European Business History Association (EBHA)

8th Annual Conference

Barcelona, 16-18 September 2004

"From Industry to Services?"

Session 5A **Beyond Chandler: Big Business in the 20th Century**

THE LARGEST 200 ITALIAN FIRMS THROUGHOUT THE 20TH CENTURY: FROM MANUFACTURING TO SERVICES?

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ABSTRACT: The paper reconstructs the dynamics of Italian big business in historical perspective focusing its attention on non-financial service sector enterprises. To this end 3 distinct datasets have been used which contain, for 10 benchmark years evenly distributed between 1913 and the year 2001, the top 200 enterprises of all sectors (excluding financial services) in terms of assets, the top 200 manufacturing enterprises and the top 200 enterprises in the non-financial service sector. The results show how large scale enterprises in the service sector only partially track the rise of the sector, as evidenced by data on employment. The difficulties encountered by service sector enterprises in consolidating growth once the apex in terms of size has been reached, emerge clearly. The dynamics are characterized by an elevated degree of turbulence which is more intense than that observed for manufacturing firms. This turbulence is determined by the combined action of several factors: institutional, conjunctural, sectorial, technological. The dynamics observed show how the sequence of «technological waves» that characterize the twentieth century have a more reduced impact on the services than on manufacturing firms. Only in the last phase, with the large diffusion of Information and Communications Technologies (ICT), does the impact of technology become considerably more relevant. The latter, in fact, causes a significant structural change with the rise of the companies of telecommunication, computer services and R&D.

JEL CLASSIFICATION: N74; N84; O33

Acknowledgements: I am grateful to Riccardo Benedetti for his collaboration in the construction of database. I would like to thank Leonardo Bargigli, Martina Cioni, Leandro Conte, Renato Giannetti, Mario Tonveronachi and Simone Ville for their helpful suggestions and Serena Rotunno for having notably improved the readability of this text. I alone can be held responsible for this paper's content.

Firenze, July 2004

1. *Introduction*

The aim of this paper is to reconstruct the dynamics, in historical perspective, of Italian big business in the service sector. Attention is focused, *in primis*, on the overall dynamics of Italian firms in order to verify whether the process of structural transformation that characterizes all developed economies, with a strong growth of the service sector, is also relevant for the structure of largest enterprises. Subsequently attention will be focused on largest non-financial services firms to examine which factors caused the considerable turbulence which, as we shall see, characterized the sector in the twentieth century more intensively than in manufacturing sector.

We will concentrate, in particular, on two different types of factors: *i*) those present exclusively at the national level, such as institutional changes; *ii*) those factors whose effect has an impact on all industrialized economies, even though in different periods, such as the changes caused by technological progress. In the first case, the difference in the public policies adopted, both as regards the variety of forms of regulation and the direct intervention of the State in the management of economic activities, assumes particular relevance, especially in the service sector. In the second case, the impact of the different «technological waves» that characterize the economies of developed countries in the twentieth century will be analyzed: from the wholesale adoption of the technologies of the Second Industrial Revolution to the success of mass production – based on the use of petrol and on the diffusion of the automobile – until the age of Information and Communications Technology (ICT) in the last decades with the advent of the microprocessor [Freeman and Soete 1997; Freeman and Louçã 2001].

The possibility of analyzing, for the case of Italy, the characteristics of big business with a quantitative support, as has been done for the main industrialized countries in the last decades, has been made possible by the availability of a dataset containing detailed information on a very broad sample of companies. The dynamics of the largest Italian enterprises were monitored for 10 benchmark years – well distributed between 1913 and 2001 –, through the use of 3 distinct samples comprehending the top 200 enterprises of all sectors (excluding banks, financial and insurance companies), the top 200 manufacturing enterprises and the top 200 enterprises in the non-financial services sector.

