



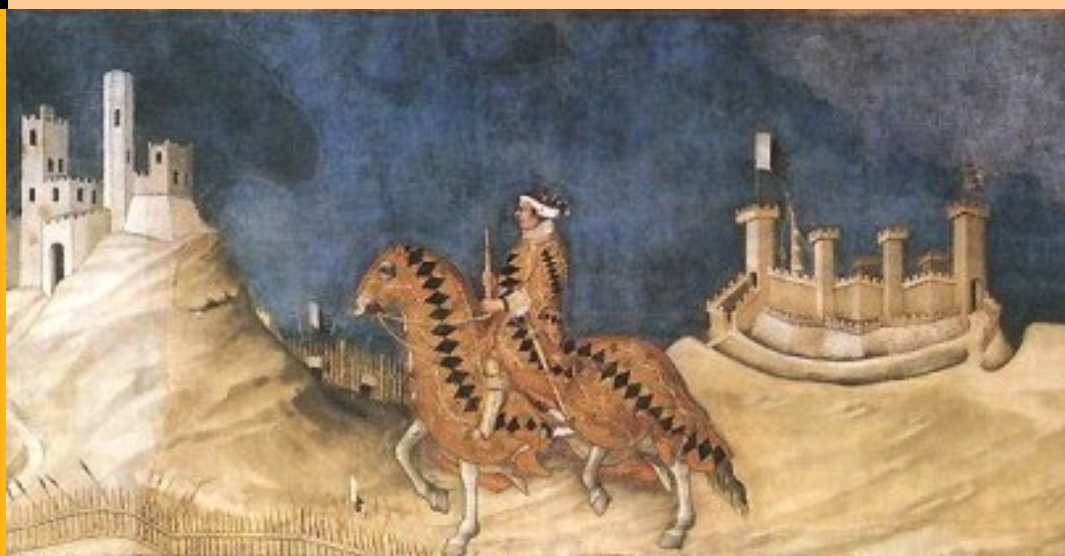
UNIVERSITÀ
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**QUADERNI DEL DIPARTIMENTO
DI ECONOMIA POLITICA E STATISTICA**

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The enduring logic: the history of business groups in Italy

n. 723 – Dicembre 2015



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Abstract: This paper, by merging a qualitative and quantitative approach, focuses on the evolution of business groups (BGs) in Italy along the XX century. By adopting the network analysis, and by using a large and comprehensive dataset (Imita.db), this paper provides various proxy measures of the relevance of the largest BGs in the Italian economy. The analysis, by also providing a taxonomy, clearly shows the persistence of large and entangled BGs in the Italian economy. Moreover, it shows that BGs are present not only among large firms, but in almost all the dimensional and juridical forms of the Italian firms. The paper, by challenging the conventional wisdom, confirms that BGs is neither limited to the less developed countries, nor is simply a second best functional substitute of the M-form characterizing big business around the world.

Keywords: business groups (BGs), network analysis, Italian capitalism

Acknowledgments: We would like to thank Asli Colpan and Takashi Hikino for their comments and help along the whole research project. This paper has also benefited from the comments of all participants of the Conference “Business groups in the West: the evolutionary dynamics of big business” (Kyoto, March 2014), and of the Session “Diversity in the evolution of big business: business groups in mature industrial economies” of the XVIIth World Economic History Congress (Kyoto, August 2015). A version of this working paper will appear in A. Colpan and T. Hikino (eds), *Business groups in the West*, Oxford, Oxford University Press (forthcoming).

1. Introduction

Business groups (that is clusters of legally independent companies linked together through formal and informal linkages) have been a constant presence in the Italian economy since the beginning of the process of industrialization in late 19th century. Since those times, companies in a vast array of sectors followed a pattern of growth and expansion by means of the acquisition of partial control of other companies in the same or closely-related areas of activity, followed later on by unrelated diversification. The purpose of these strategies was only seldom risk diversification. Indeed, from time to time, entrepreneurs chose the pattern of growth based upon the creation of business groups for various reasons. Additionally, this was a process which, contrarily to which is predicted in the dominant literature largely based upon East Asian experiences, continued to prosper well after the country reached a level of development which can be considered truly modern. Business groups were in sum not a temporary measure in order to accelerate the process of growth at the same time diversifying risk. In the Italian case, their steady presence was motivated by a vast array of reasons which varied according to different periods. This chapter offers a long-term analysis of the diffusion, relevance and rationales of business groups in Italy in the long run. The next Section will frame their diffusion in the context of the industrial modernization of the country, a process that lasted for almost all the twentieth century. Section 3 will assess the impact of their presence on economic analysis through a review of the existing literature, in order to detect the main explanations for their existence, proposing a taxonomy which will be fully presented in Section 4. A relevant issue is also to understand the quantitative relevance of the phenomenon, which in the long run has been possible only through the use of inductive methodology provided by the use of network analysis based on interlocking directorship: Section 5 proposes such measures. In Section 6 we finally put forward some of the main rationales giving account of the stubborn presence of business groups in the Italian corporate landscape. Section 7 concludes.

2. The development of big business and business groups in Italy

Italy reached, rather early after its political unification in 1861, a level of industrial development which granted her a position among the advanced nations in the western world. This was achieved starting from humble beginnings – in 1861 Italy was still more a kind of “geographical meaning” than a modern, unified, and developed country. Notwithstanding a

persistent lack of economic, social and cultural integration between the Northern and the Southern part of the Peninsula which persistently affected the economic dynamics of the country's economic growth, she successfully fought in the First World War. This remarkable success was the consequence of a modernization effort concentrated in a relatively short span of time. After all, Fiat, the automotive company destined to be for almost a century the most important symbol of the Italian manufacturing industry, had been founded only in 1899. However, before the 1890s, and in the years immediately after the Unification, the country had created the essential premises for the industrial take-off, starting from the basis of a virtuous relationship between a dominant primary sector and the artisanal creativity present among peasants and in the dense web of commercial activities and competencies dating from the Middle Ages.

The post-Unification economic policies aimed at the creation of an efficient administrative sector, at the improvement of the transportation network (railways above all) and at the attraction of foreign direct investments in technologically-intensive industries as for instance urban transportation, gas, water, and electricity production and distribution, which witnessed the full involvement of the country into the first wave of globalization. Together with this, the State put in place a mix of protectionist policies both for agriculture and industry starting from the end of the 1870s,¹ followed by the creation of a banking system modelled on the German one of the universal bank which put the financial resource at disposal of entrepreneurs willing to grow through a process of intense investments. The result of such process of growth was that, on the eve of the First World War, Italy could be considered one of the World's industrial nations. Its manufacturing industry included also a section of large companies, specialized in capital and technology intensive industries such as automotive, shipbuilding, steel, building materials, heavy mechanics and electro-mechanics, but also in other mass-production industries such as cotton. The degree of concentration in these industries was very high and in line with what was happening in other first-row economies (Giannetti and Vasta 2006), although the weight of the top 200 manufacturing firms, measured on their total asset on GDP was, in 1913, only 11.6 per cent (Giannetti and Vasta 2010: 29). As the case in other European countries, if one looks at the dominant forms of business enterprise particularly in the fast-rising industries as steel and mechanics, it emerges also quite clearly the tendency to self-regulate the process of expansion through the creation of collusive agreements, sometimes shaped in the form of trusts and cartels,

¹ For a recent account of protectionism in Italy, see Federico and Vasta (2015).

as for instance happened in the case of the steel industry which grew under the umbrella of an horizontal trust characterised by a dense network of cross-shareholdings (Bonelli 1982). The War, introduced another variable in this process. Particularly in industries most affected by War's procurement, companies started an intense process of vertical and horizontal growth, carried on reinvesting their huge returns. Companies like Fiat in automotives and Montecatini in chemicals, for instance, during the War years and immediately after expanded their boundaries acquiring major stakes in other companies, sometimes competitors, in other cases strategic suppliers. At the same time, the largest firms accumulated shares of the main banks, acquiring their stakes in order to get control over the sources of financial resources. In their turn, banks were progressively increasing their shareholdings in the most important customers, becoming at the same time lenders and owners. In the case of the country's largest bank, the *Banca Commerciale Italiana*, one can see at the end of the War it as a sort of financial holding with shareholdings of a wide range of equity stakes – in some cases conspicuous – in many companies in almost all the relevant industries (Confalonieri 1982).

The basic guidelines of this process of growth and consolidation of big business went on during the interwar period, characterised by two relevant phenomena. The first was the full consolidation of technology and capital intensive industries of the Second Industrial Revolution, in particular chemicals – even though with a marked specialization in fertilizers – electro-mechanics, electricity production, steel and shipbuilding and, of course, automotive. Even in a declining phase of globalization, foreign presence remained relevant in advanced industries, such as electro-mechanicals and oil refining. A relevant aspect of the consolidation of big business was, however, its tendency to stick to the domestic market enjoying monopolistic positions, something which strengthened further its relations with the political power, i.e. the Fascist dictatorship, but also put structural limit to their dimensional growth. In addition, the financial system continued to be shaped in the German way, influencing heavily the way in which large corporation were getting their own resources. Universal 'German style' banks provided a significant financial support and a qualified managerial advice to the major industrial companies of the country, especially in modern capital-intensive sectors such as steel, heavy engineering, electricity, shipping and so on. The stock exchange, was in fact seriously weak and not attractive for both companies and investors, due also to a frail regulatory framework. This resulted in a marked incentive for the main block-holders to leverage on control-enhancing mechanisms and low transparency in order to keep high control

levels with limited investment. Looking more closely at this process of expansion, differently from what theory predicts (and historical experience shows) in the case of developing countries (Khanna and Palepu 2010), even if with some notable exception, it appears driven by instances of vertical and horizontal growth in the same, or related, industries. One standard case is that of the electrical industry. Here the main companies carried on a process of horizontal growth acquiring majority stakes in other smaller firms, consolidating their geographic presence and creating a sort of regional or macro-regional monopolies. At the same time, they were actively pursuing a process of vertical, forward integration acquiring controlling stakes for instance in local transportation networks, as for instance tramway companies. In all the main capital-intensive industries, in sum, the pursuit of growth in order to reach a minimum standard scale of operations prevailed over strategies of risk diversification, confirming the relevance of technological stances over other strategic purposes.

A second relevant event was the massive intervention of the State in the economy, following an emergency situation created by the Great Depression. In the early 1930s, the largest universal banks found their balance sheets heavily burdened by toxic assets: credits towards the distressed industrial systems, plus the shares of failing big business. The solution, a giant bailout of the nation's three largest banks (*Banca Commerciale*, *Credito Italiano* and *Banco di Roma*) brought in the hand of a state agency, the *Istituto per la Ricostruzione Industriale* (IRI), a considerable portion of the whole share capital of Italian stock companies. In 1936, a new Banking Law allowed banks to provide only short term credit to the industrial sector, explicitly prohibiting them to act as shareholders and to provide long and medium term credit to industrial firms, which was left to State-owned agencies set up with this explicit purpose. Since, as said above, the main banks had amassed a huge portfolio of minor, and often major, stakes in the countries' most significant companies, in the end the Agency – originally designed as a temporary bailout measure, but soon became permanent – resembled a sort of giant conglomerate, which was however internally reorganized through a system of specialized sub-holdings (see Figure 2).

The State intervention marked a major event in the Nation's industrial history. From that moment on, and in particular after the end of the Second World War, such a huge complex of State-owned enterprises speeded up the growth of the industries of the Second Industrial Revolution. As a result, the weight (as a share of total industrial output) and sector composition of Italian big business converged with those of the most industrialized countries. Private, mostly

family owned big business prospered as well, even if always in a clearly, monopolistic situation on the internal market. At the beginning of the Golden age, in 1952, the weight of the total assets of the top 200 manufacturing firms on GDP was doubled respect to 1913 reaching 25.7 per cent. This ratio showed a rising curve and reached its highest point at the beginning of the 1970s with a value of 38.5 per cent (Giannetti and Vasta 2010: 29). At the apex of the *economic miracle* in the early 1960s, the top Italian manufacturing industry was thus composed by a number of large companies. They were shaped in a form of both well-structured business groups – such as the state-owned ones – and in loosely associated hierarchy-type business groups characterised by a certain degree of related diversification, in general the consequence of strategies of vertical integration. Two of the largest companies by far of the country were shaped this way. As for the public group, ENI (a State-owned Agency, created in 1953, for energy) was shaped as an operative holding company controlling a vertical chain of operation from drilling to refining and distribution, with a very limited diversification process in non-related fields. In the private sector, Fiat (automotive) had completed a process of vertical integration and related diversification (with very little degree of diversification in related business fields). The 1960s, however, witnessed also a new phenomenon, that is the undertaking of technologically-unrelated strategies of expansion, due also to the willingness to expand in profitable industries particularly when the growth process started to slow down, that is in the second half of the decade and exactly after 1963.

