Economic and Social Exchange in Renaissance Florence

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Economic and Social Exchange in Renaissance Florence[1]

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Abstract

The commercial credit system, through which the Renaissance Florentines dominated European international finance, emerged out of their particular social-network structures of family, neighborhood, and social class, with double-entry accounting providing the technical tool to increase the volume of "friends" with whom Florentines could reciprocate. Blending historically inherited logics of economic and social exchange was central to the Florentines' generative capacity to make credit and liquidity, which in turn helped Europe to expand through trade. Judging from data from the 1427 *catasto*, the particular network innovation achieved in Florence was this: economic partnership modeled on elite marriage (hence across neighborhood, within social class) was cross-cut with commercial credit modeled on clientage (hence within neighborhood, across social class). This social framework for economic markets emerged as an unintended byproduct of the political process of repressing the Ciompi rebellion of wool workers in 1378, which transformed the guild system. Through multiple-network rewiring, new cross-industry organizational forms were created. These concentrated economic wealth into the hands of a new style of generalist or "Renaissance man" elite, but they also actively sponsored new industries and new citizens. In Renaissance Florence, constructing political elites and constructing financial markets were two sides of the same co-evolutionary process of making new organizations, new markets, and new people.

Introduction

On October 29, 1501, an independent Florentine sales agent residing in Constantinople named Giovanni Maringhi wrote to ser Niccolo Michelozzi, owner of one of the three wool-cloth-production firms back in Florence with whom he traded regularly, as follows:

> "You have me in your hands, as transparent as a mirror and as unclouded as a pearl; may it all be for the best; what you like will be convenient for me to like, and I am perfectly satisfied." (Richards 1932, p. 137)

The dream agent, from any principal's perspective. Hyperbole such as this is easy enough to dismiss, knowing the rhetorical excess to which Florentine clientage letters sometimes were prone (McLean 1996). On March 29, 1502, however, Giovanni followed up his earlier statement with something rather more convincing:

> "I therefore assure you that all which I have or may ever have in this world will be theirs [that is, your childrens']. After my departure from this world, everything I have will go to them and such is my desire and my will, because all that I have has come from you and all is due you. I recognize that I have everything from you, so everything is to be left both to you and to yours. I need only my expenses because I do not in any way desire a wife, ever. And I wish to live and die in your house,[2] and this is said, once for all." (ibid., p.170)

This sentiment, and the years of loyal behavior backing it up, were rewarded in 1506 by ser Niccolo elevating Giovanni into formal partnership status with himself and with Francesco di Giuliano Medici. Before this date, no formal contract is known to have linked Maringhi and Michelozzi, nor is one ever alluded to in the voluminous business correspondence between them (ibid., p. 54). Sadly, Giovanni Maringhi died one year later, bankrupt. Instead of Giovanni leaving his estate to ser Niccolo's children, as planned, ser Niccolo was recognized in Florentine courts as liable for all of Giovanni's debts – very much the legal relationship of a father to his son.

Such deeply personal feelings were hardly inevitable in every principal-agent business relationship in Renaissance Florence.[3] But it may fairly be taken as representative of the fictive-kinship ideal to which many patrons and clients in Renaissance Florence aspired, even when that ideal was most painfully not attained (Trexler 1980, pp. 131-58; Alberti 1971).

For example, while not as deeply personal as his relationship with Michelozzi, Maringhi also interpreted the business he conducted with his other two principals, namely, the other two Florentine firms with whom he did high-volume trading, in personal cum moral terms. As Giovanni reports in his letter to ser Niccolo of May 4, 1501:

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[2] The Italian word *casa* refers to patrilineage, as well as to physical domicile. As this letter illustrates, the distinction between client and extended family was fluid in Renaissance Florence.

[3] Indeed Weissman (1982, p. 40) rightly cautions: "It is useful to remember that although personal relations in the Renaissance were often accompanied by demonstrations of strong affection, it was the perception of moral obligation, not the modern criterion of psychological intimacy, that distinguished relations between friends from relations between strangers."

> "We have received the aforesaid Lionardo Venturi [Neri's son] as we would a brother and have treated him in every way as we should desire for ourselves; in the future we shall proceed according to his merit. The favors rendered us by *maggiore* Neri Venturi are of a character such as to deserve that consideration for the both of them; for as you say, I owe more to Neri in every way than to anyone else. Be assured that I have no less concern for Lionardo's interests than I have for my own; and that daily we shall be showing him the customs of the country so that in due time I think he will be able to undertake anything." (ibid., p. 84)

> "With regard to Galilei and company, I see that there is no more need of blandishments for in truth they do things like gentlemen. The letter which I have from them now is so full, so much to the point, and so agreeable that I feel under a permanent bond of obligation to them… Maintain close relationships with them and we over here will always perform our part duly as we do every day; of this you and they will be the judge." (ibid., p. 85)

Debt, obligation – these words are pervasive in Maringhi's correspondence. But these words do not have only an economic meaning. Actually, "all that I have has come from you and all is due you" does have a narrow economic meaning: ser Niccolo had invested in Giovanni and supported his business through continual trading. But it also had a deeper social meaning: ser Niccolo had "made" Giovanni, in the sense of his place in the world, just as fathers do sons, and in less extreme form, as friends do friends. There certainly was an economic principal-agent relationship between ser Niccolo Michelozzi and Giovanni Maringhi. Yet often Florentines interpreted and evaluated such relationships in the social terms of family and friendship. Interestingly enough, these interpretations were applied even if they were not literally true.[4]

This article will explore the consequences of this dual meaning of debt -- one economic, one social -- for the economic market structure of Renaissance Florence. American social scientists who study markets, both economists and economic sociologists, usually think that the ultimate goal of economic exchange is to maximize profits.[5] While not exactly false, even for the Florentines, such an interpretation presupposes the simple decomposition of "exchange" into a series of discrete monetary transactions. But market participants "make" each other in more ways than just their economic profits. Viewed relationally and over time, market exchanges make not only money, they also help to make careers, organizations, biographies, communities, social classes, and cities. Whether participants are aware of it or not, the social reproduction of all of these systems operates through their market actions.

Credit is one mechanism, especially salient in Florence, in which these multiple productions come together. Credit breaks down the boundaries of discrete transactions by

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[4] To take an extreme case, the concept of "friends making friends" was applied even when personal feelings between the exchange parties were hostile. Maringhi, for example, wrote the following to another agent whose brother Maringhi was trying to get fired: "Do this as a friend and then let me know… Do as much as you can for the rest of my things with haste, since if you will assist me according to my wishes, you will see what I can do for you." (Richards 1932, p. 66). This is straightforward tit-for-tat behavior, for purpose of mutual advantage. Yet it is discussed in friendship terms. Given the very directness of this "friendship" discourse framing, reciprocity in this letter has vaguely threatening and coercive overtones: are you really my friend or aren't you? Likewise the concept of "father making son" through exchange works better with love behind it, but does not necessarily require personal affection.

[5] Powell (1990), Davis and Greve (1997), and Podolny (2001) are some exceptions to this generalization.

spreading them across time and into the future. Multiple transactions become arrayed not as a series, but as blended overlays of strands, like a rope.[6] When economic exchange is conceptualized as family, or as anything else, a variety of considerations enter into the construction of economic relationships over time. Viewed from the perspective of relational "ropes," conceptualizations like these, the content of which may differ from historical setting to setting, regulate the variety of transactions that are combined into relations. Viewed from the perspective of transactional "strands," market exchange supports multiple relations, not just economic ones. The "social embedding of markets," so rightly celebrated in economic sociology (Granovetter 1985), is really just a cross-sectional description of the regulated reproduction of multiple networks.

The thesis of this article is not that social exchange "causes" economic exchange or that economic exchange "causes" social exchange, as the polarized assumptions of some anthropologists and economists might have it. Rather it is that merchants in Renaissance Florence did not see the clear distinction between these two exchange logics that most of our theories presume.[7] Renaissance markets had overtones of family, friendship and neighborhood, which shaped the operation and regulation of these markets. And family, friendship and neighborhood had overtones of economic exchange, especially in the commercialized Italian city-states, which shaped the operation and regulation of these social institutions. We hypothesize that this blending of exchange logics had measurable consequences both for the network structure of Florentine economic markets, which we will study here, and for the network structure of Florentine personal friendships, which we will not.[8]

In particular, in his masterful synthetic 1987 article, Richard Goldthwaite has well posed the specific market-structure historical puzzle that we seek to explain:

> "It has rarely been remarked how seldom a competitive spirit comes into play in the relations among these [Florentine] merchants. The vast correspondence of Datini and of the Medici themselves (the largest collections of business letters to survive before the sixteenth century) yields hardly a hint of competition; and the subject does not come up for discussion in the exhaustive studies of business historians… However individualistic the Florentine business world appears in contrast with the tight corporate structures elsewhere – the Venetian senate, the Hanseatic League, the south-German cartels, the London regulated companies – it was still permeated with something of the spirit of medieval corporatism. This is what the *fiducia* Florentine business historians make so much of really comes down to – that sense of trust in one another that in a way also kept everyone in line." (1987, pp. 23-24)

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[6] Anthropologists who study social exchange are aware of this rope metaphor (Strathern 1971).

[7] Like us, Macaulay (1963), Granovetter (1985), Powell (1990), and Uzzi (1996, 1997) argue that American merchants today do not see the same sharp distinction between economic and social exchange that most American academics see. Among early-modern historians, the recent work of Curto and Molho (forthcoming) also tries to blend economic and social exchange.

[8] Just like Florentine merchants could be warm and affectionate in their economic relations, "Florentines could be cold and calculating in their acquisition and cultivation of personal relations." (Weissman 1982, p. 40) According to Allan Silver (1990), the non-utilitarian conception of friendship did not become disentangled from instrumental concerns until the rise of the so-called 'commercial society' celebrated by the writers of the Scottish Enlightenment in the eighteenth century.

Goldthwaite points to, but does not explain, "the far-flung web of relations they all depended upon." But if not formal institutional arrangements, upon what was this Florentine mercantile trust, so celebrated in the economic historiography, based?

Maringhi's descriptions of his own trading relations provide a starting point for answering this question. He had profit-sharing agreements of unknown content with all three of his regular trading partners. But in none of these cases is there evidence of any legal contract, despite extensive business correspondence which would have been expected eventually to have referred to it.[9] Oral, probably customary, agreements were enough for most Renaissance Florentine traders. This is so even though contracts had been known for centuries.[10] At the level of manifest economic behavior, profit-sharing percentages were agreed upon orally; accounting and letter-writing procedures were set up carefully to record actions taken; and after that, trading was largely a matter of reciprocal gift-giving, with each side constantly urging the other on, and with account balances frequently not settled. Both explicit calculation of projected profits and overt price competition[11] simply were nonexistent. Rather, in all of Maringhi's correspondence, the emphasis is on simple volume of flow: the greater the two-way flow of products -- sometimes of a few specialized products, sometimes of many diverse products -- the greater the mutual profits. Reciprocal trading in Florence had overtones, in business correspondence, of competitive gift-giving.[12] Unlike the potlatch, this economic-cum-social exchange behavior did not lead to ruin; quite the opposite, under normal conditions, it led to riches. Hence usually there was no

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[9] Unfortunately, very little business correspondence has survived from this period. Two known archival exceptions are Francesco Datini, the "merchant of Prato" (studied by Melis 1962 and by Origo 1957) and the Medici bank (studied by de Roover 1966). But only the Maringhi letter collection (Richards 1932) and a volume of correspondence between branches of the Medici bank in the 1460s (Grunzweig 1931) has been published. As a result of this paucity of surviving (and published) business correspondence, economic history of the period has relied per force primarily on account books and contracts. Both of these sources systematically overemphasize the formalistic sides of Renaissance business.

[10] We do not deny that institutional safeguards did exist to resolve outstanding credits. The Mercanzia commercial court heard scores of cases of commercial disputes each week, and notarized documentation of certain kinds of transactions or obligations to pay – one form of which was known as the *promessa* – were far from unknown. In our interpretation, however, these court cases represent not the norm, but breakdowns in the usually binding social obligations of relational exchange. Goro Dati, a silk manufacturer in our own data set, provides one poignant example of the predominance of social over legal considerations, even in court disputes: "Although my partner was in favor of going bankrupt [in our court case with Giovanni Serristori] so as to avoid losses and expenditures, I was resolved to face ruin rather than loss of honor." (Brucker 1967, p. 130) We believe that North (1990) overstates the importance of courts in the development of early-modern markets. Informal social networks, we argue, were more powerful enforcement mechanisms than most transaction-cost economists fully appreciate.

[11] This does not mean that laws of supply and demand were not in effect. It just means that price movements impersonally affected all actors homogeneously: no trader was trying to undercut another's prices. Competition focused instead on detailed and fast news about current market conditions. This gave businessmen who could obtain it more timely knowledge of distant events, allowing them to manage production and inventories more profitably and with less risk. Just one Maringhi example of such fine-grained information transfer is the following: "The last *panni* you sent of your manufacture were of superlative quality, especially the blue ones. I never saw any better; keep to that kind… Also do not fail to put an extra two or three ponds of wool into each *panno*. If they are of the quality indicated, you will marvel at the results, and then you will see you have made no mistake… for it will be an advantage in more ways than price." (May 4, 1501 letter of Maringhi to Francesco Galilei, in Richards 1962, pp. 76, 83) Such joint problem-solving and information sharing is similar to the "socially embedded exchange" behavior that Uzzi (1996, 1997) has observed in the modern New York apparel industry.

[12] See Natalie Zemon Davis (2000) for a valuable discussion of gift-giving in sixteenth-century France. While her examples are not drawn from Renaissance Florence, they are not far removed in place or time.

contradiction between the pursuit of profit and the pursuit of friends;[13] each was an instrument in the pursuit of the other.[14] Of course circumstances were not always normal. In perilous times, bankruptcy loomed due to the overextension of credit generated almost automatically by staggered reciprocal gift-giving.

Behind the words "oral agreement" lay a vast social-network world of credit arrangements and understandings. "A French satirist, in the fifteenth century, marveled at the ability of the Italians to do business without money. In dealing with them, he said, one never sees or touches any money; all they need to do business is paper, pen, and ink." (de Roover 1944, p. 381) This innovation, of course, was central to the Italians' capacity virtually to monopolize international markets all over Europe in the thirteenth, fourteenth and fifteenth centuries. Goods (including bills of exchange) flowed freely among Florentine merchants, with cash settlement being delayed sometimes for short, sometimes for long periods. The standard Florentine procedure for cloth sale between cloth producer and merchant, for example, was the consignment system: cloth delivery, at market price, payable three months hence. Payment-delay schemes among merchants themselves were more variable and were potentially complex. Cash settlement eventually would occur between merchants, via bills of exchange (itself a credit system), but only of net balances, not of total volumes of flow. Cash settlement inhibited the ability of agents to generate even more product-flow "gifts"; as such, there were incentives to delay cash settlements even further. Full settlement, indeed, could indicate termination of the trading relationship, almost like a divorce.[15] The capacity of Florentine international markets to generate high-volume throughput was founded directly upon this informal "social exchange" system of credit among Florentine merchants.

These economic observations about their commercial credit system draw us squarely into the social world of the Florentine merchants. For as Weissman observes,

> "The form of economic exchange that most clearly demonstrates its dependence on the entire cluster of beliefs and practices embedded in the personal economy of the Renaissance is the exchange of credit. There is scant reason to expect Renaissance economic exchanges, occurring within dense and multitextured social networks, to lack the broader cultural meaning shared by other Renaissance exchange systems: gift giving, hospitality, the exchange of greetings, or the exchange of women." (1982, pp. 35-6)

Christiane Klapisch-Zuber (1985, pp. 68-93) agrees. In her careful study of the diaries of the Niccolini family, she argued that *parenti*, *amici* and *vicini* (family, friends and neighbors) were important in Renaissance Florence not only as tangible pools of network resources on which to draw, but also as moral models for constructing and evaluating exchange behavior in a wide

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[13] Indeed McLean (1998), in his MDS statistical analysis of the language contained in Florentine patronage letters, found that the Italian words *amicizia* (friendship) and *utile* (profit) clustered quite tightly in Renaissance usage. Similarly but perhaps less impressively, Florentines routinely inscribed at the head of their account books "for God and profit," implying no contradiction.

[14] Alberti (1971, chapter 4) provides extensive exegesis on the social obligations of friendship, which were considerable, and of how to proceed when those norms were violated. Leon Battista Alberti, not himself a businessman, was more concerned with how profits begot friends than with how friends begot profits. We stress, in contrast, that causality ran both ways in Renaissance Florence. In that context, profits and friends were byproducts of each other.

[15] See Maringhi letter of May 4, 1502 (Richards 1932, p. 182) for an example.

variety of economic and political domains. In this article, we shall provide massive statistical evidence to prove the validity of this textually based claim by Klapisch-Zuber. Economic credit relationships among businesses in Renaissance Florence were deeply rooted in and shaped by the social logics of family, friendship and neighborhood – certainly when the businessmen were themselves family, friends or neighbors, and often when they were not but may have wanted to be. Florentine merchants being also Florentines, this could hardly have been otherwise.

In this article, we shall evaluate statistically this image of Florentine credit that emerges from the Maringhi letters. This statistical analysis will be based on a sample of 4,745 commercial credits among 406 Florentine firms, which we coded from the 1427 *catasto*. To describe the plan of this article: first, we will provide an overall industry-level description of our data, in order to establish historical context. Second, we will analyze the social-network embedding of economic partnerships (in other words, of the firms themselves), in order better to understand who these firms were, who were giving so much credit to each other. Third, we will analyze the social-network embedding of commercial credit in Renaissance Florence, assessing the degree to which family, neighborhood, social class, and political office underlay observed economic relations. We will find that the two economic networks of partnership and credit exhibited an intriguing cross-cut pattern, which helps to explain the "oligarchic" structure of Florentine elites at that time. Fourth, we will sketch, quite briefly, how this cross-cut network pattern, and the credit system which was founded upon it, emerged historically. And finally, we will draw out the economic consequences of this commercial credit system, for the adaptability of the Florentine economy as a whole and for the history of accounting.

To avoid potential confusion in the minds of readers, let us state at the outset how our social-network portrait of the Renaissance Florentine economy fits with the modernization narratives so often associated with that time and place. At the end of this article, we shall argue that modern methods of financial bookkeeping, in which the Florentine merchants pioneered, were not inconsistent (for them at least) with relational principles of social exchange. Indeed, formalized account books were used by them vastly to increase the volume of social relations they could manage. In social-exchange thinking, accounts are credit vesicles of one merchant in another, permitting each discretionarily to use the other to the benefit of both.[16] Financial accounts formalized the metaphor of merchants "making" each other, since the discretionary actions of party A through party B created both the profits and the exchange partners of party B (de Roover 1944).[17]

A search for economic efficiency did not produce the credit system we observe in Renaissance Florence. Rather, economic efficiency, or more precisely in our account economic

[16] Maringhi himself put it thus: "And if the occasion opens to draw me into expenditure of a hundred ducats or so where some good way opens, such [pledges] will always be honored; and you may always go ahead, as you know, without differentiating between my interests and yours." (Richards 1932, p. 85-6) And "ask as many favors as you wish, for I over here will always do my duty." (ibid., p. 78) Favors were fulfilled, but they were also recorded.