The paper is structured as follows: in paragraph 2 we illustrate the structural changes which characterize the Italian economy in comparison with the main industrialized countries, with the aid of macroeconomic data, focusing attention on the rise of the service sector; in paragraph 3 we describe the methodologies used in sample construction and in the analysis; paragraph 4 analyzes the transformation process of the Italian big business; while paragraph 5 examines the internal dynamics of the big business in the service sector followed by conclusive comments (paragraph 6).

2. *The rise of the service sector in the Italian economy*

The structural change in the Italian economy follow the typical dynamics of a latecomer country. At the beginning of the twentieth century, as can be seen from Table 1, almost two-thirds of the working population was still employed in the agricultural sector, employees in the industrial sector constituted almost 20% of the total and those employed in the service sector constituted only 17.1%, less than 15% if we exclude employees in the financial services and in the public services. After World War II, the 1951 Census data show that the agricultural sector was still predominant with the largest number of employees (44.3%), preceding the industrial sector (31%) and the service sector (24.8%) which still accounted for less than a quarter of the entire labour force, and with the exclusion of financial services and

the public sector amounted to only 18% of the labour force, little more than the level reached 50 years before.

<insert Table 1>

The acceleration of the process of structural change of the Italian economy coincides with the Golden Age, the period during which the growth rate of the Italian economy was higher, at least till 1963 – when ends the Italian «economic miracle» –, that of leader countries. It is in fact the comparison between the census data of 1951 and 1971 that shows how the quota of those employed in agricultural activities decreased significantly, due to the growth in the industrial and in the service sectors. However, a strong acceleration in the tertiary sector takes place in the Italian economy only in the last two decades of the century. Employees in the service sector exceeded those employed in the industrial sector in 1981, with 47.4% of the total number of employees, while the number of agricultural workers decreased to about 10% of the total.

The tardiness of the structural change process of the Italian economy becomes even more significant if the data illustrated above are compared with those of the main industrialized countries. Table 2 shows how, on the eve of World War I, the service sector in the United States was already the sector with the major number of employees, while it became so in the United Kingdom in the Twenties. Germany and France also underwent a more rapid structural change than Italy, even though with different characteristics with respect to the American and English cases. In the case of Germany, in fact, it was the industrial sector which, precociously, in 1907, became the one with the major number of employees, while the service sector became predominant only in the Seventies; in the case of France, the industrial and tertiary sector overtook the agricultural sector only in the Forties. Until after World War II, Japan followed the same pattern as Italy with regard to the weight of the agricultural sector, which in 1950 still amounted to almost half the labour force. Subsequently, the service sector, which was already predominant in 1960, developed more rapidly than the Italian one.

<insert Table 2>

The employment of half the workforce in the service sector, a target reached by the United States in the Fifties, as highlighted in the classic study by Fuchs [1965], also took place in different periods in the various countries: in the United Kingdom in the Sixties, at the end of the Seventies in France and Japan and, lastly in Germany at the beginning of the Eighties and in Italy at the end of the same decade. At the start of the new century the sectorial structure of the main developed countries was very similar, even though the US and the UK still showed a major incidence of the service sector as compared to the other developed countries.

The increase in the weight of the service sector in the Italian economy is evident from the data relative to its contribution to the formation of national wealth. The sector became the most important as early as 1921, with a share of 38.5% of the total GDP, overtaking agriculture which had a 37.5% share. The service sector quota increased, reaching 55.2% in 1936 but subsequently, after World War II, the quota levelled to slightly higher than that of the Twenties with 43.1%, increasing regularly until the year 2001, when it amounted to 70% of the total GDP[1].