The general framework changed progressively since the oil crisis of the 1970s and the first signs of ICT revolution. Since then, the weight of big business, – both in term of total assets and employment – decreased in Italy more than in the other advanced economies, with a much smaller weight of ICT-related industries in Italy than in other developed countries. The decline of big business since the 1970s was accompanied by the rise of other forms of enterprise, already existing but less relevant than big business in terms of contribution to GDP formation. These were small firms (often clustered in industrial districts), co-operative firms, municipalized firms, medium-sized enterprises (the Italian *Mittelstand*), and foreign-owned firms, which increased their share of both total employees and manufacturing output. Notably, as we will see in detail in the following sections, also these forms of enterprises showed a strong tendency towards the progressive agglomeration of companies, that is the formation of different typologies of business groups. Indeed, hierarchy-type business groups can today be found almost everywhere in the Italian industrial landscape, and involve companies of different size, legal status, ownership and

sectors. Instead of vanishing or weakening, the business group, as a governance and organizational device, seems to further root and diffuse among Italian enterprises as time goes by, that is over the nation's whole industrial history.

3. Business groups in Italy: a review of the literature

As the most recent literature about the forms of enterprises in emerging markets stress, the early phases of the Italian industrialization were characterized by the widespread presence of business groups, defined as clusters of independent companies linked together, or to a major holding, by significant share ownership enough to exert some control on the strategic behaviour of the companies themselves. However, a significant trait of the Italian industrialization – which has been quite surprisingly taken for granted by even the most recent studies on Italian corporate development (see e.g. Colli and Vasta 2010) – has been the fact that the group, as a form of corporate development, has established itself as a *permanent* feature of business enterprises of every size and sector along the country's whole industrial history until today. Of course, the tendency of Italian companies – and, up to the early 1930s, of the country's main banks – to establish control linkages through share ownership in order to expand their borders was well known for instance to coeval commentators, worried by the fact that such a “unregulated” behaviour would lead simultaneously to monopolistic situations and to the exploitation and expropriation of minority shareholders (see for instance, Zorzini 1925). The existence of business groups which resulted in monopolistic or oligopolistic positions in almost all the strategic, technology and capital-intensive industries of the Second Industrial Revolution (from steel, to chemicals, from electricity production to shipbuilding, from automotives to heavy mechanics) became clear – and scrutinized in detail – for instance immediately after the Second World War, when the presence of such oligopolistic positions, both in the private and in the State-controlled business, became an overheated issue in the political debate against the concentration of economic power (Radar 1948, Rossi 1955). From a completely different intellectual perspective, at the beginning of the Seventies other scholars started to become interested in the diffusion of business groups particularly among large firms in Italy; namely, Italy was one of the countries analysed by a group of Harvard Business School researchers lead by Bruce Scott and supervised by Alfred Chandler between the end of the 1960s and the beginning of the following decade. The purpose of the research group was to verify the degree of diffusion of the multidivisional, or M-

form, organizational structure, widespread among the US enterprises, on the Continent. Italy was one of the cases analysed together with France, Germany, and UK (Dyas and Tanheiser 1976; Channon 1973). The analysis made clear that in Europe, and in Italy in particular, the privileged way to grow was through the creation of legally independent subsidiaries. The creation of internal divisions dependent to a central headquarter was a far less common practice, incentivised both by legal and strategic reasons. Fiscal arrangements which avoided double taxation emphasized the benefits from the creation of groups instead of centralized M-Form organizations, while the presence of partially-controlled subsidiaries both allowed the decentralization of power and the exploitation of leverage (Pavan 1976; 1978). The present status of our research does not allow to assess the issue of the degree and quality of the administrative control exerted by the headquarters over the subsidiaries. An analysis like this can be done in different ways with different degrees of precision. For instance, a careful prosopographic research could illuminate the intensity of control exerted by the headquarters over some of the companies of the group. For instance, a recently published research on the history of the IRI group has described in detail the control practices which occurred between the main holding, the sectorial holdings and the operating companies in the pyramidal structure which was characterizing the group since its very beginning in the 1930s, concluding that the nature of the control was basically financial and not strategic, being the operative companies largely free to decide about their policies (Colli 2013). Another, more feasible way, could be the identification of proxies for the intensity and direction of these linkages. For instance, the size of the shareholding is a clear indicator of the willingness to establish a close control which could be probably also be translated into a strategic influence of the controller over the controlled company. Also in this case, however, and particularly in the long-run, the identification of the size of ownership quotas is not easy to achieve on a homogeneous scale. Again, network analysis could be a way to solve the problem, assuming that some typologies of interlocking directorship links symbolize the willingness of exerting a strategic control, more than a merely financial one. With the data available, however, it is difficult to provide even superficial insights. One impression derived from the analysis of the existing literature is that the overall intensity of financial control instead of a pure strategic one grew progressively reaching its maximum level in the early 1980s when the principal purpose of the creation of business groups was the maximization of stock exchange listings and thus of the opportunities for tunneling resources from the market.

Business historiography, which started to flourish in Italy at the beginning of the 1970s and immediately became interested in the contribution that big business gave to the country's economic growth became aware of the existence of the dominant organizational arrangements, that is the creation and consolidation of large firms through the creation of legally independent subsidiaries. The first studies on the steel industry (Bonelli 1975), on the electric industry (VV.AA 1992-1994), on the chemical industry and the dominant player, Montecatini (Amatori and Bezza 1990), on the banking industry (Confalonieri 1974-1976; 1982; 1992), on the cotton industry (Romano 1992) and on other, capital and technology intensive industries, both private and State-owned, clearly showed the dominant pattern of growth through loosely-coupled hierarchy-type business groups mostly in focused or related industries. Very little, if nothing, was devoted however to the understanding of their administrative functioning, also in consequence of the fact that this was rarely integrated and centrally planned.

In synthesis, the Italian manufacturing industry, after its first take off before the First World War, flourished during the conflict and consolidated during the interwar period expanding its range of activity in all the industries of this technological wave, in order to prepare its definitive affirmation in the years of the economic miracle after the Second World War. Not differently from other advanced nations, large firms shared a marked tendency to grow, even if, in comparison with other European and American counterparts, a weaker approach to internationalization. Growth was both achieved through a process of consolidation (i.e. taking over competitors in the same industry), through a policy of internal expansion but, more often, through the acquisition, spin-off or ex-novo creation of legally-independent companies which enlarged the boundaries of the company itself. Even if quite well known, and common to *all* companies in *all* capital intensive industries, however, this phenomenon has not been systematically studied in terms of its nature, determinants and outcomes. One of the first attempts to treat in a more systematic way the issue of business groups has been done by Amatori (1997) who, explaining the peculiarities of the process of growth among the largest Italian companies in the long run, stressed the policy of group creation as a way to hyper-inflate the company's dimension in an expansionist strategy finalized more to achieve a strong bargaining position in front of the political power than to pursue rational strategies of growth in order to exploit scale and scope economies.

Even if well aware of the existence of business groups as dominant form of organization and control in the history of Italian capitalism, business historians, as well as management scholars,

have however limited themselves to reconstruct their composition and formation over time, avoiding any systematization of the issue. In particular, four questions still remain to be answered:

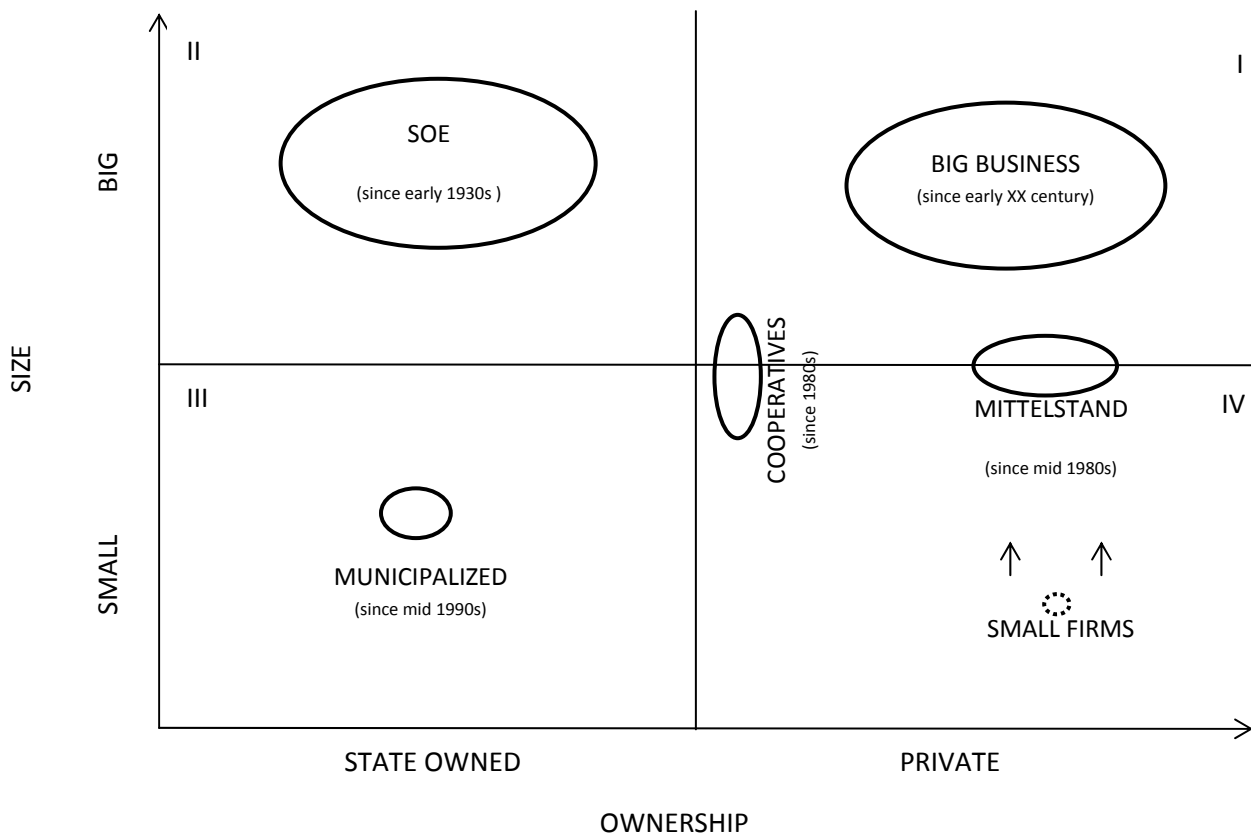
- i.* Which are the main typologies of business groups in the Italian context? Are they all the same or display different characteristics, both in a cross sectional and longitudinal way?
- ii.* What has been their relevance (in terms of sales, assets, employment and other size-measures) on the whole economy?
- iii.* Are these organizational forms diffused only among big business or do they affect other forms of enterprise diffused in the country?
- iv.* Last but not least, does historical analysis allow us to say something more about the rationales behind their existence and persistence in the long run, i.e. not only in the initial phases of the country's development but also when Italy reached a sort of “industrial maturity”, if any?

Since the 1990s, there has been a sort of revival of interest about the presence of business groups, especially of the pyramidal-variety, in the process of Italian industrialization. Research in the area of corporate governance, both contemporary (Barca et al. 1994; Bianchi Bianco and Enriques 2001) and oriented in the long run (Brioschi, Buzzacchi and Colombo 1990; Aganin and Volpin 2005; Amatori and Colli 1999) have been highlighting the role played by the *pyramidal* business groups as mechanisms set up in order to leverage control by relevant shareholders. In this perspective, the analysis follows a precise logic in terms of corporate finance, and again concentrates on listed private and state-owned big business; the diffusion and persistence of business groups is explained by the presence of weak governance institutions, allowing the exploitation of minority shareholder and the magnification of the logic of pyramidal control. Controlling shareholders - families, individuals, but also the State were thus able to retain a firm control on their business empires recurring to multiple listing of companies inside the same groups.

Another, even more recent stream of research is trying to provide a more detailed answer to the questions outlined above, suggesting an approach to the issue of business groups which explicitly takes into account the variety of the forms of enterprise which can be found in the process of Italian industrialization (Colli and Vasta 2010). Quite recently, Colli and Vasta (2015)

offered a taxonomy of business groups – basically referred to large firms – distinguishing between coalitional and vertical business groups, family and State-owned, specialized or diversified, showing how in different periods of the country's economic history in the twentieth century business groups were always resilient, but changing progressively their rationales and “demography”. The same authors, recurring to a proxy determined by the analysis of interlocking directorship, try also to measure the size, and thus the impact of the largest 15 groups across six benchmark years in the 20th century, concluding that their weight in terms of share capital and total assets on the population of joint stock companies was consistently very large. This research, which confirms the persistence of the organizational forms based upon a holding controlling legally (and sometimes, de facto) independent units during the whole process of growth, maturity - and eventually decline - of the Italian economy, and not only in the initial phases of development, paved even more recently the way for another research which started to deal with the diffusion of the form of the group not only among large companies, but also among other legal and dimensional typologies of enterprises in Italy. Colli, Rinaldi and Vasta (2015) have thus extended the study of business groups including the diffusion of this organizational form among small and medium-sized enterprises, municipalized companies and, last but not least, cooperatives. This research has highlighted that the instrument of the group as a way to manage the process of growth and expansion (both geographical and dimensional) is common to various business forms despite their legal structure and orientation, and not only to “traditional” big business (see Figure 1). The institutional environment, that is the basic rules of the game, had, in the course of time, played a role in facilitating the application and consolidation of this organizational device to different business forms and situations, showing how across time, the rationales behind the decision to adopt the business group form based on a controlling holding company (H-form) instead of other more centralized structures, as the U-form, or the M-form have been different according to different situations and contexts. This concept will probably constitute also the basis for future research into what could be defined as the “variety of business groups” inside a defined domestic environment.

