Long Distance Trade Partnerships and Social dynamic in Medieval Genoa

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From the early 12th to the late 15th centuries, the Italian cities of Genoa and Venice shared control of the Mediterranean Sea, serving as anchors[2] for the medieval economic expansion that subsequently led to western domination of the rest of the world. While the Italian Renaissance cities, in particular Florence and Venice, have been widely studied to illustrate this domination, few studies have focused on how the Renaissance social organization came about.

For example, Ansell and Pagett's (1993), building on Leifer's role structuring process (1988), analyze the emergence of the Renaissance state in Florence and open a

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[2] In 1311, at the height of the medieval economic expansion, a levy imposed by the emperor Henry VII (1308-1313) to cover the expenses of his vicar general in Lombardy gives a good indication of the relative Genoese wealth. The delegates of 15 Lombard cities assembled in Milan assigned the highest quota, 40000 gold florins per year, to Genoa. Milan and Venice followed with 29760 and 28880, respectively.(Hyde, p65)

critical path to an empirical historical sociology built on inherent processual micro-social arrangements. While Ansell and Pagett certainly contributes to a better understanding of the Florentine elite, their use of accounting books as a data source already implies the social organization they are studying and cannot be very helpful for understanding its antecedent

With different research objectives in mind, North argues that the motor of economic development is the institution of private property which eventually guarantees the well functioning of (modern) markets, but is not focused on explaining the change in social organization that accompany the new exchange system. (1981).

Likewise, for those specifically addressing the transition from feudalism to capitalism, the participation of the dominant class to the Italian medieval commercial revolution (Balard 1978, Jehel 1993) often run contrary to account that pits the nobility against the urban merchants. (Dobb 1947, Holton 1985). Even recent transition theory that focuses on social relationships, such as Lachman's elite conflict theory (2000) who studying a slightly later period, rightly points out that the fight between the existing elite left enough room for a commercial class to grow face a similar problem: The elite' participation in the growth of commerce together with the multivalence of their activity point to shifting alliances and more flexibility of economic interest than Lachman's model can accommodate.

Studying under what institutional conditions, merchant could trust distant agents, Greiff (2006) directly addresses the changing commercial relationships between Italian long distance operators at the end of the 12th century. However, his temporal scope does not cover the subsequent period and is not set to provide an explanation of the change in

mechanism of social transformation that brings about the mercantile oligarchy. In other words, his games theory models are well-designed to show how equilibrium is achieved, but are inadequate for uncovering the sources of a changing context.

In this paper, I use part of a unique data base of commercial agreement that I coded from thousands of medieval agreements to contribute to this research body. Modelling a succession of Genoese long distance Mediterranean commercial network from 1154 to 1315, I analyze one of the change in the long distance equity partnerships to study the emergence of the Renaissance mercantile renaissance oligarchy; Here, in particular, I focus on the aristocracy partner selection to make sense of its role in the unfolding of the medieval commercial revolution.

In broader terms, my aim is to contribute to the research on the emergence of complex social structure by studying the interplay between institutions and social interactions from an historical economic perspective. Toward this end, I consider commercial innovations as social patterns whose critical influence, while conditioning economic growth, was to carry the rules of the transformation of social ties and thereby prompt the emergence of a mercantile oligarchy within the feudal world of medieval Italy.

Historical Data

The historical evidence available for medieval societies is a lot sparser than that available for the modern period, and this is especially true for quantitative information. In

this light, my research is original in that it uses what is, comparatively, a very large data set to study medieval social dynamics.

The data used in this paper comes from a larger data set obtained by compiling over 11,000 commercial agreements, harvested from the 20,000 notarial records I examined. In addition, I have also used a variety of other primary sources to collect supplementary information about the parties.

The main data set contains more than 18,500 ties covering a period of 280 years (1154-1435). It includes roughly 9700 individuals from 4000 different families. In addition, I not only coded details about the transactions at hand, but also, when available, a variety of information about the parties as well. This included information such as profession, gender, formal status, geographic origins and kinship ties.

During my research, I have identified 10 types of commercial agreements,[3] each of which conforms to very regular forms. The data set is constructed in such a way as to allow the sampling of the 10 corresponding commercial networks for any temporal period. The largest number of entries in the data base (almost 9000) refers to temporary equity partnerships, which are concentrated in the early phase of the commercial expansion (1150-1250); credit agreements (more than 7300 ties organized by six different legal types) display the most stable temporal distribution in the data set, whereas the insurance relationships recorded (about 2600) cover the shortest period (1350-1440).

Each commercial contract typically contains at least the following information: 1) the year, month and day of the agreement, 2) the names and roles of the participants --

[3] *Commendae, societas maris*, exchange contracts, sea loans, sea exchange contracts, local loans, promissory notes, credit guarantees, mandates and insurance agreements. I also coded real estate transactions to track down the origins of the capital invested in the long-distance trade.

usually a pair, but sometimes up to seven -- as well as and in some cases their occupation and/or place of residence 3) the size of the transaction -- ranging from a single pound partnership in 1203 between a priest and an occasional traveller for a venture to Acres (in today's Syria)[4] to a 6500 pound investment to Sicily between three members of the powerful Spinola and Cibo clans in 1377[5], 4) the legal type of the commercial agreement, and 5) the names of the witnesses. In some cases, the records also include the type of goods transacted and the destination of the venture.

Commenda

The agreements used for the purpose of this paper are Commenda and Societas Maris, the two classic medieval forms of temporary equity association that that organized most of the social pairing in the emergence of Genoa's long distance trade. (Lopez 1955) These two well-defined institutions, which originated in the eastern Mediterranean commercial partnership (Pryor 1977; Udovitch 1970), were not market driven --The allocation of profit follows a secular and universal distribution pattern across a variety of Mediterranean communities and, as such, clearly precedes the emergence of a financial market where price clears demand and organizes the rules of exchange. [6]

[4] Notary Giovanni di Guiberto, # 579

[5] Notary Teramo Maggiolo, de Struler (1969), #358. Both Spinola and Cibo were consular families in the first part of the 12th century.

[6] The functioning of the western commenda has been the object of several specific studies such as Chiaudano (1925), Astuti (1933), Scialoja (1940) and more recently Pryor (1977).

Network Dynamics and Partner Selections

Genoese from all segments of the community were involved in the Mediterranean trade throughout the 13th century. For the overwhelming majority of them long-distance trade was a rare event and certainly not their main occupation Reynolds (1945) It remains that despite the fact that most operators lacked specialization, commerce was making an increasingly important contribution towards the organization of social structure during the period, foreshadowing the important role that trade played in defining social relationships during the Renaissance.