The rise of the service sector in developed economies has fuelled a lively theoretical and empirical debate[2]. On the one hand, following «Baumol disease» [Baumol 1967], it has

[1] Data taken by Rossi, Sorgato and Toniolo [1993] and Istat [2004].
[2] For a review of the main essays on this topic, see Bryson and Daniels [1998].

been maintained that the sector is characterized by low levels of productivity as compared to the productivity of the industrial sector [Bell 1973]. The development of services has thus been identified as a key factor in explaining the slowing down of the growth rate of developed countries which took place as from 1973 [Griliches 1992]. During recent years, owing to the diffusion of ICT, the role of the service sector in economic growth has been reconsidered. According to certain studies, in fact, the strong increase in the productivity of the US economy as from 1995 is due to the propulsive role of the service sector in which the new computer technologies have had the greatest application: «Baumol disease» has, therefore, «been cured» [Triplett and Bosworth 2002; Bosworth and Triplett 2003]. Even a long run comparative analysis has shown as the increase in productivity in the US and Britain is mainly due to the developments in services [Broadberry and Ghosal 2004]. Moreover the US overtook Britain in comparative productivity level for the whole economy primarily as a result of trends in services rather than in industry.

Other studies have attributed the development of service sector to the effect of the processes of transformation undergone by industrial organization which has raised firms' demand for services [Elfring 1989a]. Numerous empirical studies have thus attempted to verify the composition of services through classifications that endeavour to distinguish different typologies. Among these, the studies by Singelmann [1978], Elfring [1989b] and Castells [1996], which have proposed classifications that aim at distinguishing 4 different types of services – distributive services, producer services, social services and personal services - emphasizing how the sector's expansion is mainly due to a growth in services to firms and social services. A classification system has been also proposed to measure the effect that technological change has had on the development of the service sector [Soete and Miozzo 1989]. This, borrowing Pavitt's classification system [1984] for industrial companies, subdivides the sector into three typologies: scale, supplier dominated and specialised[3]. By adopting this classification for the main developed countries it is possible to highlight how the sector's strong expansion in the last decades is essentially ascribable to the diffusion of ICT technologies of the Third Industrial Revolution.

3. *Sources and methodologies*

The different samples that will be used in this study on the largest Italian enterprises derive mainly from Imita.db[4]. From this database we selected the top 200 enterprises (excluding financial, in all sectors, in the manufacturing sector and in the service sector) ordered in terms of assets for the years 1913, 1921, 1927, 1936, 1952, 1960, 1971, 1981. For the last two benchmark years, 1991 and 2001, we made use of the Mediobanca data [1992;

[3] The scale sectors include trade (divisions 50, 51 and 52), transport (60, 61, 62 and 63), communications (64), financial intermediation (65, 66 and 67) and real estate activities (70). The specialised sectors include renting of machinery and equipment (71), computers (72), Research and Development (73) and the other business activities (74). The supplier-dominated sectors include hotels and restaurants (55), public administration (75), education (80), health and social work (85), refusal disposal (90), organization activities (91), recreation, cultural and sporting activities (92) and other service activities (93). The classification system also assigns utilities to the scale typology, while the NACE classification system however, considers them as industrial activities.

[4] The Imita.db is a vast database that includes a great quantity of data (registry of companies, boards of directors, company balance sheets), on the main Italian companies from 1900 to 1982. It is the result of a project of digitalisation of a source: *Notizie Statistiche sulle principali società per azioni*, edited, from 1906 to 1925 by the Credito Italiano and subsequently, from 1928 to 1984, by the Associazione fra le Società Italiane Per Azioni (ASIPA). The number of firms included in the source varies from a minimum of 788 in 1911 to a maximum of 11,802 in 1972. The number of board directors varies from a minimum of 5,904 (1911) to a maximum of 81,419 (1972). The data relative to the registry of companies and the boards of directors are available for the benchmark years, while the entire time series are available for company balance sheets. Altogether the database includes 38,182 firms, 294,335 directors and over 200,000 company balance sheets.

1993; 2002; 2003] in that the source used formerly, ceases in 1984. The possibility of using a large number of benchmark years chosen so as to correspond with, or at least be close to Census years, permits us to follow the dynamics of largest enterprise in detail, linking these to the technological and institutional changes that succeed each other in the period under consideration.