[17] Americans could be confused by this, since they think of "accounts" primarily asymmetrically, between persons and banks, rather than symmetrically between persons, as the Florentines did. Even today, however, in Italian Civil Law (Chapter 26, articles 1823-24) *il conto corrente* refers to a contract between two private parties in which no money is exchanged but rather in which reciprocal credits are recorded. We thank Alessandro Lomi for bringing this modern descendant to our attention.

adaptability, was the unintended product, or rather byproduct,[18] of this credit system. Social arrangements in our view are "caused," in the sense of generated by, the regulated transposition of production logics from one domain of application to another (Padgett 2001). Issues of genesis notwithstanding, however, the unintended effectiveness of these informal arrangements, in generating flow and thereby profit, provided a quasi-evolutionary feedback mechanism for these credit methods to survive and to diffuse, especially in volatile business environments.[19]

Modernist concepts of "profits" can also be understood in these historical byproduct terms. It would be anachronistic indeed to impute the modern motivation of "maximize expected profits" to the Renaissance Florentines. Their understanding of profit was not the same as our understanding of profit.[20] Judging from their business correspondence, Florentine merchants were more concerned with overall product flows and with the underlying social relations that sustained these flows, than they were with decomposing those flows into distinct "decisions" and "transactions," whose alternative futures they tried to anticipate.[21] According to Maringhi's letters, the Florentine method of calculating the transactional future was "may God give good," "may God give us good luck," "may God prosper the affair," and the like. Needless to say, such techniques lie at some distance from our own approach.[22]

Such discussion of *mentalite* notwithstanding, it remains the historical case that northern Italians, Florentines prominent among them, invented double-entry bookkeeping in the early Renaissance. This invention enabled the precise measurement of "profit" for the first time, in more-or-less real time, and thereby made the concept of "profit" into an organizing principle of business. It is true that, for the Renaissance Florentines, the concept of profit had deep historical roots and resonances that we today only dimly perceive. But these traditionalists invented something new, for quite old-fashioned reasons, which altered the trajectory of subsequent world economic history.[23]

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[18] For an exacting exploration of the byproduct mechanism, as a general model for causality, see Elster (1983), reviewed by Padgett (1986).

[19] We employ the neologism "quasi-evolutionary" to underscore the fact that neo-Darwinian accounts of evolution are contested even in biology (Kauffman 1993, Gould 2002).

[20] Weissman (1982, p. 35) put the point not exactly like we would have put it, but close enough: "The medieval merchant, like his modern cousin, was obsessed with the calculation of profit and loss. Unlike the modern capitalist, however, the calculation of profit and loss was accompanied by another obsession, not readily observed by those who tally account books: the calculation of honor and shame." Even today, the Italian word for profit, namely *utile*, also means "helpful." Similarly in the political domain, the Italian word for political office, namely *onore*, also means "honor." Such contemporary multivocality in language reflects historical patterns of multivocality in behavior.

[21] Again, this is not to say that account books did not decompose past actions into specific transactions. But balancing the formal reductionism of account books with the informal reciprocity of social relations was in many ways the brilliance of the Florentine merchant mind. Socially grounded "norms of reciprocity" (Gouldner 1960), to be sure, but very precisely measured ones.

[22] Cybernetic-feedback learning models might more faithfully represent Maringhi's apparent decision behavior than would Bayesian forecasting and updating.

[23] It goes without saying that the Renaissance Florentines also invented things that altered the trajectories of world artistic, scientific and political-theory histories as well, but these are not the topics of this article.

Data

With these textual foundations as background, the bulk of this article will be a statistical analysis of Florentine commercial debts in 1427. We shall see the extent to which the Maringhi correspondence paints a representative portrait of commercial credit relations in the Renaissance Florentine economy as a whole.

This statistical study is possible because of the 1427 *catasto* or tax census, described at length in the pioneering book of David Herlihy and Christiane Klapisch-Zuber (1985). Herlihy and Klapisch computerized large portions of this rich archival source[24] and analyzed their data primarily from a demographic and family history perspective. In addition to the segments of the *catasto* coded by these authors, the *catasto* also contains extensive lists of debtors and creditors, with amounts owed, for each household tax return. Business *debitori* and *creditori* were included as distinct accounts within the household tax return of the lead partner in the firm.[25] The reason for the existence of such lists of debts in the tax records was that this innovative *catasto* for the first time in history assessed taxes on the basis of net wealth – that is, assets minus liabilities. Debts, in other words, were tax deductible. Florentine law required the itemization of outstanding credits as well as debts in order to give tax officials the ability to disallow deductions, if one person's declared debit did not equal the other person's declared credit.

This remarkable breakthrough in public finance was possible only because of the highly commercialized character of Florence's underlying economy. The Florentine population as a whole was remarkably numerate during the Renaissance (Grendler 1989, Cohn 1999, p. 39). Basically, Florentine merchants filled out their 1427 tax returns by copying their account books into their tax declaration, as those account books existed as of the date of the tax submission.[26] Hence the 1427 *catasto* is basically a high-resolution snapshot of the credits and debits of the entire Florentine economy at one specific, fleeting moment in time. Needless to say, virtually all of the account books, out of which this information was originally drawn, subsequently have been lost. There exists no other economic data set comparable to this one in early modern history,[27] nor, given source constraints, is there ever likely to be one.

The details of our coding of these *creditori* lists are reported in McLean and Padgett (1997); hence these coding details will not be repeated here. Both personal and business debts were coded, even though only business debts will be analyzed in this article.[28] The main coding rules relevant to this article are (a) that only debts of value greater than 10 florins were coded, and (b) that only debts to other Florentines were coded. An effect of the first coding rule is that artisans

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[24] The Herlihy-Klapisch data set is publicly available on line at www.stg.brown.edu/projects/catasto.

[25] This is yet another indication of the incomplete separation of personal from business in the Florentine system.

[26] Much historical study has gone into the assessment of the accuracy of information in reported *catasti* tax returns. The consensus is that the 1427 *catasto* is basically accurate, while later *catasti* are not (for example, Emigh 1996). Apparently, while Florentines eventually learned how to cheat effectively, they did not do so immediately. In copying their account books into tax returns, however, Florentine merchants abbreviated: while they listed amounts and persons/companies meticulously, they only infrequently listed purposes of debts, there being no tax reason to do so. Where such purposes were listed, however, we coded them.

[27] The only other study of pre-modern credits on this scale, of which we are aware, is Hoffman et al. (2000). That admirable study, however, covers a period over two centuries after ours.

[28] The full data set contains 15,317 debts; 4,735 of these debts, the subset analyzed here, were among businesses.

mostly are excluded from our data set. An effect of the second coding rule is that trading among Florentines (wherever they were resident) is the focus of the data set, rather than trading between Florence and other countries. The joint effect of both constraints is that the data describe, with great richness, the structure of the export-oriented sector[29] of the Florentine economy, at least as of 1427. Since this was indeed the core of the Florentine economy, including as it does both merchant-bankers and cloth manufacturers, we are not disturbed by these coding restrictions.

Within these constraints, coverage is thorough. Numerous passes through the *catasto* were performed, essentially on the logic of snowball sampling, in order to code a high percentage of firms' accounts or *bilanci*. Ultimately, McLean succeeded in coding 65.4% of the *bilanci* of active firms in our core industries. Comprehensive coding was least successful for international merchant firms located abroad,[30] for small low-quality wool firms whose accounts were hardest to distinguish from the credits and debits of the household, and for a number of firms who were connected to the export-oriented sector but not formally located within any of the key industries we targeted. For Florence-based and Pisa-based merchant-banks and banks, silk manufacturing, high-quality wool manufacturing, and cloth-retail firms, the *bilanci* coding rate approached 80%. Debts were coded not among a predefined list of all firms (which list, of course, did not exist), but rather among all firms and people meeting the above standards. As a result of this open-ended coding procedure, even the debts of firms whose accounts were not coded directly often could be found indirectly in the credit accounts of coded firms. Because of this cross-ruffing, we were able to compile, for the first time, a complete census of firms active in the year 1427. A tabulation of this census, industry by industry, is presented in table 1. The detailed list of firms underlying table 1 is publicly available on Padgett's web page: http://home.uchicago.edu/~jpadgett.

[table 1 about here]

Table 2 presents information on the estimated percentage of Florentine commercial credits that were finally included in our data set. We estimate, through procedures explained in the endnotes of table 2, that 33.4 % of the total number of all debits and credits of companies participating in the export-oriented industries of the Florentine economy were finally included in our commercial-debt data set. And we estimate that 62.3% of the total monetary value of all debts and credits are included in our commercial-debt data set.[31]

[table 2 about here]

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[29] As we shall see shortly, the export sector was the following industries: Merchant-banks, International; Merchant-banks, Florence/Pisa; Domestic Florentine banks; Silk manufacturers; Wool manufacturers, San Martino district (high quality); Wool manufactures, other districts (lower quality); and Cloth retailers.

[30] The compliance of these firms with *catasto* requirements evidently was handled with some flexibility, perhaps due to the special difficulties they faced in preparing and submitting their books for examination in Florence.

[31] These numbers may appear low to some for what purports to be a comprehensive picture of the Florentine economy, but these reported percentages are somewhat deceptive. Two types of transactions, present in our complete data set, are systematically excluded from analysis in this article: credits and debts with most firms and artisans working outside the export-oriented economy, and credits and debts with individuals rather than with companies. Had it been possible to calculate the more correct denominator of "all debts and credits among companies in export-oriented industries," percent coverage would have been very much higher than the conservative figures reported here.

In the statistical analyses to follow, these commercial debts-credits, coded by McLean, will become the dependent variable. For the social-context independent variables, Padgett has coded a wide variety of other information about the non-economic attributes and social networks of these businessmen and others:[32] namely, kinship (patrilineage[33] and marriage[34]), neighborhood (*gonfalone* and quarter), personal wealth,[35] social-class background, political office-holding,[36] and factional affiliation.[37] These variables will be used to reconstruct the "dense and multitextured social network" context in which Florentine commercial credit operated. The data base as a whole, which spans two hundred years of economic, political and social networks, is part of a long-term effort to enable the development of a relational approach to history.

Florentine Commercial Credit: a statistical overview

Before we explore the social embedding of credit among firms, let us first contextualize our data through an overview of the global structure of commercial credit and exchange in Renaissance Florence. This aggregate portrait will place our cross-sectional data in the macroeconomic and in the macrosocial contexts of the trajectory of the Florentine economy in 1427. To do this, first we will measure, by industry, the overall magnitude of reliance on credit by our firms; then we will parse these overall credit volumes into Leontief-input-output market flows among industries; then we will measure the social-class backgrounds of our businessmen, by industry; finally in this section we will subset credit flows into relational and transactional streams, in order to estimate, as best as we are able with our data, the quantitative importance of "social exchange" in these commercial credit flows.

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[32] These data, collected over 15 years, were coded for purposes of Padgett's larger project, which is documenting and studying the co-evolution of political, economic, and kinship networks in Florence over two hundred years, from 1300 to 1500. Currently there are 45,996 Florentine individuals in Padgett's ACCESS relational data base: 33,230 males and 12,766 females.

[33] Parent-child relations were inferred (a) from last and middle names, since Florentine males took the name of their father as their own middle name: as in Giovanni di Francesco [in English, John (son) of Francis], and (b) from various types of dating information. Douglas White kindly wrote a computer search program that greatly assisted in this linkage task, during our collaboration at the Santa Fe Institute.

[34] Dated marriages were coded from numerous sources, the most important by far being the *Carta dell'Ancisa,* located in the Archivio di Stato in Florence. Pierantonio dell'Ancisa was a seventeenth century antiquarian who devoted his life to extracting and recording Florentine marriages out of extant dowry contracts. His purpose was to document the past glory of Florentine families. The bulk of the original dowry contracts, from which dell'Ancisa worked, have now been lost. There are 11,039 marriages in the current Padgett data set, estimated to comprise about 40-50% of all marriages between 1350 and 1500 of Florentines with last names.

[35] Information on neighborhood and taxable personal wealth, as of 1427, is contained in the *catasto* itself, and is available publicly at the Herlihy-Klapisch website, mentioned above.

[36] All 11,312 members of the *Signoria* or city council, from 1282 to 1500, were coded by Padgett from the early eighteenth-century copies of the *Priorista* volumes located at the Newberry Library in Chicago. All 3,316 members of the *Mercanzia* or commercial court from 1310 to 1500 were coded by both Padgett and McLean from the *Fondo della Mercanzia* located in the Archivio di Stato in Florence. Social class background, in the Florentine context, refers to the date of first entry of a patrilineal ancestor to the *Signoria*, and hence can be reconstructed from office-holding data. Subsequent to Padgett's independent coding effort, the more extensive *Tratte* office-holding data coded by David Herlihy before he died, have been put on the web, thanks to the hard work of R. Burr Litchfield and others: www.stg.brown.edu/projects/tratte.

[37] Factional memberships of the 1433-4 Medici and Albizzi "political parties" were reconstructed and reported in Kent (1978). These memberships have been previously analyzed, from a social network perspective, in Padgett and Ansell (1993).

Firstly, how important was commercial credit in the economic functioning of various types of Florentine firms? One common way of operationalizing this question in finance is in terms of leverage: the ratio of outstanding debt to assets. The higher the ratio, the more important is credit in the operation of the firm. Higher leverage can generate higher profits, but at greater economic risk. "Assets" in the Florentine context means the startup capital specified in the partnership contract, called *corpo*, there being no production facilities or other fixed-cost investments to count as assets.[38] Table 3 reports leverage so defined, but it also provides two more liberal definitions of "assets", which progressively add to *corpo* the partners' reinvestments of past profit and company inventory.

[table 3 about here]

Using the strict definition of leverage, our findings are that Florentine merchant-banks were leveraged at about 5:1 of their *corpo*; that Florentine cloth retail and dyeing firms were leveraged at a little over 2:1 of their *corpo*; and that Florentine cloth production firms, wool and silk, were leveraged at about 1:1 of their *corpo*. These leverage ratios are not really comparable to modern figures, because modern firms borrow for the most part from banks, whereas these firms 'borrowed' for the most part from their exchange partners. Nonetheless, the ordering of these ratios is consistent with the known facts that merchant-banks were more profitable, but also more risky, as personal investments than were wool and silk production firms (Goldthwaite 1968). In general, it is fair to say that almost all Florentine firms were highly leveraged; a very high percentage of their business was conducted on credit.

On average, furthermore, we can say that larger and wealthier firms operated on higher leverage than did smaller firms.[39] The most extreme example in our data set was Cosimo de' Medici's bank branch in Rome, which had the highest outstanding debt of any firm, on the basis of absolutely no startup capital whatsoever![40] Such an extreme case makes it clear that name, reputation, and connections were more central in the generation of commercial credit in fifteenth-century Florence than were economic assets, narrowly defined. Given the pervasiveness of doing business on credit, moreover, without other firms being willing to extend credit to a given firm, that firm really could not be in business at all.[41] Overall, there can be little doubt that credit was central to the operation of the Florentine economy.

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[38] Cloth manufacturing occurred through the decentralized putting-out system, which had essentially no fixed costs.

[39] Of course they could be larger and wealthier in the first place in part because of their reliance on credit.

[40] The rather astonishing total debt figure for this one branch was 158,238 florins. This does not mean that Cosimo de' Medici was fiscally irresponsible, because the corresponding total credit figure was 147,987 florins. Cosimo's firm relied on massive volumes of two-way turnover and flow, grounded in no direct economic capital investment whatsoever. This was <u>all</u> social capital, bolstered economically more by an organizational system of inter-branch cross-holdings than by direct investment (DeRoover 1966).

[41] An example of this connection is provided in the diary of Gregorio Dati, one of the successful silk manufacturers in our data set: "As a result of the adversity which overtook us in Barcelona, and of the suspicions concerning Simone's ventures and the calumnies that were spread about, we were very short of credit. So we were forced to withdraw from business and collect whatever we could pay our creditors, borrowing from friends and using all our ingenuity, suffering losses, high interest and expense in order to avoid bankruptcy and shame. And although my partner was in favor of going bankrupt so as to avoid some losses and expenditure, I was resolved to face ruin rather than loss of honor." (Brucker 1967, p. 130) Judging from the facts that Dati was elected for the first time to political office (*onore*) in 1412 ["This was the beginning of my recovery" (ibid., p.124)] and that Dati was a moderately wealthy silk

Figure 1 describes more specifically the input-output pattern of how these volumes of commercial credit flowed within and among industries. In particular, figure 1 presents a graphical version of a Leontief input-output table, which shows observed credit flows relative to expected credit flows, the latter based on raw volumes of industry-level credit alone. Four trading patterns are worth highlighting in this global picture of inter-industry flow:

(a) Credit flow among merchant-banks of all three sorts (Merchant-banks located in foreign countries, Merchant-banks located in Florence/Pisa, and Domestic banks) was massive. Speaking metaphorically, the merchant-banking sector was a whirlwind of products, bills of exchange, and credits cycling around.
(b) Woolen cloth, from woolen-cloth manufacturers (*lanaiuoli*), flowed more to local cloth merchants (*ritagliatori*) in 1427 than to merchant-bankers.[42]
(c) Silk cloth, from silk-cloth manufacturers (*setaiuoli*), in contrast, flowed more to merchant-bankers in 1427 than to *ritagliatori*.[43] In reverse direction, *setaiuoli* received a higher flow of credits from domestic banks, relative to statistical expectation, than did *lanaiuoli*.[44]
(d) Silk firms in 1427 exchanged heavily with each other, whereas wool firms definitely did not.

[figure 1 about here]

Credit/trade pattern (a) documents the fact that Florentine merchant-banks were not an industry of parallel and autonomous competing firms. They were a banking system, with merchant-bankers providing much liquidity and business to each other.[45] This fact is one of the

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manufacturer in our 1427 data set, with a taxable wealth of 3368 florins, Goro Dati's principled stand in 1408 did indeed reestablish him and his firm's credit in his fellow merchants' eyes.

[42] Since figure 1 is based on number of debts, rather than value of debts, one might challenge this statement, on the ground that value of average woolen-cloth sales to merchant-bankers was much greater than value of such sales to *ritagliatori* (Goldthwaite, personal communication). Statement (b), however, remains true even when re-calculated on basis of total florin value. Namely, the total monetary value of Wool, San Martino credits to all merchant-banks combined (that is, Merchant-Bank international, plus Merchant-Bank Pisa, plus Domestic Bank) was 40,592 florins, compared to credits of 58,392 florins to *ritagliatori*. And the total value of Wool, Other credits to all merchant-banks combined was 18,247 florins, compared to credits of 32,260 florins to *ritagliatori*. In fact, within our coding constraint of greater-than-or-equal-to 10 florins, there was not much difference in average value of woolen-cloth sales to *ritagliatori*, as compared to Merchant-Bank, Pisa and to Domestic Banks. There was a substantial difference in average value of wool credits to *ritagliatori*, compared to Merchant-Bank international, however.