An investigation of this transformation requires one to analyze not only the behaviour of individuals, but also the way in which the structure of the Mediterranean trade network changed between the end of the first crusades and the beginning of the 14th century, when commendae lost their pre-eminence as the main partnership frameworks.

In this paper, I start by reviewing two basic network parameters in order to explore the morphological changes of the Mediterranean's equity network over 170 year. These changes reflected the rise of a commercial elite and a shift in Genoa's social organization. Then, in the second part, I connect the network's macro structural dynamics with the micro social interaction of partner selection pattern, to show how overseas commerce became salient in the definition of relational ties among the nobility.

As Mark Bloch (1953) observed, it is as comparative tools that analytical concepts should be deployed when referring to medieval history. Formal network analyses did not exist when Bloch made his recommendations; but following his methodological suggestions remains prudent. Bearing this in mind, my objective is to

unearth empirical regularities of operational definitions of graph features that are scalable and transposable in time, rather than precise indicators of the stand-alone social structure for individual periods. As with any other theory, the idea is that the hypothesis behind the parameters' signification will allow us to understand the concatenation and sequence of social dynamics in a way that would otherwise be hidden. As a result, in an effort to simplify my analysis, I elected to use basic measures because I realized that a marginal gain in indices' precision might be mistaken for an increase in veracity, and that such a gain would not yield much when considering the length of the time series, the size of the data set, the low density of the networks, and the remoteness of the period under study.

Figures 1 to 7 display in the next 5 pages the graphs that represent seven commendae networks from 1154 to 1315. Each node represents a participant in the commenda network, and each vertex represents either a relationship between a traveller and an investor (coded "ti"; 87% of all ties), between two coinvestors in a venture (coded "ii"; 10% of all ties) or, more rarely, the agency relationships that linked one or more investors to agents investing on his or her behalf in a commenda (coded "agm", 4% of all ties). Little can be determined just by looking at the graphs, other than the fact that, despite being only a sample of the total network, the quantity of nodes in each figure confirms a large involvement on the part of the Genoese community. Note, however, that the quantity of records available to me to code varies between each graph, and thus that the variation in the sample size over time is not representative of the social dynamic. This said, the disparity in the size of the seven networks actually offers an unexpected methodological benefit, in that the quantity of records coded for each period is not a function of time. Thus, empirical regularities in the change in the network measurements

cannot be attributed to the network's size.

Figure 1. Commenda Network, 1154-64 (n=379, mean nodal degree=2.064, average transactions per tie=1.13)

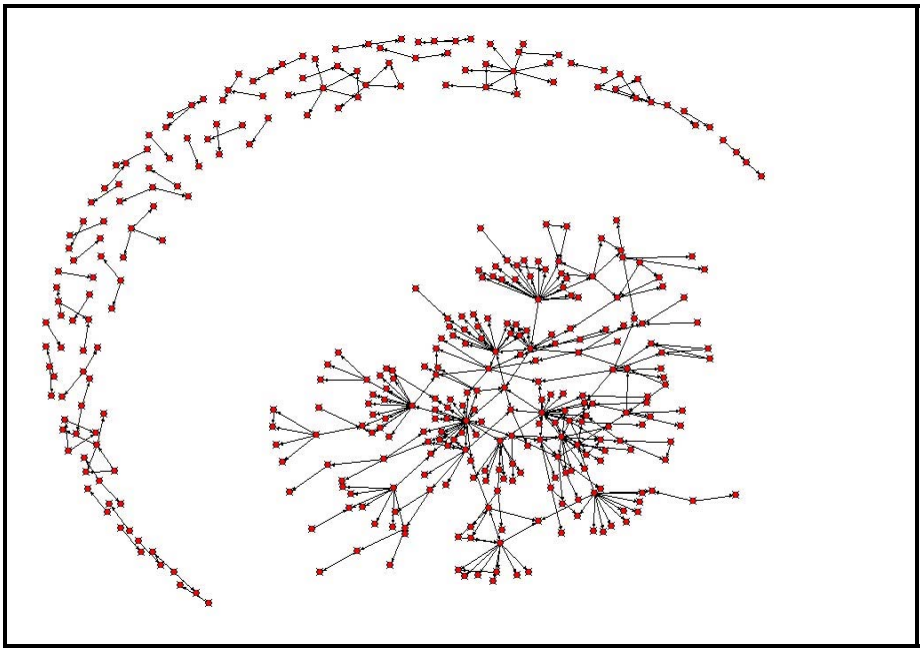


Figure 2. Commenda Network, 1182-97

(n=1072, mean nodal degree=2.29, average transactions per tie=1.11)

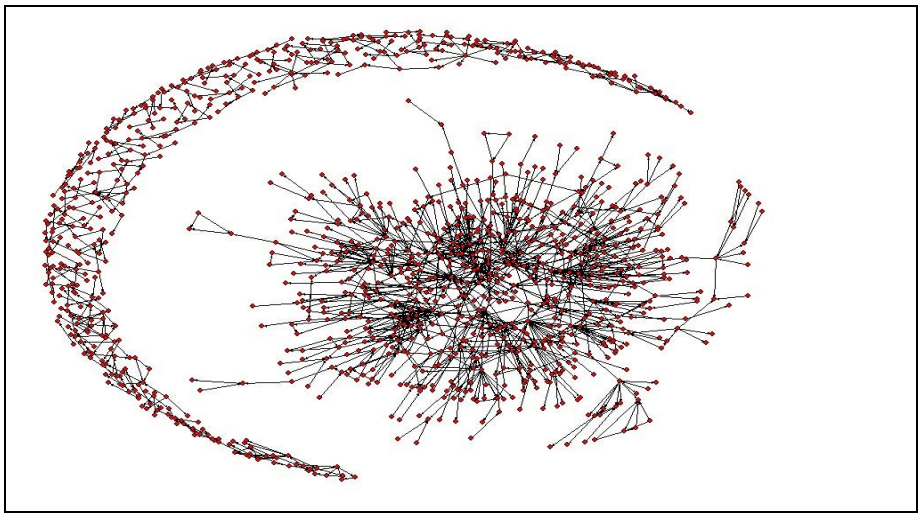


Figure 3. Commenda Network, 1198-1215

(n=1112, mean nodal degree=2.45, average transactions per tie=1.09)

