereby protecting the going-concern value of the venture against liquidation also by the investor's heirs and creditors (Astuti 1933, pp. 70-71; Weber 2003 [1889], pp. 76-77 and 134).¹⁸

Although it would be wrong to identify the sea loan and the *commenda* with today's standard debt and equity contracts, as argued above, Frederic C. Lane is right in noting that "the change from the sea loan to the *commenda* substituted for a fixed obligation an obligation to share profits" and that "[t]o that extent it was like issuing common stock to finance an expansion of business, instead of selling bonds. It placed more of the risks on the investors" (Lane 1966, p. 61). By sharing the commercial profit between the contracting parties and limiting a merchant's liability for any capital loss, the *commenda* provided a more efficient allocation of risk than the sea loan and reduced the legal costs of contract enforcement, thereby facilitating trade investments that would have not occurred in the absence of this contractual form and inducing a reallocation of both human and financial capital towards its highest value use. Yet, a merchant under a *commenda* had many opportunities and incentives to act opportunistically. He could pretend to have lost the cargo at sea or by the action of men in the expectation of being released from repayment or render a false commercial account and divert part of the profit. He could also assume high risks from which he was protected through limited liability and shirked.¹⁹

To mitigate the former problem, both the sea loan and the *commenda* stipulated that debt forgiveness because of misfortune at sea or at the hands of the enemy would occur only "if this was clearly apparent" (e.g. MRL 1940, # 134 and 627) and the Statutes of the City (in all their various compilations) admitted the "testimony of reliable witnesses" as the

during the late nineteenth and the early twentieth centuries, see Lamoreaux and Rosenthal (2005) and Guinnane et al. (2007).

¹⁸ For a historically informed theory of legal entities based on the benefits and costs of shielding a firm's assets from the personal creditors of its owners and managers, see Hansmann et al. (2005). For the need to protect the lock-in capital from expropriation by the state, see Le Bris et al. (2015) and Dari-Mattiacci et al. (2017).

¹⁹ A venture's expected return also depended on a merchant's skills. Yet, there is nothing in the evidence suggesting an adverse selection problem. For further discussion, see González de Lara (2008, 257-258). Similarly, the theory of incomplete contracting seems to have very little explanatory power in the historical context under examination. As discussed in footnote 7 and 9, a Venetian merchant took ownership of the capital received under both a sea loan and a *commenda* contract, and retained residual rights of control (except in matters concerning the ship's company as a whole, as explained below).

only form of proof in these matters (Besta and Predelli 1901, St. Enr. Dand., 32; St. Tiep., 1229, 16; Cessi 1938, St. Nov., III.2). A merchant claiming a waiver could be, and sometimes was, asked to swear under oath that he “in fact could not give any more to [the investor], neither could he render a better account,” but his oath would not have any legal value (e.g. MRL 1940, # 104; see also MRL 1953, # 86 and Luzzatto 1954, 65). Indeed, the court’s reliance on witnesses to verify losses from shipwreck, piracy or confiscation is well reflected in the available data. In 1219, for example, the captain of and various merchants traveling on the ship *Lo Carello* testified that it had wrecked close to Negroponte and that the merchant Domenico Gradenigo had lost merchandise worth 110 hyperpers (MRL 1940, # 582).²⁰

Detecting an accounting fraud when the merchant and his cargo arrived unharmed to destination, though, was far more challenging. It required uncovering the tariffs and bribes a particular merchant had paid to pass customs, the transportation and storage fees he had arranged for, the rates of conversion he got applied among a plethora of weights, measures, and currencies, the price at which he had bought and then sold his wares, whether these had been stolen from the warehouse, damaged on the voyage or pilfered by the crew, and so forth. That the Venetians were aware of the merchant’s many opportunities to misreport the commercial gain and misappropriate the difference is well reflected in the extant contractual and legal data. The phraseology in which *commenda* contracts were framed generally appealed to the merchant to share “all the profit” with the investor “by a true half without fraud or evil intent” or with “a fair and true accounting” (e.g. MRL 1953, # 53/54 and MRL 1940, # 496/508). Furthermore, a merchant under a *commenda* was legally required to render accounts under oath, and his oath was for a time admitted as the only available form of proof in judicial proceedings, thereby revealing the court’s initial limitations to verify a merchant’s accounts (Besta and Predelli 1901, p. 24; St. Enr. Dand., cc. 30–2; see also St. Enr. Dand., c. 35).²¹

²⁰ For other notarial evidence on losses at sea or at the hands of hostile people, see MRL (1940, # 35, 79, 83, 313, 316, 336, 338, 358, 360–61, 365, 369, 378–380, 403, 417, 466, 787, 798, 848, 854; 1953, # 11). For the safe arrival of a ship and its cargo, see MRL (1940, # 407, 629). For court evidence on disputes concerning losses due to the risk of the sea and people, see MRL (1940, # 783; 1953, # 86).

²¹ Accordingly, all documents of receipt concerning *commenda* contracts acknowledged payment “under oath” (e.g. MRL 1953, # 54 and MRL 1940, # 508). In contrast, settlements of sea loans took place without the debtor being under oath (e.g. MRL 1940, # 386; see # 381 for the original

But, without reliable information on a venture's commercial outcome, an opportunistic merchant would have rendered a false account and an investor, anticipating the merchant's behavior, would have refused conditioning his payoffs on the merchant's claims, thereby forgoing mutually beneficial risk sharing. Hidden information would have thus constrained the parties to implement sea loans with a fixed-repayment schedule in the event of safe-arrival.²²

Yet, we observe many *commenda* contracts and indeed a time shift from debt-like sea loans to equity-like *commenda* contracts (figure 1). Furthermore, after 1230 many *commenda* contracts (about 30 percent) stopped invoking the merchant to render a complete, fair, and true accounting without any fraud or evil intent and the vast majority of them (about 95 percent) introduced stipulations that, in the absence of symmetric information, would have exacerbated diversion of profits from investors. Specifically, the merchant was then given a high degree of freedom "to do business by land or sea, carrying, entrusting, abandoning, and recovering all or part of the merchandise wherever it seems good to [him]" and was allowed to "dispatch" an investor's proceeds without returning in person to render accounts (e.g. MRL 1940, # 780). Theory and evidence thus suggest that formal or informal monitoring provided the required information regarding a venture's commercial profit or loss.²³

contract), except when claiming a waiver (e.g. MRL 1940, # 104). This legal and contractual difference enables me to code 103 contracts for which only the act of payment have survived and for which cash flows are not specified. For further discussion of the coding criteria, see footnote 21.

²² This application of the revelation principle follows from the assumption that financial relations are not expected to repeat themselves (Radner 1968; Myerson 1979). In a simple two-period model, however, truth telling can be induced and some degree of risk sharing can be achieved by making future exchange contingent on present claims (Townsend 1982; Bolton and Scharfstein 1990; Hart and Moore 1998). Despite the potential gain from enduring relationships, Venetian contracts were one-shot agreements. They generally lasted for the duration of a voyage and never entailed a staged capital commitment. Short-term formal contracts, though, can theoretically be used to implement a long-term implicit contract under which an investor can threaten to withdraw future funds if the latter ever claims an overly low return. Such a reputation mechanism, though, seems not to have prevailed in Venice (González de Lara 2008, 259-260). Ethics and loyalty among the family can also support risk sharing in the absence of symmetric information but financial relations seem not to have been governed by either of them (González de Lara 2008, 257-259).

²³ Alternatively, this change can be thought of as a movement away from costly state verification (Townsend 1979, Gale and Hellwig 1985) toward costly state falsification (Lacker and Weinberg 1989). Yet, neither the sea loan nor the *commenda* seem to have been designed to mitigate agency problems. The sea loan, unlike today's standard debt contracts, does not minimize

Asymmetric information regarding a merchant's choice of actions while on voyage could also lead to excessive risk taking, for example, by shipping merchandise on a cheap but unsafe vessel or changing route to a highly profitable but politically unsafe port. Both a debt-like sea loan and an equity-like *commenda* contract induced the merchant to assume excessive risks at sea or from the action of hostile people because his share on a profit was higher than his share on a loss.

To mitigate these hazards during the twelfth century, sea loans and *commenda* contracts typically specified the ship, destination, route, and sailing dates, and forbade the merchant from changing the ex ante terms of the contract, except for the explicit agreement between the majority of the merchants and the crew. By allocating control rights away from the merchant and toward a third party— the whole ship's company— with no or less conflicting interests with an investor, these stipulations restricted expropriation without severely constraining a venture's profitability. For example, in 1182, a group of merchants on a voyage to Constantinople on the ship commanded by the helmsman Simeone Istrigo came to know that the Pisans and the Genoese had been expelled from Byzantium and that their property had been seized. They then met with the helmsman and the crew and, on the basis of a majority vote, changed course to Alexandria (MRL 1940, # 331; Pryor 1983, 147-48). The ship's company as a whole (of at least 60 people if the ship was armed) also had the right to decide whether the vessel should take on additional cargo, go to the aid of a stricken ship, winter overseas, and so forth (Lane 1973, 51).

These stipulations, however, did not persist. Merchants were progressively allowed to choose among various ships, routes, and destinations (e.g. MRL 1940, # 377 and 444) and by

verification/bankruptcy costs, not even under the admittedly strong assumptions imposed by the literature (for a discussion, see Bolton and Dewatripont 2005, 190-97). The *commenda* contract, on its part, has been shown to emerge optimally under the assumption that the average cost of falsification is increasing on the amount falsified. While plausible, this assumption contradicts the literature's motivating observation that medieval merchants "could easily falsify the return by first dropping some of the acquired commodities at another location" (Lacker and Weinberg 1989, 1346). Furthermore, the historical evidence clearly shows that Venetian merchants could not call on a given port at will, particularly during the thirteenth century when the *commenda* prevailed. On the contrary, the evidence indicates that institutions rather than contracts evolved to mitigate various agency problems. This institutional explanation for the selection of alternative contract also differs from the hypothesis advanced by Williamson (2002), according to whom the Black Death (exogenously) disrupted the flows of information, causing a revival of the sea loan during the fourteenth century in Venetian Crete.