Figure 1. Forms of Business Groups in 20th century Italy



Source: Colli, Rinaldi and Vasta (2015, fig. 2).
 Note: circles' size represents a broad estimate of their relevance.

4. Variety of business groups in Italy

In order to understand in depth the characteristics and mechanisms of business groups in the Italian context, we introduce a taxonomy which emphasizes two main dimensions, namely ownership and strategy. Although, these dimensions are not exclusive and can be reconstructed mainly by stylized facts, they are crucial in shaping business groups. Of course, in this reconstruction a single business group can simultaneously belong to more than one typology, or transform over time from one to another. According to ownership, we can identify two main categories: family-controlled groups and state owned-controlled groups.

4.1. Family-controlled business groups

Family controlled groups represents one of the most important typologies within the Italian capitalism. Accordingly, it is possible to include some of the "long survivor" groups, such as *Fiat*, *Pirelli*, and *Falck*, controlled by the founding families in almost all the crucial phases of the

economic history of the country. By WWI, all three companies were already important first movers in their respective industries. *Fiat*, founded in 1899, immediately emerged as a first mover, totally different from the small workshops which crowded the automotive industry at the beginning of the twentieth century. Founded in 1872, *Pirelli* quickly developed as a domestic leader in the production of caoutchouc, also establishing operations abroad, and benefiting to a significant extent from public and military procurement, especially in the case of cables. *Falck*, incorporated in 1906, rapidly became the national leader in steel production from scrap iron with the electric smelting technique. All these three companies took advantage from the increase of procurement due to WWI, and were able to re-invest their profits in order to finance a process of horizontal and vertical expansion in related fields. During the interwar period, this process continued steadily for all the largest private business groups, including another leader in chemicals, *Montecatini*, under the leadership of the Donegani family. For instance, in the case of *Fiat*, the number of companies belonging to the group grew in the different branches of the mechanical industry, or in components such as glass or aluminum, or in related activities, such as motorways. The number of *Pirelli's* affiliates also increased in the same period, in a logic of vertical downward integration: for instance, in telephone and telegraph cable communication companies. The expansion of *Fiat* and *Pirelli* is so relevant that, in both cases, the founding families already felt the necessity of increasing their control leverage through the creation, during the interwar period, of pure holdings (*IFI* in the case of *Fiat*, *Pirelli & C.* in the case of *Pirelli*); a process which, however, did not happen in the cases of *Falck*, notwithstanding their growing dimensions and diversification. The trend of the enlargement of the dimensions of family-controlled groups continued during the 1950s, but subsequently declined in the following decades. The renewal of the expansion of private groups in the most recent period has been underlined by some studies (Brioschi, Buzzacchi and Colombo 1990; Bianchi *et al.* 2005). During the 1980s, private groups expanded their boundaries through acquisitions both by the holdings and by the operating companies. The expansion was often driven by financial goals and speculative purposes, as in the case of the *Fiat* group or in that of *Cofide*, the holding of Carlo De Benedetti, a tycoon aggressively active on the market since the beginning of the 1980s (Borsa 1992). In the case of family-controlled groups, the dynamic of their expansion was quite linear. The operating companies, which were already established leaders by WWI, started to accelerate their expansion both during and after WWI, pursuing a process of both vertical and horizontal integration, a process which continued at least until the first half of the

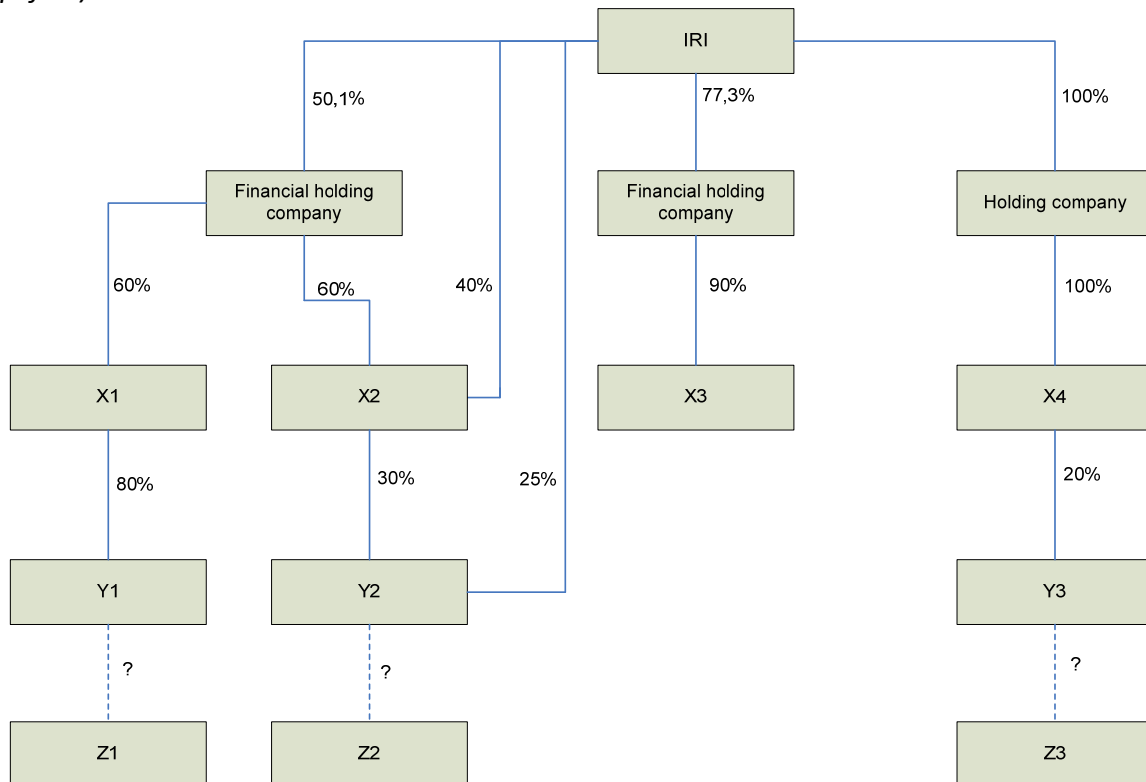
1960s. The process was carried on through the creation of subsidiaries, controlled by the operating company and progressively by pure financial holdings. During the crisis of the 1970s, and the first half of the 1980s, these groups shrunk in their size, expanding again in the second half of the 1980s, in many cases, benefiting of the effervescence of the stock market in order to collect resources for acquisitions both at home and abroad often undertaken for speculative purposes.

4.2. State-controlled business groups

The tradition of state-intervention goes far back in the history of Italian capitalism: immediately after the country's political unification in 1861; the state played an important and supportive role in fostering the Italian economic development, building the necessary infrastructures, providing military procurement and introducing protection. In some strategic industries, such as steel, the intervention of the state went further, when companies in difficulty were rescued by the central bank in order to ensure their survival (Amatori and Colli 1999). But the state involvement in the direct ownership of companies started in 1933 with the creation of the *IRI*. *IRI* was basically an emergency measure, but ended up representing the permanent, direct involvement of the state in the ownership of companies for nearly seventy years, until its dissolution in 2002. In the mid-1930s, *IRI* took over the banks shareholdings at their book value, becoming the majority owner in a vast array of companies in different industries, from real estate to steel, from shipbuilding to mechanics, from textiles to utilities. *IRI* was originally conceived as a temporary measure, but it soon became clear that the private domestic capitalism was unable to re-purchase what the state had bought. Thus, four years after its creation, *IRI* was declared permanent. It was enormous: according to some recent estimates *IRI* controlled around 12 per cent of the total share capital of Italian joint stock companies (Toninelli and Vasta 2010: 74). In addition, after the bail-out the three largest banks of the country also belonged to the state-owned conglomerate. A complex architecture was designed in order to give some order to the vast array of companies under the control of *IRI* (Figure 2): the group was based upon a head company, a "super-holding" (*IRI*) under the direct control of the government. The super-holding controlled (by Statute, at least with the 50.01 per cent of the capital) some financial holdings which were characterised by sectorial specialisation: for instance, *Finsider* (steel), *Finmeccanica* (mechanics and engineering), *Finelettrica* (electric energy). These financial holdings – some of

which listed – were, in their turn, controlling (in some cases, with less than the 50 per cent of the share capital), companies (in Figure 2 as exemplification: X1...X4 and in a lower level Y1...Y3 and Z1...Z3) belonging to that specific industry, some of which listed as well.

Figure 2. The structure of Istituto per la Ricostruzione Industriale (IRI) group (schematized and simplified)



Source: Toninelli and Vasta (2010: 56).

This pyramidal structure built progressively over time, and which took a definitive shape in the second half of the 1950s, allowed IRI not only to benefit from the leverage effects of the pyramidal control, but also – more importantly – to start a process of rationalisation in some industries, and of expansion in others. During the late 1950s, and especially during the 1960s, *IRI* played a key role in the country’s fast economic growth and modernisation, through the creation of infrastructures and a pervasive investment policy in capital-intensive industries such as steel and heavy mechanics, also trying to put in place some synergies and inter-dependencies across companies in different industries. Behind the pyramidal architecture, however, *IRI* was characterised by a peculiar kind of governance and distribution of power inside the organisation.

Another relevant example of state-controlled business groups is offered by the *Ente Nazionale Idrocarburi (ENI)*, created in 1953 in order to manage the country's needs in the fields of oil and gas, which already had some active companies such as *Agip*. *ENI* was much smaller than *IRI*, but with a similar vertical organisation, re-inforced by interlocking ownership across the companies of the group: the *Agip Mineraria* (drilling), *ANIC* (refining), *Agip* (distribution), *Snam* (gas), and other minor as *Nuovo Pignone* and *Saipem* (engineering).

Beyond some obvious similarities (including an intensive use of leverage and other control-enhancing mechanisms), state-controlled groups also show at least three main differences with private ones. The first is the use of multi-level organisational architectures (longer chains of companies control), more sophisticated than those of groups under family control – also due to their much larger dimensions. The second, is the presence of strong linkages with the country's largest banks, which put the companies of the group in a better position than the private enterprises regarding access to credit. The third one is the propensity of state-controlled groups (both *IRI* and *ENI*) to build resilient links with private firms (Rinaldi and Vasta 2005; 2012; 2014). In fact, there were a large amount of cross-participations between different groups – both private and state-owned – achieved through bridging companies. More generally, private companies and SOEs were induced to have strong links, because they play an essential function in ensuring strategic co-ordination and stabilisation of managerial control. More generally, we can observe another relevant difference which is related to the different genesis: while private groups expanded progressively from the interwar period onwards, the state-controlled ones were largely the effect of the re-organisations of companies already in the hands of the state, which were assembled in order to give them a more rational structure, particularly in the period after WWII. In the mid-1950s, *IRI* and *ENI* controlled a little less than a quarter of the total share capital of Italian joint-stock companies, but this weight in the early 1980s rose to one-third (Toninelli and Vasta 2010).

4.3 Specialized business groups²

The strategy of the business groups is the second dimension for our taxonomy to be settled. In this sense, Italian business groups refer to their degree of specialisation/diversification in terms of core production activities. Specialised (single-product, or characterised by a low degree of

² Here we are using the term “specialized business groups” to label holding companies controlling autonomous subsidiaries involved in related activities (see Table 2 in Colpan and Hikino's introduction to this volume).

production diversification) and loosely-coupled groups (without systematically integrated administrative mechanism) are widely present in the period preceding WWII. Probably its epitome can be found amongst the producers and providers of electric energy, which, until the nationalisation of the whole industry in 1963, were dominant among Italian joint stock companies. The process of the expansion of business groups in the electric industry followed a relatively standard procedure, based upon a progressive expansion both before and after the WWI through the acquisition of the relevant shareholdings in smaller electricity producers. The process of horizontal expansion continued throughout the 1920s and 1930s, when the largest companies also started some diversification initiatives in utilities, or downward integration in local transports, tramways and small-gauge railways. The progressive aggregation of smaller companies upon a regional basis led to the creation of regional monopolies each one under the control of a single large business group (Galasso 1993). Until the 1960s, the dominant business groups in the electric industry progressively enlarged their boundaries through the acquisition of companies operating in the same industry, or in closely-related field. The “specialisation” of the groups in the electric industry changes, however, on the eve of the nationalisation of the industry, in 1963, basically in two directions. The first concerns the shareholdings in the portfolios of the electricity companies: many of them, foreseeing the nationalisation of their core business, started to invest in non- or only partially-related activities. For instance, during the 1950s, *Edison*, the largest and most powerful Italian electric company, started a process of diversification in chemicals and in retail distribution by opening a supermarket chain (Pavan 1976). The second concerns the shareholdings in the main companies of the groups. There was a relevant presence of linkages amongst groups, particularly with the major role played by the electric companies. The high profitability of electricity providers, due to various reasons, including their monopolistic position, had a relevant effect on their governance. Since the interwar years, these companies had an increasing number of shareholders, many of which, including those central to the groups considered, were apparently public companies, characterised by a concentrated ownership. However, in reality, the fragmentation of the share capital was accompanied by the practice, followed by minority shareholders, of delegating their administrative rights to the top management, led to an unique situation in which basically top management controlled itself. Specialised groups, similar to those in the electric industry, were prevalent, as already stated, in the interwar period and in the phase of the *economic miracle*. Manufacturing companies such as *Fiat*, *Pirelli* and *Falck* also show a low

tendency towards diversification. Clearly, a notable exception is the state-owned conglomerate *IRI*, which was characterised by an overall high degree of diversification. However, if one takes into account the level of control *below* the super-holding *IRI* (Figure 2) and focuses on the sectorial sub-holdings heading the activities of *IRI* in the various industries, the high degree of specialisation clearly emerges. This was surely due to the intimate reason of *IRI*'s existence, conceived more as an instrument for industrial policy than as a standard business group free to undertake strategies of diversification for instance driven by reasons linked to financial performances.