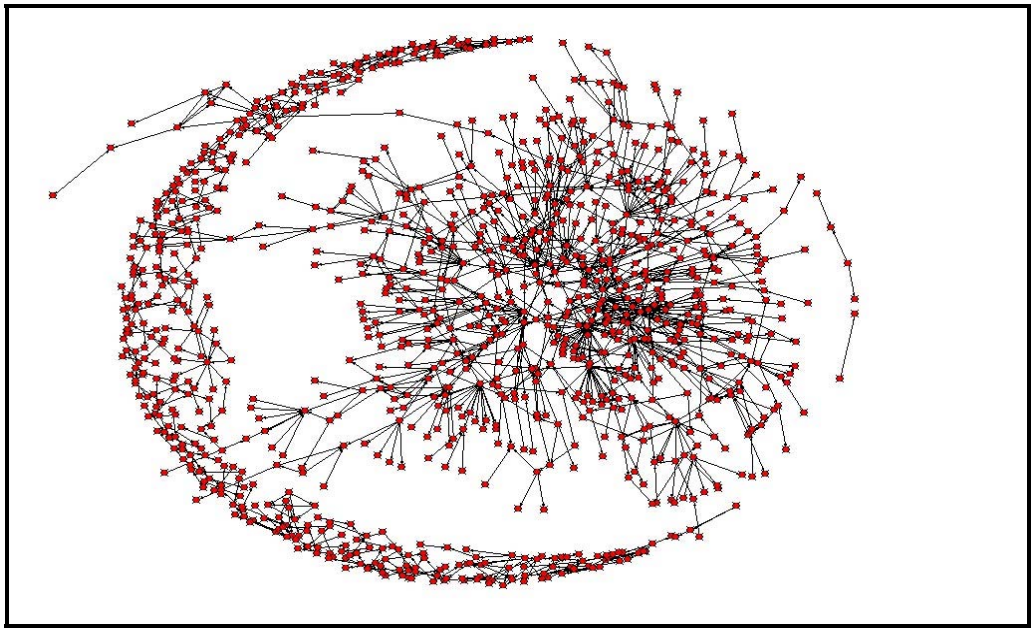


Figure 4. Commenda Network 1215-39

(n=753, mean nodal degree=1.91, average transactions per tie=1.10)

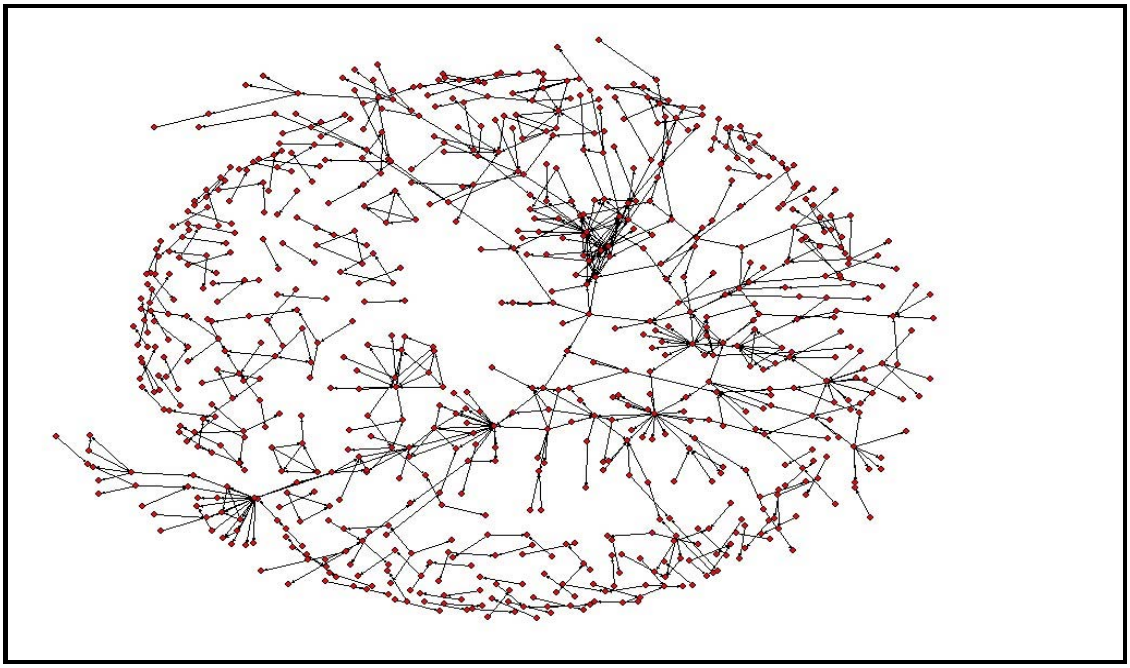


Figure 5. Commenda Network, 1245-69

(n=716, average nodal degree=1.56, average transactions per tie=1.06)

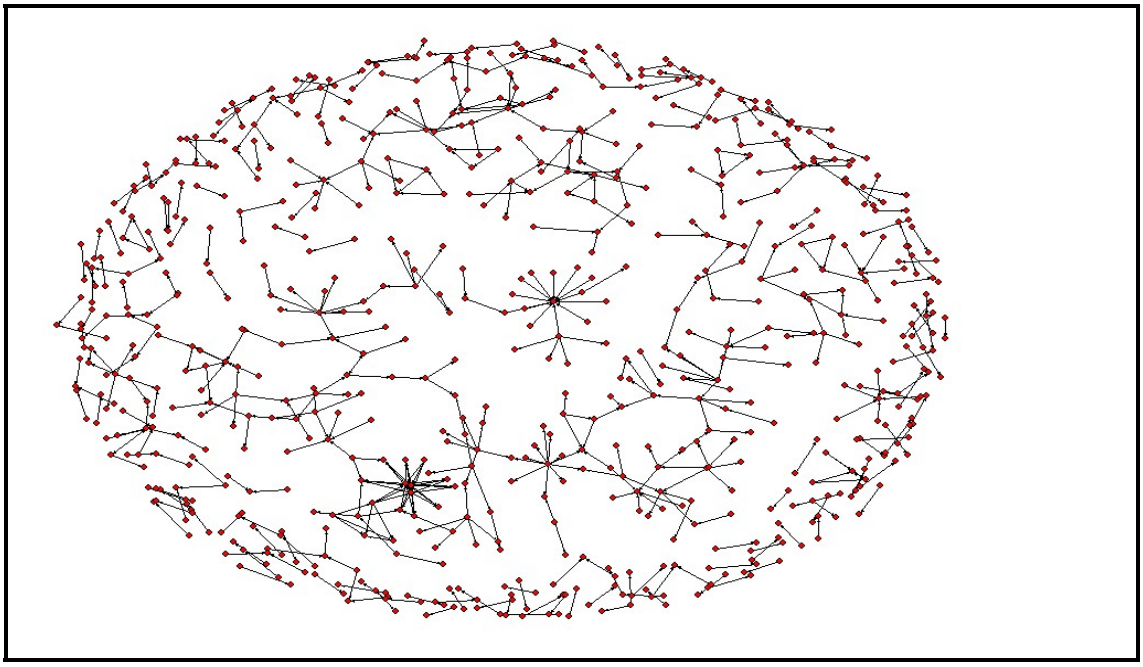


Figure 6. Commenda Network, 1269-96

(n=1822, mean nodal degree=1.93, average transactions per tie=1.08)

