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The banking-industry relationship in Italy: Large national banks and small local banks compared (1913-1936)

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ABSTRACT:

Using a large dataset including information on more than 300,000 directors of Italian joint stock companies, this paper analyzes the networks of corporate interlocks of the two largest universal banks and twenty most 'central' local banks in Italy in 1913, 1927 and 1936. The networks of the two types of banks were largely independent, with universal banks being affiliated principally to larger concerns in electricity, transport and storage, and financials; and local banks to riskier, younger and smaller firms in light manufacturing. Thus, local banks performed an important role in interlocking with businesses that other financial institutions may have not considered credit-worthy but were nevertheless important for the Italian economy. These findings challenge Gerschenkron's claim that Italian industrialization was fundamentally prompted by two great universal banks and show that Gerschenkron seems to have underestimated the resource mobilization occurring in the regional economies through local banks financing small firms.

1. Introduction

Italy is a well-known case of bank-oriented financial system, a group where it is often associated with France, Germany and Japan. Although significant differences exist between the financial systems of each of those countries, overall intermediaries play a more significant role than the market in financing the economy. It suffices to mention that the ratio of stock-market capitalization over GDP would not exceed 0.26 in the years under analysis. Whereas the counterpart value for stock-market oriented countries such as the USA and Britain was 0.75 and 1.38 respectively (Lescure, 1985; Rajan & Zingales, 2003).

The relationship between banks and industry, particularly the role of the German-type universal banks in fostering Italy's industrialisation in the early twentieth century, has been widely debated within Italian economic historiography. In his path breaking contribution, Gerschenkron singled out the main universal banks, *Banca Commerciale* and *Credito Italiano* founded in the 1890s with German capital and *Banco di Roma* founded in 1880, as the major driver of Italy's 'big spurt' in the 1896-1908 years. In his view, these banks functioned as a 'substitution factor' that prompted Italy's economic growth by providing significant financial support and qualified managerial advice to the major industrial companies of the country, especially in modern capital-intensive sectors such as steel, heavy engineering, electricity, and shipping (Gerschenkron, 1962).

Revisionist scholars, however, reconsidered the role of universal banks. Confalonieri maintained that universal banks were more concerned with standard banking activities and only became the unwilling owners of the military-industrial complex when the post-World War I crisis made it impossible for many companies to repay their debts to banks (Confalonieri, 1974-76, 1982, 1992-97). Battilossi showed that the close and long-term relationships between universal banks and industrial concerns led to unsound practises such as

sheltering managers from external controls and allowing banks to engage in excessive risk-taking behaviour epitomised by a pathological escalation of equity stakes. All of this was enabled by a lack of supervision of monetary authorities who were also expected to bail out distressed banks and corporate groups (Battilossi, 2009).

Fohlin provided an additional critical perspective when disputing the positive impact of universal banking on financed firms. She showed that firms belonging to the universal banks' networks did not grow faster than those that were not included. Fohlin also highlighted that the universal banks in Germany and in Italy tended to establish their networks on large well-established companies instead of trying to create connections with promising, but risky, small firms, which needed venture capital (Fohlin 1998, 1999). These findings suggest that universal banks were fulfilling the role of banks envisaged by Schumpeter only to a limited extent, a role which includes the important function of screening proposals of would-be-entrepreneurs and selecting those worthy of credit (Sylla, 1991). In fact, Schumpeter differentiated between 'current credit' and the credit to be provided to the entrepreneur to run and found a business 'to be able to carry out his new combinations [innovation] and to *become* an entrepreneur' [emphasis by the authors] (Schumpeter, 1934).

Throughout the twentieth century, Italy had a segmented banking sector. There were very few large banks and a multitude of small and medium-sized ones with mostly local clientele. The sector was segmented along regional lines as a result of the country's fragmentation before 1860 and the early advantage smaller banks had gained in local economies. This was one of the barriers to the creation of large national banks and local banks retained the lion's share of the commercial lending. Thus, a regionally segmented banking system allowed different types of banks to specialise in different types of customers in different geographical areas, with local banks fulfilling the credit need of small and medium-

sized enterprises (Carnevali, 2005). However, the segmentation of the banking system was one of the major causes of its instability before 1936. In fact the large national banks, which were the main lenders to big business, suffered from limited levels of liquidity as most of the deposits were held in the periphery by local banks and invested locally in smaller concerns; a mismatch in liquidity that the central bank was not able to redress (Conti, 1999).

It has been claimed that in their respective territories, however, local banks acted as small universal banks that provided firms with both short and long- term loans and sometimes also participated in their share capital. The sharing of board members became also widely superimposed to credit relationships and cross-shareholdings between banks and industry at the local level (Piluso, 2009).

Despite the relevance of the relationship between banks and industry, only a few studies within the historiography have analysed the sharing of board members – that is, the system of interlocks[1] – between banks and industrial companies in the period prior to World War II. Cohen, Confalonieri, and Fohlin found that universal banks were at the centre of an entangled network with large firms in modern capital-intensive sectors such as electric power, chemicals, iron and steel and shipyards (Cohen, 1967; Confalonieri, 1982, 1992-97, Fohlin, 1999). However, Vasta and Baccini – using a larger sample of more than 4,000 Italian joint-stock companies – argued that the Italian corporate network was not characterised by such a strong centrality of banks. The location of banks at the centre of the network could be detected in 1911 and even more in 1927, but this was no longer the case in 1936, after the collapse of the universal banks (Vasta & Baccini, 1997). By that time, insurance companies and utility companies had replaced banks at the centre of the system (Baccini & Vasta, 1995). Recently, Vasta and his co-authors have confirmed that the centrality of the universal banks in the Italian corporate system varied over time. They argued that Italian capitalism is structured

to a remarkable extent on a sizeable and stable system of corporate interlocks that existed in parallel to that centred on the universal banks. They also showed that the influence of financial capital was abundant but not limited to a few large banks. Its influence played a crucial role, at least in Lombardy and in some other developed areas of the North, involving many local banks which in turn developed a dense web of ties with industrial firms (Vasta, Drago, Ricciuti, & Rinaldi, 2017).

This article investigates the banking-industry relationship in the networks of large universal banks and the networks of small local banks in Italy using a comparative perspective for three benchmark years: 1913, 1927, and 1936. For each of these years, we selected the two largest German-style universal banks – *Banca Commerciale Italiana* and *Credito Italiano* – and the twenty most 'central' local banks in the whole Italian corporate network. Then we examined the structure of the networks of interlocks of all these banks. Following this Introduction,

Section 2 describes the data and the sources. Section 3 presents some descriptive statistics of the networks of the two larger universal banks and of the twenty local banks. Sections 4 and 5 examine respectively the geographical and sectoral distributions of the networks. Section 6 analyses the risk of interlocked firms, and the final section discusses our conclusions.