4.4. *Diversified business groups*

Aside from the case of the state-owned business groups such as *IRI* and *ENI*, diversified groups began to appear since the 1970s, but increasingly during the 1980s, enlarging their boundaries through a policy of acquisitions, pursued through the use of control-enhancing mechanisms going from different categories of shares, to pyramidal structures based upon several listed companies, albeit to a minor extent, cross shareholdings. One example is *Fiat*, which, after the 1970s, started a progressive diversification in fields that were markedly different from their core business, such as distribution (*La Rinascente*), insurance, synthetic fibres and even food. The availability of legal control-enhancing mechanisms such as the creation of pyramidal groups composed of several listed companies and an increasing separation between ownership and control through the issuance of privileged stocks with limited administrative rights provided further incentives to the creation of complex architectures designed in order to gain resources from the stock market, characterised by an unusual effervescence during the 1980s (Siciliano 2001; Consob 2011). This process of related, but increasingly unrelated, diversification can be seen, in some ways, as an "Italian" version of the conglomeration wave occurring at international level. The available qualitative evidence suggests that the process of diversification through the addition of companies continued throughout the 1990s, also due to the privatisation programme which allowed Italian private companies to take over activities previously under the control of the state (Goldstein 2003; Barucci and Pierobon 2007). In some cases, this promoted a process of related and unrelated diversification, as, for instance, in the case of the *Benetton* group which from the original core in textiles expanded in retail distribution and in motorways through the acquisition of former state-owned *SME* and *Società Autostrade*.

As said, all these forms of business groups play a crucial role in the Italian process of economic growth at least since the last decade of the nineteenth century when Italy started its transition from the periphery to the centre of the European economy. Starting to the evidence provided in a related work (Colli and Vasta 2015), in Table 1 we sum up the main phases which characterized the dynamics of Italian business groups in the period under investigation. Comparing the evidence emerging from the taxonomy described above, it clearly appears how the strategies and structures of business groups dynamically changed over time. Accordingly, the relevance of the different forms followed the nature and the evolution of national and international framework.

Table 1. Dynamics of business groups in Italy

Phase	Period	Strategy	Tactics	Main actor	Prevalent typology
1 (collusive logic)	Prior to 1914	Collusion and co-ordination	Cross-shareholdings among companies belonging to the same cartel	Single companies of the cartel; cartel HQ	Coalitional groups; banking groups
2a (expansionistic logic)	1914s-1920s	Horizontal and vertical integration among privately-held companies and banks	Acquisition of companies in related activities; joint ventures	Operating companies	Vertically integrated groups; banking groups
2b (Leviathan's logic)	1930s-1960s	Horizontal and vertical integration among privately-held and state-owned companies	Acquisition of companies in unrelated activities; joint ventures	Operating companies	Vertically integrated groups
3 (re-structuring logic)	1970s	De-centralisation with some degree of control	Spin-offs	Operating companies	De-centralised and unrelated diversified groups
4 (opportunistic logic)	1980s	Acquisition of financial resources from the stock-market; Financial speculation	Multiple listing of old and new subsidiaries	Holdings	Pyramidal groups
5 (consolidation logic)	1990s and afterwards	Consolidation; Diversification (in some cases)	Acquisition of privatised companies	Holdings	Pyramidal groups

Source: Based on Colli and Vasta (2015).

The five phases presented in the Table 1 need to be clarified briefly. The first phase (*collusive logic*) sees the rise of relatively large companies in the early start of the industrial sectors of the

Second Industrial Revolution. The best example is the cartel-type agreement of the so-called “steel trust” created in 1903 by the main iron and steel producers of the country (Amatori 1997). The logic was to adopt for the large part of the country’s steel production a collusive behavior aiming at the co-ordination efforts prevailed over competitive attitudes. The second phase (*catching up* with the Second Industrial Revolution) can be divided in two sub-phases, namely *expansionistic logic* and *Leviathans’ logic*. In the former phase, groups are mainly formed through a process of progressive aggregation of companies, listed and not listed, active largely in the same industry or in related fields, very often under a logic of technologically-driven vertical integration. In this phase, the logic was clearly to pursue growth, market control, and control over critical inputs. Examples can be found in the process of the expansion of companies of the electric industry which we have shown previously. The phase of the *Leviathan* is mainly characterized by the formation and the consolidation of the two main state owned groups, IRI and ENI which we have described above. In this phase emerged clearly the attempt for a latecomer country to close the gap with the technological frontier represented by both the technological waves of electricity and steel and that of oil, automobiles and mass production (e.g. Freeman and Soete 1997; Freeman and Louçã 2001). The third phase (*re-structuring logic*) is the period of the oil crisis of the 1970s which was faced by a large process of re-structuring of large companies. In several cases, the creation of business groups was the outcome of a strategy of de-centralisation and the downsizing of vertically-integrated firms in order to enhance their flexibility, to minimise control costs and to dilute tensions in industrial labour relations. The process of disintegration went on until the beginning of the 1980s and found a sort of “institutional” justification in the system of incentives to investments provided by the State in the economically-backward areas of the country, which encouraged companies to create several spin-offs and subsidiaries, each one entitled to access public funds for investments. The epitome of this behaviour was *Società Italiana Resine (SIR)*, a chemical company run by a tycoon, Nino Rovelli, who created hundreds of companies in order to obtain the state resources for investing in Sardinia (Zamagni 2007). The fourth phase (*opportunistic logic*) took place during the 1980s and was characterized by both the process of creation of new groups and of the expansion of the boundaries of those already existing. These processes was incentivised by two concurring phenomena: *i*) The abolishment of double taxation of inter-corporate income of the transactions inside the group eliminated a powerful incentive

towards merging subsidiaries into a multidivisional structure (Coltorti 1988);³ *ii*) a sudden effervescence, after years of stagnation, of the stock market, which made possible of obtaining financial resources by listing some subsidiaries. This strategy was followed by all the major groups, both private and state-owned, such as *Fiat*, *De Benedetti*, *Ferruzzi*, and *IRI* (Brioschi, Buzzacchi and Colombo, 1990). Thus, there was a generalized diffusion of the pyramidal structure jointly with a process of both related and unrelated diversification, carried out mainly during the 1990s, when global leaders (famous the example of General Electric) were, in contrast, moving in the opposite direction, that of re-focusing and de-conglomeration (Amatori and Colli 2011). In the fifth phase (*consolidation logic*), private groups further enlarged their activities also following the intense wave of privatization which, during the 1990s, brought a massive sale-off of state-owned companies. In some cases, acquisitions were made in related activities – for instance, in steel (*Lucchini*, *Riva* and *Marcegaglia*), in chemicals (*Mapei*), in construction and publishing. In other cases, the opportunities stemming from the privatization process brought existing groups to enhance their degree of diversification, as in the case of *Benetton*, with the acquisition of the *Società Autostrade* (motorways) and of *Autogrill* (mass distribution).

5. Boundaries of business groups in Italy

The empirically historical research on business groups in Italy, their typologies and structures, their composition and relevance has always been problematical because of the scarcity of information. Until the mid-1980s (when a change in the legislation concerning corporate information disclosure occurred), it is extremely uncommon to find consolidated statement accounts, nor detailed information about the effective composition of a group, in terms of the companies belonging to it. If we return to the interwar period, this kind of information is totally

³ The issue of the impact of double taxation as a disincentive towards the formation of business groups, and its subsequent progressive abolishment by a series of laws starting at the end of the 1970s, is still debated. In theory, in fact, double taxation of the dividends of the companies belonging to a group – was present, as said, until the end of the 1970s – should have acted as a powerful disincentive towards the formation of business groups, something that, as described in this chapter, did not happen. The reason for this apparent contradiction is probably the result of a mix of elements, among which the most relevant was the possibility for controlling owners of leveraging on the resources invested by minority shareholders. To establish a multi-divisional enterprise means that entrepreneurs need a full control on the incorporated assets, and therefore that owners have to provide all the necessary resources. In the case of partially-owned subsidiaries, they can get the same result (that is a control over the subsidiary's activity) but without committing themselves for the entire amount of the resources needed. Probably, this possibility made the disincentives implicit in double taxation strategically much less important than the incentives embedded in the possibility of enjoying the benefits of the business group as a mechanism for enhancing the dominant shareholders' control.

absent, even if the phenomenon of business groups was, as said above, known and discussed since the 1920s (Zorzini 1925; Luzzatto Fegiz 1928). Valuable, but random and non-homogeneous, information is available also for the post WWII period (Zerini 1947; Radar 1948; Benedetti and Toniolli 1963). The introduction of the European Directive about large holdings (*Large Holdings Directive 88/627/EEC*) has made new information available, but it is limited to the most recent years (Barca *et al.* 1994; Barca and Becht 2001; Bianchi *et al.* 2005). Recently, the availability of a comprehensive dataset (Imita.db) on Italian joint stock companies has allowed us to extend the systematic analysis of Italian big business from different perspectives.⁴ Starting from this source, and by using the network analysis approach (e.g. Wasserman and Faust 1994), which can represent a new tool, we can understand better the dynamics of business groups in Italy and, more generally, in different institutional contexts.⁵

By focusing on six benchmark years (1921, 1936, 1951, 1961, 1971 and 1983) of the Imita.db, we can offer a (rough) estimate of the boundaries and relevance of the largest 15 manufacturing-centered business groups of the country.⁶ After having identified the 15 largest companies, by total assets, for each of the benchmark years, our (strong) hypothesis (corroborated, however, also by the recent qualitative business-history literature) is that each of them was leading a group, the extension of which had to be re-constructed.⁷ We thus take interlocking directorates as a proxy of the existence of a formal link between two companies.⁸ Clearly, this methodology has some limitations, mainly because it allows us to identify the existence of relationships amongst different firms, but cannot provide the exact representation of the ownership structure of a business group. However, we consider it as the only possible way of obtaining precious and reliable information about the shareholdings of the single companies.

⁴ Imita.db is one of the largest datasets on joint-stock companies in historical perspective in the world. In particular, it contains information regarding companies, boards of directors, and balance sheets for a very large sample of Italian joint-stock companies for several benchmark years covering a wide time span of the 20th century. On the whole, the dataset contains data on more than 38,000 companies, almost 300,000 directors, and more than 100,000 balance sheets. Representativeness, in terms of capital, is very high as the sample covers well over 90 per cent of the total corporate universe in all but the first two benchmark years (1911 and 1913) and the last one (1983), for which the proportion is around 85 per cent. For a detailed description of this dataset, see Vasta (2006a). The dataset is available on line at: imitadb.unisi.it/en.

⁵ For a comparative study of 14 different countries, see David and Westerhuis (2014).

⁶ The rest of this Section is abridged version of Colli and Vasta (2015).

⁷ The full list of the BGs we have selected is presented in Appendix 1, where a rough measure of their boundaries is also provided.

⁸ The interlocking directorates technique is based upon the analysis of the links created between two units (*i.e.*, two firms) when an individual belongs to both; that is, a director of two or more companies in the case of ownership structure. The analysis comprises the re-construction of the articulation of inter-company links by quantitative techniques of varying complexities.

In order to find a proxy measure of the weight of each single group, we identified two methodologies, both based upon the network analysis, which allows us to estimate a lower and an upper boundary of the group extension. When the presence of a possible link between the companies belonging to the group has been identified, the Imita.db database enables us to identify the relevance of the group, by number of companies, total assets and share capital, on the universe of Italian joint-stock companies. We do this in two ways: first we say that a firm is “controlled” by a group if at least one board member is shared by the group and by the firm (all roles – AR); secondly, in order to identify the lower boundary of the networks’ boundaries, the whole exercise is repeated on the sub-network when two firms are linked if, and only if, they share at least one “qualified” board member, that is President, Vice-President or CEO in one of the two boards (leading role – LR).

Table 2 presents the average number of firms belonging to a group for the two methods we have illustrated. As appears clear in all periods, the average boundaries of each group is always large showing an inverted U shape form with an apex reached in the 1960. In order to provide a rough estimate of the relevance of the top 15 business groups, we have chosen to use total assets, information which is available for each single company included in Imita.db. In order to define the size of the single group, we first calculated its boundaries with the two methodologies described above: namely, all roles (AR) and leading roles (LR).

