

# Financial globalization and peripheral integration: business groups, relational infrastructures and networked intermediation in the south of Italy (1820–1903)

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This article analyses the integration of Southern Italy into the first wave of financial globalization through the lens of transnational business groups (BGs) and relational infrastructures. Drawing on an original micro-level dataset and employing advanced Social Network Analysis (SNA) techniques, we map the evolving structure of business and financial relationships that connected the Neapolitan periphery to core European financial centres in the nineteenth century.

The article offers a relational reinterpretation of peripheral integration, showing that global capitalism advanced not merely through markets or states, but through densely structured networks of trust, influence and institutional proximity. It proposes a methodological and conceptual framework relevant to comparative histories of financial globalization and to rethinking the role of peripheries in shaping, and not just receiving, the trajectories of modern capitalism.

**Keywords:** first globalization, global financial capitalism, business networks, interlocking directorates, Southern Italy

**JEL classification:** N23, C40

## I

The relationship between financial globalization and peripheral integration has emerged as one of the most discussed issues in contemporary political economy (Schularick 2006; Nesvetailova 2019; Oliveira *et al.* 2025). As the world moves from unipolar to multipolar financial architectures, with emerging economies developing alternative institutional frameworks that challenge traditional Western dominance (Bordo and Flandreau 2001), fundamental questions persist about how peripheral regions integrate into global financial networks while remaining systematically

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## I

subordinate to them. The persistence of these asymmetric relationships has drawn increasing scrutiny from scholars examining the role of contemporary financial elites in perpetuating core–periphery dependencies (Mohan and Tan–Mullins 2019).

Recent research on financialized capitalism shows how global financial elites continue to shape peripheral integration through mechanisms that mirror historical patterns – from sovereign wealth fund investments to the development of a range of financing models – while maintaining decisive control over capital allocation and risk assessment (Bonizzi *et al.* 2022). Developing countries still experience subordinate and dependent integration patterns that reproduce core–periphery dependencies rather than fostering autonomous development, highlighting that the influence of transnational financial elites remains as crucial today as it was during capitalism’s formative period (Oliveira and De Conti 2025).

The persistence of unequal financial relationships points to deeper structural continuities in how financial power has historically shaped global integration. The apparent spontaneity of market expansion often concealed the deliberate orchestration of powerful financial interests that shaped institutional arrangements to serve their particular ends (Polanyi 1944). The first wave of financial globalization is especially revealing. The *first global century* (1820–1913) (Williamson 2006) emerged with the consolidation of transnational networks linking distant actors through social ties (kinship, religion, politics, friendship) and shared business and financial interests (Cassis 1997; Jones 2002; Hausmann *et al.* 2008). In this context, leading financial and business figures forged the connections through which core financial centres penetrated peripheral regions, laying the foundations of global capitalism (Cameron 1961; Cassis and Cottrell 2009). During this formative period, transnational business groups (BGs) – formed by legally independent firms interconnected through economic and social ties and operating across different regions (Khanna and Yafeh 2007; Jones and Colpan 2010) – were key conduits in the process, projecting the influence of core centres and extending their reach into the peripheries (Colpan *et al.* 2010). From the 1850s, and more markedly from the 1860s, foreign direct investments (FDI) redirected capital from European cores to peripheral economies, supporting industrialization, technology transfer and infrastructure development beyond traditional trade and sovereign bonds’ channels (Gille 1968; Twomey 2000).

However, while much of the existing literature on nineteenth-century financial capitalism has largely focused on core financial centres, relatively little attention has been paid to understanding these dynamics from the perspective of peripheral regions themselves (Khanna and Yafeh 2007). Indeed, there is a body of evidence both from economic history (Feis 1965; Woodruff 1966; Cassis 2010) and economics (Schularick and Steger 2006) documenting the role of European capital in the economic development of peripheral economies prior to 1914. However, many questions remain open. How did peripheral economies navigate their integration into global financial circuits? What role did local elites play in shaping the terms of this integration? What can these historical processes reveal about the persistent

tension between institutional learning and structural dependency that continues to characterize contemporary development debates (Prasad *et al.* 2007)?

To address these questions, this article examines the case of Southern Italy, specifically Naples, during its integration into nineteenth-century globalization. Naples offers a particularly revealing case study for several reasons (Schisani *et al.* 2018). As the capital of the Kingdom of the Two Sicilies and later a major city in unified Italy, it possessed sufficient economic significance to attract sustained international investment, while remaining structurally peripheral to the dominant financial centres of Northern Europe and the rest of Italy. This intermediate position allows us to observe the full complexity of peripheral integration processes that might be less visible in either completely marginal regions or emerging core centres.

Drawing on an original micro-level data and applying advanced SNA techniques, we investigate the nature and implications of the networks through which Naples was integrated into global capitalism. We focus particularly on how foreign actors – bankers, industrialists and entrepreneurs – formed transnational BGs that connected local firms and institutions to wider circuits of capital, technology and influence. These groups did not merely operate as conduits of investments; rather, they functioned as intermediaries, brokers and at times gatekeepers, shaping the terms of local engagement with global finance through what we conceptualize as ‘relational infrastructures’.

Our approach problematizes linear and deterministic narratives of modernization that continue to influence development economics today. Rather than assuming that financial globalization necessarily produces convergence and development, this analysis considers whether these groups facilitated genuine financial modernization in peripheral economies or instead entrenched new forms of dependency and asymmetric integration. We explore whether transnational BGs acted as paragons, bringing knowledge and institutional innovation, or as parasites, exploiting local structural weaknesses for rent-seeking purposes. A dichotomy that remains relevant for understanding contemporary foreign investment patterns in emerging markets (Khanna and Yafeh 2007).

The historical trajectory we trace suggests that peripheral integration into global capital flows was neither automatic nor uniform but occurred through gradual and negotiated processes marked by institutional constraints, political alliances and relational infrastructures. By analysing how these transnational groups emerged, evolved and interacted with local elites and institutions, we show the mechanisms through which peripheral regions were embedded into global networks. Importantly, we demonstrate that these processes were not purely exogenous but involved significant agency and strategic adaptation on the part of local actors, a finding with implications for contemporary debates about peripheral participation in global capitalism (Bruszt and Vukov 2018).

Methodologically, our use of social network analysis to map BGs’ evolution and relational infrastructures positions this study within a growing recognition among international business scholars that understanding global capitalism requires attention

to densely structured networks of trust, influence and institutional proximity rather than pure market forces (Jones and Zeitz 2019). The analytical techniques we employ – including betweenness centrality analysis, community detection and modularity measures – offer a replicable framework for analysing both historical and contemporary cases of peripheral integration.

The article unfolds across four pivotal historical periods (1820–39, 1840–61, 1861–80 and 1880–1903), each marking distinct phases of financial integration and institutional transformation. For each period, we reconstruct the structure and dynamics of the Naples business network, by identifying prominent communities of actors and firms where foreign financiers and entrepreneurs were active, and by examining the role played by financial interlocks, kinship ties and sectoral diversification.

The rest of the article is organized as follows. Section II introduces the historical framework while Section III presents the data and the analytic strategy within the SNA approach, accompanied by a glossary of network terms in the Appendix. In Section IV the main network results are described. We then discuss period by period in the following sections (V to VII) the evolving topology of the networks, aiming to interpret how globalization mechanisms unfolded from the core to the periphery through the evolution and dynamics of connections between international and local actors. Section VIII concludes with some final remarks.

## II

The process of globalization represents complex and uneven patterns of economic integration driven by the interconnection of markets, monetary and financial systems, and technological networks (Bordo and Flandreau 2001; Williamson 2006). At its core lies the construction of network-related infrastructures – from railways, canals, ports, utilities to modern ICT systems – that provide the physical and institutional foundations for global connectivity (Bretagnolle and Mimeur 2025). These infrastructures are not merely technical artefacts; they embody the spatial and financial architectures through which global capitalism expands, linking distant territories and enabling the circulation of capital, goods and information, connecting valuable interests, while disconnecting valueless ones (Castells 1999).

From the nineteenth century onward, the creation of infrastructure networks required vast financial resources and sophisticated organizational structures, often exceeding the capacities of individual states or local entrepreneurs. Consequently, public authorities and private investors collaborated through hybrid arrangements – ranging from concessions to complex financial partnerships – that prefigured contemporary forms of project financing and public–private partnerships (Dupuy and Tarr 1988; Schisani and Caiazzo 2016). In this sense, the nineteenth-century globalization of infrastructures anticipated modern investment practices such as *build–operate–transfer* (BOT) schemes, through which capital from the industrialized



core sought profitable opportunities in emerging or peripheral regions (Bonizzi *et al.* 2019; Hoppe and Schmitz 2021; Castelblanco *et al.* 2025).

Such arrangements revealed a structural asymmetry inherent in global economic integration (Frank 1966; Wallerstein 1974). While core regions supplied capital, technology and institutional models, peripheral areas provided markets, raw materials and strategic locations but remained dependent on external financing and expertise. This imbalance – between those who controlled investment and those who depended on it – became one of globalization's most debated features, raising questions about whether global integration promotes convergence and shared development or reinforces dependency and hierarchy between core and peripheral economies (Frank 1998, 2002).

During the first globalization of the late nineteenth century, this ambivalence was already central to intellectual and political debates. The formation of a world economy was intended by many observers as both a mechanism of integration and an instrument of imperial expansion (Hobson 1902; Hilferding 1910). Classical theorists interpreted global economic expansion primarily from the vantage point of the industrial and financial metropolises, while scholars from peripheral contexts offered more nuanced readings emphasizing how peripheral regions internalized, resisted or reinterpreted global forces (Manoilescu 1929).

In this broader historical framework, the Mediterranean space – and particularly Southern Italy – offers an illuminating example of how infrastructural and financial globalization materialized in concrete form. Situated at the crossroads of maritime routes, connecting Western Europe, North Africa and the Near East, the region functioned as both a conduit and a testing ground for the circulation of capital, technology and expertise (Salvemini 2009; Drolet 2015). Italy's unification in 1861 marked a decisive turning point that transformed the former Bourbon periphery into a liberalized frontier of investment within a newly unified national market. The dismantling of protectionist barriers, together with the liberal government's openness to foreign capital, created conditions for intensified integration into European financial circuits (de Majo 2006a; Schisani and Caiazzo 2016). The opening of the Suez Canal (1869) represented the culmination of this process, as it symbolically recentred the sea within global routes while materially contributing to a rehierarchization of ports and routes that privileged those better integrated into Atlantic-facing and Northern European commercial networks over Mediterranean ports (Cristina 2022).

Naples, as the principal city of Southern Italy, occupied a pivotal position within this process. Its geographic centrality and maritime vocation made it a strategic node in the emerging *Système de la Méditerranée* envisioned by the Saint-Simonian economist Michel Chevalier (1832), a transnational project of infrastructural integration linking the ports of the Mediterranean to Europe's political and financial capital cities (Crispo 1940; Drolet 2015). Within this vision, railways, shipping lines, canals and public utilities were conceived not only as instruments of modernization but as vehicles for geopolitical influence, mirroring the present processes of globalization of the Global South (Mohan and Tan-Mullins 2019). The Mediterranean was imagined

as a *French lake*, a space of economic and political coordination underpinned by the principles of free trade, monetary uniformity and technical interconnectivity that culminated in the 1865 Latin Monetary Union (LMU) (Cameron 1961; Gille 1968). In this view, it was essential to integrate the South into the physical infrastructure networks that connected territories, seas and markets, since – unlike other pre-unification states (above all Piedmont) – it had remained isolated from this process, eventually becoming a breeding ground for FDI after unification (Schisani and Caiazzo 2016). This was especially true given that Southern Italy and Naples in particular were not primary beneficiaries of the Suez Canal (Curli 2022).

The evolution of Naples during the nineteenth century must therefore be read within these global currents. Foreign merchants, bankers and engineers established durable footholds in the city, operating through transnational BGs that connected it to core financial centres, Paris, Geneva, Brussels and London (Davis 1979; Caglioti 2007). These actors imported capital, institutional models and legal instruments such as the *concession à la française*, a system that intertwined political authority, financial capital and entrepreneurial initiative (Schisani and Caiazzo 2016). Through such arrangements, international investors became central participants in the creation of infrastructures and utilities (railways, ports, gas lighting and other public utilities), embedding the southern periphery within a network of financial and technological dependencies that were both enabling and constraining (de Majo 2006b; Schisani 2010a).