1220 the great majority of them were apparently set free to trade “wherever [they] saw fit” (e.g. MRL 1940, # 780). This shift towards greater contract flexibility was associated with the adoption of the *commenda*. Indeed, sea loans very rarely left the choice of the ship or the itinerary to the discretion of the merchant and none did so after 1220. A possible explanation is that an equity-like *commenda* contract provided better incentives than a debt-like sea loan regarding the manipulation of risk toward voyages with a lower probability of safe arrival but a higher expected return if the cargo safely arrived. Indeed, the bilateral *commenda*, which initially substituted the sea loan, placed better incentives on the merchant by making him bear one-third of a capital loss and reducing his share on profits from one to one-half. Yet, the *commenda* progressed from a good incentive scheme in which the merchant shared some of the downside risk, in its bilateral form, to one in which he did not, in its unilateral form (see figure 1). The evolution of contractual stipulations and forms thus suggests that the severity of moral hazard declined over time.

Finally, a merchant’s hidden actions and effort while doing business overseas could arguably make a great deal of difference to profit or loss. In light of standard contract theory, the sea loan— with a fixed repayment schedule when the ship arrived safe and sound to port— can be viewed as placing the right incentives on the merchant to refrain from assuming excessive risks and shirking, but at the cost of letting him bear all the exogenous commercial risk.²⁴ By contrast, the *commenda*, despite providing a Pareto superior allocation of risk, would have elicited suboptimal behavior from the merchant with negative repercussions on growth.²⁵ But, according to historians, the *commenda* did not

²⁴ In the Middle Ages a merchant in default remained in debt for his entire life (Noonan 1957, 129). Thus, unlike today’s standard debt contracts with bankruptcy, the sea loan gave the merchant incentives to undertake optimal risk while conducting business even in the absence of collateral (Stiglitz and Weiss 1981, 407-8).

²⁵ As discussed above, the *commenda* progressed from a relatively good incentive scheme in which the merchant took one-third of the downside risk and hold half of the residual claim to one in which he did not share the downside risk and captured only one-fourth of the gains from his profit enhancement activities. Consequently, a merchant under a unilateral *commenda* would have unduly undertaken more risks and supplied less effort than under a bilateral *commenda* or a sea loan (Greif 1996). Despite these potentially negative effects on trade productivity, the (unilateral) *commenda* might have provided a useful (second-best) trade-off between incentives and risk sharing (Stiglitz 1974).

hinder growth; on the contrary it “contributed greatly to the fast growth of maritime trade” (Lopez 1976, 76).²⁶

As discussed above, the observed association between the adoption of the *commenda* and the expansion of trade can be attributed to the countervailing role risk sharing played in promoting trade productivity and investments beyond improving allocative efficiency (see pp. 8-9). Besides, the wording of notarial acts suggest that moral hazard regarding a merchant’s diligence during the operation of a commercial venture was not a chief preoccupation for the Venetians and that their possible concerns declined over time. Indeed, whereas most *commenda* contracts made explicit reference to the exogenous hand of God in the making of profit, requiring the merchant to share “all the profit the Lord will grant” with the investor (e.g. MRL 1940, # 627), only a few contracts linked the venture’s outcome with the merchant’s management by demanding him “to do business ... as best as [he] will be able” (e.g. MRL 1953, # 60).²⁷ In its most complete form, this clause allowed the merchant “to do business wherever it would seem good to [him], carrying and sending [the invested funds] by land and by sea as best as [he] will be able” (e.g. MRL 1940, # 444). It thus appears to be related more with an awareness of conflict of interest arising from the increased freedom of action conferred to the merchant during the trip than with a perceived need to avoid excessive risk taking and/or sheer neglect while doing business. That this was the case is further confirmed by the appearance of this clause in a few sea loans, which, as discussed above, induced excessive risk taking at sea or at the hands of hostile people but elicited optimal trading behavior from the merchant (e.g. MRL 1940, # 453).²⁸ Be that as it may, the clause stopped being used in 1218, thereby suggesting that the

²⁶ Likewise, sharecropping has been found not to be correlated with low harvest returns in environments where individuals are free to choose contractual forms and hence endogenous matching is possible (Hoffman 1984; Otsuka et al. 1992; see also Akerberg and Botticini 2002).

²⁷ In other localities, however, both the notarial and the juridical sources acknowledged the influence of a merchant’s course of action and effort on the making of profit (Pryor 1983, 160-167).

²⁸ There are 46 contracts (out of a sample of 388) with this or a related clause, of which 7 were sea loans and 39 were *commenda* contracts with bilateral (19) or unilateral (20) supply of funds. The vast majority of them (about 88 percent) were drawn up during the period of transition from one contractual form to the other (1180-1220). In one case the clause “as best as (the merchant) was able” referred to options clearly unrelated to a possible manipulation of the risk of the sea and people. In particular, the merchant was allowed to trade in “whatever (goods) he will be best be able for two years” (MRL 1940, # 123).

severity of moral hazard in whatever form had declined before the unilateral *commenda* was generally adopted.²⁹

In sum, a context-specific analysis of the Venetian financial system points to the necessity of studying contractual and institutional changes in a combined manner. The Venetians, instead of designing contracts to ameliorate potential conflicts of interest between the parties, improved the informational and organizational structure of trade. Endogenous institutional changes appear to have reduced the measurement and agency costs of using better risk-sharing *commenda* contracts with positive repercussions on growth. But, what institutional arrangements underlined this process? What kind of institutions, if any, generated and transmitted the information required to verify a merchant's reports, prevented the merchant from manipulating the risk characteristics of a trading expedition, and rendered a venture's outcome less sensitive to his lack of application?

III. FORMAL MONITORING

This paper finds that in late-medieval Venice, the state regulated the operation of trading ventures in a manner that made profits more readily observable and less dependent on the merchant's choice of action and effort, thereby expanding the set of contracts that could be (legally) enforced. Specifically, ship scribes on voyage, colonial governors abroad, and various public officers in Venice came to formally monitor commercial ventures in all phases. This process was cumulative. It began during the 1180's and was completed by the 1220's, when Venetian trade became organized in state convoys from Venice to her well-established colonies and back. As a result, the better risk-sharing *commenda* contract progressively substituted the sea loan as the main form to mobilize resources into long-distance trade.

This historical institutional analysis provides both direct and indirect evidence substantiating this conjecture. Direct evidence consists on a detailed and documented

²⁹ Likewise, the phrase expressing the trading purpose of the sea loan and the *commenda* contract evolved from a formula suggesting a merchant's obligation to make a profit (*laborare et procertare*) towards a more neutral one requiring the merchant simply to do business (*negociare*) with the invested capital (e.g. MRL 1940, # 59 and 706). For further discussion of these terms, see Pryor (1983, 162).

account of the process whereby formal monitoring enabled courts to enforce *commenda* contracts that would have otherwise been fraught with asymmetric information problems. Indirect evidence refers to the confirmation of various predictions generated under the assumption that the conjecture advanced in this paper is correct. Such predictions are with respect to the impact of formal monitoring on both contract choice and the extent to which Venetians from different walks of life could enter into *commenda* contracts and benefit from them.

To test these predictions, I have constructed a data-base of 125 *debt-like sea loans* and 263 *equity-like commenda contracts* for the period 1122-1261. This required me to read in detail and classify the 969 notarial acts transcribed in full and published by MRL (1940, 1953), which constitute all the surviving documentary evidence for the period and are believed to be representative, as they were drawn up by a variety of notaries, both in Venice and throughout the Mediterranean and the Black Seas (Luzzatto 1954, 91; Lane 1966, 57-58).³⁰ The documents provide very rich information on contract's type, date of signature, voyage's organization and itinerary, and route's flexibility. These variables provide various proxies for formal monitoring, which I use in subsection III.B to show that formal monitoring indeed explains the observed transition in contractual forms. The

³⁰ The notarial acts (*cartule*) are of different type: one finds documents of obligation and their certified copies in *manifestacionis cartule* (with unilateral supply of funds) and in *memorialis cartule* (with bilateral supply of funds), settlements and transfers of contract rights in *securitatis cartule*, acts of attorney in *commissionis cartule*, wills in *testamenti cartule*, testimonies of reliable witnesses in *testificacionis cartule*, court sentences in *brevarium cartule*, and so forth. In some cases various documents make reference to the same contract (e.g. MRL 1940, # 289, 290, 292 and 300); in others, one document speaks of various contracts (e.g. MRL 1940, # 487). In total I have identified 435 original agreements referring to sea loans or *commenda* contracts that are mentioned in 455 documents for the period 1021-1261, of which I have dropped 11 because the agreements are too widely dispersed over time, spanning the period 1021-1121, and 36 because the documents do not enable their identification as one or the other contractual form. Indeed, identification is tricky. Documents of obligation clearly establish the cash-flow characteristics of each agreement but other types of documents do not always do so. In particular, 108 sea loans (out of 125) and 177 *commenda* contracts (out of 263) are clearly identified as such in the records (for their identification clauses, see the examples in the introduction). To classify the remaining 103 agreements, I have relied on legal differences in the settlement procedure: briefly, when no other distinguishing features are available, an agreement is considered to be a *commenda* contract if the merchant rendered commercial accounts under oath; otherwise, the agreement is coded as a sea loan (for further explanation, see footnote 12). All results are robust to the application of the most stringent coding criteria. For a full description of this evidence, see MRL (1940, pp. i-xxx), Luzzatto (1952, pp. 60-116) and Gonzalez de Lara (2000, appendix B).

documents also identify the contracting parties by their names, family names, citizenship and place of residence. I use this data in section IV to classify them according to their socio-economic status and their political influence and to confirm that formal monitoring and legal contract enforcement enabled the Venetians, by and large, to engage in long-distance trade and profit from it beyond their social ties and their reputational interests between or among traders.