Table 2. Average number of companies belonging to a group, by benchmark year (1921-1983)

Years	AR		LR	
	All shares (As)	Weighted shares (Ws)	All shares (As)	Weighted shares (Ws)
1921	58.1	36.9	35.7	26.5
1936	71.7	38.8	49.1	31.8
1952	74.2	39.8	43.1	27.9
1960	79.3	42.5	56.7	36.7
1972	57.8	37.7	39.0	29.2
1983	33.8	24.9	21.7	17.9

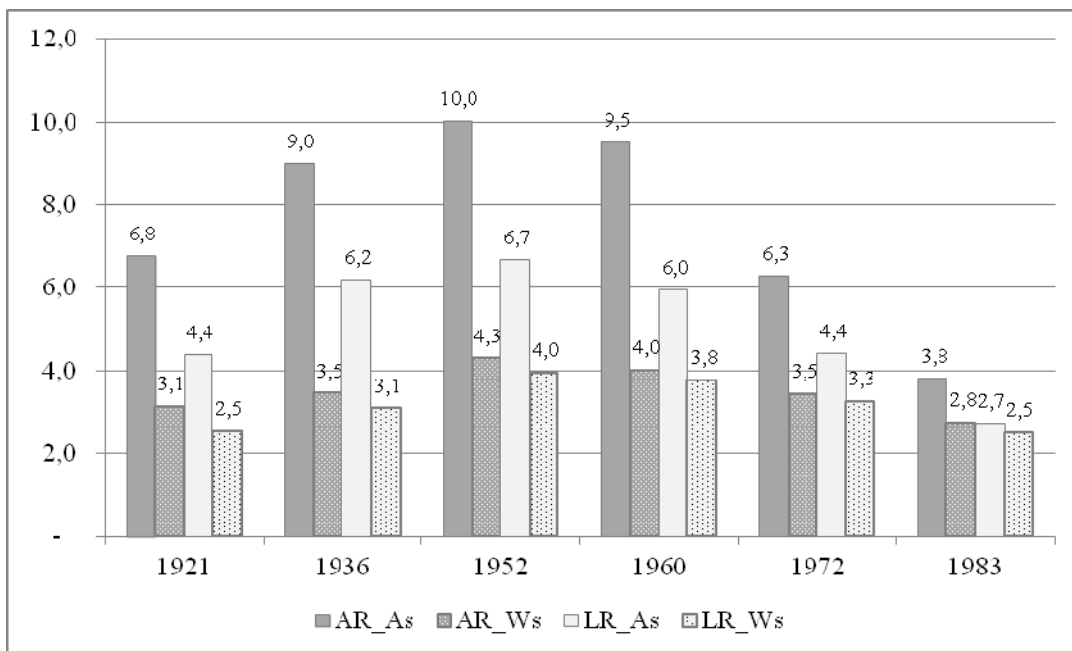
Source: Colli and Vasta (2015).

However, this method, which takes into account all shares (As), suffers from double counting because the same firm could be controlled by more than one group. For this reason, to solve the double counting problem, a second approach has been developed. It allows us to split the firm into as many equal shares as the board members that are also in the holding, and then assign one share to each group (for example, if group 1 has two board members, and groups 2 and 3 have

one board member each, group 1 will get one-half of the firm, while the other two groups will get one-fourth each). We call this latter approach weighted shares (Ws). This reduced approach will give us a lower boundary to the previous one, because now each firm that was previously controlled by one or more groups may be controlled by fewer.

Figure 3 reports the average weight by total assets of each of the first 15 groups on the total of the joint-stock companies included in Imita.db, by each benchmark, calculated with the two different methodologies described above and both for all shares (As) and, in order to avoid duplication, for weighted shares (Ws).

Figure 3. Average weight (per cent) of the total assets of the first 15 groups on the total of joint stock companies in Imita.db

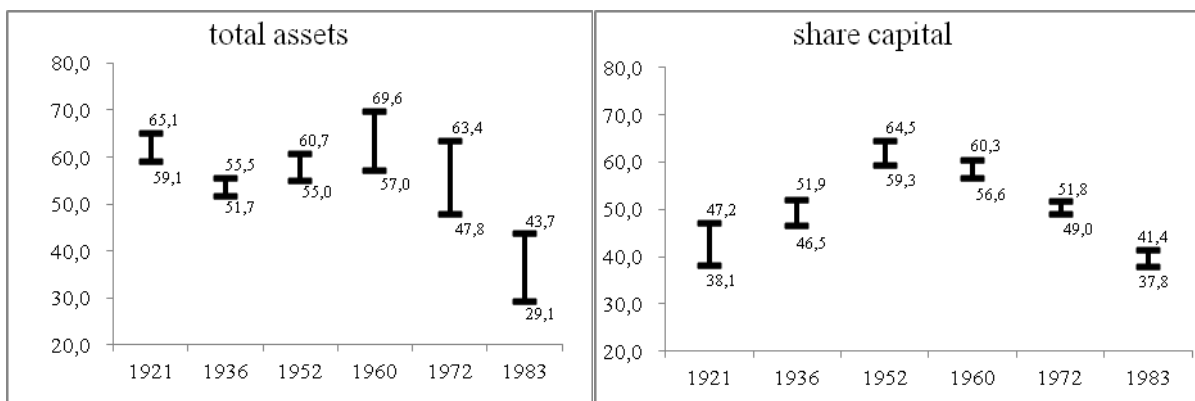


Source: Colli and Vasta (2015, fig. 4).

After having illustrated the average weight of the groups, in Figure 4, we report the total weight of the top 15 groups, for total assets and share capital, on the Italian joint-stock companies for the lower and the upper boundaries. It is worth noticing that the values are calculated following the weighted-share method, which allows us to avoid duplications. The trend is quite evident. The relevance of business groups in the Italian economy is confirmed: both private and under the control of the state, grows steadily in the interwar period, and again after the WWII until the 1960s. This is the phase of the catching-up to the Second Industrial Revolution trajectories in which the strategy is to reach the minimum efficient size following the technologically-driven vertical integration. This is particularly true both for the private electrical

business groups – including *Sade* and *Edison* – which proceeded through the aggregation of smaller companies previously operating upon a local basis and for state-owned business groups which, being active in a wide variety of sectors, followed the “Leviathan’s logic”. In the following years, this relevance steadily vanishes, although its weight still remains considerable. Whatever the calculation methodology used for 1983, the incidence of the first 15 business groups on the universe of joint-stock companies considered is lower by 30-40 per cent of that registered in 1960. Definitely, the crisis and re-structuring processes of the late 1960s, the 1970s and the early 1980s impacted heavily on business groups, weakening the internal cohesion of companies.

Figure 4. Weight of the top 15 groups on the total capital and assets of companies included in *Imita.db*



Source: Colli and Vasta (2015, fig. 6).

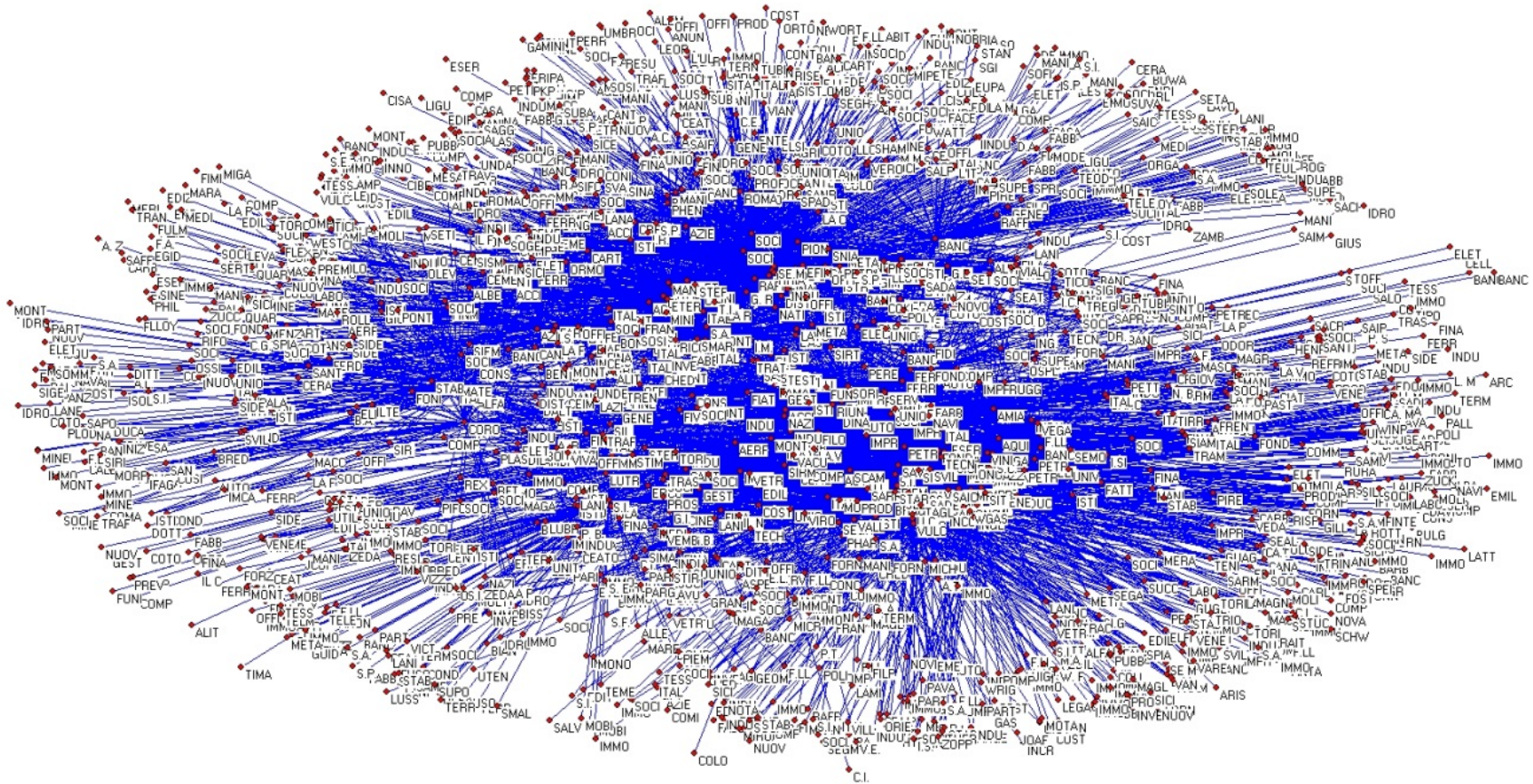
More specifically we can observe that before WWII private family-controlled groups prevailed, as *Fiat*, and *Montecatini*, both in terms of capital and assets. The phase between the 1950s and the end of the 1960s is characterised by the overwhelming relevance of the state-controlled groups, particularly of the largest and very articulated, *IRI*. From the early 1970s, the situation changes again. As can be seen above, the overall relevance of the largest groups diminishes, while that of state-controlled groups remains higher than the average – also due to the fact that the crisis brought them to enlarge their boundaries through rescues and acquisitions.

The dynamics of the largest business groups allows other considerations, for instance, concerning the longevity of the leading enterprises in the sample. The overall number of leading companies, present at least once in the sample, is 43 (see Appendix 1). Of them, 25 are present only once, something which suggests a relative instability and turbulence in the top ranks of Italian capitalism, where big business seems to be relatively unstable in the long run, whatever the reason for this may be. The sole company present in all the six benchmark years considered is *Fiat*,

followed, with less occurrences, by *Pirelli*, *Snia* (synthetic fibres) *Stet* (telephones) and *Edison* (electricity, in the last two benchmark years merged with another big group, *Montecatini*, giving birth to *Montedison*, the largest chemical group of the country). This picture is fully consistent with the dynamics detected among the top 200 Italian firms (Vasta 2006b: 99ff).

The relevance of the business groups in the Italian capitalism has emerged clearly above. Although it decreased throughout the period, its crucial role is still evident in the 1980s, too. Moreover, it must be said that the empirical analysis has offered a prudential estimate of the relevance of business groups in the Italian economy. Indeed, we have always only considered, with different methodologies, the link at distance one between the holding and other firms. The capacity of a holding to influence the strategy of the firms in the holding goes well beyond the direct link, and thus it must be considered that the influence of business groups is probably larger than our estimate. In order to offer a case of the pervasiveness of the influence of the groups, in Figure 5, we present an example of the boundaries of the *Fiat* group. In particular, Figure 5a shows the network between one of the most important groups in the country throughout the period under consideration, *Fiat* (holding), and its “neighbourhood”, to wit, those firms which share at least one member on their board with *Fiat*. This is the method used in this chapter so far. In Figure 5b, we add to these “direct” links also those firms which share at least one member on their board with a firm in the “neighbourhood” of *Fiat*. In the language of network theory, this set of nodes (*i.e.*, firms) is called the “neighbourhood” of distance two of the *Fiat* node. It clearly emerges how the influence of the business group could be larger than what we have offered in our “prudential” estimates.

b) "Neighbourhood" (distance 2)



Source: Colli and Vasta (2015, fig. 7).

The importance of business groups in the Italian capitalism is still considerable today. Table 3 presents the top 15 Italian non-financial business groups for turnover in 2013. First of all we can notice that all the main most important private firms are represented: Fiat (controlled by the holding Exor), Benetton (Edizione), Moratti's family (Saras), Del Vecchio's family (Luxottica), Pirelli (Prysmian) and Caprotti's family (Supermarkets Italiani). Secondly, it appears clearly the huge importance of state-controlled business groups considering that they are the majority in the list (8 on 15) and that, amongst the top 6, there are 4 public enterprises. Moreover, their size is impressive in comparison with other private groups, but Exor.