Without anticipating later analyses, it is enough to note that these dynamics – linking infrastructure, finance and geography – form the essential context for understanding how peripheral regions such as Naples were incorporated into the early architectures of global financial and economic integration.

### III

To investigate how transnational BGs shaped the integration of Southern Italy into global financial networks, we draw on original archival data organized in the IFESMez database (*Imprese, Finanza, Economia e Società nel Mezzogiorno*). IFESMez is a multi-source relational database that captures the economic, financial and socio-political connections among individual and collective actors operating in Southern Italy (and abroad) between 1808 and 1913. It documents how firms and financiers were linked through ownership, management, kinship and other enduring relationships – thereby providing the empirical foundation to reconstruct the *relational infrastructures* of early globalization.

Data were collected primarily from the State and Notarial Archives of Naples, the Italian State Archive in Rome, and foreign repositories such as CARAN, CAEF and CAMT in Paris, as well as municipal archives and national libraries in Naples, Paris and Geneva. Additional evidence from newspapers, genealogical records and secondary literature complements the archival sources. Thanks to the complexity and richness of the database, it can be used to quantitatively address a range of social,

economic and financial issues of nineteenth-century Southern Italy. The data have been used for several different studies, considering different periods and time spans, such as the analysis of gas infrastructures in Southern Italy (Schisani and Caiazzo 2016), for modelling the mechanisms of formation and persistence of economic elites (Schisani, Balletta and Ragozini 2021) also in relation to the persistence of familism in Southern Italy (Rondinelli *et al.* 2025), and for examining the transition from insurance to banking in the local financial local system (Schisani and Ragozini 2025). In the present article, the data have been specifically employed to investigate relational mechanisms associated with international BGs that enabled Naples to enter the first globalization.

Given our focus on a networked mechanism of peripheral integration, we employ Social Network Analysis (SNA)<sup>1</sup> not merely as a visualization device, but as a form of argumentative evidence to test how transnational capital penetrated and restructured the Neapolitan business environment. SNA allows us to trace who connected to whom, how durable those connections were, and which actors mediated between foreign financial cores and local institutions. A glossary of the network terms and measures used in the article can be found in the Appendix, where both formal definitions and their substantive meaning are illustrated with references to our analysis.

From IFESMez, we extract a bipartite (actor–firm) dataset linking each individual to the firms where they served as shareholders, directors or managers.<sup>2</sup> Given the large number of actors and firms involved in the networks, a comprehensive prosopographical account would result in extremely extensive descriptions and narratives spanning an entire century of Naples's economic history. For this reason, we have chosen to include tables summarizing only the most relevant information on the key actors and firms identified through network measures, as these details help to illuminate the macro-processes underlying globalization. Note that some actors are present in more than one table referring to different periods, as they change the position and role in the network depending on their changing connections.

Restricting the timeframe to 1820–1903, the dataset contains approximately 40,000 ties among 2,947 firms and 24,625 actors. To analyse historical change, we divide the sample into four periods – 1820–39, 1840–61, 1861–80 and 1881–1903. Twenty-year periods were chosen for both practical and historical reasons. Statistically, twenty years provide a stable basis for analysis. Indeed, shorter spans would produce too many fluctuations, while longer ones would blur together companies that operated in very different times. Historically, each period is marked by turning points. The first period ends with the establishment of the Pouchain gas company (1838), the first foreign-led public utility in Southern Italy, the birth

<sup>1</sup> The analyses and visualizations have been performed in Gephi (Bastian *et al.* 2009).

<sup>2</sup> The database contains also information on kinship, social and religious ties for actors, as well as shareholding and credit relationships among firms. These data are not used here in the formal definition of the network, but are used to better interpret results.

of the first foreign BG. In 1861, Italian unification brought a crucial institutional shift. The early 1880s, with the 1882 Commercial Code, opened a new phase by liberalizing the creation of joint-stock companies. This final period closes with a key moment for the southern electricity sector with the founding of the Société Financière Italo-Suisse (1902), which brought Swiss finance to the core of Naples' business network as French finance withdrew, in line with the new financial and technological know-how.

We focus on the largest connected component, or giant component – the largest subgraph where all nodes are mutually reachable (Cartwright and Harary 1956) – and identify BGs as clusters of at least three firms operating in distinct sectors, connected by persistent and non-occasional ties such as interlocking directorates or cross-shareholdings (Khanna and Yafeh 2007). Communities are detected using the Louvain modularity optimization algorithm, which identifies cohesive structures based on tie density (Blondel *et al.* 2008). In the field of corporate network studies, the modularity maximization algorithms, such as the edge-betweenness algorithm (Newman and Girvan 2004), the Louvain, the Leiden (Traag *et al.* 2019) can be considered a sort of standard tools to analyse interlocking directorates, business groups, corporate elite networks and financial networks (see e.g. Elouaer-Mrizak & Chastand 2013; Heemskerk *et al.* 2013; Drago & Ricciuti 2017; Heemskerk *et al.* 2016; Takes & Heemskerk 2021; Yassine *et al.* 2022; Mastrandrea *et al.* 2025; Schisani and Ragozini *forthcoming* and references therein). However, their explicit application to historical economic networks (pre-twentieth century) remains limited. Most applications focus on contemporary data rather than long-term historical evolution. Generally, economic history papers use network visualization (Grandjean 2021) and statistical analysis of components without formal community detection methodology.

Methods for community detection predominantly focus on one-mode networks (Yassine *et al.* 2022). In our case, however, the network under study is a two-mode interlocking directorates network. In this context, researchers typically either apply community detection approaches to projections onto one of the two modes, or – less frequently – propose adaptations of one-mode network algorithms that operate alternately on the two modes (for a discussion of this issue, see Zhou *et al.* 2018). All these approaches treat the two modes of the network asymmetrically, privileging one mode over the other (e.g. assigning greater importance to inter-firm ties rather than to ties among actors). Our objective, instead, is to highlight how actors and firms form cohesive groups, namely, how prominent actors cluster around relevant firms and, at the same time, how prominent actors connect groups of firms through their roles. Modularity, which identifies communities of nodes that exhibit denser internal connections than connections to the rest of the network (Newman and Girvan 2004), is well suited to capturing this criterion. Moreover, among the algorithms that maximize modularity in networks, the Louvain algorithm operates first at a local level – creating a form of super-node – and subsequently at a global level, making it, despite some limitations, particularly effective for very large and complex networks

(Lancichinetti and Fortunato 2011). In our case, the functioning of this algorithm first aggregates actors who locally participate in the same firm and then – when actors strongly connect firms through interlocking directorates – aggregates firms themselves. When these constellations of actors and firms exhibit the characteristics described above, we identify these communities as BGs. As will become clear in the following sections, the algorithm highlights, for example, large communities consisting of a single firm and all the actors associated with it (the super-nodes created in the first step), which are only weakly connected to the rest of the network and therefore remain, to some extent, isolated. At the same time, it clearly identifies BGs at the global level of the network. This methodology is novel insofar as it represents an adaptation that turns potential limitations of the method into an advantage for our analysis. The Louvain algorithm was not originally designed for two-mode networks and tends to isolate peripheral actors and firms, especially when applied to the largest connected component. By contrast, using the traditional approach of projecting the two-mode network onto firms and performing community detection on the resulting one-mode firm network would force all firms into communities, even in the presence of very weak ties, thereby generating excessively broad or even spurious BGs (Elouaer-Mrizak and Chastand 2013). A particularly telling example is that of cooperative firms and/or cooperative banks, which may have a very large number of members, only a few of whom connected to other firms. Under our approach, these organizations remain separate and form individual communities, as is analytically appropriate. In contrast, more traditional approaches that operate alternately on the two modes risk assigning them to communities together with other firms, thereby distorting the interlocking logic that is central to our analysis.

Each detected BG is characterized by sectoral classification (NACE Rev. 2) (Schisani and Ragozini 2025) and actor prominence. To quantify brokerage and connectivity, among the network centrality measures (betweenness, degree, closeness, eigenvector centrality, etc) we focus on degree and betweenness. Specifically, actors with high betweenness are interpreted as *brokers* or *hinge nodes* bridging foreign and local clusters, thus operationalizing the core–periphery linkage central to our argument (David and Westerhuis 2014).

To move beyond static description, we systematically compare network properties across time-periods. This dynamic analysis assesses how integration intensified or fragmented over the century by tracking:

- average degree and changes in modularity (overall connectivity, cohesion and degree of community segmentation);
- community persistence and reconfiguration (which BGs endured, merged, or dissolved); and
- the shifting position of brokerage actors (e.g. Rothschild vs Meuricoffre vs Parent, etc.).

Visualizations generated through a force-directed layout (ForceAtlas2) (Jacomy *et al.* 2014) are used to represent these transformations consistently across periods, enabling comparative interpretation. We decided to represent the networks through this force-directed layout, which optimizes the forces of attraction and repulsion among nodes, as it is very effective in highlighting dense areas of the network revealing communities incorporating also the idea of the presence of multigravity centres (as in our case). As closely connected nodes cluster near each other while non-connected nodes repel, the distances among the communities can be interpreted in terms of strength and closeness of their relations (Jacomy *et al.* 2014).

In all graphs, communities mainly composed of local economic/financial actors and firms are represented by light colours, while international BGs are characterized by dark colours. The size of the nodes is proportional to their betweenness centrality. Through this approach, we can visually and quantitatively trace the entry, exit and reorganization of BGs, capturing the evolving architecture of financial globalization in Naples.

#### IV

Table 1 and Figure A1a–d (in the Appendix) display the evolution of the four two-mode networks (actors-by-firms) and their projections (over actors and the firms). Recall that the networks include both firms that are legally registered in Naples and firms that are registered elsewhere but operate in Naples, or firms that are linked to actors and firms in Naples through actors who are common shareholders/directors/managers, as well as the public administration and the political institutions they belong to. Over time, the number of economic actors and firms increases, in particular after unification thanks to the liberal turn and new interests in the development of the South, bringing about an increase in the number of potential links. The number of actors over the 80 years increased by more than 10 times, while the number of companies increased by about four times, growing from 1,590 to 17,680, and from 265 to 1,094, respectively. However, the density of the network decreased since the average degree remains quite constant, suggesting a sort of structural feature of the business network, i.e. each actor can manage a limited number of participations in companies, apart from the big interlockers that belong to the local and international business and financial elites. Also, the share of both isolated and marginal firms in the interlocking networks remains quite constant, being stable at around 72 per cent for the first three time spans, decreasing to around 60 per cent in the last period. On the other hand, despite the growing number of actors, the share of both isolated and marginal ones decreases dramatically over time from 15 to 0.05 per cent. This is particularly true in the last 20 years, when we observe a significant increase in the number of actors associated with a small decrease in the number of firms. This can be explained by two factors: (i) the effects of the twin crises (1889 and 1894) that yielded several bankruptcies and company mergers (Cova 2014); (ii) the boost given by the 1882 Code of Commerce to the foundation of large special interest insurance-type

Table 1. *Descriptive measures for temporal two-mode and one-mode networks*

|                                                                | 1820–39 | 1840–60 | 1861–80 | 1881–1903 |
|----------------------------------------------------------------|---------|---------|---------|-----------|
| Two-mode network ( <i>actors-by-firms</i> ): whole network     |         |         |         |           |
| No. of actors                                                  | 1,590   | 2,224   | 8,753   | 17,680    |
| No. of firms                                                   | 265     | 569     | 1,439   | 1,094     |
| No. of public administrations                                  | 7       | 38      | 63      | 34        |
| No. of links                                                   | 2,225   | 3,163   | 11,178  | 21,934    |
| Density                                                        | 0.001   | 0.001   | 0.000   | 0.000     |
| Average degree                                                 | 2.35    | 2.24    | 2.18    | 2.33      |
| No. of components                                              | 129     | 290     | 734     | 382       |
| Two-mode network ( <i>actors-by-firms</i> ): largest component |         |         |         |           |
| No. of actors                                                  | 1,288   | 1,444   | 6,281   | 16,639    |
| No. of firms                                                   | 108     | 262     | 614     | 712       |
| Density                                                        | 0.002   | 0.002   | 0.000   | 0.000     |
| Average degree                                                 | 2.63    | 2.7     | 2.45    | 2.42      |
| Communities in the LC                                          | 21      | 22      | 40      | 48        |
| Modularity                                                     | 0.738   | 0.788   | 0.867   | 0.865     |
| Relevant business groups with foreign actors                   | 7       | 9       | 11      | 7         |
| One-mode network ( <i>firm-by-firm</i> ): whole network        |         |         |         |           |
| Isolated firms                                                 | 108     | 241     | 634     | 356       |
| Marginal firms (1/2 interlocks)                                | 90      | 193     | 458     | 304       |
| One-mode network ( <i>actor-by-actor</i> ): whole network      |         |         |         |           |
| Isolated actors                                                | 34      | 58      | 80      | 58        |
| Marginal actors (1/2 interlocks)                               | 236     | 494     | 1,458   | 808       |

firms (the so-called Mutue) and large local cooperative banks in limited liability form (Schisani *et al.* 2021). These large institutions mechanically create links among all members of the institution itself, regardless of whether they are linked to actors in other institutions,<sup>3</sup> and without generating meaningful interlocks.