2. Data and sources

The source we used for this work is *Notizie statistiche sulle principali società italiane per azioni*, published by *Credito Italiano*, from 1906 to 1925, and since 1928, by the *Associazione fra le Società Italiane per Azioni*. The *Imita.db* database is an electronic version

of this source (Vasta, 2006). This dataset contains information regarding companies, boards of directors, and balance sheets of a large sample of Italian joint-stock companies for several benchmark years. The source includes all joint-stock companies listed on any Italian stock exchange, together with companies located in Italy whose share capital at the closure of the last balance was higher than a set threshold, i.e. 1 million Italian lire, with the sole exception of 1913, when it amounted to 500,000 lire. Overall, the dataset contains data on more than 38,000 companies, almost 300,000 directors, and more than 100,000 balance sheets.[2] Representativeness, in terms of capital, is very high as the sample covers over 90 percent of the total universe of Italian joint-stock companies. As for the directors, we only used data for members of a board of directors, excluding members of *Collegi sindacali* (Stokman, Ziegler & Scott, 1985; David & Westerhuis, 2014).[3] We have carefully standardised the names of the directors. However, we estimate that the information on the boards of directors contained in *Imita.db* has a margin of error of about 1 percent, as is the case with other similar databases (Mintz & Schwartz, 1985). These errors are mainly due to cases of homonymy, misprints, or shortcomings in the source.

As mentioned earlier, this article aims to present a comparative analysis of large banks' networks and small local banks' networks in Italy in three benchmark years (1913, 1927, and 1936) using the interlocking directorates technique. We selected the two largest German-style universal banks – *Banca Commerciale Italiana* [henceforth Comit] and *Credito Italiano* [henceforth Credit] – and the twenty most 'central' local banks, according to a widely used measure of centrality in network analysis, i.e. nBetweenness.[4] This measure is based on the idea that a firm is more central if it is more important as an intermediary in the communication network: it calculates the number of shortest paths between any pairs of actors in the network that pass through any given actor (De Nooy, Mrvar & Batagelj, 2011).

The underlying hypothesis is that the top twenty local banks by nBetweenness had better access to information, better opportunities to spread information, and were in a better position to coordinate the whole network than the remaining local banks.

3. Descriptive statistics of the networks

Tables A1 to A3 in the Appendix report some information on the banks we have selected and their networks. By 1913 the two largest universal banks were well placed amongst the most central firms in the Italian corporate network, with Comit in 5th position and Credit in 13th position. Their degree[5] – i.e., the number of firms with which they were interlocked – was 84 and 63 respectively out of 1,243 Italian joint-stock companies included in *Imita.db* for that benchmark. Nonetheless, by that time several local banks, despite their smaller size in terms of total assets, had also developed their web of interlocks. Thus, *Banca Bergamasca di Depositi e Conti Correnti* had an even higher nBetweenness and the same degree as Credit. Overall, we found six local banks in the highest decile of nBetweenness, while the average rank of the top twenty local banks is 252. Thirteen of the top twenty local banks were connected to ten or more firms, the average degree of the top twenty being 16.2.

In subsequent years, the two largest universal banks further strengthened their central position in the ranking. The year 1927 represents the apex of the role of these banks, with Comit being ranked 1st and Credit 4th amongst all Italian joint-stock companies. nBetweenness increased by 61 percent for Comit and by 11 percent for Credit, indicating the increased weight of these two banks in coordinating the nation's corporate network. Their degrees also rose to 371 and 247 respectively, which means that they were linked to a number of firms four times as high as in 1913. It seems that the enlarged networks of the two largest universal banks is associated with an increase in the connectedness of the whole Italian

corporate network, whose average degree – a normalized index unbiased by a change in sample size – increases from 12.7 in 1913 to 16.8 in 1927 (Vasta, Drago, Ricciuti, & Rinaldi, 2017).

In 1927 the average nBetweenness of the top twenty local banks slightly decreased by 13 percent with respect to 1913, which involves a fall in their coordinating power of the now denser corporate network. Nonetheless, the top twenty local banks improved their position in the ranking of most central firms as now all of them were in the highest decile of nBetweenness, their average rank being 124.7 out of a total of 4,476 firms. The average degree of the top twenty local banks also rose to 52.4 and was three times as high as in 1913.

When the Great Depression struck, both the universal banks and their industrial clients had to be bailed out by the state and in 1933 the big state-owned holding *IRI* (*Istituto per la Ricostruzione Industriale* or Institute for Industrial Recovery) took over the universal banks and their industrial securities. In 1936, a new Banking Law imposed the end of universal banking in Italy. Banks were allowed to practise only short-term credit, while their share participation in non-financial firms was strictly limited. At the same time, industrial credit was entrusted to newly created specialised institutes, many of them state-owned (La Francesca, 2004).

These changes had profound effects on the structure of the Italian corporate network. In 1936 the network became less cohesive – the average degree dropped to 11.0 – and the larger universal banks lost their pre-eminent position: Comit was ranked 7th and Credit 23rd, and both their nBetweenness and degree had more than halved with respect to 1927 (Vasta, Drago, Ricciuti, & Rinaldi, 2017).

The Great Depression struck also the networks centered on local banks, which seem to have withstood better than the universal banks' networks. In 1936 all the top twenty local

banks were once again in the highest decile of nBetweenness and above all, their average nBetweenness dropped to a much smaller extent (25 percent) than the universal banks' counterpart (Comit 61 percent and Credit 55 percent). Similarly, also the number of interlocks diminished proportionally less for the top twenty local banks (by 35 percent) than for the two larger universal banks (65 percent for Comit and 59 percent for Credit).

If the top twenty local banks as a group showed a propensity to generate corporate interlocks throughout the period investigated, this was not necessarily true for each individual bank. In fact, churning was high amongst the most central local banks: only seven of the top twenty in 1913 remained in that group in 1927, whereas continuity was stronger between 1927 and 1936, with eleven banks staying in the top twenty in both survey periods. Only four banks appear in the top twenty in all the three benchmark years and all of them were in Lombardy.

4. The geographical distribution of the networks

In all benchmark years most of the top twenty local banks were headquartered in Lombardy and in the other regions of the North-West (between 60 and 75 percent overall, see Tables A1-A3 in the Appendix), that is in the area with the longest history of industrialisation. The North-East and Centre accounted for between 25 and 35 percent of the top twenty. Networks of Southern local banks were instead nearly absent, with just one occurrence in 1913 and 1927 and none in 1936.

Figure 1. Italian macro-regions

Macro-regions are: North-West (includes the regions Valle D'Aosta, Piemonte, Liguria and Lombardia); North-East (includes the regions Trentino Alto Adige, Veneto, Friuli Venezia Giulia and Emilia Romagna); Centre (includes the region Toscana, Lazio, Umbria and Marche) and South and Islands (includes regions Abruzzo, Molise Campania, Puglia, Basilicata, Calabria, Sicilia and Sardegna).

Both the largest universal banks were headquartered in Milan. As Table 1 shows, the geographical distribution of their networks was very similar in the first two benchmarks. It

was concentrated in their macro-region, the North-West, and presented slightly more than 40 percent of interlocked firms located in the same province of Milan and about 45 percent in Lombardy. However, their network patterns started to diverge after the Great Depression. In fact, in 1936 Credit's share of links with firms located outside the North-West fell dramatically to less than half of the corresponding value for Comit. Thus, if both networks declined, Comit's network became at the same time more nationally oriented whereas Credit's network was reduced to little more than an interregional network largely concentrated in the North-West. The shrinking of Comit's network was accompanied by an increased national scope. The takeover of the bank by the newly created state-owned holding *IRI* in 1933 was followed by the severing of its links with many firms in the North-West and by the creation of new ties with both state-owned and private enterprises located in Rome where *IRI* had its headquarters. In fact, the government drastically downsized Comit's board of directors and substantially modified its composition after 1933. It reduced the number of directors, from 44 (1927) to 19 (1936), and appointed representatives of the new controlling shareholder, i.e. IRI.[1] Also Credit's board of directors was downsized from 34 to 14, but it retained some major private industrialists based in the North-West, including Giovanni Agnelli (owner and president of FIAT), Giacinto Motta (president of Edison, the largest electricity company in Italy) and Lorenzo Bruzzo (a Genovese industrialist with concerns in the steel, shipping, chemicals, and sugar-refinery industries).