Table 3. Business groups (non-financial) by turnover in 2013

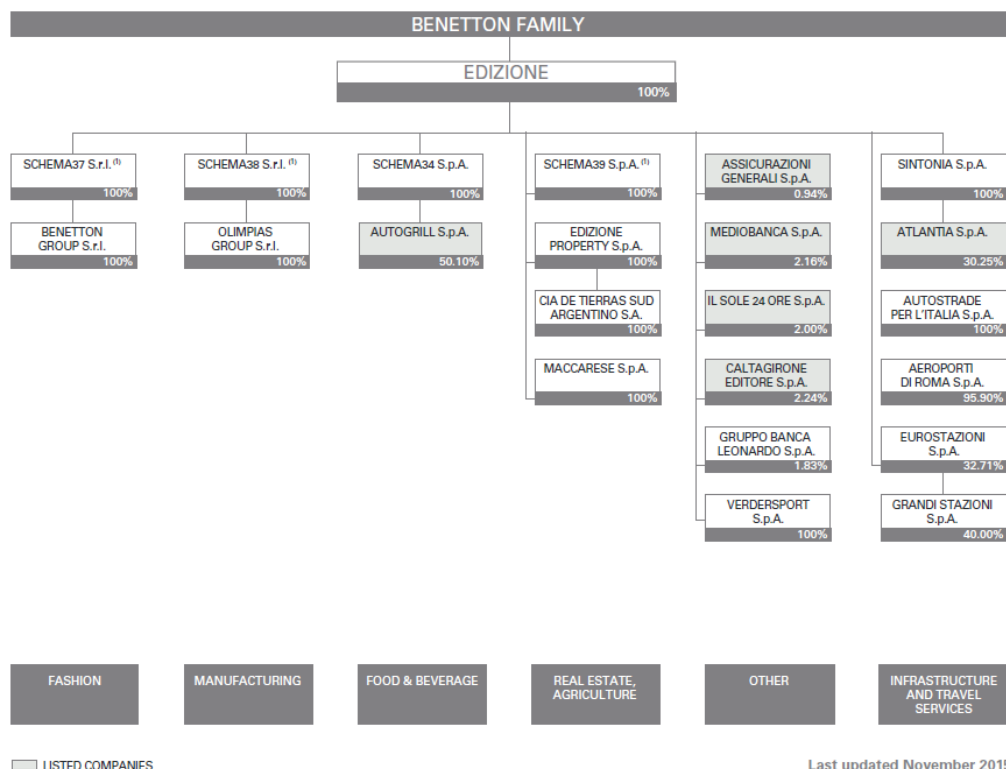
#	Group's name	Sector of main activity	Type of owner	Turnover (billions of euro)	Number of employees
1	Eni	Petroleum fuels, natural gas, mineral oils and petrochemicals	State-controlled	114.7	82,289
2	Exor	Vehicles	Private	113.7	305,963
3	Enel	Production, distribution and trade of electricity and gas	State-controlled	78.1	71,394
4	Gse - Gestore dei Servizi Energetici	Production, distribution and trade of electricity and gas	State-controlled	34.3	1,277
5	Telecom Italia	Telecommunications	Private	22.9	59,527
6	Finmeccanica	Aerospace, defence and security	State-controlled	16.0	63,835
7	Edison	Production, distribution and trade of electricity and gas	Private	12.3	3,250
8	Edizione	Miscellaneous industries, mainly manufacturing	Private	12.3	71,257
9	Saras - Raffinerie Sarde	Petroleum fuels, natural gas, mineral oils and petrochemicals	Private	11.1	1,837
10	Poste Italiane	Public services	State-controlled	9.4	145,431
11	Kuwait Petroleum Italia	Petroleum fuels, natural gas, mineral oils and petrochemicals	Private	7.8	904
12	Ferrovie dello Stato Italiane	Airlines, shipping, road and rail transport undertakings and ancillary services	State-controlled	7.6	69,425
13	Luxottica Group	Eyewear, frames and lenses	Private	7.3	73,415
14	Prysmian	Rubber, cables and allied products	Private	7.3	19,374
15	Supermarkets Italiani	Retailing and wholesale in general	Private	6.8	20,605

Source: Compiled from Mediobanca (2014, tab. I).

The case of the business group related to the Benetton family (depicted in Figure 6) looks particularly effective in explaining the recent process of growth of business groups in Italy. The

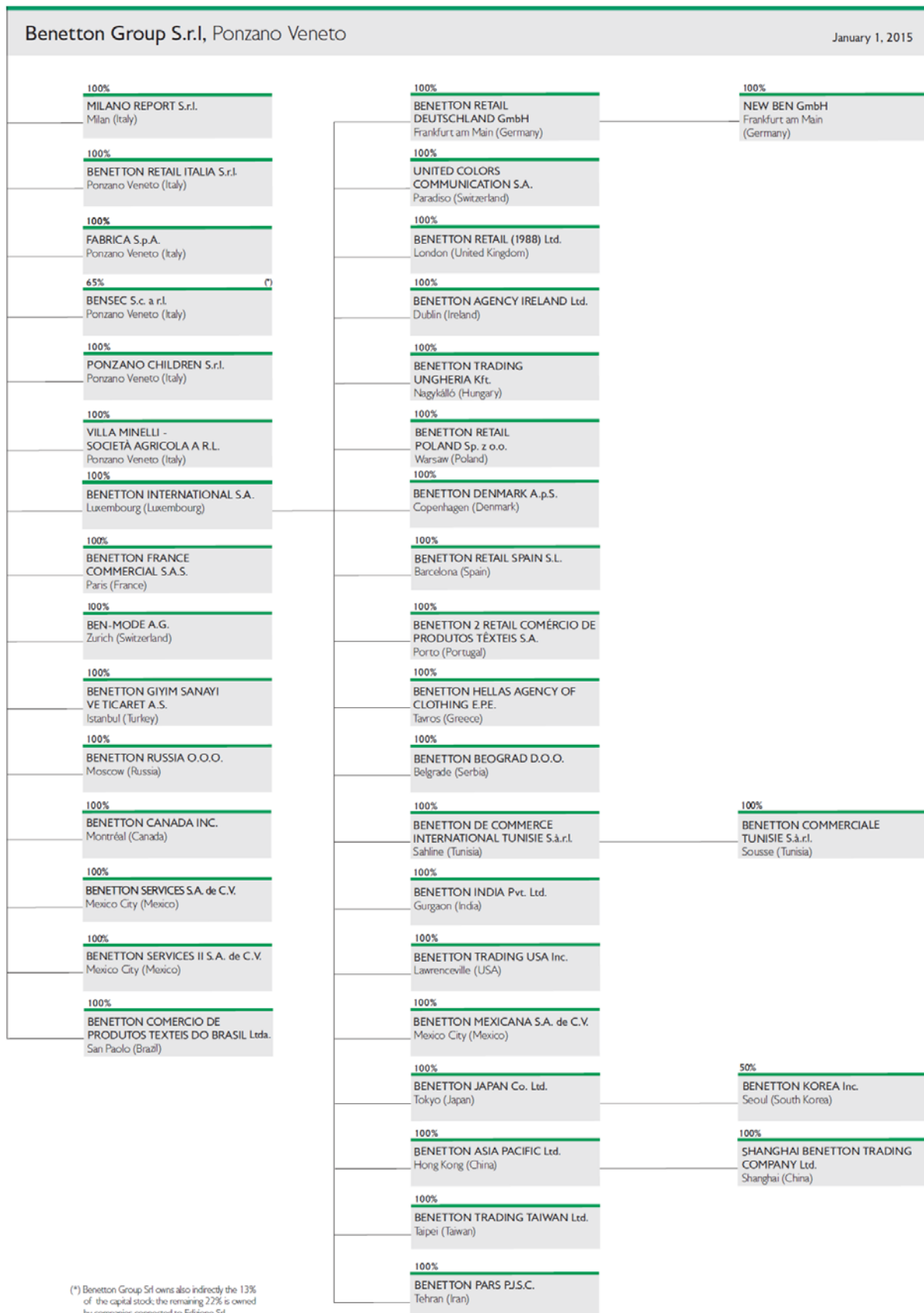
Benetton started as a family-run small business in the early 1950s and rapidly expanded and consolidated particularly in the 1980s, when it inaugurated a process of related diversification in the field of apparel and sport gear accompanied by a strategy of horizontal and vertical integration, which resulted in the creation of subsidiaries, partially of fully controlled (Figure 6.b). Towards the end of the 1980s, the Benetton family started a strategy of non-related diversification, investing in very different areas. This strategy was boosted by the privatization process inaugurated by the Italian government at the beginning of the 1990s. The Benetton family acquired the control of former state-owned enterprises, in food retail and distribution (Autogrill), motorways (Società Autostrade) and infrastructures (Aeroporti di Roma). Initially, the diversification process was managed through a holding (Edizione Holding) which acted as a final “strongbox” of the various investments undertaken by the company. More recently, Edizione Holding changed its name in Edizione (Figure 6.a) and a process of reorganization took place. Edizione is now controlling a serie of sub-holdings, each one in charge of a segment of the whole group’s activity, ranging from cloth retailing (Benetton Group), textiles production (Olimpias Group), duty free and retailing (Autogrill and, until very recently, World Duty Free), real estate, infrastructures (Sintonia spa) and miscellaneous minority holdings.

Figure 6.a. Edizione group (Benetton family)



⁽¹⁾ Since January 1, 2015 the demerger of Benetton Group S.p.A. in three different legal entities is effective.

Figure 6.b. Edizione group (Benetton group family)



Source: www.edizione.it and www.benetton.it. Last access 15 November 2015.

6. Why business groups are so resilient in the Italian economy?

After having proposed a taxonomy of different business groups, and a very rough estimation of their relevance over the whole national economy in the long run, this section discusses the reasons why Italian entrepreneurs (in all forms of enterprise) preferred to grow by creating business groups with legally independent-subsiaries rather than trying to develop large M-form corporations with integrated internal divisions. A longitudinal analysis of the persisting diffusion of business groups in Italy highlights at least *six* relevant determinants of the diffusion and persistence of business groups in Italy along the 20th and even in the beginning of 21st century.

A *first* reason refers to business group as an instrument to enhance the control of the dominant shareholders with a limited investment of their own resources through pyramidal arrangements, an explanation which, in its turn, is connected to institutional determinants, among which the presence of a favourable legislation, or at least the absence of rules limiting some kind of leverage effect. Above all – and in the case of Italy this seems particularly evident – the limits in the dimension and in the quality of the domestic financial markets, and the absence of specialized financial institutions, play a relevant role in incentivizing the formation of business groups through which the dominant shareholders obtain resources from the stock market without losing much of their decisional power. This happened several times in the course of the history of Italian capitalism. Initially, up to the Second World War, when private big business created multi-layered business groups to catch up the technological paradigm of the Second Industrial Revolution, a strategy followed also after the war by state-owned enterprises (Colli 2013). Similarly, benefitting of a sudden vitality of the stock market during the 1980s, many private corporations, as for instance Fiat, spun off divisions and listed them in order to collect financial resources from an effervescent stock market, *de facto* the perimeter of already existing groups (Brioschi, Buzzacchi and Colombo 1990).

Secondly, business groups provide more freedom and incentives to the subsidiaries' management, something which is more difficult in an integrated organization in which the headquarter has a strong grip on the divisions and in which the management's decisional power is severely constrained. This is a crucial point, which deserves a more detailed explanation. The existence of this potential incentive to the formation of business groups was already noticed by one of the components of the above mentioned Harvard group, Robert J. Pavan, in an obscure piece following up his major research on the strategies and structures of the Italian corporations

(Pavan 1978). Extending his longitudinal analysis which originally extended from 1945 to 1970 to the period going to 1977, he found that the trend towards diversification of the activities among large firms, which led to an increasing (even if still insufficient) adoption of divisional structures, was giving room to a new situation, which saw divisions progressively transformed into legally independent subsidiaries coordinated by a corporate office (in its turn, the holding company). On its side, the fiscal and legal system allowed and incentivized the process; but behind this, according to Pavan (1978, pp. 5-6), “it was necessary to proceed beyond divisions, entrusting to separate companies the management of most important sectors, with the aim of attaining a major level of productive and sales efficiency, through an autonomous management, more flexible and sensitive to the specific market problems and their tendencies”. The creation of legally independent subsidiaries, sometimes specialized and of smaller dimensions, was the Italian solution to the problem of coping with diversification, flexibility and management independence. What Pavan pointed out was, to a certain extent, a sort of global trait: independence of divisions was ensured by separate legal status more than a mature managerial culture resulting in a real autonomy of professional management, at least in the Italian case. The trait of management independence is a leitmotiv also in the case of medium-sized companies, a quite recent protagonist in the Italian corporate landscape which, as recalled before, largely use group forms to manage their business. In this case, a determinant element is the presence of an owner-family: the creation of a group allows quite easily to separate power and responsibilities across the members of the family in this way avoiding conflicts among them and, at the same time, providing a sort of equal “endowment” to siblings.