<sup>3</sup> This effect is not present in the two-mode network, where the average degree stays constant, since links among actors are not present. This is possibly due to the fact that, together with large institutions, also a large number of individual firms are created with few actors linked to them. Also, the average degree in the one-mode network of firms increases by only a factor of 1.6 (not in the table).



Thanks to the progressive integration of the business environment, we observe a changing network topology with an increase in the shares of actors and firms in the largest connected component of the networks (from 81 to 94 per cent, and from 40 to 63 per cent, respectively), suggesting that firms tended to create a more closely linked network structure. Overall, a large number of nodes and the low density in all time-periods, and in general the complexity of the network structure, mainly after 1861, justify the extraction of the largest connected components and the Louvain community detection method (Blondel *et al.* 2008) to uncover the relevant and hierarchically dominant BGs. Over time, both the modularity (i.e. the strength of division of the network into modules or communities) and the number of communities increase: many of them cannot be considered BGs, while others are local ones. The number of international BGs is quite stable, even though, as will be clearly described in the following, their composition and strength in terms of economic power evolve a lot over time. To analyse them in each period, we take a closer look at the networks highlighting the international BGs, identified as described in the previous section, by representing them in dark colours, in contrast to local BGs represented by light colours, and to other scattered firms present in the network (grey).

In the following, on the basis of the results, we found four interesting patterns related to the four time spans:

- i. Network formation and financial brokerage (1820–39)
- ii. The role of business groups in asymmetric integration (1840–61)
- iii. Institutional learning and endogenous modernization (passive modernization hypothesis) (1861–80)
- iv. Crisis, transformation and changing alliances (1881–1903)

The next three sections, one for pre-unification periods (Section V) and two for post-unification (Sections VI and VII), discuss the analysis of the communities in the largest component. The results show the central position of financial and related services firms (not only banks but also big transport and public utilities companies with a strong financial component) in the structuring of transnational BGs linked to core financial centres. Networks highlight a stable core of foreign agents, generally members of the European financial and political milieu, clustered in cohesive groups with local actors (merchant bankers, private bankers, financiers, politicians) with the highest centrality. The pervasiveness of the international BGs in the Neapolitan business environment is testified by their presence in the core of the network and by their ability to preserve the connectedness.

## V

The integration of Naples and Southern Italy into nineteenth-century global finance unfolded through a fundamental transformation in network architecture, yet one that progressively consolidated rather than dismantled peripheral status.

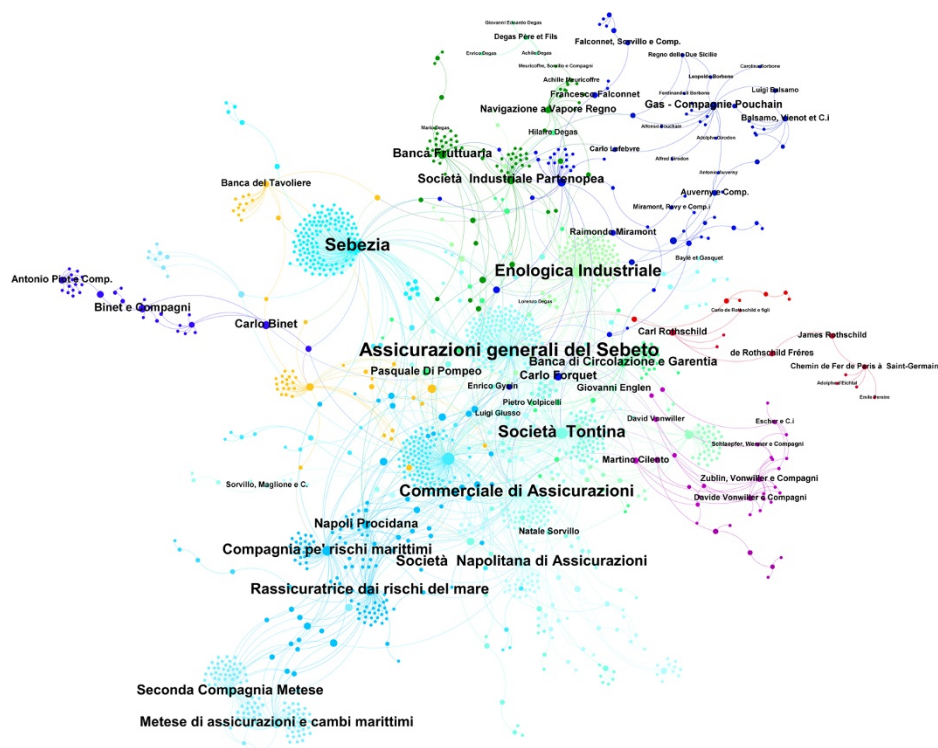


Figure 1. *Largest component of the Naples business network, 1820–39*

This process began with a dual-architecture network (1820–39) (Figure 1) that includes: (i) a local-core clustering around insurance and local industrial and banking companies (cyan and light green community) at the very core of the largest component; (ii) small, tight foreign cliques (dark blue, dark green, dark red and purple) operating as modular gateways to international BGs, surrounding the core of the largest component. In this first configuration, foreign resident capitalists functioned as structural bridges rather than replacements for local actors. Merchant-bankers like Carlo Forquet, Friedrich Meuricoffre, Hilaire Degas, Jean François Falconnet, Enrico Gysin and Giovanni Englen, who had high betweenness centrality inside their communities (Table 2), enabled the circulation of capital, knowledge and institutional practices between Naples and major European markets, while maintaining tight ethnic, religious and kinship cohesion among themselves (Davis 1979; Caglioti 2006).

Critically, these foreign actors operated as modular gateways (i.e. gateways to their local module or community), preserving internal group solidarity while connecting outwards to fragmented local partners (merchants, private bankers, industrial entrepreneurs). This architecture reveals that network centrality stemmed from positional advantage in cross-border capital coordination rather than from

Table 2. *Network formation and financial brokerage, 1820–39*

| Actor name                                                                     | Origin/<br>Nationality | Primary<br>role                | Kinship/Family ties                                                      | Business ties & companies                                                                                                   | Network position                                               |
|--------------------------------------------------------------------------------|------------------------|--------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Carlo Forquet<br>(Bucciante 1838)                                              | French                 | Merchant-<br>banker,<br>broker | Born in Naples to<br>French merchant family                              | Insurance companies;<br>banking; commercial court<br>president; chamber of com-<br>merce VP; founder of Banca<br>Forquet    | Broker/gatekeeper;<br>high betweenness<br>centrality           |
| Enrico Gysin<br>(IFESMez)                                                      | Swiss                  | Merchant-<br>banker            |                                                                          | Insurance companies; banking                                                                                                | Structural bridge;<br>facilitates capital<br>circulation       |
| Giovanni Vittorio<br>Englen (De<br>Lorenzo 1993)                               | German                 | Lawyer,<br>business-<br>man    | Noble Calabrian family<br>of German origin; father<br>of Rodolfo Englen  | Insurance sector (Società di<br>Assicurazioni Diverse CEO<br>from 1845)                                                     | Local insurance hub<br>intermediary                            |
| Friedrich<br>Meuricoffre<br>(Caglioti 2007)                                    | Swiss                  | Merchant-<br>banker            | Meuricoffre family<br>(5 generations)<br>grandnephews: Oscar<br>and Tell | Silk merchant in Lyon; pri-<br>vate banking; Meuricoffre<br>and Co. (longest-lived<br>Southern bank)                        | Institutional importer;<br>merchant-bank<br>founder            |
| Jean François<br>Falconnet<br>(Middleton and<br>Robertson 1997;<br>Zaugg 2008) | Swiss<br>(Vevey)       | Merchant-<br>banker            | Related to de Palézieux<br>family; father of<br>Eduardo Falconnet        | Textile sector (silk, cotton);<br>private banking; Falconnet<br>and Sorvillo bank; partner<br>with Meuricoffre and Sorvillo | Textile–finance bridge                                         |
| Hilaire Degas<br>(Raimondi 1958;<br>Schisani 2000).                            | French                 | Financier                      | Grandfather of painter<br>Edgar Degas                                    | Public debt financing; railway<br>financing (Naples–Portici)                                                                | Key political-financial<br>intermediary to<br>Bourbon monarchy |

(Continued)

Table 2. (Continued)

| Actor name                                         | Origin/<br>Nationality | Primary<br>role                          | Kinship/Family ties                                                                                                                                                                    | Business ties & companies                                                           | Network position                                                                       |
|----------------------------------------------------|------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| Carlo Lefebvre<br>(Catalano 1858;<br>Caiazzo 2013) | French<br>(Besançon)   | Industrial<br>entrepreneur               | Count of Balsorano<br>by concession of King<br>Ferdinand II, in 1854;<br>peer of the Kingdom<br>of the Two Sicilies<br>since 1848; father of<br>the industrialist Ernesto<br>Lefebvre. | Public works financing; mills;<br>Pouchain company (CEO)                            | Industrial-financial<br>intermediary                                                   |
| Antonio Auverny<br>(Rovinello 2009)                | French                 | Merchant-<br>banker                      | Wealthy merchant; son-<br>in-law: Emile Vienot                                                                                                                                         | Auverny and Co.; vice-<br>consul of France (Terra<br>d'Otranto)                     | Geographic/ethnic<br>intermediary                                                      |
| Alfonso Pouchain<br>(IFESMez)                      | French<br>(Lyon)       | Industrial<br>entrepreneur               | Son: Carlo Pouchain,<br>who married Giacomo<br>Pitkin's daughter;<br>related to Adolphe<br>Girodon                                                                                     | Compagnia Pouchain (gas<br>company); steam navigation;<br>industrial initiatives    | Transformation<br>of brokerage into<br>BG formation;<br>state-business<br>intermediary |
| Adolphe Girodon<br>(Caiazzo 2013)                  | French<br>(Lyon)       | Silk<br>indus-<br>trialist,<br>banker    | Brother: Alfred Girodon                                                                                                                                                                | Société de l'Union pour<br>l'éclairage par le gaz (Lyon);<br>Pouchain gas company   | Lyonnais<br>entrepreneurial<br>coalition intermediary                                  |
| Carl Mayer<br>Rothschild<br>(Schisani 2015)        | German<br>(Frankfurt)  | Investment<br>banker,<br>gate-<br>keeper | Kinship with James<br>Rothschild (Paris); head<br>of Naples branch                                                                                                                     | Rothschild Frères banking<br>network; Bourbon court<br>financing; railway financing | Financial gate-<br>keeper/'demiurge';<br>monopolistic control;<br>excludes rivals      |

nationality. The Rothschilds exemplified this logic most powerfully, with Carl Mayer Rothschild operating as a ‘financial demiurge’ (Schisani 2010a). His role as a monopolistic gatekeeper allowed him to control information distribution (Díez-Vial and Montoro-Sánchez 2020), selectively opening Naples to the French *haute banque* – through kinship ties with James Rothschild in Paris – and excluding rivals like the Belgian-founded Banca del Tavoliere<sup>4</sup> (orange community on the left side).

Yet the first network also displayed an incipient modularity that foreshadowed deeper structural changes. Aligned with European modernization logics, foreign-led cliques functioned as institutional importers transmitting modern organizational forms, such as private merchant-banks, industrial partnerships, limited-liability utilities. The community brokers German-Swiss cotton entrepreneurs (Vonwiller, Zublin, Escher, Schlaepfer, Wenner)<sup>5</sup> (communities shown in purple at the bottom right of the network) and other manufacturing clusters represent examples of long-term anchoring of their communities in the local production system (Balletta 2018). Notably, the Lyonnais Compagnia di Illuminazione a Gas Della Città di Napoli better known as Compagnia Pouchain (1839) (dark blue community on the right) emerges as pivotal. Figures like Alfonso Pouchain and Adolphe Girodon (Table 2) – also thanks to established relationships with the foreign resident industrialist Carlo Lefebvre and the merchant-banker Antonio Auverny – transformed brokerage into an embryonic transnational BG formation. They show how multi-market interlocks could link the rising French financial/entrepreneurial coalitions to Bourbon infrastructural ventures while creating state-business entanglement through royal shareholding (King Ferdinand II’s siblings Leopold Count of Syracuse and Caroline Bourbon).