Table 2 shows the geographical distribution of the networks of the top twenty local banks. The differences amongst these networks were huge as indicated by the immense gap between their minimum and maximum values. If, on the one hand, in all benchmark years we

[1] Among the state-owned enterprises located in Rome and now interlocked with Comit, stood out ANIC (chemicals); Finmare (IRI's sub-holding in charge of the shipping industry); IMI (Italy's largest industrial credit institute); INA (Italy's monopolist in life insurance) and IRI itself. At the same time Comit became connected with several private enterprises headquartered in Rome, operating in real estate, construction, insurance, public transport and utilities.

find networks that were strongly structured on the local level, with all or most of the interlocked firms located in the same province or region as the bank, on the other hand there were also some banks whose networks were largely interregional or even national. The former seems the case particularly for Lombard banks that had a high propensity to generate interlocks on the local level, whereas banks headquartered outside the North-West tended to create links not only with their local firms but also with firms located in the most industrialised macro-region.

As it could be expected – local banks had a higher propensity to create networks at the local level. These banks had a much higher proportion of interlocked firms in their same province, region, and macro-region (see median values in Table 2), compared with the two universal banks (see Table 1). At the same time, most local banks also had some interlocks with firms headquartered outside their macro-region. This is the case of fourteen of the top twenty in 1913, the totality in 1927, and seventeen in 1936. The median value of affiliated firms located in other macro-regions rose from 16 to 22 percent between 1913 and 1927 indicating an increased capacity of local banks to create national networks. Such an expansion of the geographical scope of the networks of many local banks occurred in the context of the unprecedented wildcat boom of the banking industry in Italy in the early 1920s–a time when Italian banks were subject to the Commercial Code of 1882 that did not distinguish between banking and other business activities–and was fostered by the expansionary monetary policy of the post-World War I years (Toniolo, 1995).

Conversely, in 1936 the median value of links with firms located outside the home macro-region plummeted to 12 percent. That is, the Great Depression provoked a change in the structure of many local banks' networks that lost most of their national scope and returned to be largely hinged on the local and regional level. Such a change was also prompted by the

Banking Law of 1926 that gave the Bank of Italy increased regulatory powers over the banking sector. The central bank used these powers to reduce competition and establish clearer geographical boundaries between banks in order to protect regional economies (Carnevali, 2005).

Table 1. Two largest universal banks' networks by geographical distribution of interlocked firms (%)

	Comit			Credit		
HQ of interlocked firms	1913	1927	1936	1913	1927	1936
Same province	41.7	40.7	40.3	42.9	42.9	40.2
Same region	44.0	45.3	41.1	47.6	45.3	43.1
Same macro-region	71.4	64.4	51.9	68.3	61.9	77.5
Other macro-region	28.6	35.6	48.1	31.7	38.1	22.5

Table 2. Top twenty local banks' networks by geographical distribution of interlocked firms (%)

	1913			1927			1936		
HQ of interlocked firms	Min.	Median	Max.	Min.	Median	Max.	Min.	Median	Max.
Same province	8.3	42.3	100	4.7	40	84	3.9	45.4	92.9
Same region	25	76.2	100	9.7	69.2	92	8.3	83.9	100
Same macro-region	25	84.2	100	9.6	77.9	94	8.3	87.2	100
Other macro-region	0	15.8	75	6	22.1	90.3	0	12.8	91.7

5. The sectoral distribution of the networks

As discussed in the Introduction, the sectoral distribution of banks' interlocks is a highly debated topic in the literature on industrialisation. In this section we examine separately the interlocks with other banks and the interlocks with firms in other sectors.[6]

In 1913 neither Comit nor Credit was linked to any other banks. The situation changed in 1927, when the former's network included nine banks and the latter's four; all of them were local banks. Three of the nine banks affiliated to Comit and one of the four affiliated to Credit were among the top twenty local banks and accounted, respectively, for 23.8 percent

and 2.4 percent of the total assets of the top twenty. In 1936 the number of bank connections dropped to three for Comit, of which two were local banks in the top twenty (33.2 percent of total assets of the top twenty) and the third one was a small local bank out of the top twenty, whereas Credit had just one bank connection (a small Milanese bank out of the top twenty).

The creation of interlocks with other banks was a common practice for local banks already prior to World War I. By 1913, ten of the top twenty were connected to at least another bank and four of them were interlocked to two or more banks. In 1927, the propensity of local banks to be networked to other banks reached its apex with seventeen of the top twenty being linked to at least another bank and sixteen to two or more. In 1936, links of local banks with other banks decreased but remained sizeable; in that year fifteen of the of the top twenty were interlocked to at least another bank and six to two or more.

Table 3 shows the distribution of banking interlocks of local banks by type of banks to which they were affiliated. As we have seen, in 1913 the two largest universal banks had no banking interlocks; however, four of the top twenty local banks were linked to other large universal banks (*Società Bancaria Italiana* and *Banco di Roma*). Two of the local banks linked to *Società Bancaria Italiana* were linked also to *Banca d'Italia*, Italy's largest bank of issue. Five of the top twenty local banks were linked only to other local banks, while ten had no banking interlocks.

The proportion of local banks connected to large national banks increased substantially in 1927. In that year, three of the top twenty were linked to either Comit or Credit – and one to both – another five to other large universal banks (*Banca Nazionale di Credito* and *Banco di Roma*), and one to a public law bank. These links probably existed for the larger banks to have access to the funds collected in peripheral areas by the smaller banks to which they were interlocked.

However, the majority of the top twenty local banks were disconnected from the large national banks: three had no banking interlocks and eight were connected only to other local banks. Among these, the two banks that had more banking interlocks than Comit stood out. The first one was *Banca Piccolo Credito*, a small Catholic bank (its assets were only 2.1 percent of Comit's) headquartered in Ferrara, a province in the Po Valley that stood out for its advanced and capital-intensive agriculture. *Banca Piccolo Credito* was at the centre of a web which included twelve small Catholic banks (none of them in the top twenty) and their central institute, the *Cassa Centrale Cattolica* in Parma, which acted as provider of last-resort liquidity for its members. The second one, the *Banca Nazionale dell'Agricoltura* (2.8 percent of Comit's assets) had the aim to sustain the agriculture and food processing industry and was connected to eleven small local banks (none of them in the top twenty) that operated in as many provinces of the Po Valley.

As noted, in 1936 the networks of local banks returned to be much more structured on the local level. Thus, only two of the top twenty local banks were connected to either Comit or Credit, none to the other remaining large universal bank (*Banco di Roma*), and just one to a public law bank. Five had no banking interlocks, eleven were connected only to other small local banks, and one to the central institute of Italian savings banks.