III.A. Direct Evidence on Formal Monitoring

For most of the thirteenth century, and probably since 1179, Venice sent out two merchant fleets twice each year to trade in the Eastern Mediterranean. These trading convoys, unlike those previously planned by private individuals, were protected by state-owned galleys and “treated as community enterprises subject to governmental approval” (Lane 1973, p. 49). All the vessels and merchants planning to join a particular convoy were increasingly required to register in advance and to obtain a trading license. The first trading contract mentioning such a license dates from 1200; after 1220’s the requirement prevailed. Even if a merchant was not explicitly required to obtain a license, he was nonetheless subjected to all the regulations that applied to a state convoy if he joined one and was prohibited from sailing to anywhere in the Eastern Mediterranean without joining since 1266. Licensed and regulated voyages— as Lane (1963) has called them— were operated under admirals appointed and paid by the state and according to naval and commercial instructions formulated by her governing Councils concerning the times of sailing, the protection of the convoy, the treatment of crews, the handling of cargo and the freight rates (Sacerdoti 1899, 43-44; Luzzatto 1954, 53-57; Lane 1966, 21-50, and 1973, 68-70; Ferluga 1992; Rösch 1995a).

In addition, the Maritime Statutes of 1229, which codified previous customs, regulated the operation of the merchant marine to ensure its safety and required that a semi-public scribe register the number, weight, and owner of any merchandise loaded and unloaded, record the contracts of all merchants on the voyage, and report any observed fraud. The ship scribe was an old figure but the thirteenth-century Statutes regulated his appointment, conferred legal value to his books and testimony, and retained the shipmaster responsible for the merchandise registered with the scribe, excluding losses at sea, from fire, or from

the actions of enemies.³¹ The enforcement of these regulations was entrusted, in Venice, to the Consuls of the Merchants— a distinctive board of governmental officials whose three first known members were appointed in 1228— and, in the Venetian possessions overseas, to the competent colonial governors (Predelli and Sacerdoti 1902; Michelin 2010; see also Lane 1966, 25-55; Rösch 1995c, xx-xx).³²

Venice indeed built up a colonial empire overseas. Since the second half of the twelfth century Venetian judges and other official representatives were permanently stationed in various ports throughout Istria, Croatia and Dalmatia. Venice also appointed a resident judge in Constantinople since 1186, but with a rather limited jurisdiction, and acquired legal extraterritoriality all over *Romania*— the territory that once belonged to the Byzantine Empire but had disintegrated into a few political units following the assault of Constantinople by a crusading army led by the Venetian head of state, the Doge— in 1204. In contrast with the former Venetian colonies in the region, those acquired after the Fourth Crusade were immediately placed under governors sent out from Venice: a *podestà* was installed in Constantinople in 1207, a *castellano* in Coron and Modon in 1208, a *bailo* in Negroponte in 1216, and a duke in Crete in 1219. In the Crusaders States Venice had obtained large compounds with full extraterritoriality in the early twelfth century, but the Venetian population remained predominantly self-governing until about 1192, when a *bailo* was first sent to Acre. In 1205 Venice also gained consular representation in Alexandria.

³¹ Specifically, the earliest Maritime Statutes of Doge Tiepolo called for the nomination of candidates for the post of scribe by each ship's master and for the scribe's election by the Consuls of the Merchants in Venice or the Venetian rectors in the colonies (Predelli and Sacerdoti 1902, St. Tiep., 1229, 17; St. Tiep., 1233, 4). The latter Maritime Statutes of Doge Zeno (1255) required that two scribes be assigned to each ship and that they were directly inducted by the Merchants' Consuls or the appropriate colonial authorities (Predelli and Sacerdoti 1902, St. Zeno., 1955, 41). For further discussion, see Predelli and Sacerdoti (1902, 132-136) and Lane (1966, 37).

³² One responsibility of the Consuls of the Merchants and the Venetian governors was to estimate and record the carrying capacity of each *navis*— the typical mercantile ships of the twelfth and thirteenth centuries, give a rating of the crew and equipment according to the Statutes and their own estimates, and inspect cargoes, crews and equipment before the ship was allowed to leave port in Venice or in her colonies (Lane 1966, 34 and 47). It was also their responsibility to see that licensed and regulated convoys got off within the specified sailing season and to prevent them from leaving at forbidden times (Lane 1966, 37; Jacoby 2004). In addition to their administrative duty to oversight the merchant marine and the state convoys, they were charged with the adjudication of commercial disputes between merchants, for which they were given authority over the ship's scribes and the *sensali*, who provided them with a comprehensive vision of all the affairs lawfully conducted by the merchants of Venice (Lane 1966, 33 and 37-38; Rösch 1995c, xx-xx).

These colonial governors oversaw custom duties, administered warehouses and lodging facilities, enforced the use of Venetian measures, weights and coins, and kept public records of the prices the Venetians paid for cotton and pepper while Venice maintained monopsonies in Acre or Alexandria (Prawer 1968; Lane 1973, 17-19, 49-51, 59-62 and 99-100; Day 1984; Ferluga 1992; Jacoby 1994, 1995a, 1995b, 2003 and 2004; Ravegnani 1995a and 1995b; Rösch 1995a and 1995b).

On their arrival to Venice, ships were inspected by custom officials. Various naval patrols coerced traffic in the northern Adriatic since ca. 1180 and during the thirteenth century there were thirteen control points around the lagoon. At each, half dozen men with two or three vessels inspected all passers to make sure that their cargoes were covered by permits to go where they were headed and required proof that they had been cleared in Venice (Lane 1973, 17-18, 49-51, and 59-62). Venice also created a new magistracy of three Justices in 1173 to enforce standard weights and measures and to police markets generally (Lane 1973, 104). By 1225 all commodity sales in the Rialto needed to be registered with the *Sensali dellla Messetteria*— a group of officials responsible for the collection of taxes and the provision of compulsory brokerage services who were under the jurisdiction of the Consuls of the Merchants (Rösch 1995c, 453; see also Boerner 2016).

State convoys, tight regulations and permanent administrative structures both abroad and in Venice thus enhanced an investor's ability to verify a venture's commercial outcome while reducing a merchant's opportunities and incentives to distort it through his choice of action and/or effort. The progressive ability of the legal system to enforce commenda contracts that were contingent on this outcome is well reflected in the various compilations of the Civil Statutes. As we have seen, the earliest Statutes, which were written sometime between 1194 and 1214 but codified previous customs, specifically called for the verification of a merchant's claims concerning losses at sea or from the action of hostile people but recognized the merchant's oath as legal proof of his commercial accounts, which he simply had to render by the date of due (Besta and Predelli 1901, p. 24; St. Enr. Dand., cc. 30-32). The Statutes of 1229, however, mandated a detailed account of each and every commercial operation, one by one in sequence, and the revision of 1233 made the court responsible for verifying them in case of litigation (Ibid., St. Tiep., 1229, c.16; St. Tiep., IIIA, c.2.). The final Statutes of 1242 further entailed the investor to present reliable witnesses

and established the merchant's obligation to compensate him for whatever he could prove to be owed (Cessi 1938, St. Nov., III.2, gloss 3).

III.B. Indirect Evidence on Formal Monitoring

A detailed analysis of the available contractual evidence for the period 1122-1261 lends further support to the conjecture that formal monitoring eased the transition from the sea loan to the better risk-sharing, *commenda* contract in late-medieval Venice. First, figure 1 and table 1 (rows 1-15) shows a time trend in contract choice that is consistent with the process of formal monitoring documented in the previous subsection. This process was composed of three stages. Initially— during the period *T1*, from 1122 to 1178— Venice lacked the administrative capacity required to organize state convoys, enforce regulations and govern her overseas possessions. It followed a period of transition *T2*— spanning from 1179, when the Venetian state began to organize regulated convoys, to 1219, when Venice completed her Eastern colonization— during which trade was increasingly placed under governmental supervision. Ultimately— during the final period *T3*, from 1220 to 1261— convoy admirals, ship scribes, colonial governors, tax collectors, public brokers and various other officials monitored merchants at all times.

If formal monitoring actually supported contractual innovation, one would expect to observe a corresponding transition in contractual forms. We indeed observe such a transition. Table 1 organizes the 388 sea loans and *commenda* contracts identified for the period 1122-1261 according to these stages. Row 1 defines *Commenda* as a binary variable that takes value 1 if the contract is a bilateral or a unilateral *commenda* and 0 if it is a sea loan, and dates each observation by the year in which the original contract was drawn up.³³ As expected, in the absence of formal monitoring during the initial period *T1* (1122-1178), the *commenda* was sparsely used: only 23 agreements out of 90 (that is 25.55 percent)

³³ For the coding criteria of contract's type, see footnote 21. All documents are dated by month, year and indication according to the *more veneto*. The Venetian year started on 1 March. I have changed all dates to the Gregorian calendar (e.g.: January 1178 *more Veneto* in MRL # xx is coded as January 1179).

were *commenda* contracts (see table 1, row 1) and most of them adopted the bilateral form, which, as we have seen, provided higher-powered incentives for the travelling merchant (see figure 1). As Venice progressively organized state convoys and expanded her administrative oversight throughout her colonies during the transitional period T2 (1179-1219), the unilateral *commenda* was gradually adopted (see figure 1): it was 38.53 percent more likely to finance a venture through a *commenda* contract, as compared to a sea loan, during this period than it was during the initial one (see table 1, row 1). During the final period (1220-1261), when the state consistently monitored trade, the *commenda* prevailed: 95.51 percent of the 156 financial agreements identified for this period were *commenda* contracts; there was a 69.96 percent probability increase in the use of the *commenda* relative to the initial period.³⁴

(INSERT TABLE 1 AROUND HERE)

Casual observation of voyages' organization and itinerary in table 1 (rows 2-13) reveals that the observed shift in contractual forms was indeed associated with the organization of state convoys and the regulation of the trade that linked Venice to her colonies. Information about voyages' organization lead to their classification as *licensed*, *regulated* or *free voyages* according to a decreasing degree of governmental intervention.³⁵ The two latter categories belongs to what I call, following Luzzatto (1954, 53-57), *state convoys* and serve as proxies for formal monitoring as indicated in table 2. Information about voyages' itinerary (port of departure, calls, and destination in a one-way or a round-trip venture) provides the basis for complementary proxies for formal monitoring. A merchant's accounts can be considered to be verifiable to an increasing degree if he undertook a round-trip voyages from Venice during either *the transitional T2* or *the final*

³⁴ Determining the precise dates of each stage is somehow arbitrary. All results are qualitatively robust to different time breaks in 1186, when Venice established permanent administrative and judicial offices in Constantinople, and 1229, when it codified the prevailing maritime customs into law. In particular, the probability increase of observing a *commenda* contract, as compared to a sea loan, during the periods 1186-1228 and 1229-1261 relative to the omitted period 1122-1185 are 52.78 and 69.76 percent, respectively.