The variable used to compile the ranking of the firms is, as in the major part of the studies on the dynamics of big business [Berle and Means 1932; Chandler 1990], assets. The choice is the best possible in the case of Italy and at any rate, is widely accepted at the international level [White 2002]. The only other alternative is, in fact, the use of capital, since data covering the entire period are not available for turnover, employment, added value or stock exchange capitalization. In this last case one of the reasons is that the companies listed on the stock exchange in Italy, are few [Baia Curioni 1995; Siciliano 2001]. The use of capital was discarded because it is a less adequate measure than assets in representing the real size of the firm, as it varied a great deal among the different sectors. Only joint stock companies are included in the analysis; this does not substantially alter the picture even though, especially in the first benchmark years, some even large firms adopted other company forms [Federico and Toninelli 2003]. Furthermore, firms in the financial and insurance sector were excluded from the analysis because the assets of these firms are not comparable, as is also shown in other studies [Ville and Merrett 2000], to that of other firms in the sector[5]. Finally, we excluded the groups of companies for which organic data are available only for the last two decades when it became compulsory for firms to draw up consolidated accounts of their activities.

The use of such a broad time span creates several problems in cases of changes in name, mergers, acquisitions and demergers. The criteria used to give continuity to an enterprise are based on a series of qualitative elements obtained from: *i*) the brief historical profiles that the source contains for each firm; *ii*) the notes in the Mediobanca volumes; *iii*) the historical profiles reported in the Mediobanca digital archives [R&S Mediobanca various years]; *iv*) information obtained from the ever more numerous company web sites. Use is also made of a few traditional sources on enterprises such as the *Guida Monaci, Il Taccuino dell'azionista* and the *Calepino dell'Azionista* and, in some cases, the histories of single company.

Notwithstanding this qualitative work, the criteria adopted are not exempt from arbitrariness essentially due to the succession of company makeovers. In general, however, we adopted a very broad continuity criterion in case of changes in name, while in the case of mergers and acquisitions we assigned continuity to an enterprise on the basis of localization, proprietary structure and sectorial specificity. Finally, in the case of demergers we assigned continuity to the company that carried on the core business activity of the enterprise, considering diversifications into other activities as new companies. Notwithstanding the stratagems adopted to minimize distortions, the abovementioned problems exclude the possibility of carrying out a rigorous quantitative analysis. It is our belief, however, that the methodology adopted, in line with the main research carried out in other countries [Chandler 1990; Wardley 1991; Carreras and Tafunell 1993; Cassis 1997; Hannah 1976; 1999; Louçã and Mendonça 2002] allows us to furnish useful starting points for the interpretation of the dynamics of Italian big business.

[5] If we had included financial intermediation (section J of NACE classification) companies in the services sample this would have distorted the picture. In the different benchmark years, in fact, banks, financial companies and insurance companies would have taken from 70 to 95 places among the top 100 enterprises in the service sector. This aspect is also discussed in Ville and Merrett [2000, 16].

4. *Big business enterprise in Italy*

As widely documented in historiography, large manufacturing enterprises develop later in Italy than in the main industrialized countries [Amatori 1997]. Furthermore, these enterprises are smaller in size compared to those in the US and the UK [Giannetti and Vasta 2003, 175]. A few data illustrate these characteristics. By comparing the weight of large enterprise on the total national wealth in some countries, we can better understand the entity of Italian lateness. As can be seen in Table 3, already in the years preceding and following World War I, the weight of the assets of the top 25 enterprises on the total GDP was, in the main developed countries, around 10% while in Italy it amounted to less than half. The difficulty in the development of Italian big business is still evident in the Thirties when this quota is equal to 6.1%, while it had reached 23.3% in the UK and 19.4% in the US. The gap between Italy and leader countries vanishes after World War II, when, due to the effect of war damage in the main European countries and to the increase in competition in the US [Galambos 2000], the weight of largest enterprises is scaled down everywhere. In Italy instead it grows considerably, almost reaching UK levels and overtaking the US and Germany.