This initial configuration laid the structural foundations for deeper transnationalization, which led to a decisive hierarchization of the network during the subsequent period from 1840 to Italian Unification. This transformation resulted in a consolidation of asymmetric interdependence. What distinguished this hierarchized

<sup>4</sup> The Banca del Tavoliere delle Puglie (1835) was promoted by the French diplomat Jacques Dubois Desmeure (chief of the French Consulate General in Naples since the early 1820s) and the Belgian banker François Van Aken. The banks’ aim was to grant loans to the census-holders of the Tavoliere di Puglia, who had to pay rent to the Treasury for the land assigned to them. This bank lasted barely four years, until 1839 (Giura 1967).

<sup>5</sup> These entrepreneurs exemplify a stable foreign community in the Kingdom of the Two Sicilies, German-speaking Swiss cotton manufacturers bound by kinship and shared religious identity. Davide Vonwiller, Federico Zublin and Alberto Escher established major factories in the Irno Valley (Salerno) from 1829. Federico Alberto Wenner, Zublin’s cousin, arrived in Naples the same year and, in 1835, founded with Conrad Schlaepfer (in Southern Italy since 1815) the cotton-spinning and weaving firm Schlaepfer Wenner and Co. in the province of Salerno (Balletta 2018). Innovative and never naturalized, they were active figures in the Protestant community (Caglioti 2007) and connected to the sector’s core business through the Assicurazioni Generali del Sebeto, whose shareholders and board members included Davide Vonwiller and Conrad Schlaepfer (IFESMez).

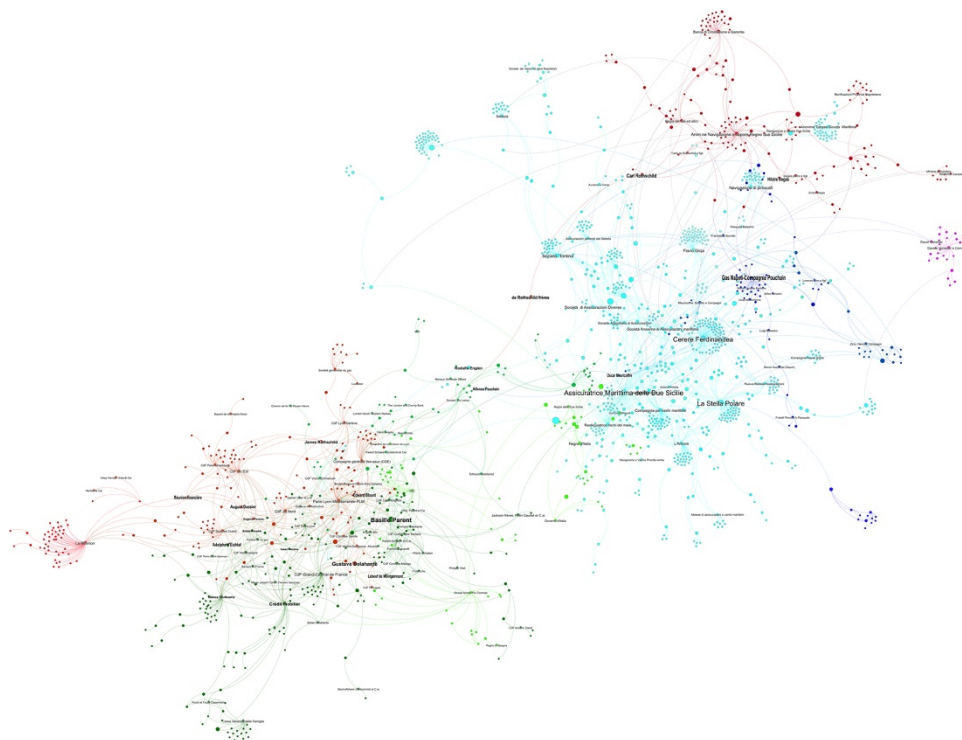


Figure 2. *Largest component of the Naples business network, 1840–61*

configuration from earlier brokerage-based forms was a shift in the locus of power within the network. During the first period, foreign brokers mediated between relatively autonomous local clusters and European markets: their centrality derived from bridging disconnected worlds. By mid-century, foreign capital had consolidated into cohesive transnational BGs with internal decision-making structures, strategic portfolios spanning multiple sectors and countries, and the capacity to impose hegemonic conditions on peripheral integration. Naples connected densely to global capital markets, yet exclusively on terms that still reproduced its peripheral positionality within the European financial hierarchy. The largest component of the network shifted towards a tripartite architecture (Figure 2): (i) the local core was still dominated by maritime insurance and traditional mercantile finance (communities depicted in cyan), and it remained structurally subordinate to (ii) large transnational BGs clustered around international railways, public utilities and investment banking (shown in dark red, dark blue, and dark green); (iii) hybrid intermediary clusters (dark red and light green) connected the previous two.

Three major transnational BGs dominated this new configuration: (i) the Rothschilds/Réunion Financière (dark red starting from upper left side to lower left side), leveraging Auguste Dassier's Swiss financial milieu; (ii) the Pereire/Crédit

Mobilier (dark green lower part of the network); and (iii) the Basile Parent's Franco-Belgian coalition (dark green lower right side) (Table 3). These groups competed through fundamentally conflicting models of financial capitalism (Cameron 1961) – the Pereire brothers' *new bank* (Crédit Mobilier) challenged Rothschild's old *haute banque* order (Landes 1956). At the international level, this rivalry paradoxically reinforced structural integration rather than fracturing it. Big interlockers (Table 3) like Auguste Dassier, Edward Blount, Basile Parent and Gustave Delahante<sup>6</sup> maintained transversal connectivity across competing networks, ensuring that conflict preserved structural cooperation. It was rather at the peripheral level that this competition revealed its limits: in the Neapolitan battleground, the attempt to found a Mobilier-type institution through the takeover of the Banca Fruttuaria del Regno delle Due Sicilie<sup>7</sup> (dark green community in the lower area) failed. Indeed, integration occurred only under hegemonic conditions, with Rothschild's gatekeeping power determining which financial models could be imported and which excluded in the peripheral market. The attempted Mobilier takeover and the Rothschilds' gatekeeping role exemplified this dynamic. Integration was no longer negotiated between equals but governed by core actors determining peripheral incorporation on asymmetrical terms. Brokers became administrators of dependence.

The critical innovation of this second period lies in the emergence of a subset of foreign actors who achieved positional centrality as hinge nodes, anchoring themselves in the local business as a mechanism of control. Foreign intermediaries like Alfonso Pouchain, Oscar Meuricoffre (Frederich's grandnephew), Rodolfo Englen (son of Giovanni), Adolphe Girodon and Carl Rothschild achieved positional centrality not through wholesale displacement of local actors but through strategic embedding in local governance, insurance firms and banking enterprises. Rothschild's institutionalized relationship with Bourbon sovereignty, mediated through kinship ties and financial services, prefigured a model in which foreign

<sup>6</sup> The business relationship between Basile Parent and Gustave Delahante was key. Both served on the board of the Società per la Rete di Ferrovie da Napoli al Mare Adriatico with Blount, while Delahante (with his brother Fernand) partnered in Parent Schaken Caillet et Cie and sat with Parent and Adolphe Girodon on the board of the French metallurgical firm Jackson Frères Petin Gaudet et Cie. This network facilitated Parent's collaboration with Auguste Dassier and other financiers in 1862 to create the Compagnie Napolitaine d'Éclairage et de Chauffage par le Gaz by taking over the Compagnie Pouchain (Schisani and Caiazzo 2016).

<sup>7</sup> The Banca Fruttuaria del Regno delle Due Sicilie offers a particularly telling example. In Figure 1, it belongs to the local core (light blue community in the upper area), whereas in Figure 2 it clearly shifts into the French core (dark green community in the lower area, close to and parallel with the Crédit Mobilier). This transition reflects the bank's takeover in 1856 by a group of international bankers who attempted – ultimately without success – to establish a Crédit Mobilier-type institution in Naples. The initiative was eventually blocked by the Rothschild house in Naples. The project had been promoted by Adolphe d'Heichtal, who led a consortium that included Émile and Isaac Pereire, Benoît Fould, Jean Henry Hottinguer, Frédéric Grieninger, August Thurneysen and other banking firms such as the Crédit Mobilier, Baring Brothers and Co. and Mallet Frères et Cie (Schisani 2010a, 2015).



Table 3. *Role of business groups in asymmetric integration, 1840–61*

| Actor/Group name                                         | Origin/<br>Nationality | Primary role                             | Kinship/Family ties                                                           | Business groups &<br>sectors                                                                                                                                                                 | Integration strategy                                                                                   |
|----------------------------------------------------------|------------------------|------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Rothschilds/<br>Réunion<br>Financière<br>(Cameron 1961)  | French-German          | Investment<br>banking group              | James Rothschild<br>(Paris) – family ties<br>with Carl Rothschild<br>(Naples) | Railways (major<br>European networks);<br>investment banking;<br>sovereign finance                                                                                                           | Hegemonic gate-<br>keeper; selective<br>opening to <i>haute<br/>banque</i>                             |
| Pereire<br>Brothers/Crédit<br>Mobilier<br>(Cameron 1961) | French                 | Investment<br>banking group              | Family partnership<br>(Isaac and Émile)                                       | Crédit Mobilier; rail-<br>ways (major European<br>networks); industrial<br>finance                                                                                                           | New banking model;<br>competitive with<br>Rothschild; failed<br>takeover attempt<br>(Banca Fruttuaria) |
| Basile Parent<br>(Schisani and<br>Caiazzo 2018)          | Belgian                | Constructor,<br>banker,<br>industrialist | Partnership with<br>Pierre Schaken;<br>related to Gustave<br>Delahante        | Parent and Schaken<br>Cie; Fives-Lille; rail-<br>ways (Paris–Strasbourg,<br>PLM); banking<br>foundations<br>Jackson Frères Petin<br>Gaudet et Cie (French<br>metallurgical firm)             | Infrastructure devel-<br>opment; international<br>railway pioneer                                      |
| Gustave Delahante                                        | French                 | Banker, investor                         | Brother of Fernand<br>Delahante                                               | Parent Schaken Caillet<br>et Cie;<br>Jackson Frères Petin<br>Gaudet et Cie (French<br>metallurgical firm)<br>Società per la rete di<br>ferrovie da Napoli<br>al Mare Adriatico<br>(railways) | Transversal bro-<br>ker and stabilizing<br>interlocker                                                 |

(Continued)

Table 3. (Continued)

| Actor/Group name                                  | Origin/<br>Nationality | Primary role                     | Kinship/Family ties                                                                               | Business groups &<br>sectors                                                                                        | Integration strategy                                              |
|---------------------------------------------------|------------------------|----------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Auguste Dassier<br>(Schisani and<br>Caiazzo 2016) | Swiss (Geneva)         | Banker, investor                 | Brother-in-law: Jean<br>Ador                                                                      | Réunion Financière<br>(partner); railways<br>(PLM); French gas<br>companies                                         | Swiss <i>haute banque</i> ;<br>industrial investment<br>supporter |
| Alfonso Pouchain<br>(IFESMez)                     | French (Lyon)          | Industrial<br>entrepreneur       | Son: Carlo Pouchain<br>who married<br>Giacomo Pitkin's<br>daughter; related to<br>Adolphe Girodon | Compagnia Pouchain<br>(gas company); steam<br>navigation; industrial<br>initiatives                                 | Brokerage consoli-<br>dation; state-business<br>partnerships      |
| Adolphe Girodon<br>(Caiazzo 2013)                 | French (Lyon)          | Silk industrialist,<br>financier | Brother of Alfred                                                                                 | Pouchain gas company;<br>Jackson Frères Petin<br>Gaudet et Cie (French<br>metallurgical firm)                       | French-Neapolitan<br>industrial coalition<br>builder              |
| Edward Blount<br>(Blount 1902)                    | English                | Banker, railway<br>financier     | Collaborator with<br>Dassier and Parent                                                           | Società per la rete di<br>ferrovie da Napoli<br>al Mare Adriatico<br>(railways);<br>Naples Water Works<br>(founder) | Franco-British<br>financial bridge;<br>infrastructure projects    |
| Rodolfo Englen<br>De Lorenzo 1993)                | German-Italian         | Son of Giovanni<br>Vittorio      | Calabrian noble<br>family                                                                         | Società di Assicurazioni<br>Diverse (CEO); local<br>insurance networks                                              | Local insurance<br>consolidator                                   |
| Oscar Meuricoffre<br>(Caglioti 2007)              | Swiss                  | Merchant-banker                  | Grandnephew of<br>Friedrich; continues<br>family banking legacy<br>with his brother Tell          | Meuricoffre and Co.<br>(private bank); insurance<br>partnerships                                                    | Long-term banking<br>continuity; multi-<br>generational trust     |

capital operated through local elite collaboration rather than external imposition (Schisani 2010b). Simultaneously, political/institutional entities – the Bourbon monarchy, the Municipality of Naples and later the Kingdom of Italy – occupied structurally invariant positions as mandatory passage points, mediating all flows between global investors and provincial infrastructures (Schisani and Caiazzo 2016).