We can argue, therefore, that the extent to which local banks were linked to large national banks – and therefore might function as branches of the latter – varied over time but was never the preponderant trait of local banking in Italy, the highest proportion being reached in 1927. So, our evidence seems to confirm that banking interlocks were largely part of a system of interlocks that existed independently of the one centered on the larger universal banks.

Table 3. Top twenty local banks by type of interlocks with banks

Type of interlock	1913	1927	1936
Top two universal bank			1
Top two universal bank and central institute		1	
Top two universal bank and local bank in the top twenty			1
Top two universal bank and local banks in and out of the top twenty		1	
Top two universal bank, other universal bank and local banks in and out of the top twenty		1	
Other large universal bank	1	1	
Other large universal bank and bank of issue	1		
Other large universal bank, bank of issue and local bank in the top twenty	1		
Other large universal bank, central institute and local bank in the top twenty	1		
Other large universal bank and local banks in the top twenty		1	
Other large universal bank and local banks in and out of the top twenty		3	
Bank of issue	1		
Public law bank and local banks in the top twenty		1	1
Central institute			1
Local bank in the top twenty	5		4
Local banks in and out of the top twenty		3	3
Central institute and local banks out of the top twenty		1	
Local bank out of the top twenty		4	4
No banking interlocks	10	3	5

Tables 4 to 6 display the sectoral and size distributions of the interlocks with firms in sectors other than banking.[7] The same information on the total number of firms in the *Imita.db* database is presented in the last column of these tables. We can observe that size appears as the main distinction between firms attached to the two larger universal banks and firms attached to local banks. In all benchmark years we find the firms linked to the former were significantly larger than those linked to the latter. The average total assets of the firms affiliated to Comit and Credit were two or three times as high as those of the firms affiliated to the top twenty local banks. The bias of the two largest universal banks' relationship

towards largest firms was present – with some exceptions – in all sectors and was by no means limited to capital intensive industries.

As to the sectoral distribution of interlocks, in all benchmark years local banks had the highest proportion of affiliated firms in manufacturing. Thus, in 1913, manufacturing accounted for 41.5 percent of firms affiliated to Comit, 44.3 percent of those affiliated to Credit, and 62.0 percent of those affiliated to the top twenty local banks, which is also considerably higher than the 55 percent of total firms in the *Imita.db* database. Due to their smaller average size, the proportion of manufacturing firms on total assets of network membership is lower, but the bias in favour of local banks remains substantial (51.9 percent as compared to 23.5 percent for Comit and 33.3 percent for Credit). The gap is particularly high for light industry that accounted for 33.8 percent of firms and 24.6 percent of assets connected to the top twenty local banks, as compared to, respectively, 18.3 and 7.7 percent for Comit and 16.4 and 5.3 percent for Credit.

In addition to manufacturing, three sectors stood out in Comit's network: electricity, gas and water supply; transport and storage (Comit was interlocked to both Italy's largest railway company and passenger ship company); and financials. In particular, links with the last sector were the main difference between Comit's and Credit's networks. In fact, Comit was connected to Italy's two largest finance companies at that time whereas Credit had no connection with finance companies. It is worth also noting that some local banks were linked to big finance companies: this was the case of *Banca Generale della Penisola Sorrentina* (the only Southern bank in our sample) and of *Cassa Generale* (a small Genoa bank).

In 1927 we find a convergence in the sectoral distribution of affiliated firms between the two larger universal banks and the top twenty local banks with respect to the previous benchmark year. Heavy industry and electrical-commercial companies were now slightly

more represented among the former and light industry among the latter. The main difference between the networks is by far – and more than in 1913 – the size of affiliated firms rather than their sectoral distribution, with the average assets of firms linked to local banks being about a half of those of firms attached to the two largest universal banks. One remarkable feature of the networking strategies of all types of banks seems their propensity to create links with financials, both insurance and finance companies. This is the case not only of Comit and Credit, but also of local banks. Financials accounted in 1927 for about 10 percent of affiliated firms to all types of banks, whereas their share of attached assets ranged from 16.9 percent for Comit to 21.9 percent for Credit, and to 21.6 percent for local banks. In particular, the links with finance companies stood out. There were several types of finance companies affiliated to the two largest universal banks. First of all, there were some holding companies that held the controlling stakes of these banks' share capital. These holding companies were controlled by the same banks they were supposed to control and by some industrial groups allied to them. Secondly, there were some big state-owned industrial credit institutes that played a crucial role in providing long-term finance to capital-intensive industries. Thirdly, there were some finance companies that functioned as bridging companies: amongst them, the *Società Italiana per le Strade Ferrate Meridonali* stood out as the 'fine sitting-room' in which the equilibria between the major Italian corporate groups were settled (Piluso, 1992). Fourthly, the considerable increase of finance companies in the networks of the largest universal banks was consequent on the propensity of Italian firms to grow by creating hierarchical business groups, i.e., by adopting a peculiar corporate form based upon a parent company (usually a finance company) which held control stakes *in* and exerted co-ordination *over* subsidiaries (Colli, Rinaldi & Vasta, 2016).

The finance companies connected to local banks were instead mostly small holding companies whose aim was to promote local development, especially in infrastructure and in the construction industry. Moreover, we also find in the networks of some local banks some big state-controlled industrial credit institutes indicating that the formation of networks of interlocks by local banks was supported by the government and by the Bank of Italy.

In 1936 we observe a new divergence between networks. Comit's network now diverges remarkably from Credit's network with the former concentrated to an unprecedented proportion on finance companies and the latter focused more on large electrical commercial firms. The impression is that Comit had become the pivotal bank of the newly-created *IRI* group. In fact, Comit was connected to the *IRI* company itself, to its sectoral holding companies, and to all the major state-controlled industrial credit institutes. This was probably a way to by-pass – at least to some extent – the constraint of the 1936 Banking Law that forbade universal banking in Italy. By contrast, Credit was connected to fewer such big state-owned finance companies or industrial credit institutes.

By contrast, local banks' networks hinged principally on manufacturing and electricity companies. Light industry accounted for more than 30 percent of firms connected to local banks (as compared to less than 10 percent for both Comit and Credit) but their share on total assets of the network membership was just 7.5 percent due to their small size. Electricity had jumped to 15.4 of firms and 41.1 percent of total assets, highlighting a change in the investment pattern of local banks towards less risky activities as local utilities. Finance companies had a lower weight than in both the Comit and Credit networks and consisted principally of small finance companies for local development promotion. However, there were also some local banks connected to big state-owned industrial credit institutes.

A focus on telecommunications and chemicals can shed some light on the propensity of the various types of banks to establish their ties with large well-established companies or instead with promising small firms that needed venture capital in new fast-growing industries. In 1913 neither Comit nor Credit was connected to any telecommunication firms, whereas two small telecommunication firms were linked to as many local banks, even if the former accounted for a very low share of the total assets of the latter's affiliated firms. In 1927 the share of telecommunications is similar in all networks, with firms ranging between 1.0 and 1.8 percent and their assets between 2.5 and 2.9 percent of the total. Finally, in 1936 we find three telecommunication firms in each of the three networks, with firms linked to Comit and Credit being much larger than those connected to local banks. In the same way, in 1913 and 1927 chemical firms had a larger share of total assets in local banks' networks than in the two larger universal banks' networks, but the situation reversed in 1936. Nonetheless, chemical firms connected to local banks had always a much lower average size than those linked to Comit and Credit.