[43] Merchant-bankers still received roughly twice as much in volume of their cloth input from wool manufacturers as from silk manufacturers. Even though wool was on the decline, and silk on the rise, the older wool industry was still much larger in 1427 than the new silk industry.

[44] Again to measure this in terms of monetary value, rather than in terms of numbers of debts, Domestic Banks gave 33,662 florins of credits to *setaiuoli* in our data set; whereas they gave 27,080 florins to Wool, San Martino *lanaiuoli* and 15,682 florins to Wool, Other *lanaiuoli*. As baseline comparison, there were over two-and-a-half times more *lanaiuoli* firms than *setaiuoli* firms in 1427 (see table 1).

[45] While no comparable study of credits exists for the earlier period, all signs point to merchant-banks during the early fourteenth century being far less integrated among themselves. The earlier period was characterized by autonomous and "vertically integrated" family-based firms, like the famous Bardi and Peruzzi banks (Sapori 1926, Hunt 1994). These collapsed gradually over the period 1300 to 1342 (not just suddenly in 1342, as is usually claimed). Both Melis (1962) and de Roover (1966) describe the late fourteenth-century emergence of decentralized "organizational systems," to take the place of these large and centralized family firms. Datini and the Medici, while the most famous

central reasons for the dynamism and adaptability of the Florentine economy in the first place. The blending of economic and social exchange, this article argues, is what made this merchant-banking system of high intra-bank credit flows possible.

Credit/trade patterns (b), (c) and (d) reflect the macroeconomic reorientation of the Florentine economy that was occurring in the early fifteenth century. The core of the Florentine economy in the fourteenth century had been the finishing, the production, and the export of woolen cloth. The Florentine wool industry, however, suffered serious and protracted contraction between 1373 and 1437 (Hoshino 1980, p. 231; Franceschi 1993, p. 13), due primarily to aggressive expansion of woolen cloth production in England (Carus-Wilson and Coleman 1963, Carus-Wilson 1967). The raw-material flow of prized English wool, upon which the high-end *San Martino* segment of woolen cloth production in Florence had depended, dried up (Hoshino 1980, p. 233), forcing a higher percentage of production of lower-quality woolen cloth, called *garbo*. The *San Martino* woolen cloth still left was sold both to merchant-bankers[46] and to *ritagliatori*, whereas *garbo* woolen cloth in this period was sold overwhelmingly to local *ritagliatori*.[47]

The Florentine merchant community and government, under the political control of the *popolani*-based Albizzi oligarchy at the time, responded to this economic crisis by trying aggressively to develop silk-cloth production (Dini 1993, Franceschi 1995, Mola 2000, Mola et al. 2000, Tognetti 2002), in order to substitute for declining woolen-cloth production. Woolen-cloth production still exceeded the newer silk-cloth production in total volume, and also in total employment, but our data show that this centrally directed industrial transformation from wool to silk was well underway in 1427. Explaining how the Florentine economy so successfully adapted to its challenging international situation is a puzzle in the existing economic history of the period.[48]

Since Florentine silk production did not really exist in the fourteenth century, this new industrial development involved the social recruitment and financial sponsorship of "new men," like Andrea Banchi (Edler de Roover 1966) and Gregorio Dati (Brucker 1967), by more socially and economically established merchant-bankers.[49] Table 4 documents the social side of this

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exemplars of this trend, were by no means the only practitioners of this innovative technique of interlocking firms. This organizational transformation is often described as sequential, indeed inevitable, but there was about a forty-year gap between the fall of one system and the rise of the other. For simplicity, Padgett (2001) labels the intervening period "the Guild period" of banking, which separated "the Family period" from "the Popolani period" of Florentine banking.

[46] Especially to merchant-bankers with warehouses (*fondachi*) in Pisa.

[47] Hoshino (1980) shows that eventually, in the last half of the century, due to the Ottoman conquest of Byzantium, *garbo* woolen cloth found favor in international trade with the Levant. This is exactly the trade described in the Maringhi correspondence: shipping raw silk to Florence from the east, and selling finished woolen cloth to the Turks. However, these events occurred well after 1427.

[48] There is a long and contentious literature, ably surveyed in Brown (1989), about whether or not there was a "depression in the Renaissance." Lopez and Miskimin (1962) anchor one end of the debate; they point to the decline of the wool industry, among other things. Goldthwaite (1993) anchors the other; he points to the rise of the silk industry, among other things. No study based on a one-year cross-section, no matter how thorough, can resolve a debate about economic trends. We do regard the fifteenth-century adaptation of the Florentine economy as a success story, however, in the specific sense that the silk industry was developed to offset decline in the wool industry. Whether this successful development of silk was quantitatively enough to offset the sharp contraction of wool is a topic we must leave to others to decide.

[49] Tognetti (2002) provides a recent and original analysis of this sponsorship, using the fascinating case of the new-man Serristori family as his primary documentation.

economic transformation. In 1427, 66% of merchant-bankers were from *popolani* or magnate families, the two upper social classes of the time; 49% of the older wool *lanaiuoli* were of these social class backgrounds; whereas only 35% of the newer silk *setaiuoli* were from the upper classes. In general, 51% of all the partners in the export-oriented industries of the Florentine economy came from *popolani* or magnate families. There was an overall correlation in this period, in other words, between economic and social (and political) elites. Whatever would happen in the Medici future, high-status *popolani* families certainly had not withdrawn from business by 1427.

[table 4 about here]

Social elitism in the upper reaches of the Florentine economy notwithstanding, the cutting edge of the new Florentine economy – namely, the economic credit alliance between the *setaiuoli* and the merchant-bankers – was socially a cross-class affair. Arguably "clientage," of this particular sort at least, emerged in the early *Quattrocento* economy, in parallel with its known emergence (or at least intensification) in politics in this same Albizzi period (Brucker 1969, Najemy 1982). The apparent ease of forming such cross-class economic credit relations, in a social and political context of strong social-class stratification, is striking.

Pattern (d), the observed credit relations among silk manufacturers themselves, reveals that cross-class sponsorship of *setaiuoli* was not inconsistent, at least in 1427, with economic solidarity among rising new men. While the guild solidarity of the *lanaiuoli* had been shattered by the 1378 Ciompi revolt (Najemy 1981), as well as by political repression and control thereafter (Franceschi 1993b), corporate spirit among newer *setaiuoli* seems evident not just in these credit data but also in their ambitious fifteenth-century sponsorship of the famous Florentine foundling hospital, the *Ospedale degli Innocenti* (Gavitt 1990). Rather than this corporate spirit becoming the social foundation to political challenge, as it did in the fourteenth century (Najemy 1982), *setaiuoli* were actively absorbed politically into the Medici regime, soon to come in 1434.

Finally in this overview we ask: How were these overall flows of commercial credits subdivided into relational and transactional streams? And what was the substantive content of these credits?

Table 5 takes overall credit flows of figure 1 and subdivides them into "relational credit" and "transactional credit" components, for sectors rather than for industries.[50] Relational credits we define to mean credits between trading companies who had more than one observed credit between them. Transactional credits, in complement, are those credits between companies who had only one observed credit between them.[51] Relational credits can be of two types: (a) reciprocal credits,

[50] In table 5, we aggregated from industries to "sectors", as defined in tables 5 and 6, primarily in order to set up the comparison of table 5 with table 6. By inspection, industries were fairly homogeneous within sectors in table 5, so the loss of detail seemed minimal.

[51] Having only one outstanding debt at a time, of course, does not preclude that debt being part of an iterated sequence of debts, which we cannot measure with cross-sectional data. We can offer one piece of anecdotal evidence from the *catasto* records to support our strong sense that even so-called "transactional" credit was iterated. Parigi di Tommaso Corbinelli's *bilanci* stand out for reporting the dates on which credits were initiated. One entry, a credit he had with the firm of Zanobi di Gherardo Corigiani & Co. for fifty-three florins, is crossed out and marked "pagato," on May 20. Subsequently, he records a credit with the same firm dated November 14. It is certain, therefore, that these reported

where credits flowed in both directions, and (b) multiple credits, where more than one outstanding credit existed in a single direction. Relational credits can be both reciprocal and multiple, like in the Maringhi example.

[table 5 about here]

The sheer existence of multiple and reciprocal credits in our data set is worthy of comment. "Relational" is a fair label for multiple credits, because multiple credits means extending to someone a second (or more) credit even before they have paid off their first debt. Some underlying character assessment or trust by the creditor of the debtor is virtually a prerequisite for such behavior. "Relational" is a fair label for reciprocal credits, because reciprocity epitomizes classic social exchange. It is notable in the Florentine case that credits flowed back and forth (for example, two credits one way and three credits the other way), without them being cancelled out into a net balance (for example, into one net credit owed). Each credit had to be cleared separately, even if not in cash. Sometimes reciprocal credits occurred through two-way transactions being itemized and recorded individually; sometimes they occurred through multiple accounts that each party held in the books of the other (de Roover 1944). In the case of multiple accounts, a reciprocity relationship could also be called a correspondent relationship, since letters went back and forth authorizing various actions. In either variant of reciprocity, what we have here is a highly formalized expression of anthropological exchange logic: instead of canceling offsetting debts, both parties remained mutually indebted to each other.

Within the high-volume merchant-banking sector, table 5 shows that 45% of the credits in our data were reciprocal credits; 50% of the credits were multiple credits; and 63% of the credits were relational credits, of one form or the other. Relational trading was fundamental in the operation of Florentine merchant-banks: the very high volume of credit flow observed within the banking sector was composed, for the most part, of relational exchange. In other words, the late fifteenth-century Maringhi correspondence cited above was hardly atypical, even for 1427.[52]

Between banks and other companies, and among other companies, relational trading was not as extreme in volume as it was among banks themselves, but it was still substantial. 33% of the credits in our data between banks and other companies were relational credits. And 29% of the credits among non-bank companies were relational credits. One-at-a-time transactional trading exceeded relational trading in aggregate importance in these other sectors. Even within these other sectors, however, relational trading often provided the core of a firm's business, with that firm transactionally seeking to expand around that core.

If we further ask what specific goods were funded by relational and transactional credits, table 6 provides the answer. Unfortunately, only 11% of our credits had their content or purpose listed in the *catasto*. No doubt all of these purposes were given in the original account books, but

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relational-credit figures underestimate the "true" rate, were it possible to include "repeat business" in our operational definition of relational exchange.

[52] It is curious that while all three of Maringhi's principals referred to themselves as *lanaiuoli*, because they owned woolen-cloth manufacturing firms, two of those three we could as easily have been classified by us as merchant-bankers, because they shipped and traded a far wider range of products than just woolen cloth. We shall return below to this interesting observation about the fluidity of trading behaviors, even within fixed self-classifications of industry.

there was no tax reason for businessmen or their scribes to copy this textual information into the tax returns. Nonetheless, even an 11% sample gives an adequate picture, as long as one is satisfied with coarse-grained resolution.

[table 6 about here]

The modal activities reported in table 6 are what any economic historian would expect. Namely, among merchant-banks, the modal type of credit was the account. Between merchant-banks and other firms, the modal credit activity was trading raw material for cloth. Among other mostly cloth-producing firms, the modal activity was buying and selling cloth. But the real message of table 6 is diversity. With the exception of trading among cloth producers and *ritagliatori*, which was fairly specialized in character, the goods and services exchanged among merchant-banks and between merchant-banks and other firms were remarkably wide ranging in content. Merchant trading activities, banking activities and account activities (which really could cover anything: merchandise, bills of exchange, even daughters' dowries) all were mixed up in exchange relationships, not just among merchant-banks but also between merchant-banks and others. While sharply distinct in terms of guild membership, Florentine industries were not sharply distinct in terms of actual exchange behavior. On the margins, Florentine industries blended into one another.[53]

On the right-hand side of table 6, we have tabulated the spread of multiple credits across content categories, among specific exchange partners, in those few cases where we were lucky enough to have more than one type of content reported. On average, exchange relations were more specialized between merchant-banks and others than they were among merchant-banks themselves. But still one should not imagine any iron-clad distinctions between industries; rather, there was a dyad-level continuum between specialism and generalism of goods and services traded, along which firms moved as their relations developed.[54] This built-in fluidity in content of exchange, not

[53] On the subject of domestic banks, Sergio Tognetti (1997) usefully has corrected one of Raymond de Roover's few mistakes. De Roover (1966, p. 14-15) had argued, very influentially, that Florentine banks were sharply divided into three distinct types: *banchi di pegno* (pawnshops), *banchi a minuto* (small domestic banks), and *banchi grossi* (large international banks). De Roover himself studied only the latter. [De Roover (1966, p. 225, 236), however, contradicted himself when discussing the case he knew best, the Medici bank.] Based on a careful study of the extensive account books of the Cambini bank, Tognetti instead argued that overlap of the latter two types was substantial: international banks frequently had domestic bank branches, and domestic banks frequently were involved in lucrative international business. The one case of the Cerchi domestic bank, studied by Goldthwaite (1985), seems to support de Roover. However, our *catasto* data, based on 100% of the banks extant in 1427, strongly supports the position of Tognetti, rather than that of de Roover. Judging from the broader perspective of looking at banking partnerships over two hundred years (Padgett 2001), it is plausible that this contradiction might ultimately be resolved in the following manner. During the public finance crises immediately before and during the Medici period (Molho 1971), the domestic banking industry internally became sharply stratified between a few large, internationally oriented domestic banks (like the Medici and Cambini banks) and a large volume of small, relatively impoverished domestic banks (like the Cerchi), which were heavily engaged in secondary-market public bond trading. In contrast, the period from 1350 to 1434 at least was characterized by more fluidity between domestic and international merchant-banking.

[54] The fifteenth-century business and career of Andrea Banchi, magnificently studied by Florence Edler de Roover, is a perfect illustration of this industrial fluidity of Florentine firms. Banchi without any doubt was a silk manufacturer (*setaiuolo*). Nonethless, as Banchi went around all over Europe searching for silk-cocoon raw materials to buy and silk cloth to sell, he sometimes was paid in wool or other commodities, which then he had to dispose of (1966, p. 271). Banchi also acted like a banker, giving loans at interest to other *setaiuoli* "competitors" and to merchant-bankers (1966, p. 227). The Maringhi correspondence (Richards 1932), with which we began this article, similarly has

infinite but substantial, created the micro-behavioral capacity for adaptation in the Florentine economy as a whole. What then generated this flexibility in the content of exchange in Renaissance Florence? Our answer will be the social framework of economic exchange. Adaptability in the Florentine economy and social embedding, even elitism, in merchant-banking were two sides of the same multiple-network coin.

The Social Framework of Economic Partnership: Family, Neighborhood, and Social Class

Who were the firms among whom such credit flows developed? Before we examine the social-network foundations of commercial credit in Renaissance Florence, it will be useful to examine the social-network foundations of economic partnerships, in order to get a better sense of the identities, and of the social production processes, of these firms. Commercial credit is trading between firms; economic partnerships are the firms themselves. Studying partnership ties is studying firm formation.

Table 7 presents logit regressions of binary economic partnerships on various social and political background variables: same kinship (nuclear family, in-law nuclear family, natal extended or patrilineage family, and in-law extended or *parentado* family), same neighborhood (*gonfalone* or ward, and quarter), same social class (*popolani* + magnates, new men + new-new men, and families never admitted to the Priorate), political office-holding (Priorate and Mercanzia), and same political factions (Medici party vs. Albizzi party). In the left-hand column of this table, we report the marginals – that is, the percentage of observed economic partnerships that fell into these various social categories. In this section, we shall discuss the partnership findings for social class, for kinship, and then for neighborhood. Political variables will be discussed in a subsequent section.

[table 7 about here]

Without simultaneously taking into account other social-context factors with which it is correlated, the structuring effect of social class on economic partnership is overwhelming. Economic partnerships were formed along social-class lines: zero-order, all industries exhibited social-class endogamy. Much of this observed class inbreeding, however, was the corollary of kinship. Controlling for this and other variables, social class endogamy still is observed sharply to be a feature of the three merchant-banking industries. Partnerships in these industries formed along social-class lines: *popolani* and magnates formed banks with other *popolani* and magnates; new men and new-new men formed banks with other new men and new-new men; and no admits formed banks with other no admits. Social-class background, apparently, was very salient in the minds of bankers looking to find partners with which to form firms, at least in 1427. Of course

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numerous examples of how the core woolen-cloth-for-raw-silk exchange was augmented with all sorts of other goods flowing between the parties: various types of cloth, ribbons, cotton, rugs, pepper, rhubarb, drugs, fox pelts, horses, cheese, sausage, even caviar (the latter four items seeming very close to personal gifts). Indeed in the Maringhi correspondence it seems clear that the stronger the personal relationship between the traders, the wider the range of commodities exchanged.

64% of these banking partnerships were among *popolani* and magnates, not among the lower social classes. Merchant-banking was overwhelming an upper social-class affair in 1427.[55]

Silk manufacturing was also class stratified, but interestingly it was the lower social classes, especially the new men and new-new men, who were class endogamous in the formation of *setaiuoli* firms, not the upper-class *popolani* and magnates. Class-conscious *popolani* and magnates in their banks, in other words, confronted class-conscious new men and new-new men in their silk firms.

It will surprise no Florentine economic historian that kinship at the level of nuclear family was a powerful force in firm formation in the *Quattrocento*. The centrality of father-son partnering had declined from its measured peak in the early fourteenth century (Padgett 2001, pp. 246-7), but partnerships among brothers remained very common. 20% of all partnerships in all firms in this 1427 data set were among members of the same nuclear family.

In contrast with universal acknowledgment among historians of the role of the nuclear family in firm formation, however, there is considerable controversy about the cognitive salience and the continued function of the extended family, or patrilineage, during the Renaissance. No one doubts the importance of patrilineage in the formation of firms during the time of Dante. But Richard Goldthwaite (1968) has argued for the diminished significance of patrilineage, especially in economics, in the later fourteenth and fifteenth centuries. Bill Kent (1977) has forcefully denied this. Since both arguments were carefully grounded in family archives, the debate remains unresolved.[56] On this contested matter, our own research finds cross-cutting patterns; this may itself account for the controversy. For economic partnerships, the *catasto* data support Kent: in 1427, patrilineage was a significant generator of firms in all industries. For commercial credit, however, we will see that the *catasto* data support Goldthwaite: in 1427, patrilineage underwrote credit only among banks. As often occurs in intense arguments between equally knowledgeable experts, both sides have legitimate points. Patrilineage remained an important social structure throughout the Renaissance, and perhaps even grew in importance in some social domains (Cohn 1988, 1992), but its role in economic markets was more variable: still powerful (if not overwhelming) in partnership, less so in commercial credit. Compared to the extreme reliance on patrilineage in Florence in the late medieval period, in economics as in other domains, its mixed economic role in the 1420s represents a diminution of significance.