Thirdly the group structure is simply the only possible structure when, for some reasons, it is necessary to maintain a legal separation among companies. A couple of examples will clarify this point. The first one refers to the case of the family firm *Luigi Fontana Spa*, one bolt and screws producer which progressively became, since the 1960s, one of the most important suppliers of the expanding automotive industry (Colli and Merlo 2006). Together with a strategy of internal growth, the company started to make a number of acquisitions taking over smaller, entrepreneurial companies in the same industry. These companies were, however, not merged into the main one, nor transformed into divisions. The Luigi Fontana SpA transformed itself into a sort of “operating holding company”, at the same time exerting the role of producer and that of a central office of the subsidiaries, each one characterised by a high degree of independence which

largely reflected their previous status of independent companies. The reasons put forward in order to explain this behaviour were basically two: to preserve the autonomy of the acquired company's management (in some cases, the former owners transformed into managers) and to approach the automotive companies with different brands and products, which had not to be perceived as part of one single company. A second example refers to the creation of joint ventures among different companies. Joint ventures involve by definition a partial share-ownership quota in companies which are by definition independent companies, and not divisions. The more a country is characterized by the presence of joint ventures (for instance, between local domestic companies and more technologically advanced foreign ones) the more this will result into the creation of partially-owned subsidiaries. Looking for instance at the history of the most important Italian oil and gas producer, the State-owned ENI, it becomes clear how a large section of the ENI's subsidiaries are *de facto* joint ventures with foreign companies in order to get new technologies, for instance in the field of chemicals, plastics and polymers. A third example of “forced” creation of a group is the case of cooperatives expanding their boundaries. The incorporation of new activities into the boundaries of the cooperative with a simple process of merger, integration and internal growth would mean that the new activities were going to be subject to the corporate regulation of the cooperative sector: for instance, the fundamental pillar that one vote corresponds not to a share, but to a head. With the progressive dilution of the last decades of the strong ideological push, both of socialist/communist and catholic inspiration, the incentive for the top management of the most important cooperatives - sometimes of relevant size to get a firm control over the new activities becomes high.⁹ This, added to the presence of favourable legislation which, from the early 1970s allowed cooperatives to own shares, brought to the progressive creation of business groups, composed by a cluster of joint-stock companies headed by a holding/operative company, i.e. the former original cooperative.

A *fourth* possible explanation for the diffusion of business group lies in the fact that this form proved very effective in accommodating the pressure of both local shareholders and stakeholders. This was particularly the case for specialized business groups that were formed in the public utilities from the aggregation of the former municipalized companies. In this case the setting-up of a separate subsidiary – with its own staff and board of directors – in each local context (a province

⁹ In 2010 co-ops accounted for 10 per cent of all the Italian enterprises with more than 500 employees. Larger co-ops have become the market leaders in Italy in some sectors, i.e., large scale retailing, constructions, and agro-food. For further details, see Battilani and Zamagni (2010; 2012).

or a union of municipalities) it is used by the business group to create new offices for individuals connected with local politics and, as a wider scope, for the interaction between the business group and the local community.

Fifth, fiscal policies play a relevant role, especially when they neutralize the difference between business group and other forms of organization (i.e. the M-form). Large business groups can have a better access to credit than large integrated organizations, leveraging on and redistributing the resources and value created by the most profitable subsidiaries. Moreover, the business group structure better allows, both for private and public business groups, the tunnelling of resources from companies where the holding has low cash rights to companies where it has high cash rights. Another peculiar situation is where the multiplication of subsidiaries is due to the possibility to obtain resources in the form of incentives and subsidies from public institutions. In the case of Italy, the policies aiming at fostering the industrialization of the South were largely based on the concession of tax exemptions, loans, but also of direct subsidies. This led some private entrepreneurs to create business groups characterized by a wide number of subsidiaries, each one separately asking for public support, as happened in the case of the Rovelli group, a chemical company which invested in Sardinia opening in a few years hundreds of subsidiaries each one getting funds from the State.

A (*sixth*) far less unplanned case happens when a company is acquired, or becomes part of an existing group, by chance, or following an unplanned event, and in particular when the buyer is allowed to buy only partial, even significant, stake of the company, something which does not allow a full integration of the acquired company into a division. This was in Italy quite frequent in the case of banks, which up to the early 1930s were frequently becoming controlling shareholders after having taking over a distressed company (Confalonieri 1992) or of larger companies called to rescue minor ones thanks to their close *do ut des* relationships with the political power interested in such rescues for social reasons - as happened in the case of a chemical company, Montecatini, which into the 1930s transformed into a conglomerate group after having rescued (under the pressure of the Government) companies in mining or in the textile industries (Amatori and Bezza 1990). The problem with this process was the presence of a variable number of minority shareholders in the acquired company, something which could in principle create some governance problem, and finally made more complex a full takeover of the rescued company which had to be left as a legal independent entity. Probably the most evident example of this

practice was the already mentioned creation, almost overnight, of the largest Italian business conglomerate, IRI, under the control of the State. As said above, the strategy at the basis of the creation of IRI was to manage the emergency situation of the financial crisis of the largest three banks of the country. In short, the State acquired all the shares of companies in the banks' portfolios - in this way de facto rescuing the banks, putting them into one single large portfolio, the one of the big holding IRI. In this way, IRI directly controlled, as it has been calculated, one quarter of the nominal capital of Italian joint stock companies. This was rarely, however, a full ownership, which meant the impossibility of creating a standard-type M form with internal divisions. In addition, it was soon clear that this situation allowed IRI to leverage control, in particular of listed companies, exactly as happened to private companies. Of course, the IRI formula, started as a sort of emerging strategy became soon a standard for almost all the large SOE concerns in many sectors.

7. Conclusion

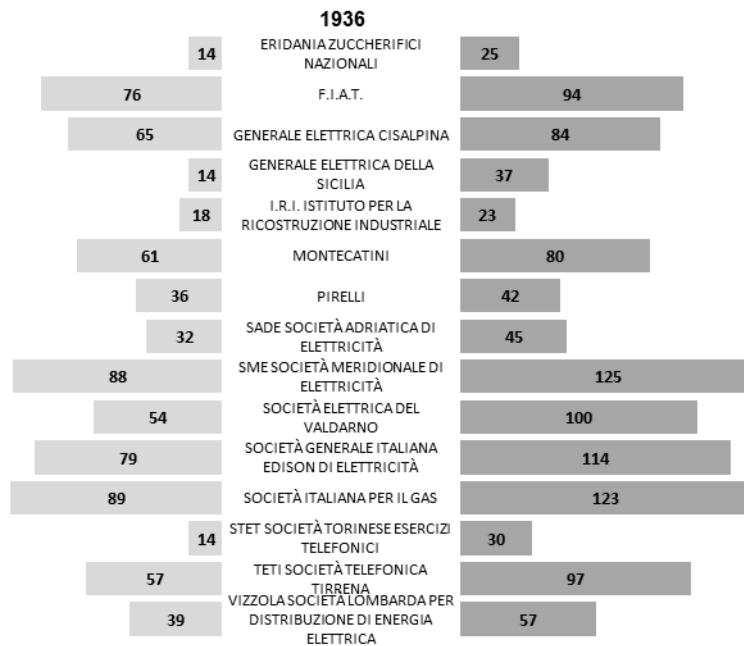
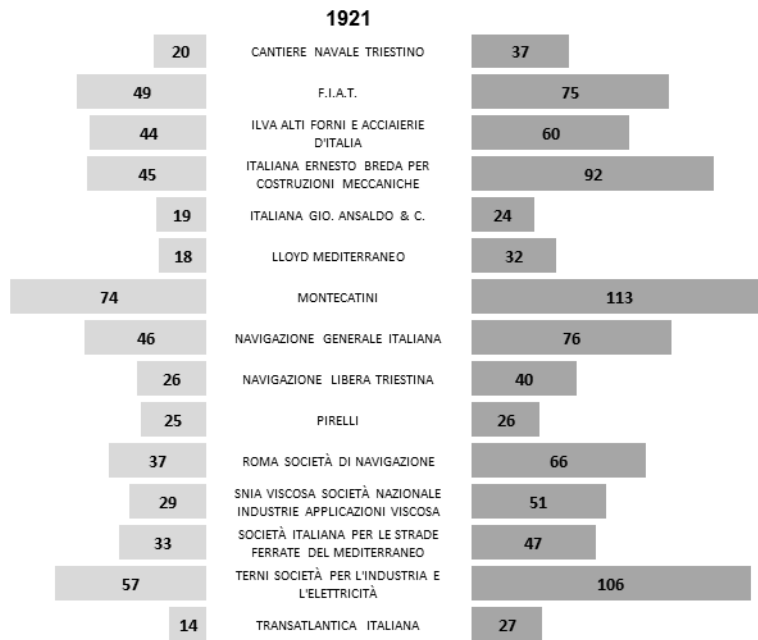
This chapter has shown that business groups are not a static component of the Italian industrial landscape even if the rationale for their existence constantly modifies over time according to institutional and technological changes. Notwithstanding the changes in the rationale for their existence, the relevance of business groups within the Italian capitalism, measured by the network analysis, has been, even using a prudential approach, constant and significant whatever proxy measures (companies involved, share capital and assets) are taken into account, even if a declining trend is certainly evident in the last decades.

Even if the different streams of literature were well aware, at least since the 1930s, of the existence of business group as dominant form of organization and control in the history of Italian capitalism, much of these studies have mainly provided blurred pictures or detailed reconstruction, avoiding any systematization of the issue. Starting in the 1990s, with the diffusion of new theoretical approach in corporate governance, some studies on Italy have also highlighted the role played by pyramidal groups as mechanisms set up in order to leverage control by relevant shareholders. Along this pattern, and by adopting an approach which explicitly takes into account the variety of the forms of enterprise, in this chapter we have introduced both a taxonomy and a periodization of business groups within the Italian capitalism.

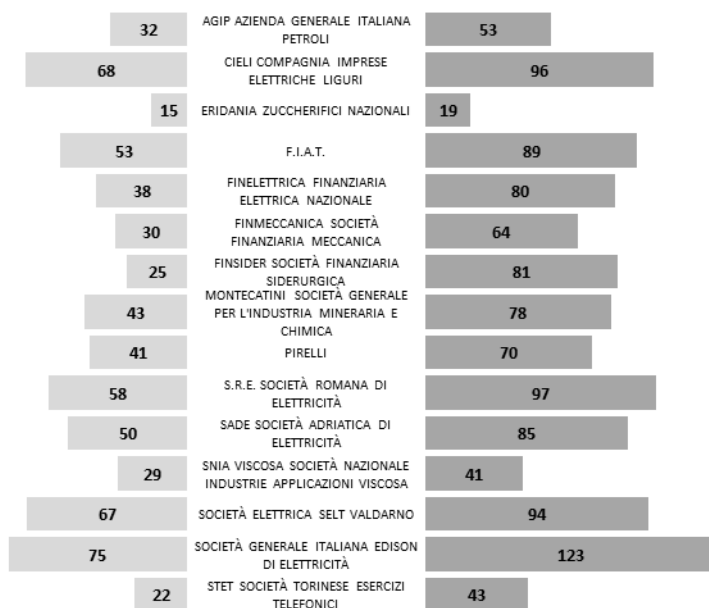
Finally, this chapter shows that business groups are present not only among large firms, but in almost all the dimensional and juridical forms of the Italian firms. This challenges the conventional wisdom which assumed that business groups are simply an (maybe less, or not) *alternative* to the M-form characterizing big business around the world.

Concluding, we can sum up this chapter saying that, in the Italian case, business groups as an organizational model looks particularly flexible, adapting itself to different ownership and market conditions. In absence of hurdles of legal or fiscal nature, this flexibility is probably the main reason for its resilience. This suggests to further investigate the institutional determinants of its adoption, i.e., if, why, and how, the policy-makers incentivized, or at least did not hinder, the formation of business groups instead of integrated, divisional structures. An analysis of this is beyond the scope of the present chapter.