Thus, the impression is that small and young firms operating in the infant stage of their industries tended more often to be connected to small local banks but once they grew in size and became well- established companies, they moved to the networks of the larger universal banks that could more properly satisfy their increased financial needs.

Table 4. Sectoral distribution of banks' networks (1913)

	COMIT					CREDIT					TOP TWENTY LOCAL BANKS					TOTAL FIRMS IN IMITA.DB				
	IDs		Assets			IDs		Assets			IDs		Assets			Firms		Assets		
Sector	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*
Agriculture, forestry and fishing	2	2.4	17,270	0.9	8,635	1	1.6	29,617	2.3	29,617	3	1.3	47,762	2.1	15,921	12	1.1	74,984	1.0	6,249
Mining and quarrying	4	4.9	41,117	2.1	10,279	2	3.3	28,344	2.2	14,172	4	1.7	10,954	0.5	2,739	41	3.6	208,826	2.8	5,093
Manufacturing	34	41.5	466,976	23.5	13,735	27	44.3	420,821	33.3	15,586	147	62.0	1,204,013	51.9	8,191	621	54.8	3,585,511	47.6	5,774
*- Light industry***	*15*	*18.3*	*151,752*	*7.7*	*10,117*	*10*	*16.4*	*66,674*	*5.3*	*6,667*	*80*	*33.8*	*571,010*	*24.6*	*7,138*	*326*	*28.7*	*1,681,402*	*22.3*	*5,158*
*- Heavy industry****	*19*	*23.1*	*315,224*	*15.9*	*16,591*	*17*	*27.9*	*354,147*	*28.0*	*20,832*	*67*	*28.3*	*633,003*	*27.3*	*9,448*	*295*	*26.0*	*1,904,109*	*25.3*	*6,455*
Electricity, gas and water supply	12	14.6	290,255	14.6	24,187	12	19.7	390,116	30.9	32,509	19	8.0	287,194	12.4	15,115	179	15.8	1,229,037	16.3	6,866
Construction	2	2.4	58,791	3.0	29,395	1	1.6	2,633	0.2	2,633	7	3.0	44,039	1.9	6,291	22	1.9	155,398	2.1	7.064
Trade	3	3.7	19,162	1.0	6,387	3	4.9	9,546	0.8	3,182	14	5.9	60,264	2.6	4,305	63	5.6	212,427	2.8	3,372
Transport and storage	15	18.3	645,717	32.6	43,048	12	19.7	349,582	27.7	29,132	25	10.5	212,604	9.2	8,504	142	12.5	1,395,226	18.5	9.826
Telecommunications											2	0.8	3,561	0.2	1,781	2	0.2	3,561	0.0	1,781
Financials	9	11.0	443,026	22.3	49,225	3	4.9	32,448	2.6	10,816	8	3.4	428,857	18.5	53,607	19	1.7	597,979	7.9	31,473
- Finance companies	*3*	*3.7*	*354,615*	*17.9*	*118,205*						*2*	*0.8*	*306,261*	*13.2*	*153,131*	*6*	*0.5*	*398,863*	*5.3*	*66,477*
- Insurance	*6*	*7.3*	*88,411*	*4.5*	*14,735*	*3*	*4.9*	*32,448*	*2.6*	*10,816*	*6*	*2.5*	*122,596*	*5.2*	*20,433*	*13*	*1.1*	*199,116*	*2.6*	*15,317*
Public administration, health and social service	1	1.2	1,217	0.1	1,217						8	3.4	22,687	1.0	2,836	33	2.9	62,172	0.8	1,884
Total	82	100.0	1,983,457	100.0	24,188	61	100.0	1,263,107	100.0	20,706	237	100.0	2,321,935	100.0	9,797	1,134	100.0	7,525,121	100.0	6,636

* Thousand lire

** Food, beverages, textiles, apparel, leather, footwear, paper, publishing, printing, other manufacturing

*** Coke, petroleum, chemicals, rubber, plastics, non-metallic minerals, iron and steel, mechanical engineering, transport products

Table 5. Sectoral distribution of banks' networks (1927)

	COMIT					CREDIT					TOP TWENTY LOCAL BANKS					TOTAL FIRMS IN IMITA.DB				
	IDs		Assets			IDs		Assets			IDs		Assets			Firms		Assets		
Sector	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*
Agriculture, forestry and fishing	3	0.9	133,182	0.4	44,394	2	0.9	40,372	0.1	20,186	35	5.2	844,623	2.3	24,132	168	4.5	1,562,896	2.2	9,303
Mining and quarrying	14	4.1	452,050	1.3	32,289	5	2.3	165,940	0.6	33,188	21	3.1	297,519	0.8	14,168	126	3.4	1,740,759	2.2	13,816
Manufacturing	137	39.8	10,222,167	29.2	74,614	85	39.0	7,927,975	28.4	93,270	306	45.9	11,621,654	31.5	37,979	1,945	52.5	32,151,300	40.2	16,530
*- Light industry***	*54*	*15.7*	*2,393,291*	*6.8*	*44,320*	*36*	*16.5*	*1,611,144*	*5.8*	*44,754*	*183*	*27.4*	*4,352,222*	*11.8*	*23,783*	*1,056*	*28.5*	*12,712,962*	*15.9*	*12,039*
*- Heavy industry****	*83*	*24.1*	*7,828,876*	*22.3*	*94,324*	*49*	*22.5*	*6,316,831*	*22.6*	*128,915*	*123*	*18.4*	*7,269,432*	*19.7*	*59,101*	*889*	*24.0*	*19,438,338*	*24.3*	*21,865*
Electricity, gas and water supply	78	22.7	12,094,350	34.5	155,056	44	20.2	9,350,798	33.5	212,518	66	9.9	9,591,997	26.0	145,333	272	7.3	17,138,428	21.4	63,009
Construction	8	2.3	219,129	0.6	27,391	9	4.1	272,809	1.0	30,312	21	3.1	342,709	0.9	16,319	140	3.8	1,172,677	1.5	8,376
Trade	18	5.2	1,403,426	4.0	77,968	13	6.0	665,668	2.4	51,205	63	9.4	1,255,731	3.4	19,932	448	12.1	4,715,150	5.9	10,525
Transport and storage	45	13.1	3,567,762	10.2	79,284	19	8.7	2,508,311	9.0	132,016	62	9.3	3,688,119	10.0	59,486	333	9.0	7,623,369	9.5	22,893
Telecommunications	5	1.5	871,639	2.5	174,328	4	1.8	804,643	2.9	201,161	7	1.0	1,006,457	2.7	143,780	16	0.4	1,367,679	1.7	85,480
Financials	31	9.0	5,921,467	16.9	191,015	34	15.6	6,113,166	21.9	179,799	69	10.3	7,957,391	21.6	115,324	163	4.4	12,318,544	15.4	75,574
- Finance companies	*16*	*4.7*	*4,274,631*	*12.2*	*267,164*	*19*	*8.7*	*3,902,374*	*14.0*	*205,388*	*37*	*5.5*	*5,282,094*	*14.3*	*142,759*	*80*	*2.2*	*9,254,152*	*11.6*	*115,677*
- Insurance	*15*	*4.4*	*1,646,836*	*4.7*	*109,789*	*15*	*6.9*	*2,210,792*	*7.9*	*147,386*	*32*	*4.8*	*2,675,297*	*7.3*	*83,603*	*83*	*2.2*	*3,064,392*	*3.8*	*36,920*
Public administration, health and social service	5	1.5	160,823	0.5	32,165	3	1.4	51,048	0.2	17,016	17	2.5	254,953	0.7	14,997	97	2.6	487,443	0.6	5,025
Total	344	100.0	35,045,695	100.0	101,877	218	100.0	27,900,730	100.0	127,985	667	100.0	36,861,153	100.0	55,264	3,708	100.0	79,978,245	100.0	21,569