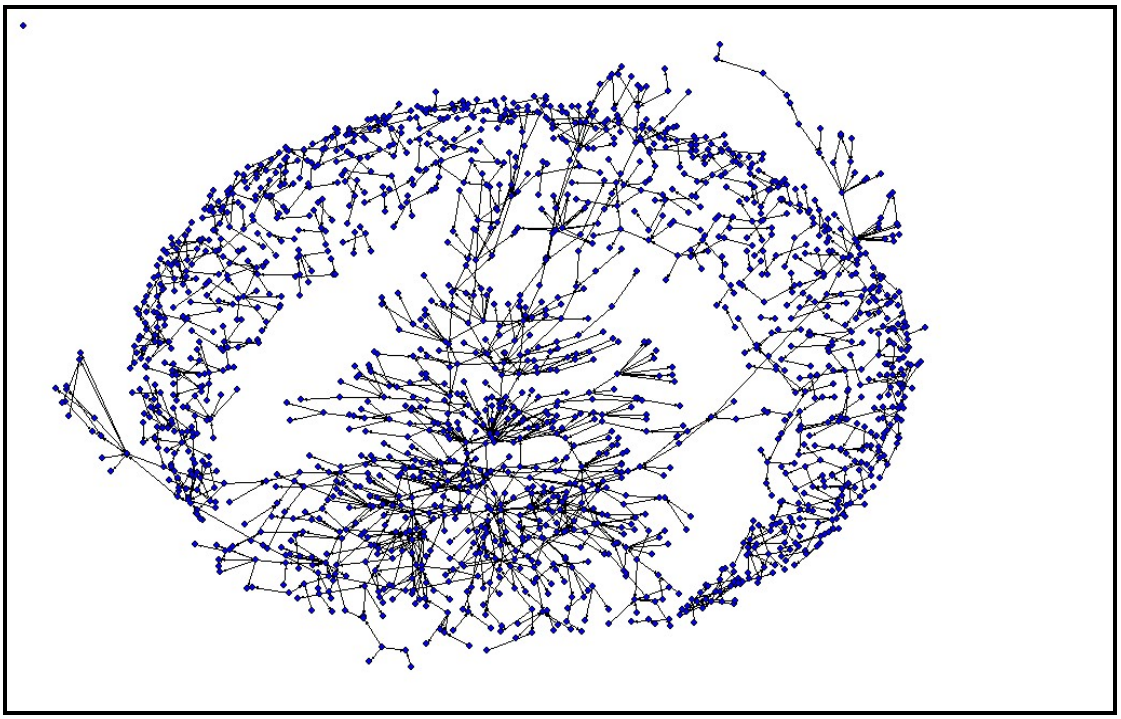
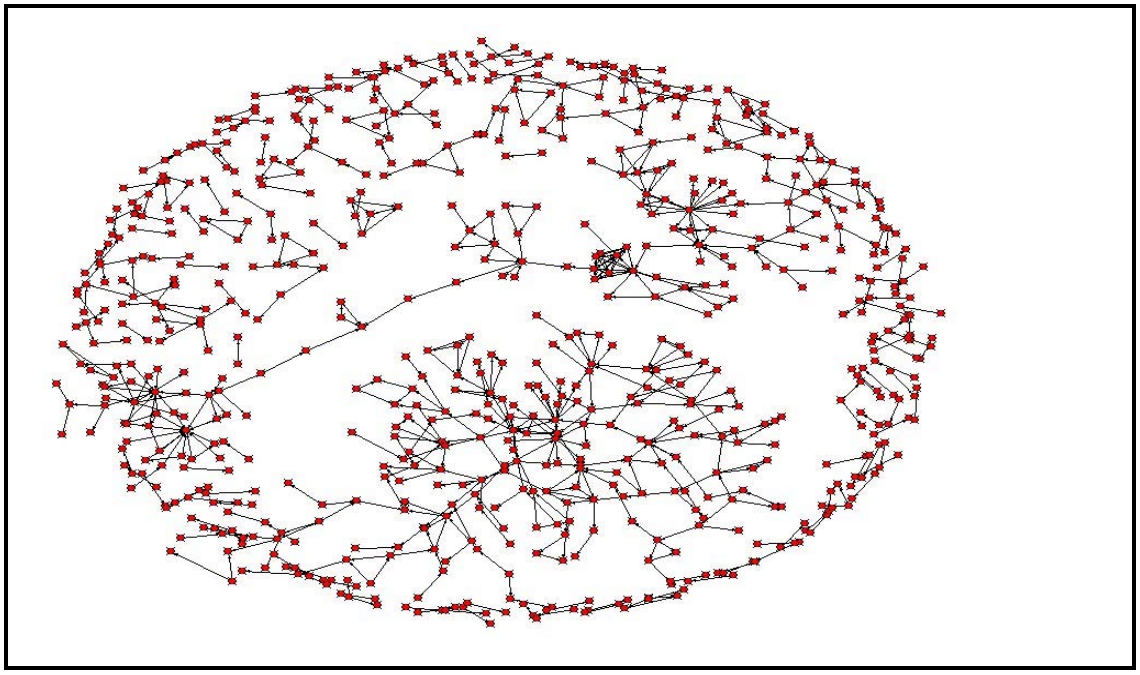


Figure 7. Commenda Network, 1297-1315

(n=723, average nodal degree=1.79, average transactions per tie=1.06)



Occasional Partnerships.