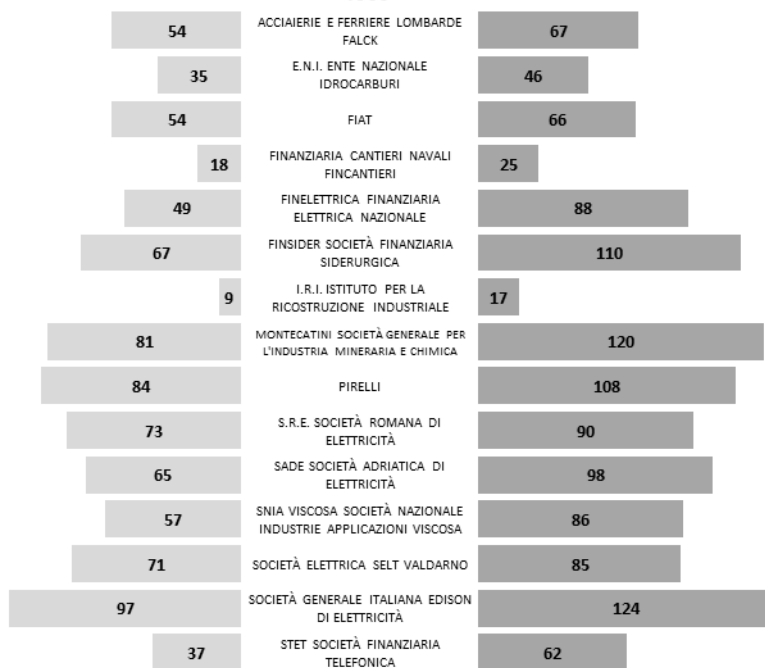
**Appendix 1: list of the Italian business groups with their boundaries for number of companies
[Leading roles (LR) – left side – and All roles (AR) – right side – methods]**

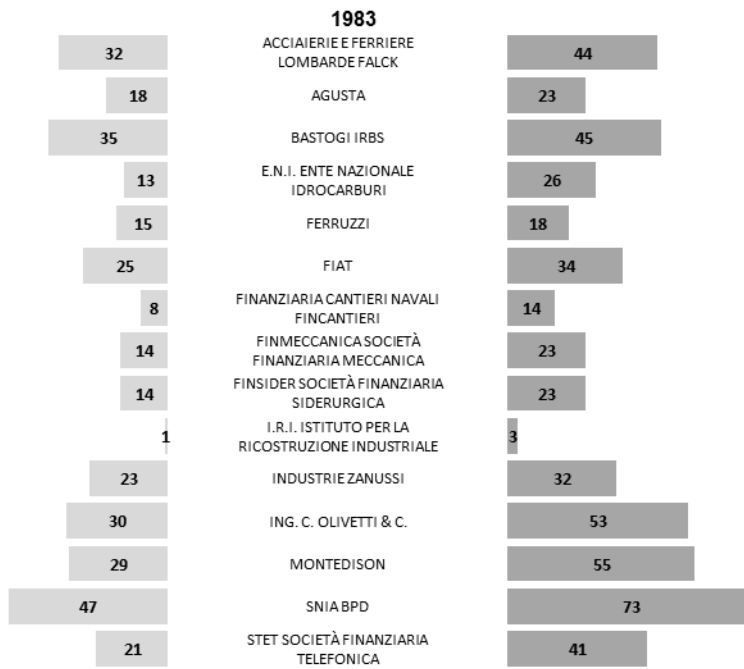
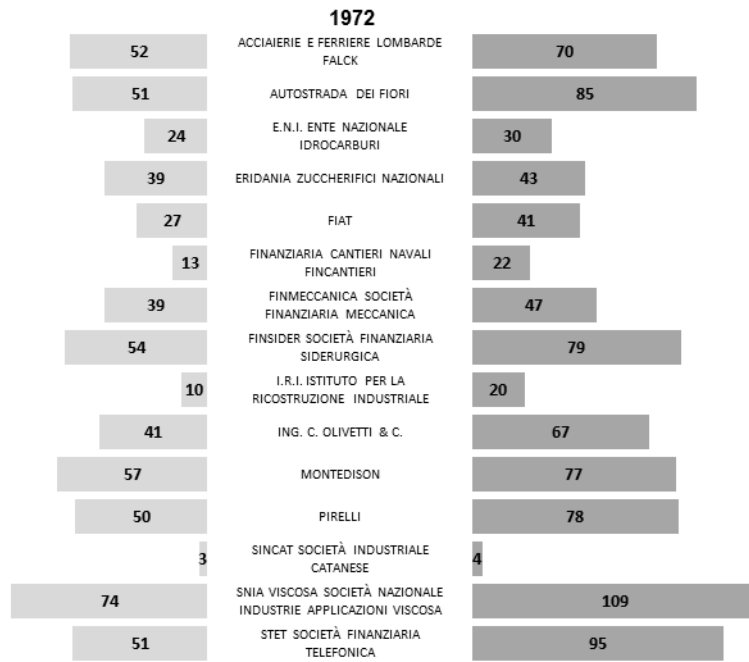


1952



1960





Source: Colli and Vasta (2015).

References

- Aganin, A. and P. Volpin 2005. "The History of Corporate Ownership in Italy". In R. Morck. (ed.), *The Global History of Corporate Governance*, Chicago: University of Chicago Press, 325-361.
- Amatori, F. 1997. "Growth via Politics: Business Groups Italian Style". In T. Shiba and M. Shimotani. (eds.), *Beyond the Firm. Business Groups in International and Historical Perspective*, Oxford: Oxford University Press, 109-134.
- Amatori, F. and B. Bezza 1990. (eds.), *Montecatini. Capitoli di storia di una grande impresa*. Bologna: Il Mulino.
- Amatori, F. and A. Colli 1999. *Impresa e industria in Italia dall'Unità ad oggi*. Venice: Marsilio.
- Amatori, F. and A. Colli 2011. *Business History. Complexities and comparisons*. London: Routledge.
- Barca, F. et al. 1994. (eds.), *Assetti proprietari e mercato delle imprese*. 2 voll., Bologna: Il Mulino.
- Barca, F. and M. Becht 2001. (eds.), *The Control of Corporate Europe*. Oxford: Oxford University Press.
- Battilani, P. and V. Zamagni 2010. "Co-operatives (1951-2001)". In A. Colli and M. Vasta (eds.), *Forms of Enterprises in 20th Century Italy. Boundaries, Structures and Strategies*. Cheltenham-Northampton: Elgar, 273-293.
- Battilani, P. and V. Zamagni 2012. "The Managerial Transformation of Italian Co-operative Enterprises 1946-2010", *Business History*, 54 (6): 964-985.
- Benedetti, E. and M. Tonioli 1963. "Concentrazione industriale e potere di Disposizione", *Rivista internazionale di scienze economiche e commerciali*, 10: 633-652.
- Bianchi, M., Bianco M. and L. Enriques 2001. "Pyramidal Groups and the Separation Between Ownership and Control in Italy". In Barca, F. and M. Becht. (eds.), *The Control of Corporate Europe*, Oxford: Oxford University Press.
- Bianchi, M., Bianco, M., Giacomelli, S., Paccès, M. and S. Trento 2005. *Proprietà e controllo delle imprese in Italia*. Bologna: Il Mulino.
- Bonelli, F. 1975. *Lo sviluppo di una grande impresa in Italia. La Terni dal 1884 al 1962*. Torino: Einaudi.
- Bonelli, F. 1982. (ed.), *Acciaio per l'industrializzazione. Contributi allo studio del problema siderurgico italiano*. Torino: Einaudi.
- Borsa, M. 1992. *Capitani di sventura. Agnelli, De Benedetti, Romiti, Ferruzzi, Gardini, Pirelli: perché rischiano di farci perdere la sfida degli anni '90*. Milano: Mondadori.
- Brioschi, F., Buzzacchi, L. and M. Colombo 1990. *Gruppi di imprese e mercato finanziario*. Roma: NIS.
- Barucci, E. and F. Pierobon 2007. *Le privatizzazioni in Italia*. Roma: Carocci.
- Channon, D. F. 1973. *The Strategy and Structure of British Enterprise*. London: The Macmillan Press.
- Colli, A. 2013. "La grande stagione dell'IRI". In F. Amatori. (ed.), *Il miracolo economico e il ruolo dell'IRI 1949-1972*, Bari: Laterza, PP

- Colli, A. and E. Merlo 2006. *Fontana: un storia di vita*. Milano: Egea.
- Colli, A. and M. Vasta 2010. "Introduction". In A. Colli and M. Vasta. (eds.), *Forms of Enterprise in Twentieth century Italy. Boundaries, Structures and Strategies*, Cheltenham: Elgar, 1-21.
- Colli, A. and M. Vasta, M. 2015. "Large and entangled: Italian business groups in the long run", *Business History*, 57 (1): 64-95.
- Colli, A., Rinaldi, A. and M. Vasta 2015. "The only way to grow? Italian Business groups in historical perspective", *Business History*, <http://dx.doi.org/10.1080/00076791.2015.1044518>.
- Coltorti, F. 1988. "Note sulla modificazione della struttura finanziaria delle imprese italiane negli ultimi venti anni". In *Atti del seminario: Ristrutturazione economica e finanziaria delle imprese*, Rome: Banca d'Italia, 593-657.
- Confalonieri, A. 1974-76. *Banca e industria in Italia, 1894-1906*. 3 voll. Milano: Banca commerciale italiana.
- Confalonieri, A. 1982. *Banca ed industria in Italia dalla crisi del 1907 all'agosto 1914*. 2 voll. Milano: Banca commerciale italiana.
- Confalonieri, A. 1992. *Banche miste e grande industria in Italia 1914-1933*. Vol. 1. Milano: Banca commerciale italiana.
- Consob 2011. *Dall'Unità ai giorni nostri: 150 anni di borsa in Italia*. Rome: Consob
- David, T. and G. Westerhuis 2014. (eds.), *The power of corporate networks: A comparative and historical perspective*. New York-Abingdon: Routledge.
- Dyas, G. P. and H. Tanheiser 1976. *The Emerging European Enterprise*. London: Macmillan.
- Federico, G. and M. Vasta 2015. "What do we really know about protection before the Great Depression: evidence from Italy", *The Journal of Economic History*, 75 (4): 993-1029.
- Freeman, C. and F. Louçã 2001. *As time goes by: From the industrial revolution to the information revolution*. Oxford: Oxford University Press.
- Freeman, C. and L. Soete 1997. *The economics of industrial innovation*. Cambridge (Mass.): Mit Press.
- Galasso, G. 1993. (eds.), *Storia dell'industria elettrica in Italia. Vol 3. Espansione e oligopolio 1926-1945*. Bari: Laterza.
- Giannetti, R. and M. Vasta 2006. "The concentration of the industrial structure". In R. Giannetti and M. Vasta. (eds.), *Evolution of Italian Enterprises in the 20th Century*, Heidelberg: Physica-Verlag, 49-61.
- Giannetti, R. and M. Vasta 2010. "Big business (1913-2001)". In A. Colli and M. Vasta. (eds.), *Forms of Enterprise in Twentieth century Italy. Boundaries, Structures and Strategies*, Cheltenham: Elgar, 25-51.
- Goldstein, A. 2003. "Privatisation in Italy 1993-2002. Goals, Institutions, Outcomes and Outstanding Issues", *Cesifo WP 912*.
- Khanna, T. and K. Palepu 2010. *Winning in Emerging Markets. A Roadmap for Strategy and Execution*. Cambridge (Mass.): Harvard Business Press.

- Luzzatto Fegiz, P. 1928. "Il consiglio di amministrazione e l'indipendenza delle imprese", *Giornale degli economisti e rivista di statistica*, 43: 197-231.
- Mediobanca, 2014. *Le principali società italiane*. Milano: Mediobanca.
- Pavan, R. J. 1976. *Strutture e strategie delle imprese italiane*. Bologna: Il Mulino.
- Pavan, R. J. 1978. "Making the Divisional Structure the Legal Structure in Italy. Why and How", Unpublished manuscript, Chandler Papers, Baker Library Historical Collections, Harvard Business School.
- Radar (pseud. of Emanuele Rienzi) 1948. *Organizzazione del capitale finanziario italiano*. Rome: Edizioni Italiane.
- Rinaldi, A. and M. Vasta 2005. "The structure of Italian capitalism, 1952-1972: new evidence using the interlocking directorates technique", *Financial History Review*, 12 (2): 173-198.
- Rinaldi, A. and M. Vasta 2012. "The Italian Corporate Network After the "Golden Age" (1972-1983): from Centrality to Marginalization of State-Owned Enterprises", *Enterprise & Society* 13 (2): 378-413.
- Rinaldi, A. and M. Vasta 2014. "Persistent and Stubborn: the State in the Italian capitalism, 1913-2001". In T. David and G. Westerhuis. (eds.), *The Power of Corporate Networks. A Comparative and Historical Perspective*, New York-Abingdon: Routledge, 169-188.
- Romano, R. 1992. *L'industria cotoniera in Italia dall'Unità al 1914*. Milano: Banca Commerciale Italiana.
- Rossi, E. 1955. *I padroni del vapore*. Bari: Laterza.
- Siciliano, G. 2001. *Cento anni di borsa in Italia*. Bologna: Il Mulino.
- Toninelli, P. A. and M. Vasta 2010. "State-owned enterprises (1936-83)". In A. Colli and M. Vasta. (eds.), *Forms of Enterprise in Twentieth century Italy. Boundaries, Structures and Strategies*, Cheltenham: Elgar, 52-86.
- Vasta, M. 2006a. "Appendix: the source and the Imita.db dataset". In R. Giannetti and M. Vasta. (eds.), *Evolution of Italian Enterprises in the 20th Century*, Heidelberg-New York: Physica-Verlag, 269-273.
- Vasta, M. 2006b. "The largest 200 manufacturing firms (1913-2001)". In R. Giannetti and M. Vasta. (eds.), *Evolution of Italian Enterprises in the 20th Century*, Heidelberg-New York: Physica-Verlag, 87-110.
- VV. AA. 1992-1994. *Storia dell'industria elettrica in Italia*. Bari: Laterza.
- Wasserman, S. and K. Faust 1994. *Social network analysis. Methods and applications*. Cambridge: CUP.
- Whittington, R. and M. Mayer 2000. *The European Corporation: strategy, structure and social science*. Oxford: Oxford University Press.
- Zamagni, V. 2007. "The rise and fall of the Italian chemical industry 1950s-1990s". In L. Galambos, T. Hikino and V. Zamagni. (eds.), *The global chemical industry in the age of the petrochemical revolution*, Cambridge: Cambridge University Press, 347-367.

- Zerini, E. (pseud. of Emanuele Rienzi) 1947. "L'economia capitalistica ed i vari aspetti delle egemonie economiche in Italia", *Critica economica*, 5, 6, 7, 67-102 and 108-142.
- Zorzini, M. 1925. "L'organizzazione dell'industria idroelettrica in Italia", *Economia*, 7: 166-176.