* Thousand lire

** Food, beverages, textiles, apparel, leather, footwear, paper, publishing, printing, other manufacturing

*** Coke, petroleum, chemicals, rubber, plastics, non-metallic minerals, iron and steel, mechanical engineering, transport products

Table 6. Sectoral distribution of banks' networks (1936)

	COMIT					CREDIT					TOP TWENTY LOCAL BANKS					TOTAL FIRMS IN IMITA.DB				
	IDs		Assets			IDs		Assets			IDs		Assets			Firms		Assets		
Sector	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*	N.	%	Total*	%	Mean*
Agriculture, forestry and fishing	1	0.9	1,071	0.0	1,071	3	3.2	464,578	2.0	154,859	19	4.0	636,417	1.4	33,496	188	5.7	1,652,146	1.5	8,788
Mining and quarrying	7	6.0	172,568	0.5	24,653						8	1.7	200,388	0.4	25,049	92	2.8	1,275,408	1.1	13,863
Manufacturing	41	35.3	5,682,396	16.3	138,595	32	34.4	4,994,950	21.3	156,092	242	50.5	10,871,091	24.1	44,922	1,761	53.4	37,677,047	33.8	21,395
*- Light industry***	*11*	*9.5*	*678,120*	*1.9*	*61,647*	*8*	*8.6*	*252,874*	*1.1*	*31,609*	*147*	*30.7*	*3,395,201*	*7.5*	*23,097*	*901*	*27.3*	*11,895,709*	*10.7*	*13,203*
*- Heavy industry****	*30*	*25.9*	*5,004,276*	*14.4*	*166,809*	*24*	*25.8*	*4,742,076*	*20.2*	*197,586*	*95*	*19.8*	*7,475,890*	*16.5*	*78,694*	*860*	*26.1*	*25,781,338*	*23.2*	*29,978*
Electricity, gas and water supply	21	18.1	6,866,692	19.7	326,985	17	18.3	8,486,431	36.2	499,202	74	15.4	18,563,399	41.1	250,857	221	6.7	24,058,173	21.6	108,861
Construction	5	4.3	598,339	1.7	119,668						10	2.1	715,481	1.6	71,548	139	4.2	1,920,911	1.7	13,820
Trade	4	3.4	94,132	0.3	23,533	7	7.5	258,355	1.1	36,908	36	7.5	531,373	1.2	14,760	343	10.4	2,365,714	2.1	6,897
Transport and storage	6	5.2	303,128	0.9	50,521	10	10.8	1,154,895	4.9	115,490	28	5.8	1,859,941	4.1	66,426	293	8.9	4,418,555	4.0	15,080
Telecommunications	3	2.6	1,784,629	5.1	594,876	3	3.2	1,861,007	7.9	620,336	3	0.6	328,234	0.7	109,411	9	0.3	1,963,711	1.8	218,190
Financials	28	24.1	19,306,136	55.5	689,505	20	21,5	6,083,386	25.9	304,169	49	10.2	11,408,612	25.2	232,829	161	4.9	30,595,645	27.5	190,035
- Finance companies	*16*	*13.8*	*14,460,754*	*41.5*	*903,797*	*11*	*11.8*	*4,203,433*	*17.9*	*382,130*	*24*	*5.0*	*5,951,397*	*13.2*	*247,975*	*95*	*2.9*	*24,459,241*	*22.0*	*257,466*
- Insurance	*12*	*10.3*	*4,845,382*	*13.9*	*403,782*	*9*	*9.7*	*1,879,953*	*8.0*	*208,884*	*25*	*5.2*	*5,457,215*	*12.1*	*218,289*	*66*	*2.0*	*6,136,404*	*5.5*	*92,976*
Public administration, health, and social service						1	1.1	106,099	0.5	106,099	8	1.7	69,925	0.2	8,741	90	2.7	5,413,683	4.9	60,152
Total	116	100.0	34,809,101	100.0	300,078	93	100.0	23,435,757	100.0	251,997	479	100.0	45,184,861	100.0	94,332	3,297	100.0	111,340,993	100.0	33,770

* Thousand lire

** Food, beverages, textiles, apparel, leather, footwear, paper, publishing, printing, other manufacturing

*** Coke, petroleum, chemicals, rubber, plastics, non-metallic minerals, iron and steel, mechanical engineering, transport products

6. Age and risk of interlocked firms

The Introduction mentions the importance of universal banks as providers of finance and business advice for large- scale industrialisation in Gerschenkron's framework, whereas for Schumpeter the role of banks is to provide venture capital to entrepreneurs and would-be-entrepreneurs. The previous section has highlighted that smaller firms in light industries had a higher weight in the interlocks of local banks. This section investigates whether local banks performed the Schumpeterian role as providers of venture capital, investigating whether their interlocks included younger and riskier firms.

Stiglitz and Weiss's milestone work clarified that in a context of imperfect information banks are not able to control the actions of the borrowers. They therefore monitor and try to attract low-risk borrowers, as well as design contracts inducing borrowers to take actions in favour of the banks themselves (Stiglitz & Weiss, 1981; Stiglitz & Weiss, 1990). Monitoring borrowers is an important component of transaction costs in the credit market. If banks and borrowers belong to the same network, information asymmetries can be lowered through less costly direct and informal knowledge. This explains the reason why local banks embedded in their communities hold an advantage in assessing the credit worthiness of small businesses, which are more difficult to monitor formally and are, or are perceived, as riskier (Carnevali, 1996). This is clearly beneficial to small firms as it decreases their disadvantages in accessing external capital.

Interlocking directorates enabled both universal banks and smaller local banks to monitor firms, provide advice, and gain informal information, thus reducing information asymmetries for both type of banks. However, we expect to find smaller and riskier firms in the network of local banks for various reasons: the financial capabilities of these banks could be less adequate to the financial requirements of large corporations, whereas smaller industrial

concerns would provide a suitable gainful employment of the resources of such banks. Most importantly, smaller commercial banks had, on average, more geographically localised networks of interlocked firms, particularly in the benchmark years 1913 and 1936, as shown in Tables 1 and 2. Therefore these banks held an advantage in assessing the credit worthiness of firms that could be perceived as risky. We have investigated this aspect by studying the variability of profits of interlocked firms, which is one of the standard indicators of risks (Brealey & Myers, 2003). We have used coefficients of variation in Table 7 below, rather than the standard deviations, as the coefficient of variation seems more appropriate to compare different samples.