³⁵ TO DO: define each category precisely – see notes on table 1

period T3, when these voyages actually linked Venice to her developing colonial empire.³⁶ In contrast, the organization in Venice of a round-trip voyage during the initial period does not capture an enhanced ability by state officials to monitor this voyage and hence is expected not to have any effect on contract choice. As observed in table 1, free voyaging progressively gave way to regulated and licensed voyages from Venice to her colonies and back (rows 2-13) at the very same time as the debt-like sea loan was substituted with the equity-like *commenda* (row 1).

(INSERT TABLE 2 AROUND HERE)

Second, table 3 reveals that the association between equity funding with the organization of licensed convoys and the regulation of the trade that linked Venice with her well developed colonies during the final period was so strong that we have a perfect fit. All 127 observations in which the merchant was explicitly required to join a *licensed convoy* are equity-like *commenda* contracts. Likewise, all 147 merchants who undertook a *round-trip voyage from Venice* during *the final period*, when various public officials could and did monitor merchants quite effectively both in Venice and in her colonies, obtained equity funding. The vast majority of them (111) joined a licensed convoy. These two proxies for *perfect formal monitoring* thus together predict correctly 288 out of 388 observations, that is, they explain over 74 percent of the whole sample variation.

(INSERT TABLE 3 AROUND HERE)

³⁶ All other round-trip voyages undertaken during the transitional and final periods (ten in total) linked the Venetian enclaves among themselves or with Venice and, hence, are expected to be equally financed through equity. In contrast, those merchants who shipped one-way (38 and six during the transitional and final periods, respectively) typically operated on an unregulated environment and so were unable to make their commercial accounts verifiable. For example, Marco Giustinian, a merchant who raised capital in Crete with the sole obligation of repaying capital plus interest in Venice in about 1255, was probably free from most trading regulations and controls while doing business in the island or elsewhere (MRL, 1940, # 827). Unlike the merchants who traveled forth and back, Marco stayed in Crete (repayment was made in Venice by his wife) and, arguably, ventured into the hinterland, where prospects for profit were higher but the state could not monitor trade (Lane 1967, 111). The probit analysis is qualitative robust to the use of round-trip voyages in general (row 6) rather than particularly from Venice (row 5).

Third, table 4 conducts a probit analysis to test whether formal monitoring in its transitional stage had an impact on contract choice.³⁷ As predicted, all proxies for formal monitoring in table 4 have a positive and statistically significant impact on the choice of equity. Also, departing on a *round-trip voyage from Venice during the initial period*, when the state did not yet monitored trade, has no statistically significant effect on contract choice. These results are robust to various specifications controlling for regular yet non-regulated trade, voyage's itinerary, and route's flexibility. When added to the probit analysis, both the most regular yet non-regulated *voyages within the East of the initial period* and all the *itinerary variables* prove insignificant and hardly affect the explanatory power of the other variables.³⁸

(INSERT TABLE 4 AROUND HERE)

IV. EFFICIENCY AND DISTRIBUTIONAL IMPLICATIONS

As discussed in González de Lara (2008, 265-266) and (2011, 107-108), Venice was celebrated for administering justice with efficiency and impartiality in most commercial matters regarding Venetian citizens but denied foreigners an equal access to courts. Thus, if formal monitoring actually enhanced the courts' ability to enforce *commenda* contracts, which would have otherwise been fraught with asymmetric information problems, we would expect to observe broad and flexible financial relations prevalently among Venetians. We indeed observe such relations.

First, over 96 percent of the *contracts* were *among Venetian citizens*, who for the most part resided in the *Rialto* (table1, rows 16-24). The Realtine islands were the capital of the Venetian state since the ninth century and became its indisputable economic, administrative and judicial center in about 1140, when the most important families from the various Venetian communities within the Dogeship migrated to the city (Castagnetti 1992). Living in the Rialto gave traders cheap access to both information and the courts (Lane 1973, 143; Müeller 1997, 124-25). A possible concern with this data is that foreigners were

³⁷ TO DO: explain each specification in table 4.

³⁸ TO DO: EXPLAIN Table 4 use probit regressions to estimate the effect of formal monitoring on equity selection.

presumably less likely to use a Venetian notary than citizens. Yet, equally biased evidence from other localities, such as Genoa, shows many relations between citizens and non-citizens, thereby suggesting that the Venetians indeed contracted mainly with each other (Greif 1994, 930-935).

Consistent with public contract enforcement, *intra-Venetians relations* did not only prevail but were about 30-40 percent more likely to be financed through equity than those between Venetians and non Venetians (tables 5 and 6). Yet, non-Venetian traders also benefitted from (perfect) formal monitoring. They could hardly verify their claims in a Venetian court of law but could and probably did use the information generated by the state to privately enforce their contracts. Indeed, a few foreigners (five in total) financed/managed ventures under perfect formal monitoring and then relied on equity just like their Venetians counterparts. Foreigners, though, were comparatively less able to use information which was not perfectly observable and appear not to have engaged on informal monitoring (table 7).

Controlling for formal monitoring, a trader's place of residence is not statistically significant at ten percent but investors in the *Rialto* had cheaper access to Venetian regulated trade and hence relied on equity more than other investors (table 6, columns (1)-(2); see also table 5). They had cheaper access because of their proximity to the city's financial market and courts, a proximity which *de facto* discriminated against investors in other Venetian communities (Lane 1973, 143; Müller 1997, 124-25).

This evidence, however, is also consistent with the operation of private-order institutions for contract enforcement based either on a Venetian sense of shared identity or a multilateral reputation mechanism.³⁹ The construction of a Venetian identity, which political leaders purposely promoted, surely played a role in surmounting contractual problems in overseas trade. Yet, preference-based trust among the Venetians as a social group was perceived as insufficient curtailment of opportunism. Consider, for example, the customary formula under which a dying merchant abroad entrusted a fellow to ship his wares to his legitimate heirs in Venice. Beyond a social norm regarding mutual help in such extreme circumstances, the merchant appealed to the fear of God and, more importantly, imposed the standard legal sanction for breach of contract: "if you infringe your duty or you

³⁹ For a discussion of their differences and the related literature, see Greif (2009). For an analysis of identity economics, see Akerlof and Kranton (2010).

are corrupted, let God the Father Almighty and his Son our Lord and the Holy Spirit be against you ... and let you burn in hell with Judas the betrayer for ever and, in addition, you will have to compensate the executor of my will with five pounds of gold,” a hefty monetary sanction which was specifically interpreted in the Statutes of 1242 as meaning £5 12s of current money (MRL 1940, # 362; Cessi 1938, St. Nov., I, 32).

A group of self-interested individuals can nonetheless be induced to refrain from breaching their contractual obligations by the shared belief that an honest merchant would be rewarded with the continuation of very profitable relations within the group and that a cheater would be caught and punished collectively by interrupting all business relations with him. Yet, such a multilateral reputation mechanism did not materialize in Venice. The Venetians, unlike the Maghribi traders among whom such informal institution prevailed, did not form a coalition of business associates with a thick information network, and hence could not and did not practice collective punishment (González de Lara 2008; Greif 2012). Indeed, the sea loan and the *commenda* contract in Venice did not formalize agency relations whereby a merchant handled another merchant’s business abroad. Instead, they enabled travelling merchants to raise capital from the population at large.

Second, the observed mobilization of both merchants’ and non-merchants’ capital into long-distance trade is also consistent with the administrative and legal enforcement of contracts. Furthermore, the weight of investors without any apparent trading experience increased over time: Whereas 88 percent of the investors known for the initial period, 1122-1180, were merchants themselves or belonged to a family of merchants, only 47 percent of those investing during the final period, 1220-1261, were members of a merchant’s family (table 1, rows 41-44).⁴⁰ Contractual innovation in late-medieval Venice cannot therefore be associated with the formation of a merchants’ coalition.

⁴⁰ The data does not directly indicate an investor’s profession (except in the case of priest and nuns, notaries and various high office holders) but provides various proxies for establishing whether he was a merchant. An investor is considered to be a merchant if he is known to have functioned as a merchant, raising trading capital from other investors; resided overseas while functioning as an investor; supplied funds to a merchant abroad; or received payment from a one-way-trip voyage at a different location from where he supplied the funds. He is regarded as belonging to a merchants’ family if he or anyone with his family surname was a merchant, as classified above. About 60 percent of the investors from a merchant’s family were merchants themselves.