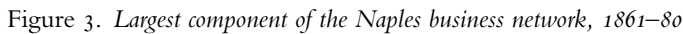
This configuration implied that international capital required embedded intermediaries to access local markets and institutional privileges. Foreign actors could not simply impose their presence but had to negotiate with sovereign institutions and local notables. The result was not convergence towards a uniform European capitalist model but rather codification of a core–periphery hierarchy within a single connected system. Naples, indeed, was simultaneously indispensable (as a market, revenue source and geopolitical asset) and subordinated (constrained to secondary roles in financial innovation, capital accumulation and decision-making).

Thus, the network topology evolution reveals a configuration in which foreign actors served as links between separate worlds into one in which Naples became a subordinate node within a pre-existing European financial–industrial order. Peripherality was not simply geographic or economic. It was structurally encoded in network architecture build of a tripartite division between local core, transnational clusters and hybrid intermediaries, in the mandatory passage point role of the state, and in the gatekeeping prerogatives of core financial actors.

## VI

After Italian unification, and particularly with the acceleration of the first wave of globalization in the 1870s, Naples experienced a structural shift in its mode of international financial integration. The period marks the definitive consolidation of the Southern Italian periphery into a densely connected European financial–industrial network in which transnational BGs fully permeated the local corporate landscape, forming international clusters that connected the entire Neapolitan structure. The persisting cohesion of the network, even when restricting the graph to major foreign players only, scattered all around (Figure 3), demonstrates that in this reconfiguration foreign BGs became indispensable integrators, connecting Naples to the European core. The Rothschilds' strategic withdrawal from Southern Italy (1863) (Schisani 2015), after their progressive peripheralization in the network (dark red community on the peripheral upper right side), marked a decisive structural pivot towards an infrastructure-based convergence. This reorientation reflected both strategic repositioning by core European finance and adaptive reconfiguration by Neapolitan elites (Schisani *et al.* 2021). Rather than representing decline, this shift exemplified how peripheral actors repositioned within transnational networks of utilities, railways and finance, where network position and institutional arrangements – rather than geographic location alone – determined economic viability.

The opening of the Suez Canal in 1869 (dark blue community on the upper right side) crystallized the strategic logic of this reorientation by restructuring Mediterranean hierarchies and privileging Northern European shipping routes



This shift towards an infrastructure-based convergence, still serving the realization of the *Système de la Méditerranée*, is clearly exemplified by the Compagnie

Napolitaine d'Éclairage et de Chauffage par le Gaz (CNG) (dark blue community in central position) that emerged as the central hub through which multiple transnational BGs converged (Figure 3). Public utilities became the institutional interface of globalization, concentrating flows of capital, technology and managerial practices. This transformation was deeply rooted in the model of nineteenth-century large-scale infrastructure financing that required vast resources and sophisticated organizational forms exceeding individual states' capacities. The legal instrument of *concession à la française* mediated technology transfer while establishing public–private governance arrangements (Bezançon 1995; Barjot and Berneron-Couvenhes 2005; Guglielmi 2006). These concessions (resembling systems still nowadays adopted in Europe) functioned as financial instruments, allowing private concessionaires to recover advanced capital and amortize it through user fees, tolls, or loans guaranteed by contract (Veesser 2013), this way generating hierarchies of dependency through ostensibly contractual arrangements.<sup>8</sup>

The new infrastructure-centred logic was embodied by the CNG's founding BGs: Basile Parent's Franco-Belgian BG and the Swiss high-finance group coordinated by Auguste Dassier (dark red community in the upper area). After unification, Parent entered Naples and founded the CNG by absorbing the Compagnia Pouchain, also mobilizing kinship-based coalitions – Adrien Louis Lebeuf de Montgermont, Eugène Blin, François Lavaurs and Henry Borguet (see Table 4) – clustered around the Parent and Schaken partnership and the Compagnie de Five-Lille (dark red community in the uppermost area),<sup>9</sup> a diversification platform spanning France, Spain, South America, Africa and Russia.<sup>10</sup> Crucially, kinship governance enabled survival across leadership transitions. When Parent died in 1866 and Schaken in 1870, the business group maintained structural centrality through lineage-based authority rather than collapsing (Schisani and Caiazza 2018). Parallel to this, Auguste Dassier – through his nephews, the engineer Jean Daniel Colladon, and in the following period the banker Gustave Ador – extended Swiss influence in the CNG,

<sup>8</sup> The *concession à la française* prefigured contemporary models of global governance: the privatization of public services, the financialization of infrastructure and the exercise of power through contractual obligation rather than explicit force.

<sup>9</sup> Fives-Lille was created in 1861 when the Belgian firm Parent and Schaken, joined by engineers from the Cail company and backed by Gustave and Fernand Delahante, founded the mechanical works at Fives near Lille. The plant quickly became a major producer of railway equipment, especially locomotives. In 1865 it took the name Compagnie de Fives-Lille, becoming in 1868 the Compagnie de Fives-Lille pour constructions mécaniques et entreprises (Dubois 1985).

<sup>10</sup> The BG was formed by diverse companies such as de Vrière, Schaken, Bruneau et Cie (Chemin de fer de Kiev à Balta) (1866), the Compagnie Houillère et métallurgique de Belmez (1877), the Jackson frères, Petin Gaudet et Cie (Compagnie des hauts fourneaux, forges et Aciéries de la Marine et des chemins de fer) (1877), the Compagnie des chemins de fer et du port de la Réunion (1878), the Compagnie française des chemins de fer Argentins (1888), the Compagnie Française des Chemins de fer de Santa Fé (1888), the Société Minière et Métallurgique de Peñarroya (1894) (Schisani and Caiazza 2016).

reinforcing the BG continuity. The same mechanism of lineage-based institutional authority represented a recurrent mechanism of long-term financial coordination (Stoskopf 2002). This kinship-structured governance was a fundamentally different mechanism of network persistence from the earlier brokerage model. Rather than relying on individual positional centrality, transnational BGs now embedded themselves through family strategies that ensured multi-generational control of critical infrastructure nodes.

Stemming from Parent's BG branching within the French and Swiss financial milieu, with its role in infrastructure financing, a second important network dynamic emerges leading to Naples' full integration into international financial circuits and its subsequent banking modernization. Parent's broader diversification strategy anchored Naples in the financial networks of Paris and Geneva through ties with the Cahen d'Anvers and Hentsch banking dynasties. These connections linked Naples to the Société Générale, Crédit Lyonnais and Paribas. Parent's strategic roles – as shareholder and director in the Société Générale (1864) (Bonin 2006) alongside Meyer Joseph Cahen d'Anvers, father of Edouard (both located midway between their dark red community and the local dark blue and green communities), Edward Blount, Edouard Hentsch and Louis Bischoffsheim (all located in the upper part of the dark red community around their firms) – generated four major relational branches, each extending different forms of globalization across Naples and constituting distinct institutional pathways for capital circulation.

First, Paribas (1872) (dark red community in the upper right area) formed the core of a dense universal banking cluster with global colonial reach, spanning from Europe to the Middle East through the Banque Franco-Égyptienne and Banque Impériale Ottomane, and Asia including Banque de l'Indochine. Second, the Crédit Lyonnais (1863) emerged as the critical bridge to Geneva and Swiss finance, connecting to Compagnie Genevoise de l'Industrie du Gaz and directly to the Neapolitan gas industry through CNG (dark blue community in the central right area). This connection anchored Naples within Swiss financial circuits that would prove increasingly important as electricity challenged gas in the subsequent decades. Third, the CGE (1853)/CGEE (1879) (Compagnie Générale des Eaux and Compagnie Générale des Eaux pour l'Etranger) expanded the technical globalization of water infrastructure through Edward Blount's Naples Water Works (1878), establishing Naples as a node within a distinct utility infrastructure network. Fourth, the Banca Napoletana (1871) (dark green in the lower central area) provided the local institutional translation of international banking models, creating an endogenous financial intermediary that replicated transnational BGs logics within the peripheral context. These four branches did not operate independently; rather, they formed an integrated portfolio through a complex system of cross-cutting interlocks in which Parent and his associates managed Naples' insertion into multiple circuits of global capital simultaneously, that is financial speculation (Paribas colonial ventures), regional finance (Crédit Lyonnais), infrastructure development (water and gas) and local banking modernization.

Table 4. *Institutional learning and endogenous modernization, 1861–80*

| Actor/Family name                                             | Origin/Nationality      | Primary role              | Kinship/Family ties                                                                     | Key companies & sectors                                                                                                                      | Role in modernization                                                                                           |
|---------------------------------------------------------------|-------------------------|---------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Basile Parent (Schisani and Caiazzo 2018)                     | Belgian                 | Entrepreneur, banker      | Son-in-law: Adrien Louis Lebeuf de Montgermont; brother-in-law: Eugène Blin             | Compagnie Napolitaine d'Éclairage et de Chauffage par le gaz (CNG, absorbed Pouchain); Fives-Lille; Parent and Schaken Cie; Société Générale | Infrastructure-based convergence hub; central to globalization interface; kinship governance ensures continuity |
| Auguste Dassier (Paquier and Williot 2005; Paquier 1996)      | Swiss (Geneva)          | Banker, investor          | Uncle of Jean Daniel Colladon (engineer); and of Gustave Ador                           | Société Générale (shareholder/director); CNG investments; Swiss financial influence extension                                                | Swiss-Italian financial bridge; banking modernization supporter                                                 |
| Jean Daniel Colladon (Paquier and Williot 2005; Paquier 1996) | Swiss (Geneva)          | Engineer                  | Nephew of Auguste Dassier; married Stéphanie Ador                                       | CNG (designer, constructor); utility infrastructure projects                                                                                 | Technology transfer specialist; infrastructure engineer                                                         |
| Adrien Louis Lebeuf de Montgermont (Plessis 1985)             | French (Seine-et-Marne) | Industrialist, politician | Son-in-law of Basile Parent (married Marie-Josephine Parent)                            | CNG shareholder; Creil and Montereau terracotta manufacture; family château                                                                  | Industrial-finance family integration; local political influence                                                |
| Eugène Blin (Caiazzo 2013)                                    | French (Paris)          | Landowner, financier      | Brother-in-law of Basile Parent (married Nathalie Parent); Son-in-law of Pierre Schaken | CNG shareholder; French landed wealth integration; Parent group financing                                                                    | Landed wealth mobilization for infrastructure                                                                   |

(Continued)