Table 7. Profitability of interlocked firms

	Comit			Credit			Top twenty local banks		
	Mean (000 lire)	c.v.	obs	Mean (000 lire)	c.v.	obs	Mean (000 lire)	c.v.	Obs
1913	0.8	1.35	81	0.7	1.54	61	0.6***	5.20***	310
1927	3.1	3.73	329	3.9	3.44	209	2.5	4.74***	852
1936	6.5	2.09	114	6.4	2.81	96	3.6***	3.74***	582

Notes: The differences in mean and coefficients of variation of profits / losses between the three networks have been tested for statistical significance; information on profit (or loss) was not available for each single interlocked firm. Therefore the number of observations in Table 7 is smaller than 'firms in the network' in Table 8.
Keys: *** p<0.01, ** p<0.05, * p<0.1; c.v. = Coefficients of variation

Table 7 shows that overall the top twenty local banks were interlocked to riskier and less profitable firms. The coefficient of variation (c.v.), indicator of risk, is consistently higher than the counterpart figures for the two universal banks and the differences are highly statistically significant, both when the two universal banks are considered individually and combined. This confirms that a more geographically-concentrated network of the local banks also meant that less profitable and riskier industrial concerns could benefit from external finance and business advice. In other words, the top twenty local banks performed an

important role in interlocking with businesses that other financial institutions may not have considered credit-worthy and that were nevertheless important for the Italian economy.

The differences in terms of profitability and risk between the networks of the two universal banks are not statistically significant. Both banks demonstrate a cautious stance by interlocking with less risky concerns than those of the top twenty local banks. A more risk-prone approach is suggested by the 1927 figures, which might be explained by a wave of new industrial concerns being established in the years of fast growth between 1922 and 1925, which ended with a sharp fall in the stock market (Toniolo, 1995). The level of risk decreases in all three networks in the last benchmark year, suggesting a widespread risk aversion following the Great Depression and the subsequent salvaging of banks and industrial concerns by the state. The state-controlled system of industrial credit reduced the instability in both the industrial and banking systems, which is reflected in the lower levels of risk in the interlocked firms in 1936, particularly compared to 1927.

Table 8. Age of interlocked firms

	Comit			Credit			Top twenty local banks		
	Mean	s.d.	Firms in the network	Mean	s.d.	Firms in the network	Mean	s.d.	Firms in the network
1913	18.0	14.4	84	20.5	15.7	63	12.7***	11.1	325
1927	17.2	16.6	371	16.3	16.9	247	14.8**	15.9	994
1936	23.3	21.4	129	22.4	18.4	102	21.5	18.3	711

Notes: the differences in the mean age between the three networks have been tested for statistical significance; the difference between the mean age of firms interlocked with the top twenty local banks and the mean age of firms interlocked with the two universal banks is statistically significant for the years 1913 and 1927 only, both when aggregating the two universal banks and when considering them separately. The difference between the mean age of the two universal banks' networks is never statistically significant.
Keys: *** p<0.01, ** p<0.05, * p<0.1; s.d.=standard deviation

Firms in the more geographically-restricted network of local banks are overall younger than those interlocked with the universal banks (see Table 8). However, we find that the age of firms affiliated to the two universal banks decreased in 1927, which is consistent with the

increase in risk in the same benchmark year observed in Table 7. The younger age and higher risk of interlocked firms are likely to reflect the establishment of new businesses in the fast-growth years of 1922-1925. The age of interlocked firms increased considerably in all three networks by 1936, consistently with the fall in risk, thus reflecting changes in the industrial structure of the country following the Great Depression.

7. Conclusions

This article examined important facets of the banking-industry relationships in a critical period of Italian industrialization. It focused on the two largest universal banks and twenty local banks displaying the highest levels of centrality in three benchmark years: 1913, 1927 and 1936.

We found that the centrality of the universal banks in the Italian corporate system varied over time, and reached its apex in 1927, when the local banks' interlocks also peaked. Local banks' networks were more structured on the local level, with a higher proportion of interlocked firms located in the same province and region as the bank.

The creation of interlocks with other banks was a common practice for local banks already before World War One. The extent to which they were linked to large national banks – and therefore might function as branches of the latter – varied over time but was never the preponderant trait of local banking in Italy, the majority of their interlocks being with other local banks. So, our evidence seems to confirm that local banks were largely part of a system of interlocks that existed independently of the one centered on the larger universal banks and that only in part redressed the segmentation of the Italian banking system.

Size appears as the main distinction between firms attached to the universal banks and those attached to local banks, with the firms linked to the former being significantly larger

than those connected to the latter throughout the period investigated. The bias of the two largest universal banks' relationship with largest firms could be detected – with some exceptions – in all sectors.

In all benchmark years local banks had a higher proportion of affiliated firms in manufacturing, especially in light industry, whereas three sectors stood out in Comit's network: electricity, transport and storage, and financials. In particular, links with the financials are the main difference between Comit's and Credit's networks, with the latter focused more on large electrical commercial firms.

Lastly, we found that local banks were interlocked to riskier and less profitable firms. This confirms that more geographically concentrated networks of local banks also meant that less profitable and riskier industrial concerns could benefit from external finance and business advice. Thus, local banks performed an important role in interlocking with businesses that other financial institutions may have not considered credit-worthy but were nevertheless important for the Italian economy.

Overall, our results challenge Gerschenkron's claim that Italian industrialization was fundamentally prompted by two great banks, which were both financial intermediaries and the main industrial policy players of the nation. Our evidence suggests that Gerschenkron seems to have underestimated the resource mobilization occurring in the regional economies and the role played by local banks in financing small firms especially in light-industry sectors; a role akin to 'the essential function of credit' in Schumpeter. Our evidence is instead some way in line with Fohlin's findings that downplay the role of universal banks as the latter tended to establish their networks on large well-established companies instead of trying to create connections with promising, but risky, small firms, which needed venture capital.

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APPENDIX

Table A1. Two largest universal banks and top twenty local banks by nBetweenness centrality (1913)

Two largest universal banks

	nBetweenness			Headquarters		
Bank	Value	Rank	Degree	Province	Region	Total assets*
Comit	1.87	5	84	Milan	Lombardy	1,093.4
Credit	1.23	13	63	Genoa	Liguria	597.8

Top twenty local banks

	nBetweenness			Headquarters		
Bank	Value	Rank	Degree	Province	Region	Total assets*
Banca Bergamasca di Depositi e Conti Correnti	1.35	10	63	Bergamo	Lombardy	31.5
Banco Ambrosiano	0.95	23	31	Milan	Lombardy	39.1
Società Italiana di Credito Provinciale	0.78	38	28	Varese	Lombardy	148.5
Banca Lombarda di Depositi e Conti Correnti	0.64	53	33	Milan	Lombardy	30.0
Credito Commerciale	0.43	112	13	Cremona	Lombardy	19.6
Piccolo Credito Monzese	0.42	116	10	Milan	Lombardy	8.0
Banca Generale della Penisola Sorrentina	0.41	127	14	Naples	Campania	26.2
Banca Biellese	0.37	139	7	Vercelli	Piedmont	25.1
Banca Veneta di Depositi e Conti Correnti	0.25	236	24	Venice	Veneto	31.1
Banco Lariano	0.24	245	12	Como	Lombardy	6.6
Credito Varesino	0.21	273	21	Varese	Lombardy	13.7
Banca Popolare	0.15	340	5	Genoa	Liguria	9.1
Nuovo Credito Umbro	0.14	362	2	Perugia	Umbria	7.2
Banca di Firenze	0.14	367	3	Florence	Tuscany	7.6
Credito Edilizio	0.14	372	4	Genoa	Liguria	6.2
Credito Centrale del Lazio	0.14	373	7	Rome	Latium	3.5
Banca di Legnano	0.13	393	19	Milan	Lombardy	9.4
Banca Latina	0.12	414	3	Rome	Latium	3.4
Banca di Gallarate	0.07	508	14	Varese	Lombardy	31.7
Cassa Generale	0.06	542	12	Genoa	Liguria	24.4
Average	0.357	252.2**	16.2			24.1