<insert Table 3>

Extending the analysis to the top 200 enterprises we obtain further confirmation of the delay in the rise of Italian large scale manufacturing enterprise. The quota of the assets of the top 200 Italian manufacturing enterprises on GDP (Table 4, col. 2) remains slightly more than 10% until 1927 showing a wide gap in comparison with the three leading countries (Table 4, col. 3-5). It grows at a sustained rate during the Golden Age, from 26% in 1952 – when it is already at almost 10 points above the 1938 level and higher than the quota of the US and Germany –, to 38.5% in 1971 when it reaches its all-time peak. Subsequently the weight of the leading manufacturing enterprise on GDP decreases, in line with the weight of industry on the total economy, dropping to about 25% in 1981 and 1991. It is, however, the last decade of the last century, as observed in recent literature [Gallino 2003], which sees the decline Italian large scale firms. In the year 2001, in fact, the weight of the top 200 manufacturing enterprises on GDP decreases markedly returning to 16.3%, about the same level as in the Thirties.

These data show the existence of 3 distinct phases that characterize the «parabola» of Italian industry. The first phase, corresponding to the start of the industrialization process, in which serious difficulties are encountered in the adoption of the technologies of the Second Industrial Revolution based on energy intensity and the economies of scale. A second phase beginning in the Thirties, which, also due to the role of the State, sees the rise of large scale enterprises in «new» sectors [Bonelli 1999]. This process becomes decidedly more noticeable during the Fifties and the Sixties, in concurrence with the expansion phase of the fordist enterprise which also allows the attainment of maximum profits levels [Giannetti and Vasta 2003; Vasta 2003]. Finally a third phase, which begins with the petrol crises of the Seventies, marks the decline in the size of industries, leading in the last decade to a strong streamlining of many important strategic sectors for an industrialized country [de Cecco 2000; Sori 2003].

<insert Table 4>

We will now concentrate our attention on the top 200 enterprises in the non-financial service sector (Table 4, col. 6) which also form the basis of the rest of this study. The quota of assets of the top 200 enterprises in the non-financial service sector has a growing weight on

GDP. While, in fact, until after World War II this quota remains fixed at less than 10%, moving from a maximum of 8.5% in 1913 to a minimum of 6.6% in 1936, from 1960 it rises constantly reaching 21.9% in the year 2001. For the first time, at the start of the new century, the quota of assets of the top 200 enterprises in the non-financial service sector on GDP is greater than that of the top 200 manufacturing enterprises. This «overtaking» shows how the process of tertiarization of the Italian economy has, at least in part, also reached big business[6].

Let us now consider the weight of the assets of the top 200 enterprises of the all sectors, with the sole exclusion of financial companies, on GDP (Table 4 col. 7). *In primis* it can be noted that the quota assets/GDP is much higher than that observed for the other two samples (Figure 1). This is due to the combination of two effects: *i)* the strong weight of the non-manufacturing industrial enterprises (mining and, especially utilities); *ii)* the high level of concentration which characterizes all sectors, with the presence of a small number of big enterprises which, in this case are all included in the sample. The trend is also different in comparison to what we previously observed for the top 200 manufacturing and service sector enterprises. A constant growth can be noted in the quota assets/GDP already as early as the Fascist period, mainly as an effect of the considerable acquisition of holdings by the main electrical companies. This growth becomes considerably more marked during the Golden Age period, the assets of the top 200 enterprises reaching 62.3% of GDP in 1971. Subsequently, also due to the reduction of the weight of manufacturing enterprises, this weight dropped below 50% as from 1981.