Third, financial relations in Venice also transcended the boundaries of the family. Family ties were certainly important, especially during the initial period when intra-family relations were more likely to be financed through *commenda* contracts than inter-family relations, but they amount to a mere 9 percent of the total (table 1, row 40).⁴¹

Finally, the broad participation of the citizenry and the flexibility with which the Venetians entered into *commenda* contracts also suggest the centrality of an impartial administrative and legal system. Indeed, investments were made both by the wealthiest and most politically influential individuals and by small investors. For example, in 1226 the nobles Tommaso Agadi and Tommaso Gradenigo respectively invested 400 and 100 Venetian pounds; the same year a women named Soria entrusted 8 pounds and 4 pence in commenda to a merchant who appears to be unrelated to her family (MRL 1940, # 638, 633, 627).⁴² Most investors bore noble family names and about half of these belonged to the ruling aristocracy, but over a third of the known investors were commoners (table 1, rows 25-28).⁴³ Similarly, most ventures were managed by noble merchants (table 1, rows 90-93), but nobility did not constitute a barrier to trade, as documented by the participation of relatively poor merchants such as Dobramiro Stagnario, a manumitted slave, or Romano Mairano, whose wife received a humble dowry (Luzzatto 1952, 98-99 and 108-116; Lane 1973, 52 and 90-93; Robbert 1999, 34). Furthermore, financial relations were not driven by traders' social class: 37.30 percent of the contracts were entered among nobles and 19.94 among non-nobles but 39.37 percent were flexible contracts between nobles and non

⁴¹ Two individuals are considered to be family members if they had the same surname or the contract mentions that they were relatives. Surnames, though, might have been homonymous. On the other hand, contracts did not specify all ties within the extended family. In 1201, for example, Tommaso Viadro is known to have raised capital from Pietro Ziani (MRL 1953, # 53, 54). Pietro happened to be Tommaso's maternal uncle (Takada 1995, 7). Family ties are reported between merchants and their brothers, sisters, mothers, grandfathers, various other relatives by blood, and in-laws. For a possible selection bias, see p. xx above.

⁴² One pound or *lira* corresponds to 20 pence or *soldi*. In 1225 a basket of pepper was sold in Venice for £170 and a bale of gray cloth for £62 10s; one bundle of figs cost 12s. The monthly salary of a crossbowman in a galley in 1224 was £5 5s. The annual salary of a parish notary in 1266 was £150. For further information on prices, see Robbert (1994, 384-87).

⁴³ As the 'nobility' was not legally defined in Venice until 1297, nobility is here a proxy for economic and political prominence. Based on González de Lara (2008), a trader is classified as a member of the ruling aristocracy if anyone with his or her family name held high public office during the period of analysis. A trader is classified as noble if he/she belonged to the ruling aristocracy or anyone with his/her same family name underwrote a ducal charter or sat in the Great Council.

nobles; the remaining 3.36 percent were between Venetians and non-Venetians whose social status is unknown (table 1, rows 33-39). Neither was contract choice determined by the parties' relative status (table 7).

In fact, Venetian merchants typically raised capital from various investors of different ranks and sometimes invested in other merchant's ventures for the sake of diversification, either through sea loans or *commenda* contracts. During his trading career Romano Mairano — who appears 49 times as a merchant and three times as an investor during the period 1150-1199 — raised capital from 43 individuals belonging to 35 families, both noble and non-noble. Domenico Gradenigo entered into 28 *commenda* contracts during the period 1205-1226 with various members of his aristocratic, rich family and with 14 other investors, of whom only two financed him repeatedly. In 1223, for example, he raised 81 Venetian pounds from Pietro Ziani, the ruler of Venice himself and probably the richest man in town, and 50 pounds from a noble widow who had been given her dowry back (MRL 1940, # 605, 604; Robbert 1999). Likewise, Rodolfo Suligo, a non-noble merchant who joined a state convoy in 1234, received funds ranging from 25 to 152 Venetian pounds from at least 15 noble and non-noble investors (MRL 1940, # 675–690, 804). In total he raised 1071 Venetian pounds and 5 pence, about 200 times the annual rent of a profitable shop in the market place of the Rialto in the year 1238 (MRL 1940, # 710; Robbert, 1999, 37).

Diversification was also pervasive. For example, Giovanni Serzi contracted with a different merchant in each of the eight sea loan contracts that have survived. In 1169 he funded four merchants who were sailing on three different ships from Armiro in the Peloponnesus to Constantinople and in 1170 he financed another four merchants under similar conditions (MRL 1940, # 214-217, 219-223). Lazzaro Mercadante, another prosperous merchant, is known to have supplied capital through eight *commenda* contracts to seven different merchants during the period 1242-1258 and held as many as 25 credits of *commenda* when he died in 1281 (MRL 1940, # 746, 759, 764, 771, 793, 839-40, 843; Luzzatto 1952, 61-65). At the time of his death in 1268 the doge Raniero Zeno had about half of his fortune diversified in 132 *commenda* contracts (Luzzatto 1952, 81-87).

This evidence also refutes the historical importance of informal monitoring and bilateral reputation as the basis for contract enforcement in late-medieval Venice. Under a bilateral reputation mechanism, an investor could have induced a merchant to fulfill his observable contractual obligations towards him by the promise of long-term relations of a

sufficiently high per-period value and the threat of terminating these relations if he ever discovers the merchant cheating. Yet, the many investments made by relatively humble people who sporadically supplied small sums, the large extent to which investors diversified and the flexibility with which merchants raised capital from many competing investors suggest that a merchant could commit to fulfill his contractual obligations even when his bilateral relations were expected to last only for a short period of time and be of little value.⁴⁴

Altogether the available data indicate that formal monitoring indeed made the unilateral *commenda* a feasible and a profitable form of investment for the broader Venetian public, and not only for a few merchants or close associates who could informally monitor and enforce their own financial relations, as it appears to have been the case before about 1180.

V. CONCLUSIONS

This theoretically informed, context-specific analysis demonstrates that in late-medieval Venice formal institutions for contract enforcement emerged at a very early stage of development and proved favorable to growth. Asymmetric information problems were central in determining contract choice but contracts were not privately designed to ameliorate potential conflicts of interest between the parties. Instead, the state regulated the operation of trading voyages in a manner that reduced the scope for moral hazard and generated the information required to verify a contractual breach, thereby making the better risk-sharing *commenda* contract enforceable at a court of law. Regulation and litigation thus conjointly provided investor protection from expropriation by controlling merchants and fostered the adoption of new contractual forms.

⁴⁴ In contrast, the typical Genoese investor of the mid-twelfth century was a wealthy noble who diversified relatively little. Consistent with the operation of a bilateral reputation institution, he generally conferred large sums to a few merchants and financed them for a prolonged period of time (Greif 1994; 2102). Based on Greif's seminal work, Dean V. Williamson has conjectured that "informal monitoring [also] gave [Venetian] merchants some capacity to detect cheating if not verify it ... and provide[d] a basis for informal sanctions" (Williamson 2010, 2). For a comparison between the Genoese and the Venetian institutions for contract enforcement, see González de Lara (2008).

Financial innovation in late-medieval Venice required extensive governmental intervention, including the establishment of administrative structures, the organization of licensed convoys, the acquisition of overseas possessions, and the formal monitoring of merchants in Venice, on voyage and abroad. The history of Venice hence challenges the conventional wisdom held among business historians, according to whom “the role of law in the past was simply to uphold and enforce private contracts” (Musacchio and Turner 2013, 537). It also suggests extending the research agenda of the Law and Finance literature to include the study of regulations aimed at producing verifiable information as a public good. The Venetian institutional system, though, was not built solely or principally to reduce informational asymmetries in financial relations and hence the cost of litigation. Governmental intervention made Venetian trade more secure and profitable than it would have been otherwise and ensured citizens an economic rent from trade (González de Lara 2008). The benefits of the system thus well exceeded its administrative costs. In the long run, however, the formation of a city-state with strong administrative capacity arguably led to the oligarchization of society and the adoption of growth-undermining policies during the early modern period (González de Lara et al. 2008; Puga and Trefler, 2014).

The Venetian formal institutions for contract enforcement sustained broader and more flexible exchange relations than those made possible by other private-order institutions that prevailed at the time (Greif 1994). On the one hand, regulation and litigation in Venice, unlike the Maghribis’ multilateral reputation mechanism, did not require investors to engage in informal monitoring of merchants’ conduct or practice collective punishment, and so enabled the mobilization of both merchants and non-merchants capital into long-distance trade. On the other hand, the Venetian institutional system, unlike the Genoese bilateral reputation mechanism of mid-twelfth century, supported financial relations that were expected to be of short duration and little value, and so enabled the mobilization of legacies, small incomes and personal savings into *commenda* investments in long-distance trade as well as the diversification of risk and the pooling of capital through multiple *commenda* contracts.

Like in Venice, however, trade opportunities in Genoa and in most other Western localities opened up to a wide range of people. During the thirteenth century *commenda* investments throughout the Western Mediterranean were made both by professional merchants and by individuals without business experience, by nobles and by commoners, by

big investors and by small ones (Pryor 1984, 431-440; Cipolla 1993[1976], 196; Weber 2003[1889], 130-131; van Doosselaere 2009, 78-118). The Western *commenda* thus evolved from a service contract, whereby a relatively unskilled and poor merchant handled another merchant's business abroad, to an equity investment, whereby an independent travelling merchant pooled funds through multiple *commenda* contracts (González de Lara 2017). In contrast, the Muslim equivalent to the *commenda*, the *qirād* or *mudāraba*, remained an agency contract (Goldberg 2012; Greif 2012). Thus, unlike in medieval Europe, where "savings were activated for productive purposes to a degree inconceivable in previous centuries" (Cipolla 1993, 164), trade expansion in the Muslim World was constrained by the capital endowment of the merchants as a class. Individuals outside the circle of merchants could not invest in long-distance trade and profit from it (Çizakça 2006, 11-12).⁴⁵

This divergent process of contract formation suggest that courts throughout the Latin West and not only in Venice enhanced their ability to enforce complicated and state-contingent contracts like the *commenda* and that this institutional distinction made the Western *commenda* an engine of revolutionary growth and upward mobility unparalleled in the Muslim world, thereby lending additional support to Avner Greif's "institutional distinction conjecture" (Greif 2012). It also challenges the myth of the Law Merchant as a uniform and universal private ordering that facilitated international trade in the West and invites further research on the extent to which courts throughout the Western world differed substantially from each other and from their modern equivalents.⁴⁶

⁴⁵ Furthermore, agents in the Muslim world hardly ever combined the capital of many principals in a pool of investments, if at all (Çizakça 2006, 11-12; Ackerman-Lieberman 2011, 655-656), and so "*mudāraba* partnerships remained small institutions with limited capital" (Çizakça 2006, 21). This reduced the cost-efficiency of each single venture and, arguably, inhibited subsequent institutional, organizational and contractual developments that facilitated impersonal exchange in the West and thus market expansion (Kuran 2011; Greif 2012).