Perhaps the biggest surprise (to us at least) in these partnership findings concerns neighborhood: *gonfalone* and quarter.[57] Same neighborhood, of both types, influenced the probability of partnering into firms in every economic sector <u>except</u> that of merchant-banks. Given the dense *piazza*-centered urban ecology of Florence, neighborhood heavily influenced the sheer

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[55] Future articles by Padgett will document temporal variation in *popolani* dominance of Florentine banking over two centuries. Within this 1300-1500 Renaissance era, the 1382-1433 Albizzi regime was the peak of *popolani* dominance.

[56] It is fair to say that majority sentiment among historians currently favors Kent's position over Goldthwaite's. The debate, however, vigorously continues (e.g., Jacks and Caferro 2001, pp. 7-8).

[57] The city was divided administratively into four quarters (Santo Sprito, Santa Croce, Santa Maria Novella, and San Giovanni). Each quarter, in turn, was subdivided into four *gonfaloni* or political wards, making 16 *gonfaloni* as a whole.

frequency of encounter, and thereby the generation of both friends and foes.[58] D. Kent and F.W. Kent (1980), F.W. Kent (1987), and Eckstein (1995) have emphasized the importance of *gonfalone* in shaping basic sociality patterns in Renaissance Florence.[59] And we have already cited Klapisch-Zuber (1985) on the Florentine fixation with *parenti*, *amici* and *vicini*. Given the dense social matrix that was Florentine neighborhood, finding economic partnerships to be shaped by neighborhood comes as hardly a surprise. Florentine merchants, after all, were also Florentines.

The surprise is that merchant-bank partnerships were not so influenced. At the pinnacle of the 1427 Florentine economy, social class was central in the process of bank formation, but neighborhood was not. This profile is very similar to what was going on in Florentine marriage at the time. Within the *popolani* and magnate social elites, neighborhood-based marriages were on the decline, and class-based marriages were on the rise (Cohn 1980, Padgett 1994). This coincidence in social profile was no accident: during the Albizzi political regime, Florentine banking partnerships came increasingly to be structured more along the social lines of marriage[60] and friendship than along the earlier models of patrilineage and guild (Padgett 2001, pp. 226-230). Neighborhood remained central in the social organization of most Florentines during the Renaissance, just as Kent (1987) asserts, but the *popolani* and magnate social elites increasing transcended neighborhood in their internal social organization,[61] with apparent direct consequences for the partnership structure of their banks.

The Social Framework of Commercial Credit: Family, Neighborhood, and Social Class

What are the analogous social-embedding results for commercial credit itself? For legibility, table 8 extracts significant kinship, neighborhood and social class coefficients from the full commercial-credit logit regressions reported in the appendix. The dependent variable in table 8 and in the appendix is presence or absence[62] of observed credit between firms, subdivided a

[58] Dale Kent (1978) paints an especially vivid portrait of the hothouse cross-currents of friends and enemies that were generated within neighborhood, in precisely this period.

[59] Sam Cohn (1980, pp.115ff.) has pointed to the even smaller unit of parish as the locus of daily sociality, especially for workers and artisans. *Gonfalone* is the smallest spatial unit consistently measured in Florentine records. We coded parish memberships for many 1427 Florentines, from non-standardized text in the *catasto*; unfortunately, coverage of parish in our data set was not consistent enough to include it in the regressions, in order statistically to distinguish the argument of Kent and Kent (1980) from that of Cohn (1980).

[60] Within Padgett's larger data set, 3.4% of domestic bank partners were intermarried, at the level of their nuclear families, in the 1350-1379 "guild period." In the 1380-1433 Albizzi or "*popolani* period," in contrast, 12.1% of domestic bank partners were intermarried, again at the level of their nuclear families. Since Padgett's data set includes about 40% of last-named marriages during these periods, actual intermarriage rates were undoubtedly substantially higher than can explicitly be documented.

[61] Cohn (1980, p. 37) reports that notaries in the fourteenth century routinely recorded all names with neighborhood appended, whereas elite names in the fifteenth century were recorded only as *cives Florentinis* or "citizen of Florence." Even more evidence supporting this observation comes from Eckstein (1995), who noted the withdrawal of social elites from *gonfaloni* councils during the early Medici period, without their losing political control from afar (as long as they were on the right side of the Medici, that is).

[62] Since our underlying dependent variable, "number of credits", is actually a count, not a binary, variable, originally we performed all these regressions within a zero-inflated negative-binomial statistical context, rather than in the simpler logit framework reported here. After a great deal of futzing around, we learned that, for us at least, there was no difference in substantive results between these two different statistical approaches. We decided that the fancier

number of different ways: all credits, relational credits, and transactional credits.[63] This subdivision allows us to uncover different types of social embedding for different types of exchange. The full model, reported in the appendix, includes numerous statistical controls: (a) expected number of credits, based on the two firms' total volumes of credits; (b) whether the observed credit came from *bilanci* directly coded from the *castasto* or was coded indirectly, from the other firm's accounts; (c) the total personal wealth of the firms' partners; (d) "organizational system," that is, whether the firms were linked via common partners into holding companies;[64] (e) "brokerage," that is, the number of "indirect ties" or credit third-parties that the two firms shared in common;[65] and (f) a full set of market-interface dummies, to deal with specific market idiosyncrasies, technologically based or otherwise.

[table 8 about here]

Net of all this, our social-context findings are as follows:

Once again, nuclear-family connections between the partners of two companies are important predictors of commercial credit relations between those companies. Natal nuclear family affected both relational and transactional credit-based exchange; in-law nuclear family affected relational exchange only. Today, we might be tempted to label such familial behavior "nepotism" or "cronyism," but Renaissance Florentines would have been perplexed by these modernist terms, since they believed gracious treatment of family and friends to be moral. To Florentines, lending and forming businesses with nuclear kin seemed a natural[66] option, whether chosen or not. More than that, normative expectations were strong that requests from close kin, both natal and affinal, should be satisfied, if at all possible.[67]

Unlike the case of economic partnerships, however, where 20% of partnerships were formed among nuclear family members, the sheer volume of nuclear-family credits was not high, in relative terms. Nuclear-family ties between firms, at the level of partners, affected lending, when those connections existed. But they were not so voluminous as to exert a shaping effect on the economy as a whole. For the most part, such commercial credits were simply the economic

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technology was not really worth the costs, both in terms of explication and in terms of fragility of convergence and in terms of flexibility in dependent-variable decomposition.

[63] Further logit-regression decompositions of relational credits into reciprocal and multiple, and of transactional credits into asymmetric and solo, are available upon request. Nothing inconsistent with table 8 appears there; in particular, reciprocal and multiple credits load on the same social-network variables, thereby justifying their union.

[64] This is the variable that Melis (1962) and de Roover (1966) make so much of.

[65] Brokerage is subdivided into the different types of indirect ties: transitive credit connections, cyclic credit connections, incoming credit connections, and outgoing credit connections. See Holland and Leinhart (1971) for a description of these triad types and a theoretical motivation in terms of classic balance theory. Gould and Fernandez (1989) reinterpreted these balance-theory triad types in terms of brokerage.

[66] We do not imply by this term that emotions or family dynamics were any more simple and uncomplicated then than they are today. See footnote 3. The treatise on the family by Leon Battista Alberti ([~1430] 1971), the famous humanist, written in about 1430 is the standard reference on ideal kinship norms in Renaissance Florence.

[67] Marco Parenti (Phillips 1987) is the most well-documented case, from the mid-fifteenth century, of very close nuclear in-law bonds.

expression of normal kinship obligations, although the economic consequences of nuclear-kin ties could become massive if ever a firm teetered on bankruptcy.[68]

Dramatically unlike what we found for economic partnerships, common social-class background of partners did not matter for the commercial credit behavior of their firms. Social-class background did not matter in any market, and it did not matter for any social class. However class-conscious Renaissance Florentines were in so many other domains, including that of economic partnership, they did not discriminate by social class in their business relations with other firms: a *popolani* businessman would just as likely do business with a new-man firm as with another *popolani* firm. This is a puzzle that needs explanation. In a social world of such intense particularism, how was social-class "impartiality" in the market produced?

There is one important exception to this statement about social-class impartiality in Florentine commercial credit. Social-class background in and of itself did not matter in any credit market, but patrilineage links[69] among merchant-bankers in different banking firms did. Patrilineage was primarily an upper-class phenomenon, among *popolani* and magnate families.[70] Hence, while social class did not matter directly even in banking, it did matter indirectly, through establishing the layers of soil through which mostly upper social-class patrilineage roots spread. Merchant-banking credits flowed through class-endogamous kinship, of both nuclear and patrilineal variants, and these flows induced a non-trivial degree of network cohesion among *popolani* merchant-bankers in different firms. 25% of observed credits among merchant-banks involved firms with at least one patrilineage or nuclear-family tie linking the two sets of partners.

The most dominant finding that comes through table 8, however, is neighborhood. In all sectors of the Florentine economy that involved merchant-banks – namely, among banks themselves, between banks and silk producers, and between banks and wool producers – the impact of partners' common neighborhood residence on commercial-credit relations between their firms was substantial. The details one can see in table 8: the impact of common neighborhood on commercial credit was usually more powerful for *gonfalone* than for quarter, and for relational credits than for transactional credits. But the main point is that, in all sectors of the economy in which merchant-banks were active, the structuring impact of neighborhood was pervasive, on all types of credits, and at all aggregation levels of "neighborhood."

Nor is this only a matter of statistical significance. Volume of banking credits flowing through neighborhood was also high: 42% of the credits among merchant-banks, 20% of the credits between banks and silk-cloth producers, and 23% of the credits between banks and woolen-cloth producers flowed between firms with at least one member of each partnership residing in the same *gonfalone*. [There were sixteen *gonfaloni* or wards.] With the exception of reciprocal credits

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[68] Gregorio Dati (Brucker 1967, p. 140) is only one of many cases that could be cited where large, crucial loans from brothers or other close kin saved a firm in tough times.

[69] Of course we excluded nuclear family ties from our operational definition of patrilineage ties; otherwise, statistics would have been confounded. Likewise we excluded "same partner" or self from our operational definition of intra-nuclear-family ties between companies.

[70] No doubt this was because such families, on average, had more inheritance to deal with. Cohn (1988, 1992), however, documents through wills the spread of this upper-class patrilineage ideal throughout lower segments of Florentine society, as the late fourteenth and fifteenth century advanced. Such diffusion was largely a parvenu status-mimicking affair. See also Klapisch-Zuber (2000) on genealogical representation.

among *ritagliatori*, moreover, neighborhood was irrelevant to economic exchange everywhere else in the export-oriented sectors[71] of the Florentine economy. The centrality of neighborhood to the business of merchant-banking in Florence can thus not be explained by sheer propinquity or interaction frequency alone. Indeed, the importance of Florentine neighborhood to merchant-banking, but only to merchant-banking, exchange becomes doubly remarkable when one appreciates that this statistical finding extends to international merchant-bankers. That is, even when Florentine merchant-bankers lived far away from home, for example in London or in Paris, their old Florentine tax addresses continued to influence their overseas business relations.

Without 1427 business correspondence to back up these 1427 statistical findings, we cannot be certain about the contemporary Florentine meaning of "neighbor" (*vicino*) to our merchant-bankers. Surely the term is related to currently fashionable social-science concepts like "trust" and "social capital," but these concepts are too vague to be useful in historical research. Instead of abstractions, we need to ask: What was the "neighbor" model of trust, upon which Florentine merchant-banking credit was based?

While *gonfalone* had a specifically administrative meaning as well, we will follow the leads of Klapisch-Zuber (1985) and of F.W. Kent (1987) and interpret *vicino* as rather close to family, friend and client. It helps interpretation to realize that upper-class Florentine patrilineages were very concentrated spatially, often packed into *palazzi* and urban compounds.[72] Neighboring families lived and worked around, or even in, these upper-class families' compounds, and often became clients of those families. As long as they were cooperative and politically supportive, neighbors blended in to the patrilines in quotidian ways, socially but of course not legally. This physical organization of residential space – multiple social classes packed into close contiguity with each other, around urban "castles" and *piazze* – had roots in the medieval-era immigration patterns that had created Florence in the first place. To oversimplify the old migration patterns: one village in the Tuscan *contado*, one *palazzo* cum *piazza* in Florence.[73]

With this lived experience in their backgrounds, "neighbor" to a first-order approximation meant "friend" or "client" – notwithstanding the fact that, in any spatial hothouse, neighbors can also turn out to be traitorous enemies. Cognizant of the Maringhi correspondence, we therefore interpret "same *gonfalone*" not as a social-network tie in and of itself. Rather *vicino* and *amico* (and for that matter *padre*) were powerful discourses or moral frameworks within which Florentine constructed social relations with one another, through the medium of social and economic exchange. As such, these terms were not neat and tidy boxes into which people categorized their alters. Rather, they were claims and counter-claims of obligation and of pleading, through which they tried to move each other, both emotionally and instrumentally (McLean 1996).

Overheated epistemological polemics notwithstanding, cultural gestalt and quantitative correlations need not be in contradiction: the moral appeal of *vicino* no doubt carried more weight

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[71] We remind the reader that we have no substantial data on Florentine artisans, among whom we expect neighborhood to be important, for sheer propinquity reasons. For discussion of that sector of the economy, see Goldthwaite (1980).

[72] Indeed in today's Italian the word *palazzo* means "apartment building." Similarly, the dual meaning of *casa* simultaneously as physical residence and as family is no linguistic accident. Recall the second quote of Giovanni Maringhi that we gave at the outset of this article.

[73] "Thirteenth-century immigrants tended to reside in the urban district closest to their ancestral residence in the countryside." (Weissman 1982, p. 7, cites Greppi and Massa 1971 as authority for this claim.)

and credibility when the person addressed actually lived near by. For this reason, statistical correlations between trade and spatial residence were strong, though not perfect. However, the moral language of neighbor, friend, and family could blend into each other as social-cum-economic exchange relations developed. Instead of creating categorical boundaries between traders, these terms laid down the understood channels through which social and economic mobility could occur.[74]

More specifically, neighborhood shaped commercial credit only when merchant-bankers were involved, we argue, because in the particular Florentine historical context only merchant-banks and merchant-bankers, in the economic domain, were plausible analogues to *palazzi* and *popolani*, in the social domain. This analogy worked, as most powerful analogies do, on at least two levels at once. At the level of cross-class social relations, cloth producers were to merchant-bankers as new-men neighbors were to *popolani* lineages. Cloth producers received access to international markets, through neighborhood, just as lower-class new men received access to elitist Florentine politics, through neighborhood. This analogy was credible cognitively because merchant-bankers really were in demographic reality *popolani*, on average. And production-oriented businessmen really were in demographic fact lower in social prestige, on average. Cognitive analogies that too greatly diverge from the facts are not likely to grip the mind.

The analogy worked among *popolani* merchant-bankers themselves, on the other hand, we believe because of a cognitive resonance between commercial credit and political alliance. This is not an article about political factions, but it is well known that Florentine neighborhood was a breeding ground both for strong dyadic political alliances and for intense dyadic political hatreds (D. Kent 1978). If our hypothesis of a Florentine cognitive analogy between political alliance and commercial credit, among *popolani* themselves only, were true, then both of these social networks should be rooted in *gonfaloni*.

Table 8 reveals crucial economic-network interactions between neighborhood, social class, and industry. Namely, *popolani* bankers had intense relational credits among themselves, within *gonfaloni*, whereas (as we showed last section) they had intense partnership relations among themselves, but only across *gonfaloni*. Among the *popolani* merchant-bankers, commercial-credit and partnership networks cross-cut each other, by means of neighborhood. While this is only indirect evidence of a cognitive analogy in the minds of *popolani* between banking credit and political alliance, which had the same cross-cutting structure, the correspondence between such a *mentalite* hypothesis and observable network data is quite fine-grained.[75]

Such analogies, moreover, had directly measurable economic consequences in trading: the high volumes of credits among *popolani* banking neighbors were relational in character; whereas

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[74] As we pointed out above, this same topology also held, at a more macro level of discussion, for Florentine industry structure: industrial categories, reified in the guilds, simply guided the more flexible mobility of generalist firms through heterogeneous exchange behaviors.

[75] As we shall show in the next section, this statistical correspondence does not extend to any correlation between commercial credit and the Medici or Albizzi parties of 1433. Maybe this is only because of the short gap in time between 1427 and 1433. But we believe the deeper reason for this lack of statistical correspondence is that, as was shown in Padgett and Ansell (1993), the Medici party actually represented a new organizational form of politics in Florence. The cognitive models of political alliance we are discussing here, by contrast, are the old-fashioned way of doing Florentine politics.

the high volumes of credits between *popolani* bankers and their non-*popolani* business neighbors (mostly lower-class cloth producers) were transactional in character. Either way, however, *gonfaloni* anchored a high volume of merchant-banker commercial credits.

Other than those relating to kinship, all of the social-embeddedness findings of the last two sections can summarized crisply in figure 2. Neighborhood was the social foundation for both commercial credit relations among merchant-bankers and for commercial-credit relations between merchant-bankers and their cloth-production customers. It was also the social foundation for partnership ties among cloth producers, new men or otherwise. This social anchoring of economics in neighborhood was rooted in Florence's deep late-medieval past. More recently, however, as will be shown below, there had been an explosion of banking partnerships, or firms, within the elite *popolani* social class, but only when those elites resided in <u>different</u> neighborhoods. This emergence of cross-neighborhood exogamy in firm formation paralleled contemporaneous trends in elite marriage. The multiple-network conjunction of these two trends in credit and in partnership was a cross-cut: *popolani* bankers reached to their neighbors through credit; but they reached to each other, across neighborhood, through firms. City-wide elite formation and neighborhood-based clientage were two facets of the same transformation. Or to be somewhat more precise, they were two facets of the same sedimentary process of layering Florentine history into its social networks. The economic-cum-social-cum-political elites that produced civic humanism and all that art were themselves produced by this peculiarly Florentine cross-cutting of multiple social histories.

[figure 2 about here]

<u>The Social Framework of Economic Partnership and Commercial Credit: Politics</u>

Shortly we shall give an abbreviated sketch of the political process of this elite transformation, but as bridge to this Ciompi-revolt narrative, let us first summarize the statistical findings about political office, postponed until now. For both economic partnership and commercial credit, we evaluated three sets of political variables: (a) 1430-34 factions: membership in the Medici party and membership in the Albizzi party;[76] (b) Priorate: membership in the city council, both before 1427 and after 1427; and (c) Mercanzia: membership in the commercial court, both before 1427 and after 1427.[77] Significant regression coefficients from political variables with dates before 1427, we interpret as "politics causing economics"; significant regression coefficients from political variables with dates after 1427, we interpret as "economics causing politics."

Summarizing the statistical linkage between politics and economic partnership is easy: there is none.[78] As we will explain further in the next section, there was indeed a powerful <u>indirect</u>

[76] As mentioned above, this variable, originally coded by D. Kent (1978), has previously been analyzed by Padgett and Ansell (1993).

[77] Sources for the Priorate and Mercanzia variables are described in footnote 36. Since the dependent variables in these logit regressions are dyads, while political-membership independent variables are attributes of persons, we included the attributes of both participants in the dyads. For the symmetric dyad of economic partnership, we expect no statistical difference between the partners. For the asymmetric dyad of commercial credit, there could well be a statistical difference between creditor and debtor.