* Million lire

** Out of 1,243 total firms

Table A2. Two largest universal banks and top twenty local banks by nBetweenness centrality (1927)

Two largest universal banks

	nBetweenness			Headquarters		
Banks	Value	Rank	Degree	Province	Region	Total assets*
Comit	3.02	1	371	Milan	Lombardy	9,539.4
Credit	1.38	4	247	Genoa	Liguria	5,956.3

Top twenty local banks

	nBetweenness			Headquarters		
Banks	Value	Rank	Degree	Province	Region	Total assets*
Banca Industriale di Busto Arsizio	0.54	39	76	Varese	Lombardy	65.9
Banca del Sud	0.51	45	31	Rome	Latium	106.2
Credito Commerciale	0.50	49	90	Cremona	Lombardy	445.5
Banca Nazionale dell'Agricoltura	0.50	50	48	Milan	Lombardy	275.5
Banco Lariano	0.44	57	42	Como	Lombardy	118.5
Banca Agricola Milanese	0.41	64	50	Milan	Lombardy	286.5
Banca di Firenze	0.39	69	37	Florence	Tuscany	133.8
Banca Vonwiller	0.34	85	39	Milan	Lombardy	163.1
Banca Bergamasca di Depositi e Conti Correnti	0.31	103	86	Bergamo	Lombardy	127.7
Banca Commerciale Triestina	0.27	129	112	Trieste	Friuli-VG	705.9
Banca di Legnano	0.27	134	74	Milan	Lombardy	167.9
Credito Subalpino	0.27	136	11	Turin	Piedmont	16.4
Banca Piccolo Credito	0.25	150	44	Ferrara	Emilia-R.	201.8
Banca Milanese di Credito	0.25	152	39	Milan	Lombardy	27.0
Banca d'America e d'Italia	0.25	155	21	Rome	Latium	849.3
Banca Belinzaghi	0.23	174	95	Milan	Lombardy	101.5
Banca Regionale	0.20	220	26	Rome	Latium	113.2
Banca Mobiliare	0.19	223	25	Rome	Latium	28.5
Banca Generale della Penisola Sorrentina	0.19	227	49	Naples	Campania	74.3
Banca Lombarda di Depositi e Conti Correnti	0.19	232	53	Milan	Lombardy	193.6
Average	0.325	124.7**	52.4			210.1

* Million lire

** Out of 4,476 total firms

Table A3. Two largest universal banks and top twenty local banks by nBetweenness centrality (1936)

Two largest universal banks

	nBetweenness			Headquarters		
Bank	Value	Rank	Degree	Province	Region	Total assets*
Comit	1.18	7	129	Milan	Lombardy	7,993.0
Credit	0.62	23	102	Genoa	Liguria	6,871.0

Top twenty local banks

	nBetweenness			Headquarters		
Bank	Value	Rank	Degree	Province	Region	Total assets*
Credito Commerciale	0.73	16	76	Cremona	Lombardy	384.0
Banca Popolare Cooperativa Anonima di Novara	0.53	28	52	Novara	Piedmont	2,342.6
Banca di Legnano	0.50	34	37	Milan	Lombardy	141.5
Banca Toscana	0.49	36	32	Florence	Tuscany	387.2
Banco Lariano	0.46	41	34	Como	Lombardy	111.1
Banca Belinzaghi	0.44	44	58	Milan	Lombardy	147.7
Banco Ambrosiano	0.40	52	46	Milan	Lombardy	783.0
Banca Agricola Milanese	0.28	105	34	Milan	Lombardy	327.2
Banca Provinciale di Depositi e Sconti	0.26	117	34	Milan	Lombardy	17.4
Banca Nazionale dell'Agricoltura	0.25	127	22	Rome	Latium	526.6
Credito Industriale di Venezia	0.24	135	65	Venice	Veneto	140.0
Banca Unione	0.23	143	46	Milan	Lombardy	108.4
Credito Varesino	0.22	158	21	Varese	Lombardy	192.7
Banca Popolare di Milano	0.21	172	25	Milan	Lombardy	582.0
Banca Milanese di Credito	0.20	180	25	Milan	Lombardy	29.0
Banca d'America e d'Italia	0.20	187	24	Rome	Latium	666.9
Credito Legnanese	0.18	220	14	Milan	Lombardy	30.7
Banca Mutua Popolare di Verona	0.14	321	4	Verona	Veneto	208.6
Banca Lombarda di Depositi e Conti Correnti	0.13	326	36	Milan	Lombardy	174.8
Credito Agrario Bresciano	0.13	334	17	Brescia	Lombardy	183.6
Average	0.245	131.0**	34			374.2

* Million lire

** Out of 4,243 total firms

[1] An interlock is the link between two companies when a person is a director of both.

[2] The database is available online: http://imitadb.unisi.it

[3] During the period investigated in this article, the 1882 Commercial Code regulated corporate governance in Italy. This had designed a two-board system of corporate administration in which the assembly of the shareholders appointed the two following boards: 1) the board of directors (*Consiglio di amministrazione*), which was the executive body of the assembly of the shareholders. This usually included both inside and outside directors; 2) the board of syndics (*Collegio sindacale*), which monitored the financial probity of the firm and whose function did not coincide with that of the supervisory board in the German system (Teti, 1999). Thus,

similarly to what was done in the two major international research projects on corporate networks in comparative perspective (Stokman, Ziegler and Scott, 1985; David and Westerhuis, 2014), for our analysis we have selected only members of the board of directors.

[4] We considered as local banks the totality of banks included in *Imita.db* except the banks of issues (*Banca d'Italia* and, until 1926, *Banco di Napoli* and *Banco di Sicilia*); the larger universal banks (*Comit*, *Credit*, *Banco di Roma*, *Società Bancaria Italiana* and *Banca Nazionale di Credito*); the "public law banks" according to the Banking Law of 1936 (*Banca Nazionale del Lavoro*, *Monte dei Paschi di Siena*, *Istituto Bancario San Paolo di Torino*, *Banco di Napoli and Banco di Sicilia*); and the central institutes of cooperative banks and savings banks.

[5] In network analysis, the degree of a node is the number of edges connected to it (De Nooy, Mrvar and Batagelj, 2011).

[6] We decided to separate the banking sector because the assets of banks are usually much higher than those of firms in other industries. Thus addressing the sectoral distribution of banks' interlocks by including simultaneously all sectors in the analysis would have blurred the differences between network membership in industries other than banking.

[7] We excluded real estate because of the large number of missing data in this sector.