Let us now see how the sectorial structure of Italian big business changed in the twentieth century. Table 5 shows the sectorial disaggregation for the top 200 Italian enterprises of all sectors, excluding only the financial service companies. The first element to emerge is a substantial structural stability between the first benchmark year, 1913, and the last, the year 2001. The differences, in fact, seem modest: manufacturing enterprises increase from 100 to 108, the utilities drop from 39 to 31 and service enterprises move from 50 to 49. The number of construction firms increases (from 3 to 11) and mining companies decrease (from 5 to 1). This picture of stability seems to demonstrate that there is no structural change within Italian large scale enterprise. If we observe the internal dynamics of the period, however, a few relevant discontinuities emerge, beyond the disappearance, as from 1960, of agricultural forestry and fishing companies which formerly had a few representatives in the sample.

The first element of note regards manufacturing enterprises which, having reached their maximum number in 1971 with 147 companies (73.5% of the total), concurrently with the peak of the Fordist paradigm, subsequently lose ground, returning almost to starting levels. The utilities show even more relevant changes, being affected by the institutional changes that characterized the sector during the period studied. In fact, we can note a strong expansion of the enterprises in the sector in concurrence with the increase in consumption during the Twenties and Thirties, until 1936, when there are 59 utilities among the top 200 enterprises (29.5% of the total). Subsequently, we register a drop that brings the number of utilities among the top 200 enterprises in 1960 to 1913 levels. In 1971, due to the nationalization of electricity that occurred in 1962 [VV. AA. 1989], only 3 companies remain in the sample. Finally, in the year 2001, the number of companies increases again considerably as a consequence of the process of privatization of ENEL, which initiates company fragmentation. The combined effect of the liberalization of the energy sector and the law on local autonomy, which gives the municipalities broad scope in the management of public services [Giuntini

[6] To some extent this growth is due to the «entry» into the sample, thanks to their transformation in joint stock companies, of 4 public companies which manage the Italian railway system: Rete Ferroviaria Italiana (RFI), Trenitalia, Ferrovie dello Stato (FF.SS.) and Italferr. Without the weight of these companies the quota of the service sector would still overtake that of manufacturing but with a value of 16.8%.

and Muzzioli 2003] also gives rise to a few multi-utilities, companies that operate on a local basis as suppliers of different services (gas, water and electricity). In the last two decades there is also an increase in construction companies which were few in number until 1936 and completely absent in the first years after World War II. In 1991 there are 16 construction companies present in the sample, which drop to 11 in the year 2001.

<insert Table 5>

As far as services are concerned (we will discuss them in more detail further on), we can observe a downward trend from 1921 to 1952 which brings the enterprises in the top 200 in this sector from 54 to 29. Subsequently considerable growth takes place, which brings the number of companies in the year 2001 to the same levels as 1913.

Observing the sectorial distribution of the assets of the top 200 enterprises of all sector (Table 6) we can detect further elements for analysis. The first regards the trend of the manufacturing sector which parallels, even though in a less marked manner, the abovementioned trend relating to the number of companies, with a peak in 1971 of 57.8% of the total and a subsequent streamlining due to which the sector is unable to reach the quota of 30% in the year 2001. The weight of the utilities shows a less seesaw movement than that observed previously for the number of companies in that the trend in this case is not influenced by institutional changes. An interesting element emerges with regard to construction firms in which the increase in number observed in the last decades has no corresponding increase in terms of weight of assets on the total. Finally, as regards services, we can observe how the overall performance shows marked differences to what we observed previously in terms of number of enterprises. In comparison with the results deriving from the number of enterprises, however, a strong growth emerges in the last decade, with the weight of the assets reaching 42.2% of the total in the year 2001, achieving first place among the sectors taken into consideration[7].