A quick examination of the average nodal degree and its frequency distribution in each network from 1154 to 1315 (see appendix 1) confirms that the overwhelming majority of Genoese traders were occasional participants in long-distance trade. More informative network measures indicate that, even among those who were part of multiple contracts, very few selected the same partner twice. The low number of repeats in investor/traveller ties in our data base represents the commercial reality of the time: with little control over the length of each venture, and thus of cash flow and its timing, participants in the equity network were only able to plan their investment decisions to a limited extent. This meant that opportunistic behaviour was the norm. In this context investors selected travellers who were about ready to leave, as opposed to waiting for their previous partners, as the timings of their departures would be unpredictable (if they were to leave again at all). Similarly, and especially in the early phase of the commercial revolution, those travellers who decided to take to the sea again could not necessarily take it for granted that their previous investors would provide them with access to cash or goods. This is especially true in the case of Mediterranean trade, where credit instruments did not yet leverage existing equity investment. The best evidence that investors did not have much cash sitting around and did not wait to invest their cash -- a factor which severely limited the repeat of partnerships -- is the very small ratio of cash to commenda contracts apparent in the thirteenth century wills that have been studied by Epstein (1984) and Jehel (1993).

Hierarchy

There is an abundant amount of literature which considers individual and group centralization, and the properties of several operational parameters have been well analyzed (Freeman 1979; Marsden 1981; Bonacich 1987). For our purposes, those parameters which take into account how "close"[7] actors are to each other (such as "betweeness" and "closeness" centrality) can only be deployed when considering a subgraph of the entire network. Indeed, the very large amount of components - subgraphs of nodes which are directly or indirectly linked to each other - in each network are a graphic representation of the lack of commercial connection apparent between many operators in our sample. Thus the distance between them can not be computed.

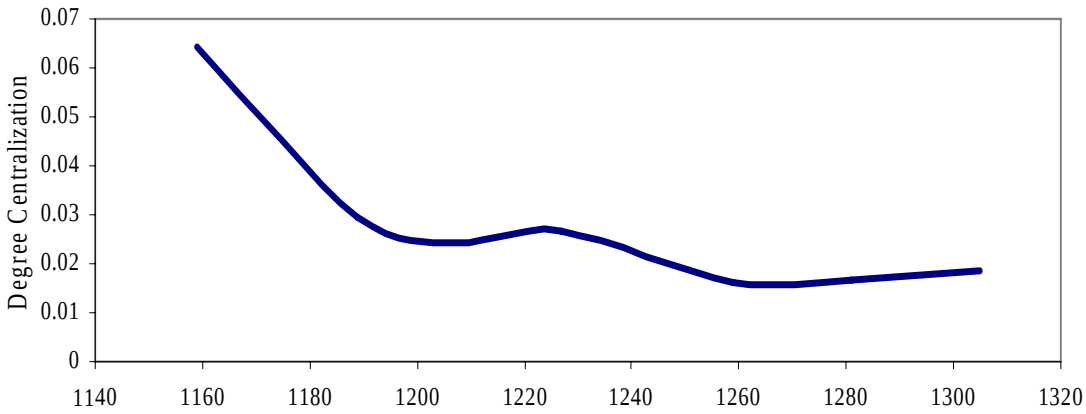
As a result, I have relied on network degree centralization - an index that measures the dispersion of a person's activity[8] as represented by the number of his ties - when assessing the hierarchical dynamic of the Mediterranean trade network. In other words, since this centralization's index is the variation in the number of ties of each operator divided by the maximum degree variation for a network of this size, the change in the index value from 1154 to 1315 reported in figure 8 is an indication of how isomorphic each trade network is to a star[9] or to an ideal type feudal clientelist configuration.

[7] Most distance-related parameters are based on the shortest path between two nodes, also called 'geodesic distance'.

[8] As represented by the number of ties and not by the size of their investment

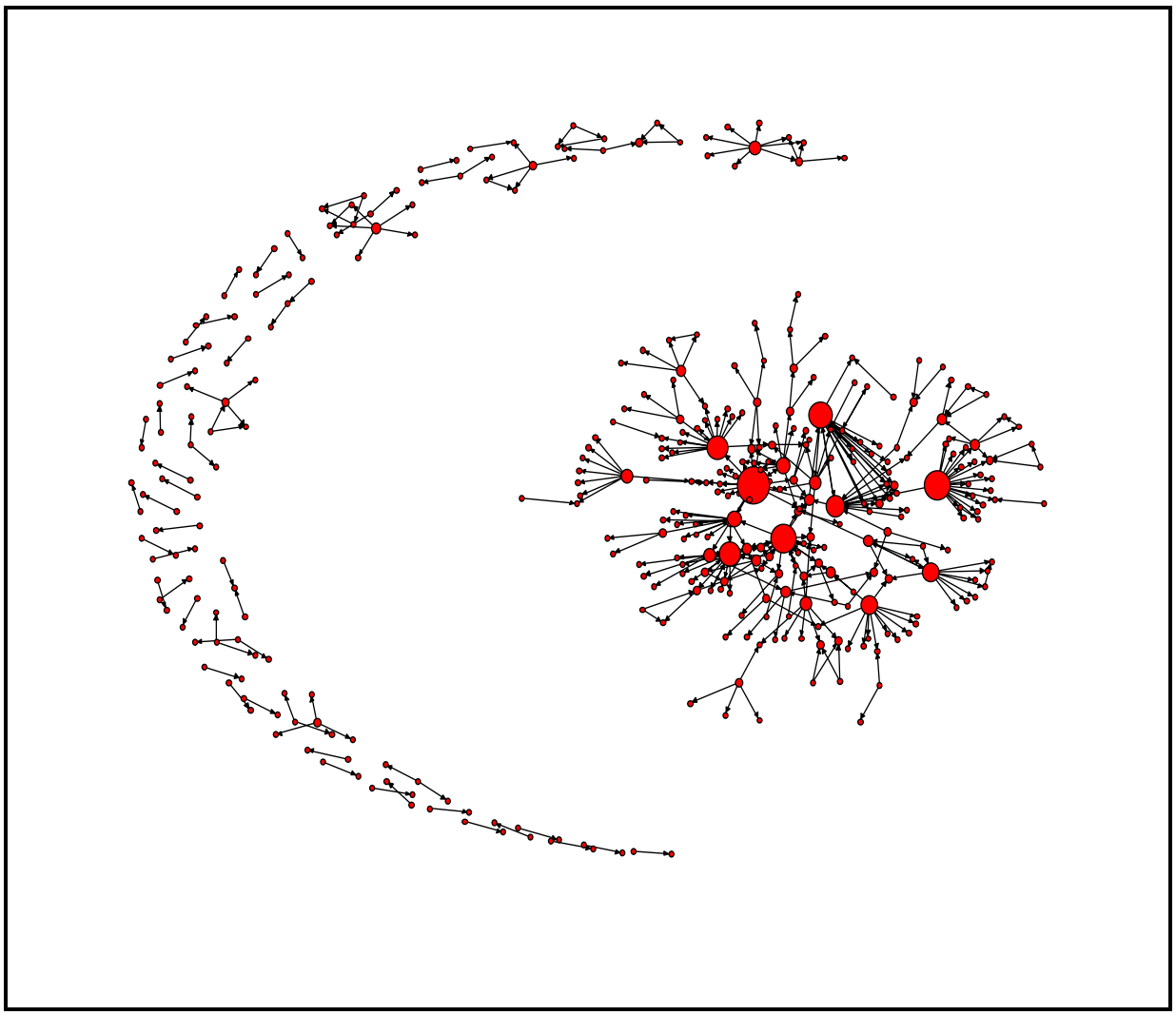
[9] In a star network of x nodes, the index (variation of degree) is maximal since the central node's degree equals x-1, while all others equal 1. Conversely, in a network where all nodes have equal degree (for example if each node belongs to a clique of a similar size), the index is equal to zero.