⁴⁶ For the history of the myth and further evidence contradicting the existence of a universal law merchant produced, interpreted and enforced by a legally autonomous merchant class, see Greif (2006, 309-320), Kadens (2012), and the references therein. For the need to examine the extent to which courts and reputation were similar in different historical contexts and the fallacies of assuming that all historical courts and reputation mechanisms were identical, see Greif (2012).

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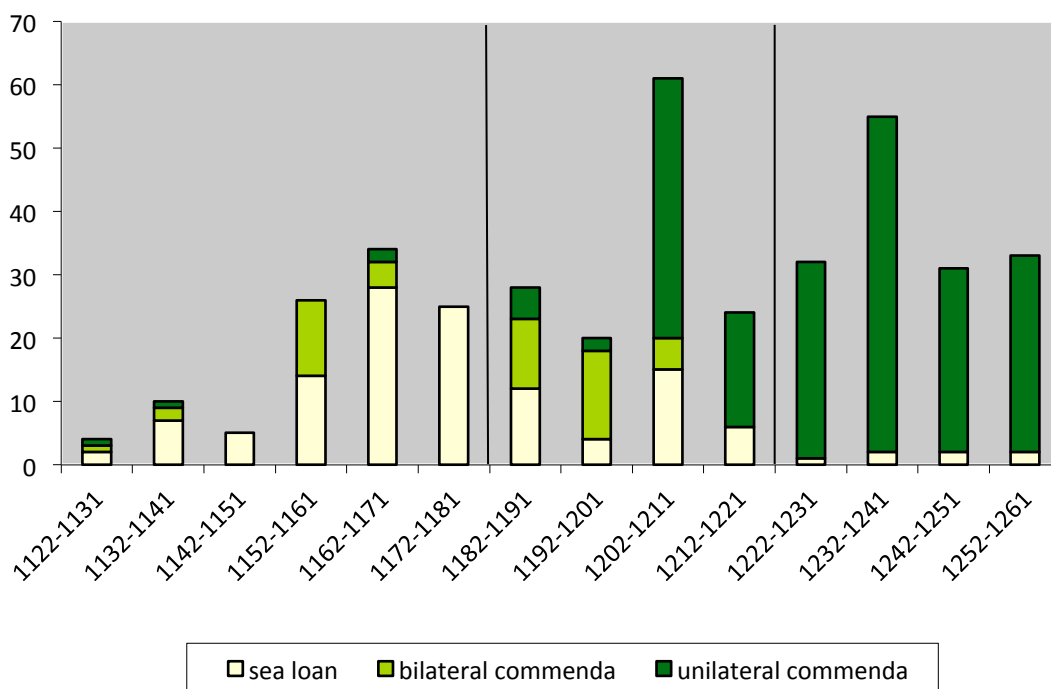
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FIGURE 1:
DOCUMENTED SEA LOANS AND COMMENDA CONTRACTS AND THEIR DISTRIBUTION OVER TIME



Source: The author, based on Morozzo della Rocca and Lombardo [1940; 1953].

Note: Number of observations is 388. There is also evidence on one sea loan and eleven commenda contracts for the period 1021–1120. In addition, there are 38 contracts that cannot be classified with certainty as either type and hence do not appear in the figure.

TABLE 1.
SUMMARY STATISTICS OF BINARY VARIABLES

Binary Variables		T1-T3 = 1122-1261		T1 = 1122- 1178		T2 = 1179-1219		T3 = 1220-1261	
		Obs.	Mean	Obs.	Mean	Obs.	Mean	Obs.	Mean
1	Commenda	388	.6778	90	.2555	142	.6408	156	.9551
2	Licensed convoy	388	.3273	90	.0000	142	.1126	156	.7115
3	Regulated convoy	376	.1781	87	.000	140	.3214	149	.1476
4	State convoy (2 OR 3)	376	.5159	87	.0000	140	.4357	149	.8926
5	Round-trip voyage from Venice ¹	381	.6797	86	.2093	141	.6666	154	.9545
6	Round-trip voyage	381	.7664	86	.4767	141	.7304	154	.9610
7	Voyage from Venice	387	.7571	90	.3666	141	.7872	156	.9551
8	Voyage to Venice (final destination)	383	.7206	88	.2613	141	.7234	154	.9801
9	Voyage from Venice to East	379	.5989	87	.2758	139	.5899	153	.7908
10	Voyage from East to Venice	379	.0448	87	.0689	139	.0575	153	.0196
11	Voyage from East to East	379	.1715	87	.5057	139	.1366	153	.0130
12	Voyage within the Adriatic Sea	379	.1134	87	.0229	139	.1510	153	.1307
13	Other itinerary ²	379	.0712	87	.1264	139	.0647	153	.0457
14	Flexibility ³	375	.5226	87	.1609	139	.4316	149	.8187
15	Flexible voyage	375	.1626	87	.1609	139	.2733	149	.0604
16	Contract is between Venetian citizens ⁴	386	.9663	90	.9777	141	.9645	155	.9612
17	Investor resides in the Rialto ⁵	386	.9041	90	.7666	141	.9148	155	.9741
18	Investor resides in the Dogeship ⁵	386	.0569	90	.1666	141	.0425	155	.0064
19	Investor resides in Romania, Istria, or Dalmatia ⁵	386	.0259	90	.0555	141	.0212	155	.0129
20	Investor resides in other places ⁵	386	.0129	90	.0111	141	.0212	155	.0064
21	Merchant resides in the Rialto ⁵	386	.9663	90	.9333	141	.9574	155	.9935
22	Merchant resides in the Dogeship ⁵	386	.0259	90	.0555	141	.0354	155	.0000
23	Merchant resides in Romania, Istria, or Dalmatia ⁵	386	.0051	90	.0111	141	.0000	155	.0064
24	Merchant resides in other places ⁵	386	.0025	90	.0000	141	.0070	155	.0000
25	Investor is noble, ruling aristocracy ⁶	386	.3937	90	.3777	141	.3971	155	.4000
26	Investor is noble, lower nobility ⁶	386	.2538	90	.1555	141	.3191	155	.2516
27	Investor is non-noble ⁶	386	.3341	90	.4555	141	.2624	155	.3290
28	Investor is non-Venetian ^{4,6}	386	.0181	90	.0111	141	.0212	155	.0193
29	Merchant is noble, ruling aristocracy ⁶	386	.3626	90	.2444	141	.4255	155	.3741
30	Merchant is noble, lower nobility ⁶	386	.1476	90	.1111	141	.1063	155	.2064
31	Merchant is non-noble ⁶	386	.4740	90	.6333	141	.4539	155	.4000
32	Merchant is non-Venetian ^{4,6}	386	.0155	90	.0111	141	.0141	155	.0193

33	Contract between nobles, ruling aristocracy	386	.1891	90	.1555	141	.1985	155	.2000
34	Contract between nobles, lower nobility	386	.0362	90	.0111	141	.0283	155	.0580
35	Contract between nobles, of different rank	386	.1476	90	.0888	141	.2056	155	.1290
36	Contract between nobles	386	.3730	90	.2555	141	.4326	155	.3870
37	Contract between non-nobles	386	.1994	90	.3444	141	.1631	155	.1483
38	Contract is between nobles and non-nobles	386	.3937	90	.3777	141	.3687	155	.4258
39	Contract is between Venetians and non-Venetians ⁴	386	.0336	90	.0222	141	.0354	155	.0387
40	Family ties ⁷	386	.1139	90	.0888	141	.1276	155	.1161
41	Investor functions as merchant ⁸	386	.0544	90	.0333	141	.0709	155	.0516
42	Investor's family functions as merchant ⁸	386	.3704	90	.3222	141	.3758	155	.3935
43	Investor is a merchant ⁸	383	.3890	90	.8222	140	.4142	153	.1111
44	Investor belongs to a merchants' coalition ⁸	385	.6441	90	.8888	140	.6785	155	.4709
45	Investor is big (25 OR 26 OR 49)	386	.7694	90	.7000	141	.8297	155	.7548
46	Investor is Big (25 OR 26, AND 49)	386	.2668	90	.1444	141	.3404	155	.2709
47	Investor's family is big (25 OR 26 OR 50)	386	.8134	90	.7666	141	.8723	155	.7870
48	Investor's family is Big (25 OR 26, AND 50)	386	.5310	90	.3777	141	.6028	155	.5548
49	Investor invested twice or more	386	.3886	90	.3111	141	.4539	155	.3741
50	Investor's family invested twice or more	386	.6968	90	.6111	141	.7588	155	.6903
51	Merchant appears twice or more as such	386	.6347	90	.6222	141	.7021	155	.5806
52	Merchant's family appears twice or more as such	386	.7953	90	.7666	141	.8368	155	.7741
53	Long-term relation	386	.1709	90	.1000	141	.2198	155	.1677
54	Long-term relation – families	386	.3212	90	.2111	141	.3829	155	.3290
55	Long-term relation, I. > once	150	.4400	28	.3214	64	.4843	58	.4482
56	Long-term relation – families, I.'s family > once	269	.4572	55	.3454	107	.5046	107	.4672
56	Long-term relation, M. > once	244	.2704	56	.1607	98	.3163	90	.2888
57	Long-term relation – families, M.'s family > once	307	.4006	69	.2753	118	.4576	120	.4166

Source: The author, based on Morozzo della Rocca and Lombardo [1940; 1953].