[78] Examination of table 7 will reveal a significantly <u>negative</u> relationship between being partners in a 1427 firm and being joint members of the early 1430's Medici party. But we discount this "finding" because it is due to the well-

effect of politics on partnership: the Ciompi revolt restructured the social embedding of partnership in social class and neighborhood. But as for direct causal linkage, the Florentine businessmen showed remarkable ability to keep political calculations out of their firm-formation decisions, precisely as has been pointed out by Goldthwaite (1987).

The findings for commercial credit are more interesting. Again, there is no statistical relationship between 1427 credit and 1430-34 factional membership.[79] But statistical relationships between commercial credit and Priorate and Mercanzia office memberships are strong. The more likely economic partners were to engage in commercial credit, regardless of whether they participated as creditor or as debtor, the more likely they were to appear as members of the Priorate, the governing body of republican Florence,[80] at some time or another. From data on relative timing, evidence exists for causal direction going both ways, but the bulk of the evidence points to commercial-credit engagement being a prelude to political success, rather than the reverse. For the most part, in a typical Florentine businessman's biography, election to the Priorate followed active business participation, rather than the reverse.[81] Business engagement and success, in other words, was rewarded with political office.[82] Indeed election to political office was the republican method for translating economic wealth into public recognition and status.[83] Through this electoral method, economic and political elites, while not at all identical, became correlated.

Given the causal direction mostly from economics to politics, we do not argue that this strong status-generating electoral connection had a structuring effect on markets themselves, other

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known dense partnership ties between the Medici and the Bardi families. The Medici and the Bardi fell out with one another during the factional struggles of 1430-1434, with the result that the Medici purged the Bardi family from their bank in 1435 (de Roover 1966, p. 234).

[79] This only apparently contradicts the findings of Molho (1979) and of Kent (1978) that personal loans, out of the Medici bank, were used by Cosimo de' Medici in helping to consolidate his factional support. Although we do have the data to investigate this question, the subset of data used in this article cover only commercial credits, not personal credits. However political considerations shaped the Medici bank's credit relations with persons, they did not shape its credit relations with other firms. Perhaps this was because of heavy Bardi participation in the management of the Medici bank, but this is only speculation on our part.

[80] Florence was a republic, which meant active participation of citizens in government. Specifically, the *Signoria* or Priorate was a city council of nine members, each of whom served only for two months each, so as only temporarily to disrupt their businesses. Despite the inconvenience, virtually all Florentines anxiously awaited the opportunity to serve in unpaid public office, because of the prestige and honor entailed. Choice of membership was a quite complicated and secret process of election, essentially by one's peers and higher (Najemy 1982).

[81] Among the merchant-bankers in our 1427 data set, 64.4% (i.e., 114/177) of their Priorate seatings occurred after 1427. Among the wool and silk producers in our data set, 61.4% (i.e., 164/267) of their Priorate seatings occurred after 1427. Among the *ritagliatori* in our data set, 54.8% (i.e., 34/62) of their Priorate seatings occurred after 1427. For the most part, our 1427 businessmen were looking forward to their election to the Priorate, in the future.

[82] In regressions for another article, yet to be written, Padgett (with the help of Michael Heaney) has found that membership in the industries of merchant-bank international, domestic bank, wool manufacturing, and silk manufacturing significantly predicted election to the Priorate throughout the 1343 to 1500 period.

[83] We can illustrate the cognitive importance of political office to Florentine businessmen by once again turning to the diary of the *setaiuolo* in our data set, Goro Dati: "On April 28, [1412], my name was drawn as Standard-bearer of the Militia Company. Up until then I had not been sure whether my name was in the purses for that office, although I was eager that it should be both for my own honor and that of my heirs.… On the very day my name was drawn for this office, only fifteen minutes before it was drawn, I had taken advantage of the reprieve granted by the new laws and finished paying off my debt to the Commune. That was a veritable inspiration from God, may His name be praised and blessed! Now that I can obtain other offices, it seems to me that, having had this great benefit, I should be content to know that I have sat once in the Colleges and should aspire no more." (Brucker 1967, p. 125)

than this: the electoral connection was one institutional device that ensured that Florentine businessmen behaved in social-exchange as well as economic-exchange terms, when they conducted their business. Otherwise, they would not get elected to political office, with all the status consequences for them and for their family which that implied.

Commercial credits also affected admission to the Mercanzia, the Florentine commercial court, but in a different way. The Mercanzia was a commercial court charged with settling and adjudicating disputes among internationally oriented Florentine businesses. Being situated within the Florentine republic, it was not an independent judiciary; it was comprised of businessmen, elected by businessmen.[84] Our data show that being a commercial creditor did not affect one's likelihood of becoming a Mercanzia judge, one way or the other. But being a commercial debtor definitely lowered one's chances of being a Mercanzia judge, in the past or in the future. The Mercanzia was a technically competent arbitrating body, which was not biased in the sense of a membership positively packed with creditors. On the other hand, on average, it definitely served the interests of creditors, since it systematically excluded debtors from its membership.

Emergence

How and when did the economic network structure, schematically portrayed in figure 2, emerge? Figure 3 and table 9 provide, if not the answer, then at least powerful clues to the answer.

Figure 3 presents the social-class demography, and the volume, of partners active in the domestic banking industry from 1340 to 1400.[85] These data were extracted from the annual industry-census records of the Florentine banking guild.[86] 1348 to 1378 is the period that Padgett (2001) labeled "the guild regime"; 1378 to 1433 is the period that Padgett (2001) labeled "the *popolani* regime." Figure 3 presents some of the evidence behind this labeling, not just of politics but also of markets. To aid interpretation: the Ciompi revolt, which triggered the transition between these two regimes, occurred in 1378.[87]

[figure 3 about here]

The data in figure 3 demonstrate clearly that after their successful political repression of the Ciompi revolt, citizens of *popolani* class background suddenly and dramatically increased their demographic dominance in the domestic banking industry. The *popolani* did this not directly by

[84] Franceschi (1993b, p. 888) has discovered greater centralized control over this election process, and over the analogous one for guild consuls, during the post-Ciompi Albizzi regime.
[85] Unfortunately, due to guild books being lost, this graph cannot continue through 1427. Table 4 assures us, however, that 1427 was not substantially different from 1390 in *popolani* dominance. Nor should we expect it to be, since 1382 through 1433 is coherently the "oligarchic" Albizzi regime, in political terms.
[86] Specifically, from *Arte del Cambio* 11, located in the Archivio di Stato, in Florence.
[87] We do not have the space to explain this searing working-class revolt of the wool-industry "proletariat". *Ciompi* was a Florentine nickname for *sottoposti* wool workers. Standard references are Brucker (1962, 1968), Najemy (1981), and Stella (1993). This violent revolt profoundly affected the consciousness of the *reggimento* elite, who had been forceably evicted from Florence, many of whose houses had also been burned. Padgett plans to do a social-network analysis of this Ciompi revolt in the future, to complement his earlier study of the rise of the Medici (Padgett and Ansell 1993).

legally prohibiting other social classes from entering domestic banking. Rather, (a) institutionally, the Albizzi regime made it easier for sons of bankers and harder for non-kin apprentices of bankers to enter the guild;[88] and (b) behaviorally, wealthy *popolani* bankers ceased to form partnerships with lower social classes.[89] This change in firm-formation logic shut down the partnership avenue of economic mobility that had been so prominent in the previous guild regime.

Whereas figure 3 traces social-class demography, table 9 traces the changing organizational structure of firms – specifically, the growth of "organizational systems" of linked partnership networks, which spanned multiple industries. Melis (1962) is famous, among other things, for his documentation of the historical emergence in Florence of these new organizational systems. Table 9 adds to Melis's research only by attempting to narrow the timing of this emergence somewhat.

[table 9 about here]

Table 9 measures the growth of "organizational systems," in various industries, by the number of partners who participated simultaneously as partners in multiple firms. We reconstructed such multiple-firm ownership networks by collating various firm censuses or quasi-censuses. Sources are listed in the notes of table 9. Such censuses or quasi-censuses could be found for 1369 because of an ad hoc registration of export-oriented merchant-bankers using the port of Pisa (Silva 1908), for 1385-99 because of the thoroughly documented international trading activities of Francesco Datini (Melis 1962), and for 1427 because of our own firm census. There is some slippage in comparability among these three compilations because of the wider time range covered in the middle list, but the numbers suggest that the magnitude of this slippage is not large.

These multiple-ownership data reveal that both the volume and the percentage of merchant-bankers and domestic bankers partnering in three or more firms simultaneously exploded soon after the Ciompi revolt. In terms of percentage, only 0.9% of merchant-banking and domestic banking partners[90] participated in three or more firms in 1369, compared to 11.6% of banking partners in 1385-99 and 12.7% of banking partners in 1427. Not only that, but close examination of the list of "generalist" businessmen, who participated in multiple firms in multiple industries after the Ciompi, reveals virtually a Who's Who of famous Florentines of the time period. The emergence of partnership links across industries is really the same phenomenon, viewed from the organizational perspective, as is the emergence of an economic elite within the *popolani*, viewed from the social-network perspective. Organizational transformation, in other words, constructed a cross-industry economic elite. Arguably in part because of its generalist character, this elite in turn sponsored the rise of civic humanism (Baron 1966) and Renaissance art.

We would like to suggest that the rise of the *popolani* demographic dominance in banking, the explosion of "organizational systems" of interlinked partnership, and the development of cross-neighborhood partnerships among *popolani* bankers are all inter-linked phenomena, both in timing and in logic. These are the mechanisms behind the emergence of the economic elite, very shortly

[88] Franceschi (1993b, p. 888) discusses in greater detail the Albizzi regime's centralized control over the elections of guild consuls, who enforced these new matriculation rules.
[89] For 1427, this statement is proved in table 7. We have similar data, for domestic banking only, for the slightly earlier 1380-1400 period.
[90] Actually there was only one such person, Piero Fastelli.

after the Ciompi revolt. Instead of exercising political and economic control through guilds, now discredited, internationally oriented businessmen reorganized themselves, in response to intense political challenge, to dominate both their state and their markets through overlapping networks of firms and of marriages.[91] Attempting merely to survive, literally as well as figuratively, conservative *popolani* families during the Albizzi regime reconstructed their firms (Melis 1962), they reconstructed their marriages (Padgett and Ansell 1993), they reconstructed their friendship networks (Kent 2002), they reconstructed their republican state (Najemy 1982), they reconstructed their ideology (Baron 1966), they reconstructed themselves (Burckhardt [1878] 1990).

Appearances notwithstanding, the social-network emergence of this economic-cum-political "oligarchy" did not imply a closed social-class system, either on the political or on the economic fronts. Najemy (1982) brilliantly has resolved the following paradox on the political front. He, along with Molho (1968a, 1968b) and Witt (1976) before him, showed that political representation by *popolani* families in the Priorate actually went down during the Albizzi regime, even as their political control over the Priorate's policies went up. Special new "off-line" institutions, like the *balie*, the *consulte e pratiche*, the *borsellino*, and the *accopiatori*, partly explain this paradox. But more fundamentally than institutional devices, which can come and go, the resolution of this paradox is to be found in underlying social networks: the development and radical expansion of clientage in this period (Brucker 1969). *Popolani* families no longer needed themselves to dominate Priorate membership; from the Albizzi regime on they could rely on their neighborhood-based clientage networks to do that for them. The emergence of firms and marriages to re-tie together the *popolani* themselves was matched by the emergence of clientage to re-tie the *popolani* with their lower-class neighbors. One fascinating consequence of more "democratic" elections, highlighted by Najemy (1982, chapter 8), was fragmentation and "individuation" in patrilineage solidarity, both for *popolani* and for new men. A second consequence was increase in the volume of new families who could be elevated into the intensely-desired status and recognition of political office, thereby coopting them, the powerless, into supporting the *popolani* regime (cf. Padgett 1990).

The findings in this article present the economic parallel to this political clientage story, already well told by Brucker, by Molho, and by Najemy. Cross-class neighborhood relations between bankers and cloth producers (among others) shifted from a predominantly economic-partnership basis, during the guild regime, to a predominantly commercial-credit basis, during the *popolani* regime. *Gonfaloni* neighborhood was important in both regimes, but the economic-network expression of that localist *mentalite* changed. Instead of inviting new-men neighbors into their houses and firms, *popolani* lineages offered them loans and favors instead. We certainly do not argue that Florentine businessmen ever confused the two, but commercial-credit exchange in the economic domain came to fit together with patron-client exchange in the political domain as two instantiations of a generalized Florentine way of making friends (cf. Trexler 1980). Because of

[91] Regarding the marriage connection, recall the data of footnote 60.

a shift in the content of their social exchange,[92] medieval neighbors, we argue, transmuted into Renaissance clients.[93]

The Economic Consequences of Social Exchange

For the historical development and operation of Florentine economic markets, there were two important and long-lasting consequences of this multiple-network transformation. On the macroeconomic level of the Florentine economy as a whole, the city was remarkably adaptive: under crisis, it developed an entirely new industry for itself. On the microeconomic level of economic technique, double-entry bookkeeping rapidly diffused. This helped the Florentines to manage a dramatic expansion in the volume of commercial and financial credit, thereby securing their monopoly over European international financial markets for over a century.

Recently, Goldthwaite (1993) has emphasized quite forcefully the macroeconomic importance to Florence, in the early fifteenth century, of the rise of its silk industry, to offset (either in whole or in part) the decline of its wool industry.[94] Florence was not the innovator in Italian silk, Lucca was (Edler 1930). But the achievement of Florence in so radically restructuring its own economy in the face of economic crisis,[95] exploiting the decline of Lucca, demonstrated an impressive capacity for macroeconomic flexibility and adaptation.

Our social-network analysis explains two central organizational features of this observed macroeconomic flexibility: first, the collective-action ability of Florentine merchant-bankers to generate a coherent state industrial policy in the first place, and second, even more impressive, the implementation ability of Florentine merchant-bankers to develop and to support new-men *setaiuoli*.

Arguably Florentine merchant firms were flexible already, even before the Ciompi revolt, in their ability to adapt to short-term geographical fluctuations in supply and demand (Goldthwaite et al. 1995, Melis 1962). Longer-term structural trends, like the drying up of English *San Martino*

[92] Such historically observed transformation in the content, not just in the patterned distribution, of social network ties of course presents an important theoretical challenge to social network analysis as a field − a challenge, it is fair to say, that hardly anyone has thought about. White (1992), in our opinion, at least made an unsatisfactory stab at this very deep problem.

[93] The client product of this transformation is well illustrated by the new-man perspective of Giovanni di Pagolo Morelli, writing sometime around 1405: "Now, be courteous: make an effort to acquire one friend or more in your neighborhood, do whatever good you can for him, and don't trouble yourself about putting yourself in his care. If you are rich, be content to buy friends with your money, if you can't obtain them otherwise; try to marry into families of good citizens, both well-loved and powerful; and if there is in your neighborhood someone to help you (or, to whom to attach yourself) and to put yourself close to, draw near to this person. If you are able to do this by marriage, do it; if not by this means, hang out with him, work with his (associates), contrive to serve him, offer yourself to him when you see his need." (Branca 1986, pp. 190-91. Translation by McLean.)

[94] See also Tognetti (2002).

[95] As mentioned above, the Florentine wool industry suffered an horrendous 72% decline in production from 1373 to its nadir of 1437 (Franceschi 1993, p. 13; Hoshino 1980, pp. 227-31; Tognetti 2002, p. 16). Debates continue about the causes of this crash, but the argument in the literature that seems the most convincing to us is the rapid growth of English woolen-cloth production in this same period (Carus-Wilson and Coleman 1963). This growth deprived Florence of its primary input: high-quality English raw wool (Hoshino 1980, p. 233).

wool, however, required a more coordinated response, and this out of a decentralized set of geographically dispersed merchants. Faced with a well-recognized economic crisis in wool, Florentine merchants in historical fact did not try to "solve their collective action problem" through institutional design. For reasons quite unrelated to their economic needs, the Florentine electoral connection had already both structured and solved this problem for them.[96] Florentine republicanism almost automatically elected merchants and other businessmen to the city council. Along with its penumbra of informal *consulte e pratiche* advisory boards, the Priorate during the Albizzi regime had become virtually a rotating "central committee" for internationally oriented merchants, within which they could debate, explore and discover their own interests, in conjunction with other *simpatico* voices.[97] A centralized political decision to develop a new silk industry, as well as another centralized decision to develop a new fleet to help the wool industry, thus emerged from the Priorate fairly smoothly and "naturally" (Brucker 1977, Franceschi 1994).

The reason why macroeconomic adaptation took the form of state-led industrial policy, rather than possible counterfactual forms, like price cutting or technological innovation or war, was the institutional context in which Florentine merchants jointly discussed their economic interests.[98] The Priorate setting not only coordinated their own special-interest discussions as international merchants; it also framed these discussions in terms of the "general interest of Florence." Florentine merchants in the Priorate were not speaking to each other merely as merchants. They were also speaking to each other as kin, as neighbors, as *popolani*, and as republicans. But in addition to their multiple social roles, they were indeed speaking to each other as merchants. As such, they came from a variety of industries. Given the cohesion that cross-cutting social ties provided to the discussion, a collectively corporatist analysis of their economic predicament became virtually a background assumption.[99]

Even in their firm-centric special interests, moreover, Florentine merchants were not specialized, as table 6 showed. Socially and corporately the gap between merchant-bankers and *setaiuoli* could be vast, but in terms of concrete economic behaviors, merchant-bankers and silk manufacturers were not all that distinct (Edler de Roover 1966, Tognetti 2002). Perhaps the

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[96] We agree with Greif (1994) that northern Italian political institutions had definite consequences for economic growth. We disagree with him, however, in his functionalist view that these institutions existed for that purpose. There were deeper historical reasons for the character of Florentine political institutions than trade (cf. Trexler 1980). In lieu of economic functionalism, we find Elster's (1983) byproduct view of causality to be more consistent with the historical processes that we observe. Also see Najemy (1991) for a deeply informed view of Florentine political institutions as dialogic settings for discovering and creating interests, through conflict. As Najemy himself points out, this dialogic view stands in sharp contrast to an instrumentalist and narrowly economistic perspective on political institutions, which presumes fixed interests independent of social interaction.

[97] In the earlier fourteenth century period, the Mercanzia had served this function (Najemy 1972, Astorri 1998), turning the commercial court essentially into a powerful special interest group. By 1427, however, international merchant-bankers had been blended more smoothly into the Priorate itself, thereby on the one hand turning the Priorate into a more "consensual" and elitist body (Najemy 1982), controlled by clientage, and on the other hand turning the Mercanzia into a more "impartial" judicial authority. Brucker (1962, 1977) and Kent (1975) explain well the informal, but important, advisory role of the *consulte e pratiche*.

[98] For a modern example of the use of political institutions by industrialists to discover and indeed to construct their own interests, see Herrigel (1996).