Figure 8. Equity Network Degree Centralization, 1154-1315



Evidently the trade network's centralization decreased in the early phase of the Genoese commercial revolution, as trade opportunities opened up to all, and remained low during the 13th century. A closer look at the network for the period 1154 to 1164 in figure 9 (next page) clearly shows that during that period, aside from isolated and smaller traders, the Mediterranean trade was controlled by a few large operators, each surrounded by clients who were only indirectly connected to each other by their exclusive patronage tie to a central node. As such, network analysis confirms earlier findings, based on the surviving records of that time that a group of larger-scale operators dominated the long distance trade around the mid 12th century (Byrne 1920; Day 1988).

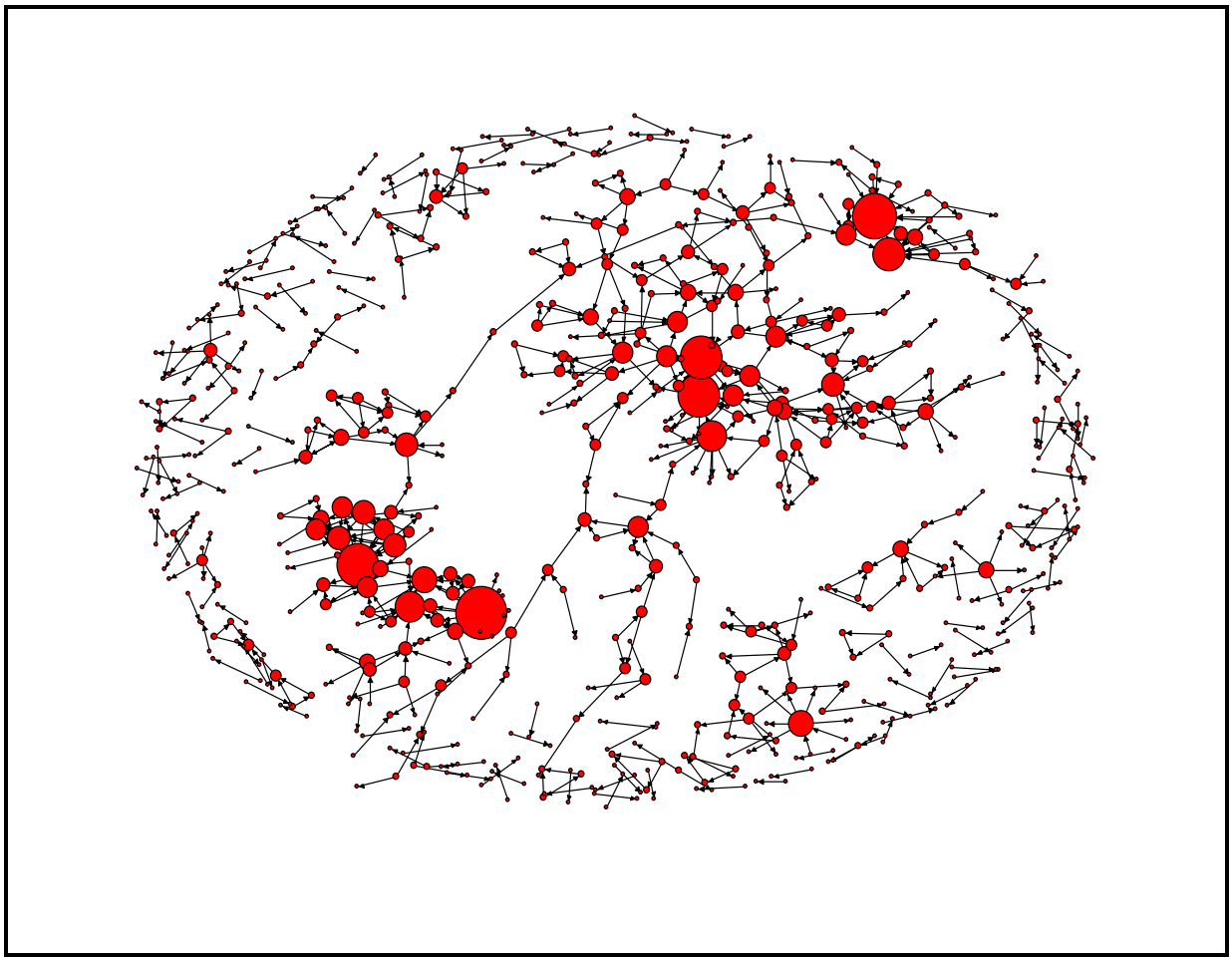
Figure 9 Equity Network, 1154-1164



One striking point, however, is how tenuous the indirect commercial relationships between these operators were during that time. Indeed while we have plenty of evidence to show that the large operators interacted socially and forged political alliances with each other, they seem to have not been dealing directly with each other commercially: there is also little evidence for multiple indirect paths of commercial

interaction. This is another indication that the exclusive character of feudal clientelism permeated not only social organization as a whole but also the commercial network as well. As figure 10 shows, by the end of the 13th century though, this had changed and the largest operators increasingly collaborated with each other directly and their ties were spread all around the network. By then the oligarchy collaborated more, not only with regard to the political and military organization of the city, but also with regard to matters of long-distance trade.

Figure 10 Equity Network, 1297-1315



Integration

While the centralization index makes clear the changing hierarchical nature of the network, these measures provide no information about either the integration of the network or, in general, about the social cohesion of trade. Indeed, while centralized networks always exhibit some degree of connection, the reverse is not true. For example, our centralization parameters will be equally low for networks in which integration varies from none (if they consist of dyadic relationships only) to maximal (if all the nodes are tied to each other).