Note 1: Out of the 388 observations, 375 include both port of departure, destination, and routes' flexibility (rows 14-15), 4 are completed only for the two first categories (leading to $379 = 375 + 4$ observations in rows 9-13), and 4 refer to round-trip voyages from Venice (enabling therefore to classify $383 = 379 + 4$ observations in row 8). The variable *Round-trip voyage from Venice* is defined on $381 = \min\{381, 387, 383\}$ observations, namely on those specifying both whether the voyage was round trip or not (row 6), whether it departed from Venice or not (row 7), and whether its final destination was Venice or not (row 8).

Note 2: Out of the 27 observations with other itinerary, 14 refer to round-trip ventures from Venice to Sicily (5), Hungary (1), Lombardy (1), or wherever it seemed best to the merchant (7); 4 refer to one-way ventures from Venice to the Maghreb; 6 refer to ventures from Constantinople to Puglia (1) or to wherever it seemed good to the merchant (5); and 3 refer to one-way trips from Acre to Sicily (1), from Puglia to Crete (1), and from Tunisi to Venice (1).

Note 3: Out of the 196 observations with a flexible route, 135 refer to convoy voyages organized by the state from Venice to its Eastern colonies and, hence, are included in row 9; 49 specify either an intermediate or a final port of call, which determines their classification in rows 9-12; and 12 are quit claims in which the merchant is simply said to have been allowed to trade *wherever it seemed good to him* and so are grouped in row 13.

Note 4: A contract is considered to be between Venetians if any of the investors and any of the merchants are identified as Venetian citizens. Generally contracts were underwritten by only one investor and one merchant. There are two contracts in which one Venetian merchant and one non-Venetian merchant raised capital jointly. Out of the 13 observations with a non-Venetian trader, seven were between non-Venetian investors and Venetian merchants and six were between Venetian investors and non-Venetian merchants. Non-Venetian investors came from Verona, Bologna, Florence, Lucca and Puglia; two of them resided in the Rialto. The non-Venetian merchants came from Dalmatia, the Crusader States, Bologna and Burges; four of them resided in the Rialto.

Note 5: I. (M.) holds for investor (merchant). DEFINE RIALTO, DOGESHIP, dalmatia, ETC... OTHER PALCES

Note 6: Nobility was not legally defined in Venice until 1297. An investor (merchant) is classified as noble if he/she belonged to the ruling aristocracy or to the lower nobility. He/she belonged to the ruling aristocracy if anyone with his/her family name held high public office during the period in which the contract was signed. He/she belonged to the lower nobility if, non belonging to the ruling aristocracy, anyone with his/her family name underwrote a ducal charter or sat in the Great Council during the period in which the contract was signed. The following periods are considered: 960-1140, 1140-1204, and 1205-1297. The classification is based on Castagnetti [1992; 1995], Luzzatto [1929, pp. 25-29], Rösch [1989, pp. 59-60, 65-69, 91-104, 127-133, 209-228], and Sanudo [1900, pp. 238-257, 277-281]. Non-Venetian investors (merchants) cannot be classified as nobles or non nobles.

Note 7: Two individuals are considered to belong to the same family if they had the same surname or the contract mentions that they were relatives. Surnames, though, might have been homonymous. Contracts acknowledge family ties between a merchant and his brother [MRL 1940, # 587, 622, 633, 642, 785], sister [ibid., # 704; 1953, # 62], mother [ibid. 1940, # 588, 808], grandfather [ibid., # 469, 600, 647], relatives by blood [ibid., # 234] and in-laws [ibid., # 61, 71, 75, 104, 337, 353, 391, 569, 575, 602, 603] but do not specify all ties within the extended family. In the case of the three better documented merchants, five such relations can be identified. Tommaso Viadro raised capital from his maternal uncle, the doge-to-be Pietro Ziani, and his wife Maria [MRL 1953, # 53, 54, 73; Takada 1995, p. 7]. The Ziani also financed Domenico Gradenigo, with whom they were related in fourth degree through Domenico's mother [MRL 1940, # 511-12, 605; Robbert 1990, p. 31]. On the basis of the 98 contracts in which Romano Mairano, Domenico Gradenigo and Tomasso Viadro functioned as merchant and taking into account all known family ties, 20.40 percent of the financial relations were established between members of the same *extended* family.

Note 8: An *investor* is classified as a *merchant* if she is known to have functioned as a merchant, raising trading capital from other investors; resided in Romania, Istria or Dalmatia while functioning as investor; supplied funds to a merchant abroad; or received payment from a one-way-trip voyage at a different location from where she supplied the funds. She is regarded as belonging to a *merchants' coalition* if she was a merchant herself, as defined above, or any member of her family functioned as a merchant. Women were not allowed to carry merchandise abroad and hence do not appear as traveling merchants but they sometimes undertook the sale of the goods sent back by their husbands and settled commercial accounts. In this broader sense, they could belong themselves, and not only through their families, to a merchants' coalition. Very few women, though, appear in the sample. Only **x.xx** percent of the investments were undertaken by women, of whom **xx** (out of **xx**) belonged to a merchant's coalition

TABLE 2. COMPLETE FORMAL MONITORING HAS A PERFECT FIT
SUMMARY OF CONTRACT CHOICE

<i>Licensed convoy</i>	Mean	Frequency	<i>Round-trip voyage from Venice * T3</i>	Mean	Frequency
0	.5210	261	0	.4829	234
1	1	127	1	1	147
Total	.6778	388	Total	.6824	381

Notes: Contract equals 1 if equity-like commenda contract; 0 if debt-like sea loan. In total there are 163 (out of 388) observations with either *Licensed convoy* = 1 or *Round-trip voyage from Venice * T3* = 1. These proxies for formal monitoring predict success with a perfect fit and hence cannot be used in probit regressions. Since 125 out of the remaining 225 observations (with *Licensed convoy* \neq 1 and *Round-trip voyage from Venice * T3* \neq 1) are sea loans, these two measures of complete formal monitoring predict 74.22 percent of the (388) observations correctly.

TABLE 3. PROXIES FOR FORMAL MONITORING

Formal Monitoring	=	Imperfect Formal Monitoring	+	Perfect Formal Monitoring
<i>State convoy</i>		<i>Regulated convoy</i>		<i>Licensed convoy</i>
<i>Round-trip voyage from Venice * T2-T3</i>		<i>Round-trip voyage from Venice * T2</i>		<i>Round-trip voyage from Venice * T3</i>

Notes: All variables are binary. *State convoy* takes value 1 if the merchant voyaged on a *Regulated convoy* or a *Licensed convoy*; 0 otherwise. *Round-trip voyage from Venice * T2-T3* captures the regulated trade between Venice and its colonies. It takes value 1 if the merchant joined a *Round-trip voyage from Venice* to its colonies once they were established during the transitional period *T2* or after they were consolidated during the final period *T3*; 0 otherwise.

TABLE 4.
DETERMINANTS OF CONTRACT CHOICE: FORMAL MONITORING

	(1)	(2)	(3)	(4)	(5)	(6)
State convoy	.3211*** (0.000)	.3211*** (0.000)				
Regulated convoy			.2345** (0.033)	.2417** (0.029)	.2800** (0.022)	.2083* (0.082)
Round-trip voyage from Venice * T2-T3	.2916** (0.035)	.4354*** (0.000)				
Round-trip voyage from Venice * T2			.4194*** (0.000)	.4128*** (0.000)	.3350* (0.073)	.3452*** (0.002)
Round-trip voyage from Venice * T1		.1091 (0.213)	.1752 (0.213)	.2501 (0.137)	.1542 (0.471)	.0065 (0.966)
Round-trip voyage from Venice	.1379 (0.213)					
T2-T3 = 1179-1261	.0547 (0.492)	.0547 (0.492)				
T2 = 1179-1219			.0713 (0.499)	.1476 (0.297)	.0905 (0.432)	.0899 (0.415)
T3 = 1220-1261			.1544 (0.612)	.2295 (0.465)	.1545 (0.645)	.2175 (0.466)
Voyage from East to East * T1				.1220 (0.401)		
Round-trip voyage					.1354 (0.6039)	
Voyage from Venice to East					-.0569 (0.764)	
Voyage from East to Venice					-.0325 (0.870)	
Voyage from East to East					.0763 (0.701)	
Voyage within the Adriatic Sea					.1142 (0.623)	
Flexible voyage						.4723*** (0.000)
Observations	374	374	212	211	202	211
Pseudo R-squared	.4420	.4420	.2136	.2145	.2386	.2978
Log Likelihood	-129.679	-129.679	-114.653	-113.901	-105.519	-101.813
Observation Predicted	.6871	.6871	.4481	.4454	.4405	.4454
Predicted Probability (at x-bar)	.7826	.7826	.4462	.4421	.4332	.4632

Notes: The dependent variable equals 1 if the contract is an equity-like commenda and 0 if it is a debt-like sea loan. The coefficients reported are marginal probabilities. P-values are given in parenthesis. *Licensed convoy* and *Round-trip voyage from Venice* * T3 have a perfect fit and hence cannot be used as proxies for (perfect) formal monitoring in probit regression. The omitted variables are T1 = 1122-1178 for time periods and *Other itinerary* for voyage's type. Since probit models are non-linear, the marginal effect of changing just the interaction term *Round-trip voyage from Venice* * T2-T3 in (1) is not equal to the marginal effect of a change in both interacted variables. After running the *inteff* command, the mean interaction effect is positive for all values of the independent variables and statistically significant at 5 percent for most of them. For consistency, column (1) reports the interaction term after running the *dprobit* command. Probit marginal effects in (3)-(6) are estimated without using the 163 (out of 388) observations with *Licensed convoy* ≠ 0 or *Round-trip voyage from Venice* * T3 ≠ 0, which predict success perfectly. To compare the observations predicted under different specifications, one must add 41.75% (i.e. 163/388) to the corresponding percentage in columns (3)-(6). T-test significant at *** 1%; ** 5%; * 10%.