[99] Once again, this economic analysis has a political parallel: see Hans Baron's (1966) famous analysis of the rise of civic humanism. We take this opportunity to salute Baron's underappreciated work as curator at the Newberry Library in Chicago. We have used numerous manuscripts from the excellent Renaissance Florentine collection at the Newberry, which Baron acquired during his lifetime.

Florentines paid an efficiency cost for their generalism in term of marginal productivity, as Adam Smith would have argued. But offsetting this, the benefits in economic flexibility and in political collegiality were profound. Helping *setaiuoli*, helping merchant-bankers, helping Florentine workers, helping Florence at large: framed within the Priorates and *consulte e pratiche* of the Albizzi regime, the gaps between the discussions of these various "interests" was hardly large. Of course, the Albizzi regime was so "consensual" (Najemy's term) in the first place precisely because the Ciompi revolt had been crushed.

At their microeconomic foundation, Renaissance Florentine markets were a fascinating combination of formalization, in the form of account books and double-entry bookkeeping, and of informal social networks, constructed out of the surrounding rules of Florentine sociality. The paradoxical character of this combination is only apparent from the modern perspective. To Renaissance Florentines, doing business and doing life were extensions of each other. Business was conducted on a logic of friendship, but friendship in turn was instrumental, as well as emotional. In both the economic and the social senses, Florentines "made" each other. But exactly how they made each other changed somewhat over time, at least in the domain of economics.

Account books and double-entry bookkeeping were marvelous technical inventions, to be sure. They enabled the Florentines to leave the restrictive and hostile institution of legal contracts behind.[100] Weber's Germanic rationalization thesis notwithstanding, account books were <u>not</u> inconsistent with social exchange; rather, they formalized and made social exchange easier. Accounts set up between two traders, anchored by mutual indebtedness, were complementary holding bins, located within each trader, where other traders could execute discretionary actions, to the long-term benefit and profit (usually) of both sides.[101] This was the practical economic meaning of traders "making" each other. Classic anthropological gift-exchange (Mauss [1923] 1990, Gouldner 1960, Sahlins 1972, Gregory 1982, Davis 2000) also keeps mental track of debits and credits, without ever balancing the accounts, but formalized accounting vastly increased the number of exchange partners with whom one could engage in this activity.

There is a remarkable coincidence in dates between the adoption of double-entry bookkeeping by Florentine merchant-bankers and the political events and phenomena we are discussing here. Although there remains some debate about ultimate origins, double-entry bookkeeping probably was invented in Genoa in the early fourteenth century. It was not adopted in Florence, however, until 1380s at which point it diffused very rapidly throughout the Florentine merchant-banking community (Peragallo 1938, p. 19; de Roover [1956] 1974, p. 143).

Most economic histories treat the rise of double-entry bookkeeping as autonomous and inevitable, its technical advantages supposedly being self-evident. This teleological approach

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[100] Contracts are restrictive in the sense that they chop resource flows into discrete transactions, each of which must be negotiated anew. [See Stinchcombe (1985) for one way relational thinking can be smuggled into contracts, however.] They are hostile in the sense that their use presupposes distrust between exchange partners. The use of contracts was pervasive in medieval Genoa, a city with a hostile social climate. This hostility was generated by intensely contending lineages (Hughes 1977). For the case of Florence itself, Dini (2001, p. 93) documents cross-sectionally the case of the Girolami and Corbizzi firm, which in 1332-37 extended low-interest loans to "friendly" firms through its account book, avoiding contracts. At the same time, this firm extended high-interest loans to foreigners, exclusively via contracts.

[101] See footnote 16.

obfuscates historical context. Instead of analyzing the formal technical features of double-entry bookkeeping, we prefer to ask: what new patterns of trading and credit were being accounted for, in these new account books? What specific economic and/or social exchange problems did double-entry bookkeeping solve for the historical Florentine merchant-bankers of the late *Trecento* and early *Quattrocento*?

Dini (2001, pp. 97-98), we believe, provides the answer. Building on the pioneering research of Melis ([1972] 1987), Dini describes the dramatic growth, in the Florentine account books of the late *Trecento*, of two new forms of economic exchange: (a) the *credito di esercizio* or "credit of use," and (b) the *conto corrente* or current account. Before the 1380s, Florentine firms financed themselves through the explicit investment vehicles of startup capital (*corpo*), reinvestment of profits (*sopracorpo*), and time deposits by investors (*deposito di discrezione*). Without dropping these earlier investment methods, Florentine firms after the 1380s increasingly financed themselves through the very credits from commercial customers that are the data of this study. According to Melis, the *credito di esercizio* was not originally invented in Florence; it was first invented in nearby Pisa in 1354-70. But its quick adoption by the Florentines provided the means through which the financial sector of Florence lifted itself to the center of Europe. With these two new methods, Florentine firms now had the technical capacity to finance each other without money.

Double-entry bookkeeping, we would like to suggest, was for the late-*Trecento* Florentines a second-order adaptation to, not a first-order mover of, of this growth in credit. Bookkeeping was required in order to keep all these new credits and accounts straight. Before the 1380s, double-entry bookkeeping existed, at very least in Genoa and elsewhere in northern Italy, but for the Florentines it just sat on the shelf as a scholastic curiosity, having no practical point. With the explosion of commercial credit, however, the virtues of double-entry became apparent to all. Metaphorically speaking, double-entry bookkeeping diffused into the mercantile air, becoming not just an object but a language, through the strong winds of commercial credit.

The growth in commercial credit was caused, we believe, by the restructuring of Florentine economic networks that is summarized in figure 2. The post-Ciompi Florentine *popolani* elite restructured itself in part through marriage and in part through merchant-banking partnerships. This restructuring produced both organizational "systems" in firms and intra-class but city-wide sponsorships in careers. "Trust" is too simple and univalent a concept to capture the increased elite network cohesion implied by this re-weaving: an increase in dyadic bonding among cross-neighborhood *popolani* families was offset by an increase in dyadic antagonism among intra-neighborhood *popolani* families.[102] Nonetheless, "pipes" in banking, to use Podolny's (2001) recent word, were definitely strengthened.

At the same time as *popolani* bankers turned inward in partnership, however, they turned outward in neighborhood-based credit. Domestic credit rained down on neighbors, recorded in new *crediti di esercizio* and *conti correnti*. This article focuses on the fact that new industries like silk were built in this process. But in addition, in the different domain of politics, clientage-based factions were also built.

[102] As we mentioned earlier, Kent (1978) is especially good, at the level of elite politics, at describing the complicated and contradictory cross-currents in Florentine neighborhoods, in 1426-1434.

Just because the diffusion of double-entry was caused, in Florence at least, by an exogenous growth of commercial credit does not mean that commercial credit was unaltered thereby. Just as all languages do, the double-entry accounting language of the Renaissance simultaneously described and classified. De Roover (1944) provides a thorough, even if rather complex, description of the inner logic of Florentine foreign-exchange accounts under the double-entry method. Basically, reciprocal and ongoing exchange between two parties ("relational exchange," in our terms) was broken down into four interlinked accounts: the *Nostro* ("our") and *Vostro* ("your") accounts within one party to the exchange, and the complementary *Vostro* and *Nostro* accounts within the other party to the exchange. De Roover shows how classification of flows into these four accounts was crucial for the calculation of profit, in a relational context where credit extended over time and where very little money exchanged hands.[103] On the one hand, double-entry bookkeeping was used instrumentally to help to manage high volumes of credit flow. On the other hand, the use of this language changed, in the direction of formalization, the representation (indeed the written embodiment) of businessmen to each other. When businessman A modified the *Vostro* account of businessman B, which was located in the account book of businessman A, he was "making" businessman B in the Renaissance double-entry way of doing so. This is still social exchange in our view, because social networks in the background gave these representations their human meaning. But it was a highly formalized and mathematical version of social exchange, which added a new dimension of communication to the social networks themselves. Transformed social networks reproduced themselves through economic markets; this process of network reproduction gave those markets their structure, their flexibility, and their life.

The Macinghi letters with which we opened this article come from a later period in Florentine macroeconomic adaptation: the opening of Turkey to *garbo* woolen cloth export. But the letters revealed that the intimate blending of social and economic exchange logics that the Florentine *popolani* elite forged in the 1380s, in response to the Ciompi revolt, served Florence well over one hundred years later. The composition of "elite" changed radically over this interim, with the rise of the Medici displacing the *popolani* (Rubinstein 1966, Kent 1978, Padgett and Ansell 1993). But some of the "deep structure" of Florentine rules for social and economic network composition persisted, in a glacial and sedimentary fashion that Braudel ([1949] 1972), perhaps more than any other historian, would have appreciated.

Conclusion

Granovetter (1985) did a service for the field of economic sociology by underscoring the importance of "social embeddedness" in the operation of markets. For good or ill, the flag has been taken up by "social capital" (Coleman 1988, 1990), which has sought essentially to absorb the topic into economics by treating social relations as resources to develop, in the pursuit of individualist ends. Social relations, however, are not in and of themselves resources, which flow anywhere. They are the rules and interactions through which people construct resource flows, and each other in the process. Individuals stand within, not outside of, social relations. In their notions

[103] In bills-of-exchange transactions, huge volumes of money exchanged hands between bankers and their non-banker customers, the main point after all being to transfer money between cities. What we are referring to is the lack of money exchanging hands among the bankers themselves.

of people "making" each other – through exchange, through credit, through accounts, and through careers – the Florentines perhaps had a deeper understanding of social process than we do.

In biology, the concept of evolvability is not adaptive movement toward a system optimum; it is the capacity of a system to adapt in the first place (Wagner and Altenberg 1996). Evolvability refers not to the capacity of a single organism to learn. It is the capacity of a set of organisms, in reproductive interaction, to reconstruct themselves through time. Developmental pathways of organisms, rooted in chemical transformation networks, do not pre-determine the end result of species evolution. But they do constrain the path-dependent trajectories along which a species can possibly move (Fontana and Schuster 1998; Stadler, Stadler, Wagner and Fontana 2001).

To understand how a society moves through history, not just responding to events but actively shaping and reinventing itself, we need to uncover the logics through which its people interact. Contingency is relevant, to be sure, but patterns of multiple-network overlay and blending channel the trajectories of possible discovery. Such channels of accessible transformation are poorly understood in the social sciences, mostly because the question has too infrequently been asked.

Following the lead of the Renaissance Florentines themselves, we have argued in this article that people in their interactions transform each other. The historically specific rules of such transformation are socially distributed in human (and artifact) networks, and have their own dynamic of reproduction through people (Padgett 1997). "Social embeddedness" we take to mean the catalytic regulation of rates of reproduction of rules of interaction in one domain by rules of interaction in other domains (Padgett 2001). Jurisdictional boundaries between domains stabilize catalytic regulation and themselves have their histories. Inventions are transpositions of logics from one domain of application to another, which become amplified or suppressed. Much remains to be understood, both theoretically and historically. But to make progress, we need to ground our search for theory, not in ahistorical stick men of stereotyped motivation, but in the multifaceted people who actually made our history. Their interactions, their mutual framings, and their transformations of each other are the motors moving human evolution and change.

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Table 1. CENSUS OF 1427 COMPANIES/PARTNERSHIPS IN MAJOR INDUSTRIES

	High Certainty Companies			Low Certainty Companies		
	Florence	Overseas	Old	Florence	Overseas	Old
International Merchant-Banks	0	45	7	0	10	2
Florence/Pisa Merchant-Banks	0	20	1	0	1	0
Domestic Banks	53	0	10	12	0	4
Cloth Retail	32	3	5	4	1	2
Silk Production	38	8	4	11	1	1
Wool Production						
San Martino	36	5	10	2	0	0
Via Maggio	27	0	2	1	0	0
San Pancrazio	8	0	0	0	0	0
S Pier Scheraggio	9	0	1	0	0	0
Unclear Location	34	4	9	21	4	4
All Wool Firms	114	9	22	24	4	4
Cloth Dyers	18	0	3	7	0	2
Other Industries (partial)						
Fur	6	0	0	4	0	0
Gold	3	0	0	5	0	0
Linaioli	6	0	0	10	1	0
Merciai	6	1	0	5	1	1
Rigattieri	7	1	0	4	0	1
Speziali	11	0	2	1	0	0
Miscellaneous	6	1	5	6	0	1
Unknown Industry	9	9	10	110	20	15
Totals	312	94	69	203	39	33

Table 2. PROFILE OF SAMPLE OF COMMERCIAL CREDITS FROM 1427 CATASTO

		Seen Bilanci			Unseen Bilanci			Overall			
	Debts Coded	N of firms	% trans. coded	% value coded	N of firms	est. % trans. coded	est. % value coded	% bilanci seen	est. % trans. coded	est. % value coded	Estimated Total Credits
International Merchant-Banks	1364	16	25.4	44.3	29	19.4	70.2	35.6	23.8	45.4	1418387 fl.
Florence/Pisa Merchant-Banks	1172	16	31.0	58.0	4	4.3	9.4	80.0	28.7	56.2	535761 fl.
Domestic Banks	4194	39	46.9	71.2	14	25.0	66.8	73.6	44.7	70.7	2150706 fl.
All Merchant-Banks	6730	71	39.1	60.1	47	19.7	64.0	60.2	37.3	60.4	4104854 fl.
Cloth Retail	2705	26	22.3	50.4	9	12.0	23.1	74.3	21.1	47.5	592033 fl.
Silk Production	1765	37	33.4	81.2	9	20.0	[?]	80.4	33.4	81.2	281424 fl.
Wool Prod.: San Martino	1726	31	48.5	79.4	10	8.9	18.8	75.6	47.6	78.8	359732 fl.
Via Maggio	434	17	35.7	84.1	10	14.2	35.9	63.0	31.1	75.5	39058 fl.
San Pancrazio	200	6	44.0	59.7	2			75.0	44.0	59.7	23291 fl.
S. Pier Sch.	108	4	32.9	98.1	5	17.6	31.9	44.1	25.4	66.2	8127 fl.
All Garbo		27	37.2	77.3	17	15.6	34.4	61.4	32.3	70.0	70476 fl.
Unknown	795	21	42.3	64.3	18	29.7	98.3	53.8	39.8	67.2	173080 fl.
Total Wool	3263	79	44.3	75.8	45	23.2	68.2	63.7	41.4	75.0	603288 fl.
Cloth Dyers	619	10	27.4	47.5	8	32.9	51.6	55.6	28.7	50.0	67364 fl.
Totals		223	34.9	64.2	118	20.3	44.3	65.4	33.4	62.3	

Note: Percentage of transactions coded for 'seen *bilanci*' companies equals the sum of the number of coded credits/debts for all 'seen *bilanci*' companies in a given industry, divided by the sum of

the total number of credits/debts of those companies in that industry. The same formula was used to calculate percentage of florin value for 'seen *bilanci*' companies within each industry. Totals were also coded, whenever they were available from *campione* summary statements of company records, for a subset of 'unseen *bilanci*' firms in each industry. The percentage of numbers of credits and of florin values of credits coded for this subset of 'unseen *bilanci*' was used, within each specific industry, to estimate totals for the remaining firms for which totals information was otherwise lacking. Then the above formula was applied for each complete industry, summing coded numbers and values for all companies, as well as estimated total numbers and values, to estimate overall percentage and size of each industry.

Table 3. CAPITAL STRUCTURE OF 1427 CATASTO FIRMS

Average Capital/Corpo Size of Firms, in florins:

	n	corpo1= corpo only	corpo2= corpo1 + soprac. + profit	corpo3= corpo2 + inventory
Merchant Banks	23	5080	5751	6973
Domestic Banks	24	6375	9941	10119
Cloth Retail	21	4305	5348	7102
Silk Manufacturing	25	3568	3928	4851
Wool Manufacturing (San Martino)	30	3239	3654	4373
Wool Manufacturing (other)	24	2030	2233	2517
Cloth Dyeing	8	1095	1195	1595

Average Leverage = Σ_i (total debt) / Σ_i (capital)

	n	corpo1= corpo only	corpo2= corpo1 + soprac. + profit	corpo3= corpo2 + inventory
Merchant Banks	12	5.42	4.98	3.62
Domestic Banks	14	4.93	3.29	3.20
Cloth Retail	14	2.20	1.66	1.15
Silk Manufacturing	19	0.94	0.86	0.66
Wool Manufacturing (San Martino)	23	1.17	1.04	0.84
Wool Manufacturing (other)	16	0.54	0.48	0.41
Cloth Dyeing	7	2.27	2.03	1.44

Table 4. SOCIAL CLASS COMPOSITION OF PARTNERS

number:	M-B, Intl.	M-B, F/Pisa	Dom. Banks	Cloth Retail	Silk	Wool, S.M.	Wool, Other	Cloth Dyers	Total
Magnates	22	5	15	8	6	1	7	0	64
Popolani	33	15	62	21	23	49	46	4	253
New Men	1	1	11	15	19	10	24	4	85
New-New Men	5	3	10	15	11	9	20	3	76
Not Admitted	16	17	13	14	23	14	31	16	144
Total	77	41	111	73	82	83	128	27	622

percentage:	Merchant-banks	Cloth Retail	Silk	Wool	Cloth Dyers	Total
Magnates + Popolani	.664	.397	.354	.488	.148	.510
New Men + N.N.Men	.135	.411	.366	.299	.259	.259
Not Admitted	.201	.192	.280	.213	.593	.232

Definition of social classes, according to political cohort:

1) "Magnates" are those families legally excluded from membership in the Priorate in 1293-95 (see Lansing 1991).
2) "Popolani" are those families who first entered the Priorate between 1282 (birth of republic) and 1342.
3) "New Men" are those families who first entered the Priorate between 1343 (Duke of Athens) and 1377.
4) "New-new Men" are those families who first entered the Priorate between 1378 (Ciompi revolt) and 1427.
5) "Not Admitted" are those families who had never entered the Priorate by 1427 (date of *catasto*).

Table 5. Percentage of Credits flowing through Economic Credit Relationships

(a) RECIPROCAL CREDITS:

creditor companies:	Banks	debtor companies: All Other Companies	Total
Banks	427/953 = .448	117/749 = .156	544/1702 = .320
All Other Companies	115/662 = .174	232/1959 = .118	347/2621 = .132
Total	542/1615 = .336	349/2708 = .129	891/4323 = .206

(b) MULTIPLE CREDITS:

creditor companies:	Banks	debtor companies: All Other Companies	Total
Banks	474/953 = .497	169/749 = .226	643/1702 = .378
All Other Companies	160/662 = .242	400/1959 = .204	560/2621 = .214
Total	634/1615 = .393	569/2708 = .210	1203/4323 = .278

(c) RELATIONAL CREDITS:

creditor companies:	Banks	debtor companies: All Other Companies	Total
Banks	601/953 = .631	234/749 = .312	835/1702 = .491
All Other Companies	230/662 = .347	562/1959 = .287	792/2621 = .302
Total	831/1615 = .514	796/2708 = .294	1627/4323 = .376

N.B.: (c) is the union of (a) and (b).
"Banks" equals {M.B. Int'l., M.B. F/Pisa, and Domestic Banks}.
"All Other Companies" equals {Cloth Retail, Silk Producers, Wool producers: both San Martino and other conventi, and Dyers}.