Table 4. (Continued)

| Actor/Family name                            | Origin/Nationality           | Primary role                | Kinship/Family ties                                                      | Key companies & sectors                                                                      | Role in modernization                                                    |
|----------------------------------------------|------------------------------|-----------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| François Lavaurs (Caiazzo 2013)              | French (Quimper)             | Architect, company director | Son: Raymond Marie Lavaurs                                               | CNG (director); architectural design for utilities                                           | Technical modernization facilitator                                      |
| Henry Borguet (Caiazzo 2013)                 | Belgian                      | Entrepreneur                | Son of railway pioneer Henri Borguet                                     | CNG shareholder; public works contracting; railway infrastructure                            | Infrastructure construction expertise; transalpine connector             |
| Mayer Joseph Cahen d'Anvers (Stoskopf 2002)  | French-Jewish                | Banker, investor            | Father of Edouard Cahen (CNG co-founder); married to Clara Bischoffsheim | Société Générale (founder); Paribas (founder, 1872); Crédit Mobilier; banking networks       | Universal banking pioneer; colonial finance (Indochine, Egypt, Ottoman)  |
| Edouard Cahen d'Anvers (Stoskopf 2002)       | French-Jewish (Naples based) | Banker                      | Son of Mayer Joseph; financial dynasty connection                        | CNG (co-founder); banking networks extending from France to Orient                           | International banking modernization; colonial connections                |
| Edward Blount (Blount 1902)                  | English                      | Banker, financier           | Collaborator with Dassier and Parent networks                            | Naples Water Works (NWW, founder 1878); Compagnie générale des eaux; international utilities | Anglo-French utility finance pioneer; water infrastructure globalization |
| Edouard Hentsch (Cassis 1994; Stoskopf 2002) | Swiss (Geneva)               | Banker                      | Banker from Geneva elite; related to Dassier through Louis Bischoffsheim | Société Générale (investor); CNG shareholder; international banking networks                 | Geneva banking elite integration; financial modernization                |
| Leopoldo Persico (IFESMez)                   | Neapolitan                   | Businessman, banker         | Local elite position; government connections                             | Banca Napoletana (co-founder, 1871); CNG (shareholder, later board); banking modernization   | Local elite adaptive learning; banking innovation internalization        |

(Continued)

Table 4. (Continued)

| Actor/Family name                             | Origin/Nationality | Primary role                | Kinship/Family ties                                                      | Key companies & sectors                                                                     | Role in modernization                                                 |
|-----------------------------------------------|--------------------|-----------------------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Domenico Gallotti (Schisani 2019)             | Neapolitan         | Businessman, financier      | Local merchant family; Paris–Rome–Naples networks                        | Banca Napoletana (organizer, financier); local financial leadership; industrial connections | Local financial institution building; network builder across capitals |
| Antonio Cilento (Schisani and Ragozini 2025)  | Neapolitan         | Businessman                 | Son of Martino Cilento; brothers: Francesco, Federico                    | Società di Credito Meridionale (co-founder); CNG (shareholder); banking leadership          | Insurance-to-banking family transition; financial modernization       |
| Mariano Arlotta (Schisani <i>et al.</i> 2021) | Neapolitan         | Merchant-banker, politician | Son of Antonio Arlotta (Bourbon-era prominence); uncle of Enrico Arlotta | Banking leadership; politics (city council, parliament); leverages Bourbon-period networks  | Bourbon-unification continuity; political-financial integration       |
| Eduardo Falconnet (Zaugg 2008)                | Mixed origin       | Businessman                 | Descendant of Falconnet banking family                                   | Investment banking; modernization initiatives                                               | Family banking tradition continuity                                   |
| Louis Bischoffsheim                           | German-Jewish      | Banker                      | Brother-in-law of Mayer Joseph Cahen d’Anvers                            | Paribas (founder) Société Générale (founder)                                                | French banking elite integration; financial modernization             |

International actors, strictly interplaying with local elites, moved fluidly across these relational branches, carrying capital, knowledge and organizational practices. This portfolio diversification resembling Chinese boxes enabled capital accumulation in one sector to finance ventures in another (Schisani and Caiazzo 2016), and represented a distinct evolution from the earlier phases where foreign brokers typically maintained separate roles in insurance, banking or commerce. In this period, the same actors embodied multiple sectoral positions, functioning as multilevel intermediaries who could mobilize capital across infrastructure domains. Within this process local elites progressively acquired positions across the network, transforming peripheral participants into co-managers of this multilayered structure. The institutional learning and adaptive capacity materialized as Neapolitan elites – families and agents such as Oscar Meuricoffre (dark red community in the centre of the graph), Leopoldo Persico, Antonio Cilento and his brothers Francesco and Federico, Domenico Gallotti (dark blue community), Eduardo Falconnet, Mariano and Enrico Arlotta (dark blue and dark green communities in the lower central area) (see Table 4) – gradually internalized BG models, shifting from maritime insurance towards investment banking and infrastructure finance (Schisani and Ragozini 2025). The Banca Napoletana became the operational hub of hybrid holding structures financing industrial construction (Impresa Industriale Italiana di Costruzioni metalliche IICM), maritime credit (Cassa Marittima di Napoli), and storage logistics and utilities (Magazzini Generali), while simultaneously interlocking with northern Italian institutions like the Turinese Credito Mobiliare Italiano and with foreign BGs linked to the CNG.

Crucially, the modernization Naples' banking did not appear as passive foreign imposition. By the 1870s, after a decade of political liberalization, Neapolitan elites did not simply receive capital and technology but actively participated in their adaptation to local conditions, their growing political roles both at local and national level, negotiating the terms of infrastructure concessions, and positioned themselves strategically within transnational networks. A small group of elite connectors through their positions in key state institutions (orange community in the upper left area) operated as obligatory passage points for transnational capital. In this setting, modernization unfolded through political intermediation, rather than bypassing it. Thus, Naples institutionalized long-term capital intermediation not through purely endogenous innovation, but under strong external influence, transforming its peripheral status into a strategic asset within transnational financial networks centred on infrastructure and investment banking.

## VII

The period from the mid 1880s to the turn of the century marked the most acute phase of structural stress in the Italian financial system. The twin crises (1889–94) and collapse of Italian *Crédit Mobilier*-type institutions (Credito Mobiliare Italiano and Banca Generale) revealed the fragility of a speculative banking model dependent

on weak monetary governance (De Luca *et al.* 2025). Yet rather than indicating a slowdown in the integration process, the Naples network underwent a systemic transformation from external brokerage to internalized intermediation. In this period, changes in the network's topology mirror broader geopolitical reconfiguration (Figure 4). The dissolution of the Latin Monetary Union (1878), the Triple Alliance with Germany and Austria–Hungary (1882), and the rupture of trade relations with France (1887) progressively pulled Italy, including Naples, away from its traditional French matrix of capital, realigning it towards the German industrial-finance model (Confalonieri 1974). As evident in Figure 4, the entrance of the Milan-based COMIT (Banca Commerciale Italiana, 1894) (dark red community in the lower area) and CREDIT (Credito Italiano, 1895) (dark blue community in the lower area), the first Italian German-type universal banks, fundamentally transformed the Naples network. Their dense interlocking directorates with Deutsche Bank, Berliner Handels-Gesellschaft, Wiener Bankverein, Credit-Anstalt, Credit Suisse (dark red community in the lower area) and Dresdner Bank (dark blue community in the lower area) established a northeastern vector of financial influence, replacing the earlier Paris–Brussels axis and reflecting Italy's reorientation towards Central European finance.

The most consequential structural shift occurred at the interface between global capital and local power, marking a clear reorientation of the local relational axis towards a political-financial elite, southern actors who held high-level institutional roles in both local and national politics (members of Parliament, senators of the Kingdom of Italy, ministers, and high-ranking officials of the central bank Banca Nazionale/Banca d'Italia, mayors, etc.). Figures such as Davide Consiglio (orange community) and Ignazio Florio, both in the COMIT's Board, together with Fedele De Siervo, Leopoldo Persico, Gaetano Pavoncelli and Maurizio Capuano (all in the dark blue community) (see Table 5), became domestic gatekeepers. These members of the local elite had internalized brokerage functions previously completely monopolized by foreign interlockers. Foreign BGs still dominated the central hubs, but local elites occupied positions of genuine strategic coordination. Their betweenness centrality peaks capture a transition in brokerage that became institutionally embedded.

This dynamic unfolded in the energy-utilities sectors, where the second industrial revolution had introduced electricity in competition to gas (Schisani and Caiazzo 2016). The reconfiguration of technological know-how and capital requirements elevated the significance of Swiss financiers and engineers. The Parent-Montgermont-Lavaurs coalition (clustered around the Fives-Lille) moved to the network periphery (dark blue in the peripheral lower right area), while the Swiss banker Ernest Hentsch's Swiss BG emerged as the new technological and financial fulcrum (Paquier 2001), articulating Naples' public utilities with electrical expertise from Geneva and Zurich (Schisani and Caiazzo 2016). The progressive takeover of the CNG by Ernest Hentsch positioned him as a strategic crossroads between local and Swiss gas and electricity companies (dark blue community in

Table 5. *Crisis, transformation, and changing alliances, 1881–1903*

| Actor/Institution name        | Origin/Nationality | Primary role                | Kinship/Family ties                                                 | Key companies & positions                                                                                   | Strategic position                                                                      |
|-------------------------------|--------------------|-----------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Davide Consiglio              | Neapolitan         | Banker, politician          | Local political elite (senator, 1881)                               | COMIT (board member); Banco di Napoli (director, 1879; royal commissioner, 1890; director general, 1890–93) | Domestic gatekeeper; local political-financial integration; betweenness centrality peak |
| Ignazio Florio (Candela 1997) | Sicilian           | Entrepreneur, industrialist | Head of Florio industrial dynasty; senator                          | COMIT (board); Navigazione Generale Italiana (co-founder); shipping, tuna, sulphur, wine production         | Southern elite mobilization; transnational business group connector                     |
| Fedele De Siervo (IFESMez)    | Neapolitan         | Statesman, businessman      | Liberal elite; first mayor of Naples (1866–7); Senate member (1873) | COMIT (board); CNG (board); SGI (board); multiple utility companies; political-financial hub                | Domestic gatekeeper; multi-institutional linker; bridge between politics and finance    |
| Leopoldo Persico (IFESMez)    | Neapolitan         | Banker, businessman         | Continued from 1861–80 period                                       | CNG (board); SGI (board); Società di Credito Meridionale leadership; multiple utility boards                | Persistent local elite; adaptive broker; utility sector consolidation                   |

(Continued)

Table 5. (Continued)

| Actor/Institution name                                        | Origin/Nationality | Primary role                | Kinship/Family ties                                                        | Key companies & positions                                                                                                     | Strategic position                                                                                |
|---------------------------------------------------------------|--------------------|-----------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Gaetano Pavoncelli (Nardella et al. 1999)                     | Neapolitan/Apulian | Banker, entrepreneur        | Brother of public works minister Giuseppe Pavoncelli                       | Banca Cooperativa Partenopea; Banca di Piccoli Crediti; SGI (board); SME (board); SNIE; transportation and energy             | Infrastructure modernization driver; political-family leverage; energy sector pioneer             |
| Maurizio Capuano (Bruno 1990)                                 | Neapolitan         | Entrepreneur, industrialist | Utility sector innovator (1865–1925)                                       | SME (CEO); SGI (board); first hydroelectric plants (Southern Italy); electricity network developer                            | Second industrial revolution pioneer; energy transition leader; electricity sector founder        |
| Ernest Hentsch (Cassis 1994; Stoskopf 2002)                   | Swiss (Geneva)     | Banker, financier           | Great-grandson of Henri Hentsch; banking dynasty                           | CNG (financial management takeover); SME shareholder; SGI connector; Société Suisse pour l'industrie électrique (founder)     | Swiss encroachment strategist; technology–finance nexus; electricity sector integration           |
| Gustave Ador (Paquier and Williot 2005; Paquier 1996)         | Swiss (Geneva)     | Banker, politician          | Grandson of Auguste Dassier; son of Louis Ador; married Stéphanie Colladon | CNG (board); SGI (board); SME (connections); International Red Cross (chair, 1914–28); League of Nations (Honorary President) | Swiss financial-humanitarian influence; multi-institutional integrator; International connections |
| Jean Daniel Colladon (Paquier and Williot 2005; Paquier 1996) | Swiss (Geneva)     | Engineer, financier         | Continued from 1861–80 period; married Stéphanie Ador; Nephew of Dassier   | CNG (historical role); SGI (board); utility engineer; continued Swiss presence in modernization                               | Persistent Swiss technical-financial influence; utility infrastructure continuity                 |

(Continued)