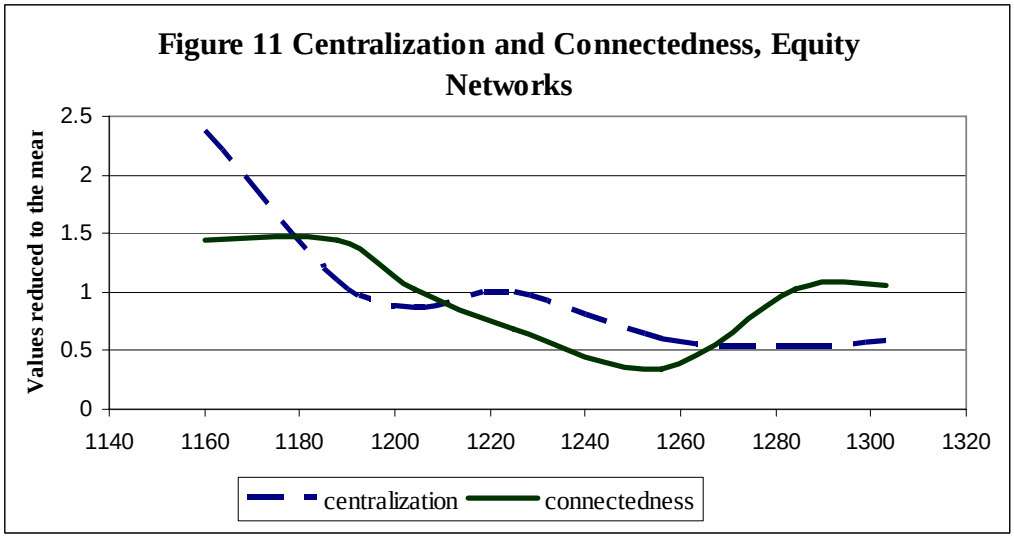
Integration is naturally related both to the idea that the actors are connected and to the social concepts of cohesion (a more robust version of connection which involves more intensively organized mutual relationships) and adhesion (which refers to the idea of social partition) (White D et Harary. 2001, 308-12). While density of relationships springs directly to mind when considering social connection, this criterion is not very helpful when comparing a large network of tangible social ties such as that considered here, because of the inherent maximum number of social relationships that any given individual can have.[10] Thus density indices are a function of a network's dimension, and the difference in sample size for each period of this research makes this measure unoperational. Similarly, parameters that include graph measures of distance between operators in a network are also naturally deployed to assess a social organization's integration. However, as noted above, the commenda network consisted of many disconnected components and the distance between operators can therefore simply not be

[10] Obviously that statement varies depending on what kinds of ties are analyzed. For example density might be a meaningful parameter to assess the integration of an internet network based on hit on common web sites.

computed. As a result, as in other studies on large networks (Watts 1999), I relied on the parameter *connectedness*—an index that is based on the number and variability of the size of a given network's components—to size up the integration dynamic of the commenda networks.

Figure 11 presents both *centralization* and *connectness* indices from 1154 to 1315. As already noted, the integration of the earlier networks was based on their centralized architecture, as most trade connections passed through a central operator.

Figure 11 Centralization and Connectedness, Equity Networks



However as feudal-like control over the network declines, the trade network's integration decreases sharply, before commercial ties knit the whole back together to form a more integrated -- yet more decentralized -- trade architecture.

Unsurprisingly however, the historical increase in the interaction activities occurring between operators, as well as the slow build-up in specialization, followed the earlier more dyadic construction of the early 13th century, which involved many smaller components. In many ways this developmental model (moving from an isolated cluster of operators to a more integrated network) intuitively fits with both the historiography

(which recognizes that an increase in trade opportunities for the population as whole followed the more restricted access to long-distance trade which was associated with the earlier period) as well as theoretical market models that recognize that a market's integration correlates with its maturity (White, H. 2002).

Partner's selection[11]

While figure 11 leaves little doubt about the timing of the social 'rewiring' which occurred in the trade network after the mid 13th century, its adhesion and its partner-selection processes need to be investigated understand how the rewiring took place. Because members of the aristocracy provide the bulk of the growth volume during that period, I focus in this paper on their partner selection pattern and in particular their homophilic tendencies.

I operationalized homophily by coding each commercial tie with a pair of binary attributes corresponding to the connected nodes, in order to generate a set of 2 by 2 tables for each of the networks from 1154 to 1315. In each of the four cells of the tables, I recorded the total amount of one of the four possible combinations of attributes for periods. From these 2 by 2 Tables, the simplest way to assess the propensity of commercial operators to form homogeneous partnerships with respect to the attributes coded would be to use simple percentage. However, this metric does not take into account the availability of "alike partners". As a hypothetical example, consider a case in

[11] The term "partner selection" seems to imply decision by the actors. However, this is not the case here. Commercial operators certainly used some initiative in a restricted menu of social choices, but it remains that in average, social structural regularities occurred in partner selections.

which 30% of artisans form partnerships with other artisans and 70% select non-artisans as their commenda partners. If only a few artisans took part of the commercial network, this could indicate a very high propensity for homophilious selection with respect to occupation. However, if artisans were to represent the majority of the commercial operators, it might actually represent the opposite. Indeed, everything being equal, artisans in this second hypothetical case would be more likely to select a non-artisan as a partner.

As a result I selected a measure that takes into account the availability of "alike partners". From among the measures suggested by Gower and Legendre (1986), which were suitable for use with a 2 by 2 table, I elected to use the point correlation statistic, a closure index which those authors label S14[12] in their article. Following Krackhardt's suggestion (1990, p350), I also deemed S14 appropriate because it exhibited sensitivity to large variations in cell sizes and a low distortion at the extreme values that could result from such variation.

The calculation of S14 generates values that range from - 1 to 1, with a positive value indicating that there exists a propensity to form homogenous partnerships given appropriate availability. Measures close to zero indicate that, on average, the attribute is not salient in the partner-selection process.