Table 6. Content of Credits (when known)

I. AMONG BANKS:

Relational Credits:	Transactional Credits:	Specialization of Credits: (when two contents known)
70 Accounts	17 Accounts	51 Different categories
17 Banking activities	16 Banking activities	21 Similar: Accounts
19 Merchandise	6 Merchandise	45 Similar: Other categories
19 Cloth	6 Cloth	
16 Raw materials	3 Raw materials	
5 Other	4 Other	

II. BETWEEN BANKS AND OTHERS:

Relational Credits:	Transactional Credits:	Specialization of Credits: (when two contents known)
17 Accounts	10 Accounts	5 Different categories
8 Banking activities	27 Banking activities	7 Similar: Accounts
3 Merchandise	4 Merchandise	19 Similar: Other categories
45 Cloth	38 Cloth	
28 Raw materials	52 Raw materials	
0 Other	3 Other	

III. AMONG OTHERS:

Relational Credits:	Transactional Credits:	Specialization of Credits: (when two contents known)
0 Accounts	2 Accounts	0 Different categories
3 Banking activities	4 Banking activities	0 Similar: Accounts
0 Merchandise	1 Merchandise	2 Similar: Other categories
15 Cloth	34 Cloth	
1 Raw materials	14 Raw materials	
0 Other	4 Other	

N.B.: "BANKS" = {Merchant-Banks: International, Merchant-Banks: Florence/Pisa, Domestic Banks}
"OTHERS" = {Cloth Retailers, Silk Producers, Wool Producers: San Martino, Wool Producers: Other conventi, Cloth Dyers}
"Specialization" = contents in similar or different categories, when two contents known.

Table 7. PREDICTING PARTNERSHIPS: Logit Regressions on Partnership Dyads

Independent variables:	Percentage of partnership dyads in indep. vars.	Dependent variable = partnership dyad (i.e., in partnership or not) social-class baseline	complete model	subdividing social class for bankers
Kinship:				
Nuclear Family	20.2		4.373***	4.384***
In-law Nuclear Family	0.5		2.607***	2.633***
Patrilineage Family (excl. nuclear)				
among banks	8.8		1.928***	1.826***
among silk producers	14.3		3.529***	3.537***
among wool producers	11.1		2.853***	2.859***
among cloth retailers	7.8		3.132***	3.142***
In-law Parentado Family (excl. nuclear)				
among banks	6.4		1.509***	1.499***
among silk producers	0.1		3.622**	3.617**
among wool producers	0.1		1.499*	1.493*
among cloth retailers	0.0		---	---
Neighborhood Relations:				
Same Gonfalone				
among banks	16.9		.261	-.321
among silk producers	20.4		.978**	.969**
among wool producers	17.6		.496*	.488*
among cloth retailers	19.6		1.191**	1.182**
Same Quarter (excl. gonfalone)				
among banks	37.8		.269	.279
among silk producers	30.6		.420	.416
among wool producers	41.7		.388**	.382**
among cloth retailers	25.5		.880***	.876***

Independent variables:	Percentage of partnership dyads in indep. vars.	Dependent variable = partnership dyad (i.e., in partnership or not) social-class baseline	complete model	subdividing social class for bankers
Social Class:				
Popolani + Magnates:				
among banks	64.2	.943***	.369**	
within gonfaloni				.591
across gonfanoni				.428***
among silk producers	22.4	1.120***	-.057	-.059
among wool producers	41.7	.709***	-.056	-.061
among cloth retailers	29.4	1.509***	.825**	.822**
New Men + New-new Men:				
among banks	4.7	1.235***	.660*	
within gonfaloni				2.868**
across gonfaloni				-.661
among silk producers	26.5	1.289***	.623*	.611*
among wool producers	13.0	.200	-.220	-.231
among cloth retailers	13.7	.588*	-.622	-.635
No Admit:				
among banks	7.4	1.246***	.758**	
within gonfaloni				3.374***
across gonfaloni				.479
among silk producers	8.2	.731*	.758*	.759*
among wool producers	3.7	.016	-.363	-.365
among cloth retailers	2.0	.425	-.450	-.454
Political Relations:				
Medici party (future)	2.2		-.710*	-.693*
Albizzi party (future)	0.3		-1.461	-1.333
Priorate (past): first partner	19.9		-.083	-.072
Priorate (future): first partner	20.2		-.077	-.057
Priorate (past): second partner	19.9		-.087	-.076
Priorate (future): second partner	20.2		-.074	-.054
Mercanzia (past): first partner	5.2		.073	.073
Mercanzia (future): first partner	22.7		.081	.067
Mercanzia (past): second partner	5.2		.075	.075
Mercanzia (future): second partner	22.7		.078	.064
Constant:		-4.769***	-4.907***	-4.907***

Number of observations	56,284	56,284	56,284
Number of non-zero observations	732	732	732
Log likelihood	-3817.60	-3248.56	-3234.38
Likelihood ratio	176.50	1314.57	1342.92
Number of parameters	12	39	42
Probability > chi-squared	.0000	.0000	.0000
Pseudo R-squared	.023	.168	.172

Notes:

(a) *** = ($p < .001$); ** = ($p < .01$); * = ($p < .05$).

(b) "---" means "not enough cases to estimate."

Table 8. SIGNIFICANT SOCIAL EMBEDDEDNESS COEFFICIENTS
(extracted from full logit-regression results presented in Appendix)

	Partnership	All = Credits	Relational + Credits	Transact'l Credits
AMONG BANKS:				
Kinship:				
Nuclear Family	4.384***	3.226***	3.577***	2.245***
In-law Nuclear Family	2.633***	2.163**	3.639***	
Patrilineage Family (excl. nucl.)	1.826***	1.297**	1.218*	
Parentado Family (excl. nuclear in-law)	1.499***			
Neighborhood:				
Gonfalone Quarter (excl. gonfalone)				.492*
Social Class:				
Popolani + Magnate				
Within gonfaloni		.803***	.942***	
Across gonfaloni	.428***			
New Men + New-new Men				
Within gonfaloni	2.868**			
Across gonfaloni				
No Admit				
Within gonfaloni	3.374***			
Across gonfaloni				-1.213*
AMONG CLOTH RETAILERS:				
Kinship:				
Nuclear Family	4.384***	3.226***	3.577***	2.245***
In-law Nuclear Family	2.633***	2.163**	3.639***	
Patrilineage Family (excl. nucl.)	3.142***			
Parentado Family (excl. nuclear in-law)				
Neighborhood:				
Gonfalone	1.182**	1.413*	3.952***	
Quarter (excl. gonfalone)	.876***			
Social Class:				
Popolani + Magnate	.822**			
New Men + New-new Men				
No Admit				

Partnership	All = Credits	Relational + Credits	Transact'l Credits
BETWEEN BANKS & SILK:			
Kinship:			
Nuclear Family	3.226***	3.577***	2.245***
In-law Nuclear Family	2.163**	3.639***	
Patrilineage Family (excl. nucl.)			
Parentado Family (excl. nuclear in-law)			2.256*
Neighborhood:			
Gonfalone	.748**	1.556***	
Quarter (excl. gonfalone)		-1.057**	.524**
Social Class:			
Popolani + Magnate			
New Men + New-new Men			
No Admit	.548*		
BETWEEN BANKS & WOOL:			
Kinship:			
Nuclear Family	3.226***	3.577***	2.245***
In-law Nuclear Family	2.163**	3.639***	
Patrilineage Family (excl. nucl.)			
Parentado Family (excl. nuclear in-law)		2.720*	
Neighborhood:			
Gonfalone	.729**	1.634***	
Quarter (excl. gonfalone)	.403*	.699*	
Social Class:			
Popolani + Magnate			
New Men + New-new Men			
No Admit			

	Partnership	All = Credits	Relational + Transact'l Credits	
AMONG SILK PRODUCERS:				
Kinship:				
Nuclear Family	4.384***	3.226***	3.577***	2.245***
In-law Nuclear Family	2.633***	2.163**	3.639***	
Patrilineage Family (excl. nucl.)	3.537***			
Parentado Family (excl. nuclear in-law)	3.617**			
Neighborhood:				
Gonfalone	.969*			
Quarter (excl. gonfalone)		-.661*		
Social Class:				
Popolani + Magnate				
New Men + New-new Men	.611*			
No Admit	.759*			
AMONG WOOL PRODUCERS:				
Kinship:				
Nuclear Family	4.384***	3.226***	3.577***	2.245***
In-law Nuclear Family	2.633***	2.163**	3.639***	
Patrilineage Family (excl. nucl.)	2.859***	1.729*		
Parentado Family (excl. nuclear in-law)	1.493*			
Neighborhood:				
Gonfalone	.488*			
Quarter (excl. gonfalone)	.382*			
Social Class:				
Popolani + Magnate			1.072*	
New Men + New-new Men				
No Admit				

Partnership	All = Credits	Relational + Credits	Transact'l Credits
BETWEEN RETAIL & SILK:			
<u>Kinship</u>:			
Nuclear Family	3.226***	3.577***	2.245***
In-law Nuclear Family	2.163**	3.639***	
Patrilineage Family (excl. nucl.)			
Parentado Family (excl. nuclear in-law)			
<u>Neighborhood</u>:			
Gonfalone			
Quarter (excl. gonfalone)			
<u>Social Class</u>:			
Popolani + Magnate			
New Men + New-new Men			
No Admit	1.064*		1.454**
BETWEEN RETAIL & WOOL:			
<u>Kinship</u>:			
Nuclear Family	3.226***	3.577***	2.245***
In-law Nuclear Family	2.163**	3.639***	
Patrilineage Family (excl. nucl.)			2.577*
Parentado Family (excl. nuclear in-law)			
<u>Neighborhood</u>:			
Gonfalone			
Quarter (excl. gonfalone)	.382*		
<u>Social Class</u>:			
Popolani + Magnate			
New Men + New-new Men			
No Admit			

Table 9. THE GROWTH OF "ORGANIZATIONAL SYSTEMS"

A. 1369	Number of industry partners in one firm	two firms		three firms	
Merchant-bankers	94	31	(24.6%)	1	(0.8%)
Domestic Bankers	74	17	(18.5%)	1	(1.1%)
Cloth Retailers	---	---		---	
Wool Manufacturers	309	14	(4.3%)	1	(0.3%)

Sources: Silva (1908, pp. 679-83) for merchant-bankers in 1369;
Arte del Cambio 14 for domestic bankers in 1369;
Arte della Lana 46 for wool manufacturers in 1382.

B. 1385-99	Number of industry partners in one firm	two firms		three+ firms	
Int'l. Merchant-bankers	99	39	(23.8%)	26	(15.9%)
Fir./Pisa Merchant-bankers	76	41	(29.9%)	20	(14.6%)
Domestic Bankers	245	35	(11.5%)	24	(7.9%)
Cloth Retailers	---	---		---	
Silk Manufacturers	---	---		---	
Wool Manufacturers	309	9	(2.8%)	5	(1.6%)

Sources: Melis (1962: tavole 27, 28, 31, 32, 35, 36, 39, 40) for
Florentine companies trading with Francesco Datini;
Arte del Cambio 14 for domestic bankers in 1385-99;
Arte della Lana 46 for wool manufacturers in 1382.

Table 9 (cont.)

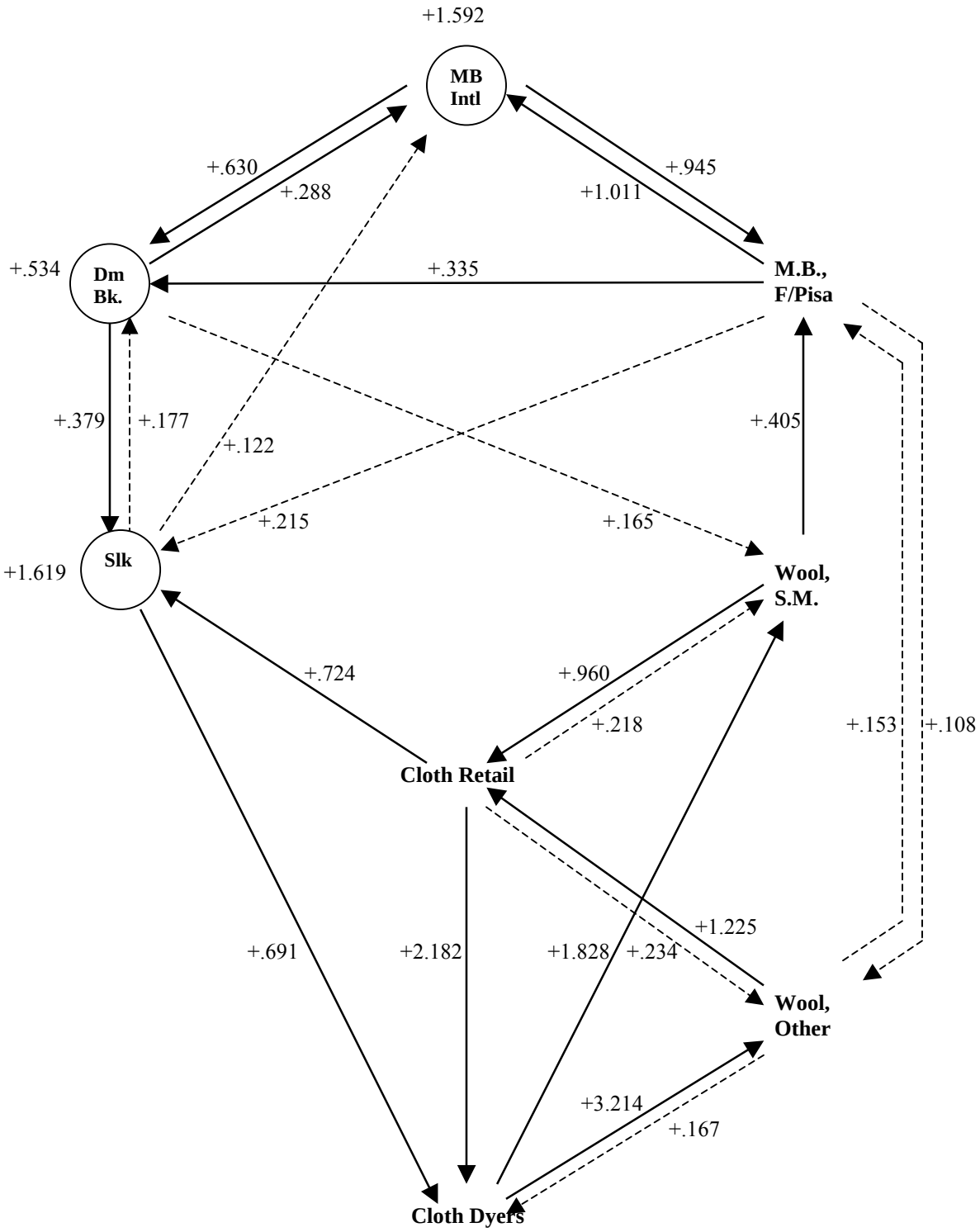
C. 1427	Number of industry partners in one firm	two firms		three+ firms	
Int'l. Merchant-bankers	48	13	(19.1%)	7	(10.3%)
Fir./Pisa Merchant-bankers	24	6	(15.8%)	8	(21.1%)
Domestic Bankers	71	23	(21.7%)	12	(11.3%)
Cloth Retailers	55	10	(14.9%)	2	(3.0%)
Silk Manufacturers	73	4	(4.9%)	4	(4.9%)
Wool Manufacturers, San Martino	65	10	(12.7%)	4	(5.1%)
Wool Manufacturers, Other	115	9	(7.1%)	2	(1.6%)

Source: 1427 Catasto.

D. Summary: Merchant-bankers and Domestic Bankers (only)	Number of industry partners in one firm	two firms		three+ firms	
1369	168	48	(22.0%)	2	(0.9%)
1385-99	420	115	(19.0%)	70	(11.6%)
1427	143	42	(19.8%)	27	(12.7%)

Note: Sometimes, "industry partners in two firms or in three+ firms" refers to second or third firms in that same industry. But in the large bulk of cases, such extra firms were located in industries other than the focal industry.

Figure 1. INPUT-OUTPUT VOLUME OF CREDITS BETWEEN INDUSTRIES:
shown if [(Observed Credits - Expected Credits) / (Expected Credits)] > .10



N.B.: [(O-E) / E] controls for raw volume of credit effects. Dotted lines show weaker ratios.