TABLE 5. DETERMINANTS OF CONTRACT CHOICE:
INSTITUTIONS FOR CONTRACT ENFORCEMENT

	(1)	(2)	(3)	(4)	(5)	(6)
T2 = 1179-1219	.0555 (0.642)	.0535 (0.642)	.0484 (0.661)	.0485 (0.662)	.0554 (0.609)	.0366 (0.740)
T3 = 1220-1261	.1941 (0.566)	.1844 (0.590)	.0650 (0.880)	.0385 (0.927)	.2060 (0.530)	.0505 (0.906)
Regulated convoy	.2104* (0.070)	.2126* (0.067)	.2280** (0.046)	.2222* (0.056)	.2129* (0.062)	.2204* (0.057)
Round-trip voyage from Venice * T1	.1134 (0.454)	.1158 (0.444)	.1155 (0.454)	.1016 (0.509)	.1216 (0.416)	.1075 (0.481)
Round-trip voyage from Venice * T2	.4171*** (0.000)	.4161*** (0.000)	.4260*** (0.000)	.4241*** (0.000)	.4165*** (0.000)	.4306*** (0.000)
Flexible voyage						
Contract is between Venetians	.3520*** (0.009)	.3587*** (0.006)	.3698*** (0.003)	.3518*** (0.012)	.3945*** (0.000)	.3912*** (0.000)
Investor (I.) is noble, ruling aristocracy	.0519 (0.577)	.0611 (0.523)		-.0191 (0.860)		
Investor (I.) is noble, lower nobility	.0731 (0.492)	.0822 (0.450)		.0395 (0.730)		-.0404 (0.704)
Investor (I.) is non-noble					-.1161 (0.373)	-.0788 (0.578)
Merchant (M.) is noble, ruling aristocracy	.2031** (0.022)	.1877* (0.054)		.1132 (0.354)		
Merchant (M.) is noble, lower nobility	.2092* (0.093)	.2037 (0.105)		.1176 (0.427)		-.0824 (0.589)
Merchant (M.) is non-noble					-.2099** (0.028)	-.1917* (0.056)
Contract is between nobles, ruling aristocracy ≡ I. is noble, ruling * M. is noble, ruling			.2516** (0.023)	.2105 (0.222)		
Contract is between nobles, lower nobility ≡ I. is noble, lower * M. is noble, lower			.4666*** (0.001)	.4098** (0.046)		.4359** (0.020)
Contract is between nobles, of different rank			.0657 (0.590)			
Contract is between non-nobles ≡ I. is non-noble * M. is non-noble			-.0643 (0.516)		.0691 (0.690)	.0182 (0.919)
Contract is between nobles and non-nobles		-.0355 (0.684)				
Family ties						.2070 (0.158)
Investor's family functioned as merchant						.0720 (0.426)
Investor's family is Big						.1046 (0.230)
Observations	211	211	211	211	211	211
Log Likelihood	-107.727	-107.644	-106.054	-105.578	-107.907	-106.569
Observation Predicted	.4454	.4454	.4454	.4454	.4454	.4454
Predicted Probability (at x-bar)	.4384	.4389	.4405	.4403	.4391	.4398

Notes: The dependent variable equals 1 if the contract is an equity-like commenda and 0 if it is a debt-like sea loan. The coefficients reported are marginal probabilities. P-values are given in parenthesis. All regressions are estimated excluding the 163 observations with *License convoy* = 1 or *Round-trip voyage from Venice in T3* = 1, which predict success perfectly. These proxies for formal monitoring accounts for 41.75 percent of the contract variation in the whole sample. The omitted variable for time periods is *T1* = 1122-1178. T-test significant at *** 1%; ** 5%; * 10%.

TABLE 6
DETERMINANTS OF CONTRACT CHOICE: CITIZENSHIP, RESIDENCE, SOCIAL CLASS, AND FAMILY

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Contract is between Venetians	.3096* (0.078)	.4076*** (0.000)	.4499*** (0.003)	.4037*** (0.000)	.3369** (0.044)	.3698*** (0.003)	.3768*** (0.001)	.3696** (0.022)	.3911*** (0.000)
Investor resides in the <i>Rialto</i>	.1823* (0.062)	-.0120 (0.916)							
Merchant resides in the <i>Rialto</i>	.0609 (0.668)	-.1311 (0.469)							
Investor is non-noble			-.0664 (0.251)	-.0845 (0.314)					
Merchant is non-noble.			- .1490*** (0.007)	-.1739** (0.042)			-.1060 (0.262)		
Contract is between nobles, ruling aristocracy					.1705*** (0.001)	.2516** (0.023)	.1902 (0.125)		
Contract is between nobles, lower nobility					.1909** (0.015)	.4666*** (0.001)	.4357*** (0.008)		
Contract is between nobles, of different rank					.0829 (0.186)	.0657 (0.590)			
Contract is between non-nobles					-.0694 (0.331)	-.0643 (0.516)			
Contract is between nobles and non-nobles			-.0264 (0.639)	-.0420 (0.625)					
Family ties								.1890 (0.000)	.2344* (0.084)
Controls for time trends	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls for formal monitoring	NO	YES	NO	YES	NO	YES	YES	NO	YES
Observations	386	211	386	211	386	211	211	386	211
Pseudo R-squared	0.3144	0.2320	0.3153	0.2561	0.3351	0.2686	0.2695	.3198	0.2399
Log Likelihood	-166.654	-111.360	-166.426	-107.868	-161.626	-106.054	-105.919	-	-110.213
								165.345	
Predicted Probability	.7488	.4383	.7471	.4391	.7570	.4405	.4405	.7549	.4403

Notes: The dependent variable equals 1 if the contract is an equity-like commenda and 0 if it is a debt-like sea loan. The coefficients reported are marginal probabilities. P-values are given in parenthesis. Controls for time trends are $T2 = 1179-1219$ and $T3 = 1220-1261$. The omitted variable is $T3 = 1122-1178$. Controls for formal monitoring are *Licensed convoy*, *Regulated convoy*, *Round-trip voyage from Venice in T1*, *Round-trip voyage from Venice in T2*, and *Round-trip voyage from Venice in T3*. *License convoy* $\neq 0$ and *Round-trip voyage from Venice in T3* $\neq 0$ predicts success perfectly. *Licensed convoy* and *Round-trip voyage from Venice in T3* dropped and 163 observations not used. The results are qualitatively robust to alternative controls for formal monitoring, including *State convoys*, *Round-trip voyage from Venice in T1*, and *Round-trip voyage from Venice in T2-T3*. T-test significant at *** 1%; ** 5%; * 10%.

TABLE . CITIZENSHIP AND FORMAL MONITORING.
MEANS AND FREQUENCIES (IN PARENTHEIS) OF CONTRACT CHOICE.

	Contract is between Venetian citizens		Total
Perfect Formal Monitoring	0	1	
0	.125 (8)	.4545 (209)	.4423 (217)
1	1 (5)	1 (157)	1 (162)
Total	.4615 (13)	.6885 (366)	.6807 (379)

Notes: Contract equals 1 if equity-like commenda contract; 0 if debt-like sea loan *Perfect Formal Monitoring* =1 if *Licensed convoy* = 1 OR *Round-trip voyage from Venice in T3* = 1; 0 otherwise. Out of the thirteen observations with a non-Venetian trader, seven refer to contracts with a non-Venetian investor and six to contracts with a non-Venetian merchant, of whom two investors and three merchants operated a venture under perfect formal monitoring. Non-Venetian merchants were all funded by big Venetian investors; non-Venetian investors cannot be classified as nobles/non-nobles but two of them appear twice or more and hence are classified as big investors.

TABLE 6.
DETERMINANTS OF CONTRACT CHOICE: MERCHANTS' COALITION

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Investor functions as merchant	-.1014 (0.401)	-.0222 (0.882)						
Investor's family functions as merchant			.0467 (0.356)	.1377* (0.081)				
Investor is merchant					-.3575*** (0.000)	-.2994* (0.050)		
Investor belongs to a merchants' coalition							-.1612*** (0.001)	.0457 (0.681)
Controls for time trends	YES	YES	YES	YES	YES	YES	YES	YES
Controls for formal monitoring	NO	YES	NO	YES	NO	YES	NO	YES
Observations	386	211	386	211	383	211	385	211
Pseudo R-squared	0.2943	0.2121	0.2943	0.2224	0.4073	0.2241	0.3121	0.2553
Log Likelihood	-	-	-	-	-142.042	-	-166.426	-
	171.549	114.250	171.526	112.751		112.505		107.984
Predicted Probability	.7443	.4435	.7443	.4407	.7968	.4462	.7560	.4389

Notes: The dependent variable equals 1 if the contract is an equity-like commenda and 0 if it is a debt-like sea loan. The coefficients reported are marginal probabilities. P-values are given in parenthesis. Controls for time trends are $T2 = 1179-1219$ and $T3 = 1220-1261$. The omitted variable is $T3 = 1122-1178$. Controls for formal monitoring are *Licensed convoy*, *Regulated convoy*, *Round-trip voyage from Venice in T1*, *Round-trip voyage from Venice in T2*, and *Round-trip voyage from Venice in T3*. *License convoy* $\neq 0$ and *Round-trip voyage from Venice in T3* $\neq 0$ predicts success perfectly. *Licensed convoy* and *Round-trip voyage from Venice in T3* dropped and 163 observations not used. The results are qualitatively robust to alternative controls for formal monitoring, including *State convoys*, *Round-trip voyage from Venice in T1*, and *Round-trip voyage from Venice in T2-T3*. T-test significant at *** 1%; ** 5%; * 10%.