Table 5. (Continued)

| Actor/Institution name             | Origin/Nationality | Primary role          | Kinship/Family ties                             | Key companies & positions                                                                          | Strategic position                                                                       |
|------------------------------------|--------------------|-----------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Ludovico Arduin                    | Turinese           | Entrepreneur, banker  | Northern Italian presence                       | Società di Credito Meridionale (temporary infiltration); Banking system modernization              | Northern Italian expansion into south; Banking crisis response                           |
| Ulrich Geisser                     | Northern Italian   | Banker, industrialist | Northern connections                            | Società di Credito Meridionale (temporary role); manufacturing and banking integration             | Northern industrial model diffusion                                                      |
| Giuseppe Morpurgo                  | Triestine          | Banker                | Trieste-based financier                         | CREDIT (connections); International banking networks                                               | Austro-Hungarian financial bridge                                                        |
| Emilio Weiss                       | Florentine         | Banker, industrialist | Central Italian elite                           | Società di Credito Meridionale (temporary); banking leadership; industrial connections             | Central Italian expansion south                                                          |
| COMIT (Banca Commerciale Italiana) | Milan-based        | Universal bank        | German-model banking institution (founded 1894) | Milan-based German-style universal bank; dense German–Austrian interlocks; systemic hub for Naples | New system integrator; German–Italian financial bridge; post-crisis restructuring leader |

(Continued)



Table 5. (Continued)

| Actor/Institution name                     | Origin/Nationality | Primary role        | Kinship/Family ties                                 | Key companies & positions                                                                                      | Strategic position                                                                      |
|--------------------------------------------|--------------------|---------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| CREDIT (Credito Italiano)                  | Milan-based        | Universal bank      | German-model banking institution (founded 1895)     | German-style universal banking; Austro-Hungarian connections; railway and utility finance                      | Alternative systemic hub; German-Austrian networks; regional financial modernization    |
| Société Générale pour l'Illumination (SGI) | Franco-Swiss       | Utility company     | Cross-border company; founded 1875                  | CNG (junction point); SME (junction point); gas-electricity transition hub; Franco-Swiss model                 | Technology transition facilitator; utility infrastructure consolidator                  |
| Società Meridionale di Elettricità (SME)   | Neapolitan-Swiss   | Electricity utility | Swiss technical-financial involvement; founded 1899 | Electrical power generation and distribution; Swiss BG connections; second industrial revolution               | Energy transition pioneer; Naples electrification leader                                |
| Société Financière Italo-Suisse            | Swiss (Geneva)     | Financial holding   | Created 1902; Swiss financial rescue vehicle        | CNG restructuring; SGI-SME consolidation; capital raising for debt resolution; Italian-Swiss partnership model | Crisis resolution mechanism; Swiss financial dominance; Italian-Swiss partnership model |

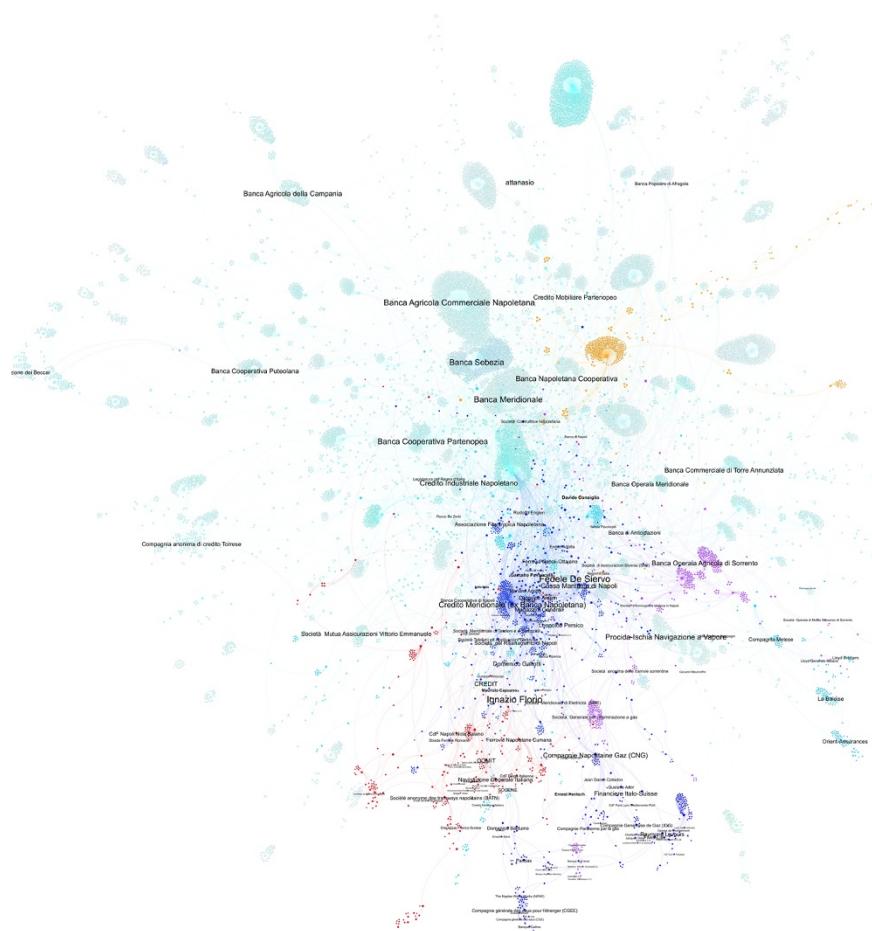


Figure 4. *Largest component of the Naples business network, 1881–1903*

the lower area). His BG linked the newly founded Società Meridionale di Elettricità (SME) (1899), the CNG (both in the dark blue community) and the Società Generale per l'Illuminazione (SGI) (1875) (purple community in the central right area) with the Société Franco-Suisse pour l'Industrie Electrique (1898) (dark red community in the lower area close to COMIT) and the Société Financière Italo-Suisse (1902) (dark blue community in the lower right area), as well as the traditional Geneva gas companies. The formation of this enlarged BG relied on key non-occasional interlockers. Beyond prominent Swiss financiers, such as Gustave Ador and Jean Daniel Colladon, several members of Southern Italy's elite played pivotal roles due to their institutional positions. Significantly, actors such as De Siervo, Persico, Pavoncelli and Capuano became major linkers across clusters, sitting on the boards of CNG, SME and SGI, brokering between international and local financial

interests in gas–electricity competition. During this phase, these local actors reproduced the multiplex role of foreign actors described in the previous period. Their simultaneous participation in utilities, infrastructure and finance demonstrates how domestic gatekeepers achieved structural centrality not through monopolizing single positions but through critical roles spanning multiple clusters.

This period also witnessed the maturation of local corporate holding structures, enabled by the 1882 Commercial Code. The Società di Credito Meridionale (1885), evolving from the Banca Napoletana, became the very core of the Naples network (dark blue cluster in the core area), coordinating the city's infrastructural modernization (maritime warehouses, harbour expansion, the *Risanamento* project<sup>11</sup> and complementary rail networks). Its speculative activities finally triggered the 1889–94 crisis in the Neapolitan banking system that ultimately led to its liquidation in the early years of the twentieth century (Marmo 1976). Northern Italian entrepreneurs and bankers, such as Ludovico Arduin and Emilio Weiss (dark blue cluster), Ulrich Geisser and Giuseppe Morpurgo (dark red cluster close to CREDIT), had temporarily infiltrated this BG since the time of the Banca Napoletana, which explains the apparent reduction of foreign dominance, not by disengagement, but through diffusion of alliance structures.

Nevertheless, transnational finance did not retreat despite diplomatic realignment and banking crises. The enduring presence of the Blount-led Anglo–French group (NWW, CGEE) (dark blue cluster at the bottom) and Belgian groups linked to tramway construction (Société Anonyme des Tramways Napolitains – SATN) (dark red cluster on the lower left) (Dumoulin 1990) demonstrates that financial globalization follows network logics, not national loyalties. Capital, once embedded in institutional arrangements and territorial relationships, persists and adapts across geopolitical ruptures.

The Naples network between 1880 and 1903 embodies a systemic transformation from external brokerage (from the core to periphery) to internalized intermediation (from periphery to the core). Integration persists, but the locus of strategic control shifted. Foreign capital remains structurally indispensable; yet domestic actors come to govern the interfaces where capital, technology and political authority converged. Path dependence persists through the enduring logic of BGs and the internalization of dependence on the core's technical and financial culture. In this process, Naples ceases to be merely a peripheral node of international finance and becomes a selective producer of its own modernity. This transformation occurred just as Italy was approaching its economic take-off.

<sup>11</sup> The Risanamento Law (n. 2892, 15 January 1885) consisted of the impressive plan to sanitize Naples (about 980,000 square metres of the city) after the cholera epidemic in 1884. It aimed to demolish and rebuild the city centre, and particularly to replace the narrow streets of the lower city with large boulevards (Russo 1966).

## VIII

The evidence presented in the article suggests that the integration of peripheral economies into global capitalism of the nineteenth century can be better understood as a transformation in their relational architecture rather than as a simple inflow of foreign capital or adoption of modern institutions. The network perspective reveals that globalization operated through the emergence of structurally cohesive constellations of financial and entrepreneurial actors whose power lay in their capacity to reorganize the channels through which information, credit, control and political power circulated. In this configuration, finance had a foundational role. It was the domain in which cross-border coordination was first institutionalized, where brokerage positions acquired systemic relevance, and where asymmetries in access and influence became most visible.

The case study analysed shows how the globalization of a peripheral economy unfolded through a dynamic interplay between external financial logics and local mechanisms of absorption, translation and negotiation. What proved decisive was not the mere presence of foreign capital, but the construction of relational networks able to stabilize expectations, organize risk-sharing, and align local decision-making with the constraints and opportunities of international financial centres. Once financial interlocks and BG structures crystallized as the dominant mode of coordination, they generated a distinctive form of path dependence, shaping how technologies, institutions and political arrangements were subsequently incorporated into the peripheral context. Thus, this process of peripheral modernization was neither purely exogenous nor mechanically imposed; rather, it entailed institutional learning, strategic adaptation and the reconfiguration of local financial structures within enduring asymmetric power relations.

By foregrounding these dynamics, the findings suggest a conceptual reframing of peripherality as a historically situated reconfiguration of social and financial ties. A region becomes peripheral not because it lacks connections, but because the structure of its connections embeds it in asymmetric networks of financial intermediation. The persistence of brokerage positions concentrated in a limited set of actors – local and/or foreign – suggests that peripheral integration tends to reproduce hierarchical forms of globalization even as it facilitates modernization. In this sense, financial globalization is neither inherently emancipatory nor inherently exploitative. It can be intended as a dynamic process that acts through multiplex relational mechanisms, selectively empowering those positioned at the intersections of multiple circuits of capital and information. This conceptual perspective may extend beyond the specific case study, offering a framework for interpreting how other peripheral regions have been captured into global financial systems in the past, and why such insertions continue to generate both opportunities for development and enduring structural dependencies.

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## Appendix

Table A1. Glossary of network terms and measures

| Term                                                          | Technical definition                                                                                                                                                                                                                                                                                                                                                                                                                                 | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Type of networks: two-mode &amp; one-mode (projection)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Two-mode network<br>(bipartite)                               | $B = (A, F, E)$ where;<br>$A =$ set of actors (persons);<br>$F =$ set of firms (organizations);<br>$E =$ edges (person–firm relationships).<br><b>Network with two distinct node types.</b>                                                                                                                                                                                                                                                          | <p>A network where one type of node represents people and another represents organizations. Edges connect people to organizations they participate in (director, shareholder, manager). Enables analysis of how people coordinate through shared organizational memberships. In the article, the IFESMez database is a two-mode network capturing ~40,000 ties among 24,625 actors and 2,947 firms.</p>          |
| One-mode projection<br>(actor-by-actor)                       | <p>Transformation of two-mode <math>B(A, F, A)</math> in a weighted graph <math>G(A, L, W)</math> where: <math>A =</math> set of actors (persons) and <math>L =</math> set of edged among actors.</p> <p>Two actors <math>i, j</math> are connected by an edge in <math>L</math> if they share <math>\geq 1</math> firm. Edge weight <math>w_{ij} =</math> number of shared firms.</p> <p><b>Produces person-to-person network.</b></p>              | <p>Creates a network of people where edges represent ‘working together’ (sharing board memberships). Strong ties indicate close business partnerships. Reveals which elites collaborate. In Naples, identified ‘big interlockers’, actors with multiple board seats connecting different business groups. Betweenness on actor-projections identified gatekeepers like Rothschild and Dassier.</p>               |
| One-mode projection<br>(firm-by-firm)                         | <p>Transformation of two-mode <math>B(A, F, A)</math> in a weighted graph <math>G(F, L, W)</math> where <math>A =</math> set of actors (persons) and <math>L =</math> set of edged among firms.</p> <p>Two firms <math>i, j</math> connected by an edge in <math>L</math> if they share <math>\geq 1</math> director. Edge weight <math>w_{ij} =</math> number of shared directors.</p> <p><b>Produces organization-to-organization network.</b></p> | <p>Creates a network of companies where edges represent ‘interlocking directorates’ (shared leadership). Shows which firms operate as coordinated groups through overlapping management. In the article, identified which firms were operationally integrated through shared directors. Foreign-owned firms showed more interlocks than local firms, indicating coordinated strategy within business groups.</p> |