Figure 2. Summary of Statistically Significant Social-Embeddedness Coefficients

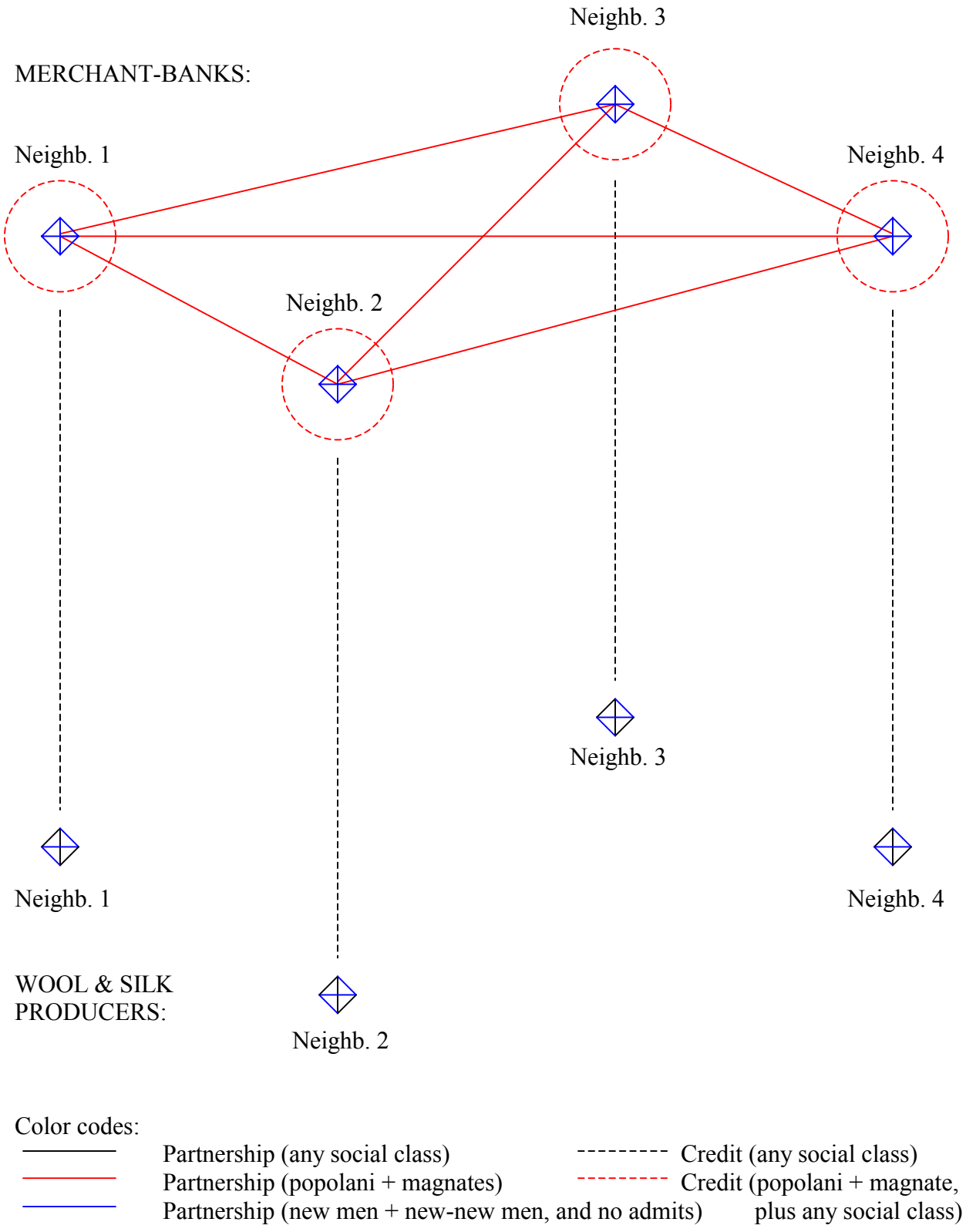
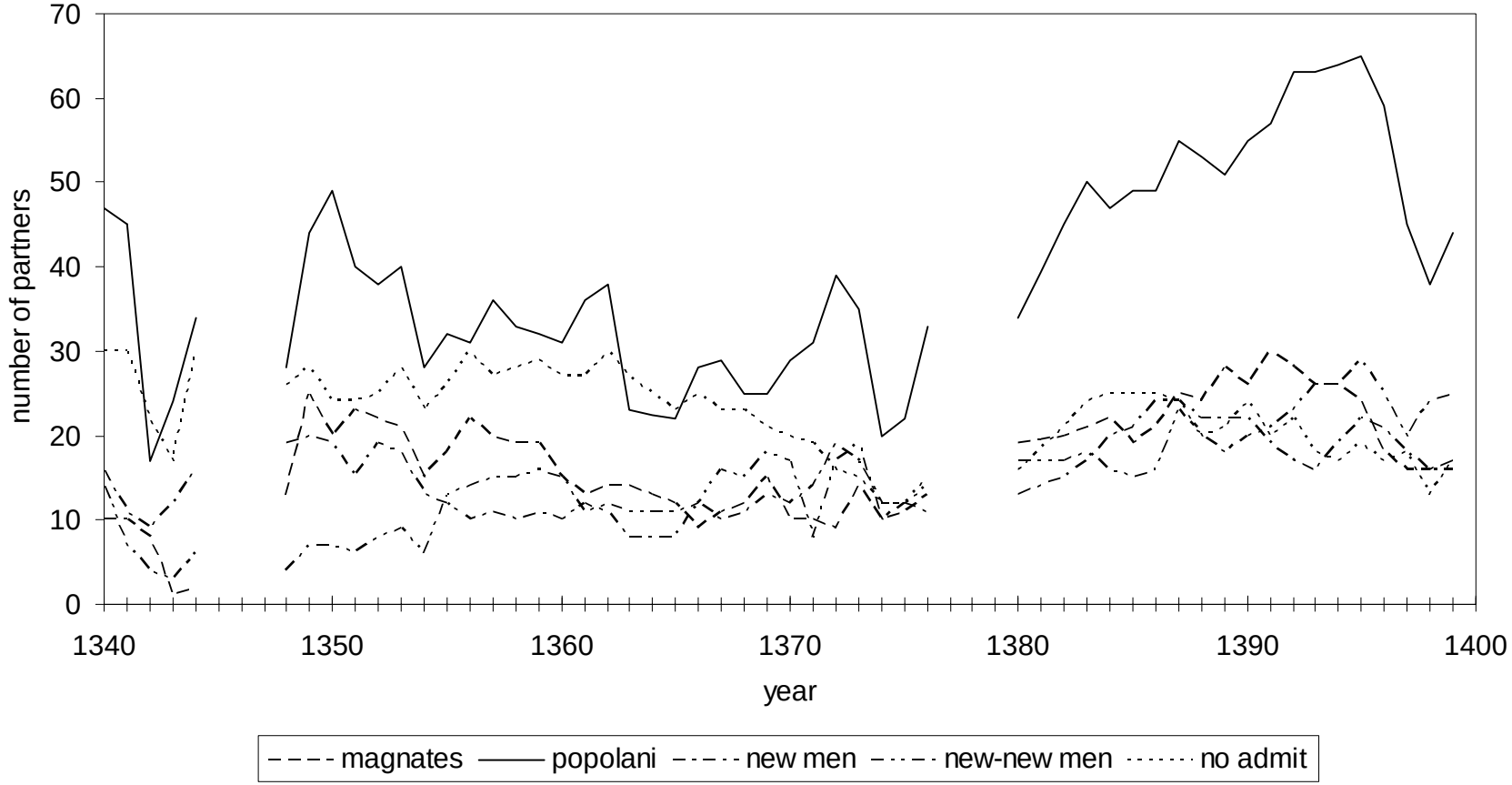


Figure 3. Number of Domestic Bankers, by Social Class: 14th century



source: Archivio di Stato, Florence, *Arte del Cambio* 11, 14.

Appendix: PREDICTING COMMERCIAL CREDIT: Logit Regressions on Credit Relations

	Dependent variable = dichotomized credit (i.e., credit received or not)			
Independent variables:	baseline model	all credit relations	= relational + credits	transactional credits
Statistical Controls:				
Expected Credits (firm sizes)	7.071***	6.577***	4.005***	3.904***
Creditori bilancio seen	.609***	.532***	.881***	.513***
Debitori bilancio seen	.567***	.486***	.514***	.561***
Creditori partners' wealth	0.99e-06	-0.01e-06	1.20e-06	1.06e-06
Debitori partners' wealth	-2.55e-06*	-2.82e-06*	-0.99e-06	-2.80e-06
Economic Relations:				
Org. system (same partner)	7.763***	6.009***	6.710***	.413
Indirect Third-Party Ties:				
# transitive credit connections		.065***	.027	.096***
# cyclic credit connections		.011	.114***	-.034
# incoming credit connections		.045***	.051**	.040***
# outgoing credit connections		.073***	.064**	.095***
Kinship Relations:				
Nuclear Family (excl. self)		3.226***	3.577***	2.245***
In-law Nuclear Family		2.163**	3.639***	.218
Patrilineage Family (excl. nuclear)				
among banks		1.297**	1.218*	.469
banks and silk		.745	.595	.265
banks and wool		.624	.960	.592
among wool producers		1.729*	1.942	1.317
wool and silk		.000	.000	.000
among silk producers		---	---	---
cloth retail and silk		---	---	---
cloth retail and wool		1.917	---	2.577*
among cloth retailers		---	---	---
banks and cloth retail		.000	.000	.000
In-law Parentado Family (excl. nuclear)				
among banks		.329	.160	.176
banks and silk		.869	-5.182	2.256*
banks and wool		-1.429	2.720*	-4.546
among wool producers		---	---	---
wool and silk		.000	.000	.000
among silk producers		.000	.000	.000
among cloth retailers		.000	.000	.000
banks and cloth retailers		3.490	-5.323	6.793

	Dependent variable = dichotomized credit (i.e., credit received or not)			
Independent variables (cont.):	baseline model	all credit = relations	relational + credits	transactional credits
Neighborhood Relations:				
Same Gonfalone:				
among banks		.629	.572	.699
banks and silk		.748**	1.556***	-.104
banks and wool		.729**	1.634***	.466
among wool producers		-.059	.982	-.222
wool and silk		-.010	.316	-.053
among silk producers		-.151	-.067	-.205
cloth retail and silk		-.912	-.287	-.843
cloth retail and wool		-.003	-1.363	.390
among cloth retailers		1.413*	3.952***	.046
banks and cloth retail		-1.018	-2.510*	-.550
Same Quarter (excl. gonfalone)				
among banks		.334	-.161	.492*
banks and silk		.301	-1.057**	.524**
banks and wool		.403*	.699*	.263
among wool producers		.185	-.195	.248
wool and silk		-.195	-.688	-.151
among silk producers		-.661*	-1.349	-.440
cloth retail and silk		-.636	-.840	-.510
cloth retail and wool		.382*	-.182	.353
among cloth retailers		.062	.480	.066
banks and cloth retail		-.608	-1.830*	-.314
Social Class:				
Popolani + Magnates:				
among banks	(.369**)	(.128)	(.142)	(.062)
within gonfaloni	1.294***	.803***	.942***	.254
across gonfaloni	-.202	-.205	-.376	-.015
banks and silk	.016	-.043	.314	-.210
banks and wool	-.157	-.244	-.342	-.242
among wool producers	-.082	-.074	1.072*	-.165
wool and silk	-.164	-.019	---	.119
among silk producers	-.801	-.732	---	-.372
cloth retail and silk	.161	.123	.326	-.264
cloth retail and wool	.039	.062	.333	.029
among cloth retailers	.450	-.021	-3.599	.085
banks and cloth retail	.441	.403	-.569	.574*

Independent vars. (cont.)	Dependent variable = dichotomized credit (i.e., credit received or not): baseline model	all credit relations = relational + transactional credits: relational credits	all credit relations = relational + transactional credits: transactional credits
Social Class: (cont.)			
New Men + New-new Men:			
among banks	(.506)	(.251)	(.199)	(-.020)
within gonfaloni	2.492***	1.100	1.392	-.690
across gonfaloni	.152	.137	-.039	.113
banks and silk	.521	.416	.110	.373
banks and wool	.016	-.068	-.974	.095
among wool producers	.083	-.096	-.026	-.182
wool and silk	-.094	-.266	1.710*	-.704
among silk producers	-.120	-.361	.041	-.438
cloth retail and silk	.372	.283	.258	.312
cloth retail and wool	.051	.020	-.026	.305
among cloth retailers	.833	.610	-1.022	.744
banks and cloth retail	.030	-.019	.494	-.098
No Admit:				
among banks				
within gonfaloni	1.985***	.811	1.174	.090
across gonfaloni	-.969	-.826	-.234	-1.213*
banks and silk	.521	.548*	-.076	.475
banks and wool	.332	.313	.641	.176
among wool producers	.387	.478	1.433	.459
wool and silk	-.105	-.018	.829	-.097
among silk producers	-.637	-.561	-1.006	-.410
cloth retail and silk	.917	1.064*	-.635	1.454**
cloth retail and wool	.063	.105	.115	-.071
among cloth retailers	-.918	-.238	-1.208	-.063
banks and cloth retail	.247	.501	.248	.530
Political Relations:				
Medici party (future)		.331	.521	-.061
Albizzi party (future)		1.084*	.994	.910
Priorate (past): Creditori		.162	.131	.236
Priorate (future): Creditori		.298*	.479*	.267
Priorate (past): Debitori		.245*	.238	.269*
Priorate (future): Debitori		.214*	.408	.120
Mercanzia (past): Creditori		-.081	-.009	-.124
Mercanzia (future): Creditori		-.031	-.253	.081
Mercanzia (past): Debitori		-.301*	.138	-.378*
Mercanzia (future): Debitori		-.314**	-.170	-.292**

	Dependent variable = dichotomized credit (i.e., credit received or not)			
Independent variables (cont.):	baseline model	all credit = relations	relational + credits	transactional credits
Individual Markets:				
Among merchant-banks:				
M.B., Int'l. → M.B., Int'l.	.087	.003	1.278***	-.132
M.B., Int'l. → M.B., F/Pisa	.040	.011	1.512***	-.067
M.B., F/Pisa → M.B., Int'l.	.219	.127	1.482***	-.085
M.B., F/Pisa → M.B., F/Pisa	-.364	-.444	-.648	-.178
M.B., F/Pisa → Dom. Banks	-.011	-.178	.483	-.255
Dom. Banks → M.B., F/Pisa	-.003	-.247	.837*	-.639
Dom. Banks → Dom. Banks	.324*	.102	1.337***	-.170
M.B., Int'l. → Dom. Banks	-.267	-.314	.600	-.495
Dom. Banks → M.B., Int'l.	-.029	-.121	1.007***	-.411
Between banking and wool:				
M.B., Int'l. → Wool, S.M.	-.154	-.272	-1.260	-.107
Wool, S.M. → M.B., Int'l.	-.292	-.410*	.118	-.494
M.B., Int'l. → Wool, Other	-1.075*	-1.131**	-1.371*	-1.240*
Wool, Other → M.B., Int'l.	-1.599***	-1.652***	-1.348*	-1.852***
M.B., F/Pisa → Wool, S.M.	.082	-.029	.373	-.172
Wool, S.M. → M.B., F/Pisa	.232	.132	-.498	.140
M.B., F/Pisa → Wool, Other	-.242	-.310	-.206	-.193
Wool, Other → M.B., F/Pisa	.147	.126	-.277	.437*
Dom. Banks → Wool, S.M.	.258	.021	.124	.125
Wool, S.M. → Dom. Banks	.350*	.104	-.424	.182
Dom. Banks → Wool, Other	-.106	-.239	-.199	-.326
Wool, Other → Dom. Banks	-.285*	-.401**	-.867*	-.451*
Between banking and silk:				
M.B., Int'l. → Silk	.012	-.093	.577	-.273
Silk → M.B., Int'l.	-.292	-.379	.432	-.369
M.B., F/Pisa → Silk	.277	.170	.302	.348
Silk → M.B., F/Pisa	-.207	-.296	.623*	-.270
Dom. Banks → Silk	.137	-.049	.681**	-.039
Silk → Dom. Banks	.271*	.115	.860***	.016

	Dependent variable = dichotomized credit (i.e., credit received or not)			
Independent variables (cont.):	baseline model	all credit = relations	relational + credits	transactional credits
Among wool producers:				
Wool, S.M. → Wool, S.M.	.184	-.318	-.965*	-.427
Wool, S.M. → Wool, Other	-.170	-.402**	-.917*	-.499**
Wool, Other → Wool, S.M.	-.289	-.476*	-1.154*	-.563*
Wool, Other → Wool, Other	-.425*	-.568**	-1.684	-.609**
Between wool and silk:				
Wool, S.M. → Silk	-.155	-.284	-.884	-.476
Silk → Wool, S.M.	-.988***	-1.033***	-1.550*	-1.027**
Wool, Other → Silk	-2.012***	-2.020***	-1.791*	-2.308***
Silk → Wool, Other	-1.481***	-1.440***	-2.546*	-1.571***
Among silk producers:				
Silk → Silk	.829***	.819***	.400	.982***
Between cloth retail and silk:				
Silk → Cloth Retail	.106	.180	.768*	.017
Cloth Retail → Silk	.238	.309	.943**	.275
Between cloth retail and wool:				
Wool, S.M. → Cloth Retail	.526**	.417*	.263	.630**
Cloth Retail → Wool, S.M.	.029	-.195	1.099***	-.838**
Wool, Other → Cloth Retail	.717***	.696***	.767**	.863***
Cloth Retail → Wool, Other	.022	-.106	.592	-.393
Among cloth retail firms:				
Cloth Retail → Cloth Retail	.417*	-.100	-.075	.118
Between banking and cloth retail:				
M.B., Int'l. → Cloth Retail	-.509*	-.504	.136	-.673
Cloth Retail → M.B. Int'l.	-.506	-.451	-.288	-.684
M.B., F/Pisa → Cloth Retail	.101	-.012	1.088**	-.047
Cloth Retail → M.B., F/Pisa	.091	-.092	.433	-.135
Dom. Banks → Cloth Retail	.315*	.166	.749*	.110
Cloth Retail → Dom. Banks	.218	.109	.496	-.008
Constant	-5.214***	-5.229***	-7.411***	-5.215***

Number of observations	153,272	153,272	153,272	153,272
Number of non-zero obs.	3,991	3,991	954	3,037
Log likelihood	-12,389.23	-12,221.62	-3,736.55	-11,573.54
Wald chi-square	4,278.67	5,994.57	5,515.00	3,540.22
Number of parameters	88	133	130	133
Probability > chi-square	.0000	.0000	.0000	.0000
Pseudo R-squared	.330	.339	.355	.224

Notes to Appendix:

(a) $^{***} = (p < .001)$; $^{**} = (p < .01)$; $^{*} = (p < .05)$

(b) "---" means "not enough cases to estimate."

(c) All variables were constructed to avoid nesting, which induces massive collinearity. That is, by construction, "same nuclear family" between firms excludes "same person" (which equals "organizational system") between firms; "same patrilineage" excludes "same nuclear family"; "same parentado" excludes "same in-law nuclear family"; and "same quarter" excludes "same gonfalone."

(d) All social variables constructed on a "percentage of possible partnership dyads" basis. For example, if firm A had two partners, one of whom lived in *gonfalone* x, and firm B had three partners, two of whom lived in *gonfalone* x, with no further *gonfalone* overlaps, then the A-B firm pair received a "same *gonfalone*" score of 2/6 = .333. The "organizational system" variable, the kinship variables, the neighborhood variables, the social-class variables, and the political-party variables were all constructed this way.

(e) The political-office variables were constructed, on the other hand, on "percentage partners holding office" basis. To use the same example as the previous note, if (A → B) was the firm dyad being evaluated, and if one of B's three partners were elected to Priorate before 1427, then (A → B) would receive a "Priorate (past): Debitori" score of 1/3 = .333. If later in time two of B's three partners were elected to Priorate after 1427, possibly including a repeat election of the same partner first elected before 1427, then (A → B) would receive a "Priorate (future): Debitori" score of 2/3 = .667.

(e) The "baseties" variable was constructed in order to control explicitly for differences in firm size, as measured by the raw credit volumes of the firms. Specifically, "baseties = expected number of credits" was calculated as (total number of commercial credits given out by creditor firm) x (total number of commercial credits received by debtor firm) / (total number of commercial credits in data set).

(f) Various types of indirect ties – transitive, cyclic, common in-ties, and common out-ties – were calculated in order to control for possible balance-theory-type network interdependencies

among observations. We used the UCINET social-network statistical package to calculate the number of such indirect connections, and then imported this UCINET output into STATA. P-star (Wasserman and Pattison 1996) is an alternative way to perform such controls. In the future, we intend to explore this new statistical technique, but at present we choose to stick with more "tried and true," and hence more well understood, statistical methods like logit.

(g) Controls for market interfaces, e.g., "M.B., Int'l. → Dom. Banks", are all dummy variables.

(h) Logit regressions were run using STATA's "cluster option," in order to control for correlation of credits disbursed by the same companies, due to unmeasured factors. Specifically, as implicitly recommended by Huber (1967), we clustered by company ID, in order to adjust standard errors. In reality, this adjustment changed very little, since we already had included so many explicitly measured controls. The cluster option, touted in recent sociological methodology (e.g., Sorenson and Stuart 2001), produced little more than coefficients bouncing around the "p = .05" cutoff a little. In the text, we ignore four of the "odd" coefficients in table 8 [namely, "between banks & silk: No Admit," "between banks & wool: Parentado," "among silk producers: Quarter," and "among wool producers: Popolani + Magnate"] precisely because they were generated solely by this cluster option.