Status as a "rewiring" attribute

[12] For a given 2X2 table with four cells denoted x11, x12, x21, x22, S14 is defined as follows:

$$S14=\sqrt{\ }[(x11/x11+x21 -x12/x12+x22)(x11/x11+x12-x21/x21+x22)]$$

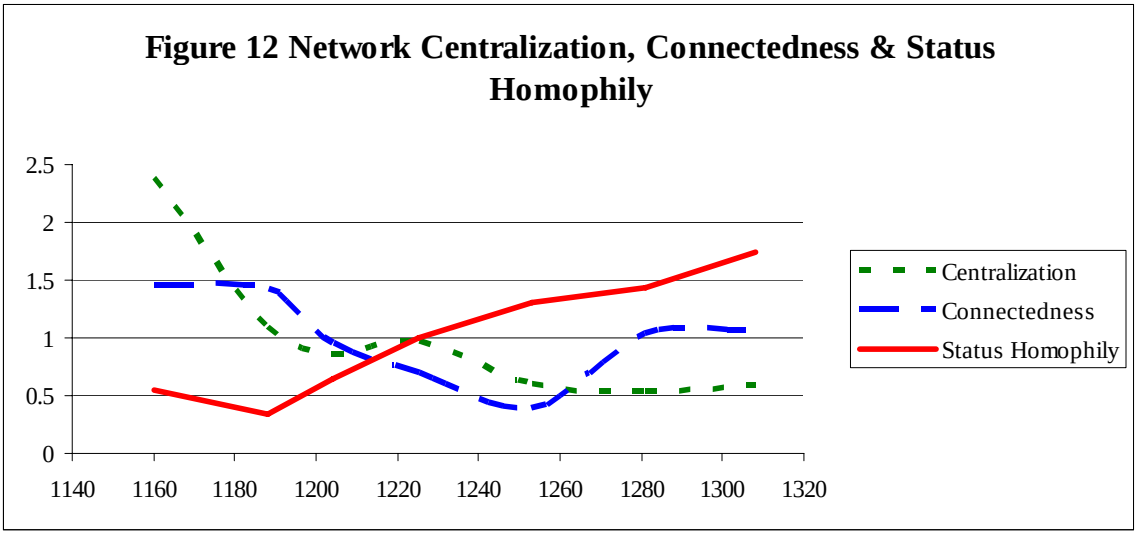
Table 1 reports S14 values for a status-homophilic propensity. The index shows that, following an earlier period of heterogeneous partner selections, from the end of the 12th century onwards formal status became increasingly salient in commercial partnerships. This is not to say that cross-status commendae disappeared; however, it does indicate that, given availability, an aristocrat was increasingly likely to form a partnership with a fellow aristocrat.

Table 1. Value of S14 for Status Homophily, 1154-1315

1154-1164	1182-1197	1198-1215	1216-1239	1245-1268	1269-1296	1297-1315
0.191	**0.117**	**0.223**	**0.348**	**0.451**	**0.499**	**0.604**

In figure 12 for the sake of comparability, I have reduced the same homophilic S14 indices to their means. Then I supplemented these values to the hierarchy and integration parameters reported earlier in figure 11. In light of the changes of both network measures, the rise of homophilic selection among the aristocracy takes on greater meaning.

Figure 12 Network Centralization, Connectedness & Status Homophily



From the middle of the 12th century onwards, the decrease that occurred in centralization expresses the loss of the preeminent position previously enjoyed by thos of the ruling aristocracy who benefited from long-distance trade. In addition, the feudal nobility's monopoly of financial surplus was eroding, as the marginal saving rate of lay participants in long-distance trade increased. While, the loss of this economic monopoly did not translate into much of a loss of political power until the middle of the 13th century, it remains obvious that the nobility as a group had increasingly to compete for resources with the rest of the population. Control struggles start to move to the level of markets. For the nobility, one logical outcome of this situation was to increase intra-status ties. As a result, over time, status-based selection became salient, giving rise to a social mechanism which contributed to the formation of a commercial network which was, as a whole, more integrated but less hierarchical. There is no evidence to indicate, however, that the desire for intra-status partnerships was the result of a deliberate control strategy. But, this said, the data certainly does show that as aristocrats lost some of their feudal prerogative, especially after the revolution of 1259, commerce became an increasingly significant factor in the definition of their social ties.

As a result, henceforth, the commenda institutional framework that had fostered the formation of heterogeneous ties in long distance trade partnerships lost its appeal. By the early 14th century, the sharp drop in the number of temporary equity agreements in the data set confirms other scholar finding of the commendae demise.

Conclusion

The historical evidence shows that commenda contracts served at first to link the investing nobility with a few professional traders but also simultaneously opened the door to a multiplicity of other participants. As a result, feudal control was decoupled by the expansion of trade -- in a pre-market society -- and a quantitative change became qualitative (Padgett 1990). Indeed, The lack of repeat of most names in the data set points to the occasional nature of commercial activities for many Genoese and indicates that before the middle of the 13th century, the multivalence of identity of most commercial actors makes it difficult to define a social structure with respect to trading activity

The focus on real relational ties shows how commercial innovations were as much a condition for economic growth as they were the carrier of the rules that organized the transformation of commercial ties that gave rise to a merchant class. Commendae decline sharply toward the end of the 13th century precisely when the long distance partnerships became more homogeneous with respect not only to status but also- I did not show it today for lack of time- to occupation. This is after all not surprising, since Commendae- with its temporary commitment and its fixed –nonmarket driven- profit allocation had provided the perfect instrument for the heterogeneous social pairing that characterize the early part of the medieval commercial revolution, but made little sense under an increasing homogeneous and connected commercial network of the renaissance. It was thus not - as economist such as North (1981) and Greiff (2006) have claimed - an economic optimization that drove the long distance trade institutional frame work

decline, but a change in the partner selection that reflected the dynamic of the Genoese social organization as a whole.

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Appendix 1: Nodal Degree Distributions of Commenda Networks, 1154-1315

1154-1164. n=379

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree
Frequency	241	77	21	13	8	5	3	5	5	2	777

1182-1197, n=1073

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree..
Frequency	578	229	94	63	30	39	21	11	5	5	2462

1198-1215, n= 1112

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree.
Frequency	538	251	108	61	35	40	25	22	10	4	2779

1216-1239, n=753

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree.
Frequency	472	137	69	27	16	15	7	4	5	1	1444

1245-1268, n=716

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree.
Frequency	508	115	48	19	15	5	1	1	0	0	1134

Nodal Degree Distributions of Commenda Networks, 1154-1315 (cont.)

1269-1295, n= 1823

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree.
Frequency	1162	343	127	66	39	36	23	21	4	2	3468

1297-1315, n=723

Nodal Degree	1	2	3	4	5	6-7	8-9	10-13	14-19	20+	Sum nodal degree.
Frequency	414	175	66	23	16	19	4	4	2	0	1366