(Continued)

Table A1. (Continued)

| Term                                     | Technical definition                                                                                                                                                                                                                                                                               | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Centrality measures</b>               |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Betweenness centrality (BC)              | $BC(v) = \Sigma[\sigma_{st}(v)/\sigma_{st}]$ for all node pairs $(s,t)$ ;<br>$\sigma_{st}$ = number of shortest paths between $s$ and $t$ ;<br>$\sigma_{st}(v)$ = number of shortest paths passing through $v$ .<br><b>Measures the fraction of shortest paths that pass through a given node.</b> | Indicates how often a node serves as a bridge or intermediary between other pairs of nodes. High betweenness means the node is crucial for information, capital or goods flowing through the network. A node with high betweenness can control or regulate flows between otherwise disconnected groups. In the Naples context, foreign merchant-bankers had high betweenness despite moderate degree, making them ‘gatekeepers’ controlling capital flows to local enterprises.         |
| Degree centrality                        | $D(v)$ = number of edges connected to node $v$ . <b>Simply counts direct neighbours.</b>                                                                                                                                                                                                           | The number of connections a node has. Represents activity level and local prominence. A person with high degree is connected to many others, suggesting involvement in multiple ventures. A firm with high degree has many shared directors. In Naples, an actor’s degree measured how many firm board positions they held – higher degree indicated greater elite status and portfolio accumulation.                                                                                   |
| <b>Network-level structural measures</b> |                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Density                                  | $\rho = (2L)/(n(n-1))$ for undirected networks;<br>$L$ = total number of edges;<br>$n$ = total number of nodes.<br><b>Proportion of all possible connections that actually exist.</b>                                                                                                              | Overall connectivity of the network. Ranges from 0 (no connections) to 1 (complete connectivity – everyone connected to everyone). Higher density means actors are tightly interconnected; lower density means sparse connections. In the Naples context: consistently low density (0.001–0.002) indicates sparse but strategically important connections. Decline in density despite network growth suggests increasing specialization and modularity rather than uniform integration. |

(Continued)

Table A1. (Continued)

| Term                         | Technical definition                                                                                                                                                                                                                                                                                                                   | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Modularity (Q)               | $Q = (1/2L) \sum [A_{ij} - (k_i \times k_j / 2L)] \times \delta(c_i, c_j);$<br>$A_{ij} = 1$ if edge exists between $i, j$ ; 0 otherwise;<br>$k_i, k_j =$ degrees of nodes $i, j$ ;<br>$\delta(c_i, c_j) = 1$ if $i, j$ in same community, 0 otherwise;<br>$L =$ total edges.<br><b>Measures strength of division into communities.</b> | <p>Indicates how much the network divides into distinct communities/clusters. High modularity (0.3–1.0) means nodes cluster into tight groups with sparse connections between groups. Low modularity means the network is homogeneous. In Naples, modularity increased from 0.738 (1820–39) to 0.865 (1880–1903), showing that business groups became increasingly distinct and self-contained, reflecting hierarchy and specialization within a single integrated system.</p> |
| Average degree ( $\bar{d}$ ) | $\bar{d} = (2L)/n;$<br>$L =$ total number of edges;<br>$n =$ total number of nodes.<br><b>Sum of all degrees divided by number of nodes.</b>                                                                                                                                                                                           | <p>Average number of connections per node. Indicates typical connectivity level in the network. Remarkably stable when network size increases suggest structural constraints. In Naples, average degree remained constant (2.18–2.35) across all four periods despite 10x increase in actors, revealing organizational constraint – each person manages limited number of board positions, except for ‘big interlockers’ (elite connectors).</p>                               |

(Continued)

Table A1. (Continued)

| Term                                                | Technical definition                                                                                                                                                                                                                                                       | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Component &amp; community detection measures</b> |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Connected component                                 | <b>Maximal subgraph where:</b><br>- All nodes are mutually reachable (connected by at least one path);<br>- No path exists from any node in component to nodes outside.<br><b>Largest Connected Component (LCC) = largest such subgraph.</b>                               | A group of nodes all connected by some path. The Largest Connected Component (LCC) is the main ‘core’ network where integration occurs. Nodes outside LCC are isolated or disconnected sectors. In Naples, LCC grew from 81% of actors (1820–39) to 94% (1880–1903), documenting increasing integration. Remaining 5–6% represents marginal/disconnected economic sectors.                                                                                                    |
| Community detection (Louvain algorithm)             | <b>Iterative optimization of modularity Q:</b><br>1-Assign each node to community maximizing local modularity Q;<br>2.-Aggregate communities with high internal modularity;<br>3.- Repeat until Q cannot be improved<br><b>Unsupervised partition into communities.</b>    | Visual positioning algorithm where closely connected nodes cluster near each other while distant nodes repel. Creates intuitive spatial representation of network topology. Related nodes appear together; structural breaks visible as gaps. In the article, generated all network visualizations (Figures 1–4, A1–A2). Node positions reveal core local clusters surrounded by foreign BGs; Rothschild as isolated gatekeeper; Swiss encroachment as new cluster emergence. |
| <b>Visualization &amp; layout measures</b>          |                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Force-directed layout (ForceAtlas2)                 | <b>Iterative algorithm applying:</b><br>1. Repulsive forces between all node pairs;<br>2. Attractive forces along existing edges;<br>3. Gravity towards centre.<br>Converges when forces balanced.<br><b>Computes final node positions representing network structure.</b> | Visual positioning algorithm where closely connected nodes cluster near each other while distant nodes repel. Creates intuitive spatial representation of network topology. Related nodes appear together; structural breaks visible as gaps. In the article, generated all network visualizations (Figures 1–4, A1–A2). Node positions reveal core local clusters surrounded by foreign BGs; Rothschild as isolated gatekeeper; Swiss encroachment as new cluster emergence. |

(Continued)

Table A1. (Continued)

| Term                                 | Technical definition                                                                                                                                                                                                                                      | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Node colour coding                   | <p><b>Colour assignment scheme:</b><br/> <i>Dark colours (red, blue, green, purple) = foreign-led BGs;</i><br/> <i>Light colours (cyan, light green) = local/Italian clusters;</i><br/> <b>Qualitative classification based on leadership origin.</b></p> | Visual distinction between international and local actors in network visualizations. Enables immediate recognition of which network parts are foreign-dominated vs local-controlled. Over time, shows shifting balance from foreign to local control. In the article, used consistently across all period figures to track changing composition and control of Naples business network.                                                                             |
| Node size (betweenness proportional) | <p><b>Node size <math>\propto</math> Betweenness Centrality.</b><br/> <i>Larger nodes = higher betweenness.</i><br/> <b>Visual encoding of node importance.</b></p>                                                                                       | Node size represents the node's importance as a bridge/intermediary. Larger nodes are crucial connectors; smaller nodes are peripheral. Combined with colour, shows which actors/groups serve as key intermediaries. In Naples, foreign merchant-bankers appear as large nodes despite moderate degree, showing their critical broker role.                                                                                                                         |
| <b>Key network concepts</b>          |                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Broker/Brokerage                     | <p><i>An actor serving as intermediary between otherwise disconnected groups. High betweenness centrality indicates brokerage position.</i><br/> <b>Broker = bridge between communities.</b></p>                                                          | A node that connects different parts of a network that would otherwise be separate. Brokers control the flow of information, capital or goods between groups. They have disproportionate influence because they are the only path between groups. In Naples, foreign merchant-bankers served as brokers connecting European financial centres to local Neapolitan enterprises. Their broker position gave them power despite not having dominant economic presence. |

(Continued)

Table A1. (Continued)

| Term                      | Technical definition                                                                                                                                                                                                                                                                     | Intuitive explanation                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gatekeeper                | <i>An actor with monopolistic or near-monopolistic control over access to resources/information. High betweenness + ability to exclude rivals = gatekeeping power.</i><br><b>Gatekeeper = exclusive broker.</b>                                                                          | Similar to broker but with exclusive/monopolistic control. A gatekeeper can permit or deny access to others. In Naples, Rothschild functioned as financial gatekeeper (1821–63), controlling Bourbon court access and blocking rival financial models such as that of Crédit Mobilier. His exit paved way for alternative financial groups.                                                                                                                               |
| Interlocking directorates | <i>When two or more firms share board members/directors. Operationalized as one-mode firm projection (shared directors = edge). Indicates coordinated strategy across organizations.</i>                                                                                                 | A situation where the same person sits on multiple company boards. Reveals operational coordination, information sharing and strategic alignment between firms. In Naples, degree and extent of interlocking directorates increased over time, showing stronger business group coordination. Foreign-owned firms maintained denser interlocks than local firms.                                                                                                           |
| Relational infrastructure | <i>Networks of trust, influence, and institutional proximity through which global capitalism expands.</i><br><i>Composed of: (1) persistent social ties (kinship, ethnicity, religion), (2) economic ties (shareholding, directorates), (3) institutional ties (state partnerships).</i> | The article’s central conceptual contribution: the networks themselves (the relationships and ties) that enable financial flows. Not just markets or capital, but the persistent relationships and institutions that structure access to capital. In Naples, foreign BGs constituted relational infrastructure connecting the city to European financial cores. These relationships persisted across crises, enabling continuous capital flows despite political changes. |



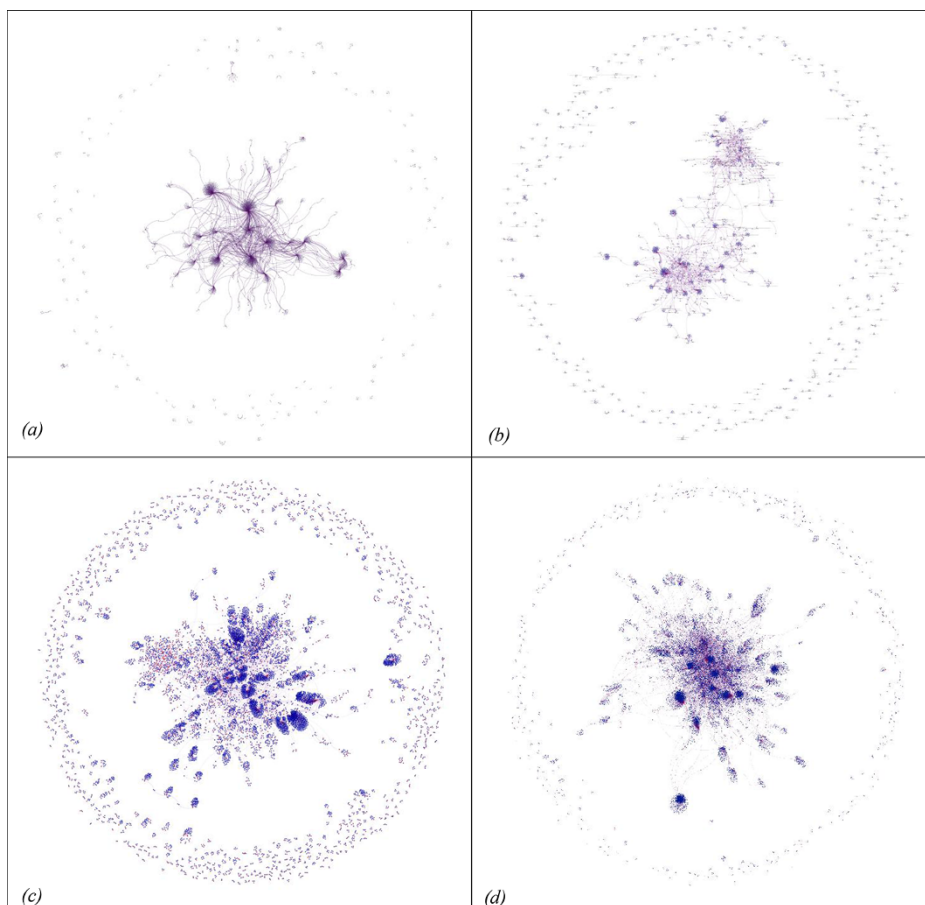


Figure A1. *Evolution of the Naples business network: 1820–39 (panel a), 1840–61 (panel b), 1861–80 (panel c), 1881–1903 (panel d)*