<insert Table 6>

The tertiarization of Italian large scale enterprise therefore, takes place in a peculiar manner. Service sector enterprises do not significantly increase as a presence within the top 200 enterprises, while their weight in terms of assets rises considerably. This is ascribable to two phenomena: *i*) enterprises in the service sector increased markedly in size as compared to those in other sectors; *ii*) the sectorial matrix covered by the enterprises in the services does not grow in a significant manner. It is in fact the enterprises that manage services with a low competitive level that, for the most part, determine the structural shift of large scale enterprise towards the service sector.

The analysis of the main companies, those placed in the top 10 positions of the ranking (Tables 7-8), permits the observation of a few interesting dynamics. In 1913, 4 transport companies, 3 of which are railway firms with the Società Italiana per le strade ferrate del Mediterraneo in first position, are present among the top 10. Notwithstanding the nationalization of railways in 1905 [Giuntini 1999], in fact, Italian railway companies remain, at least until the eve of World War I, at the top of the ranking, acting, as illustrated by the Chandlerian model, as an important means of diffusion of the new organization and managerial models and as a breeding ground for the formation of the country's industrial élite [Merger 1992]. After the War, the railway companies progressively disappear from the top positions, the State in fact takes over the major part of the railroads: some companies

[7] As we have seen previously (cfr. note 5), without the weight of railways system companies the weight of the service sector would still be in first place but with a percentage quota of assets of 34.6%.

transform themselves into financial companies, others continue to manage secondary railroads. The War also represents a *caesura* for Italian big business with the rise of firms engaged in the technological production of the Second Industrial Revolution. In 1921 the first 3 companies in the ranking are in fact manufacturing companies (Ilva, Ansaldo and Fiat) and another 3 (Montecatini, Breda and Pirelli) are within the top 10. The development of large scale enterprise and the post war increase in consumption permit the rise of the electrical firms. As from 1927, 4 electrical companies are in the top 10 positions among which Edison and Sip. In 1936 the number of electrical companies in the top 10 rises to 6 and, until 1960, at least 4 of these – Edison and Sip in a stable manner –, remain in the top 10 positions of the ranking. The nationalization of electricity, with the creation of ENEL – which becomes the foremost Italian enterprise in terms of assets –, leads to a reshuffle at the summit of Italian big business. In 1971, 5 manufacturing firms are among the top 10 companies, of these only FIAT has been present since 1921. Yet again in 1991, 4 manufacturing enterprises are present among the top 10: besides Fiat, Ilva, Fincantieri and the IBM Semea, a company belonging to the ICT sector. In the year 2001, as a confirmation of what was previously observed relative to the decline of Italian industrial enterprise, no manufacturing companies are present among the top 10 Italian enterprises. At the summit of the ranking there are 5 utilities, 4 service companies, and 1 mining company.

<insert Tables 7 and 8>

The overall dynamics of Italian large scale enterprise, illustrated with the aid of several indicators (weight on GDP, sectorial presence and composition of assets relative to the top 10, 25 and 200 enterprises), seem to be ascribable to the action of two factors. The first, operating on a global scale, regards the changes brought by technical progress with the succession of «technological waves» that accompany it; the second, operating at a national level, regards institutional changes.

During the first phase, transport enterprises occupy a prominent position in the ranking, while manufacturing enterprises, mainly engaged in traditional activities of textile and food production, are in the last positions. Subsequently, also thanks to the nationalization of railways which marks the disappearance of railway enterprises, and with the introduction of the technologies of the Second Industrial Revolution, the role of the manufacturing enterprises becomes consolidated. The private electrical enterprises that manage the regional electrical systems emerge at the same time. The nationalization of electricity causes the disappearance of electrical enterprises which, for the most part, are substituted by manufacturing enterprises which reach their peak in 1971. The decline of the leading manufacturing enterprises in the Seventies and Eighties proceeds slowly and is characterized by great turbulence due to the rise of the Third Industrial Revolution enterprises and to the streamlining of mature sectors [Giannetti and Vasta 2003]. In the last decade, this process, as illustrated by all the indicators undergoes a sudden acceleration. However, as we have seen, the streamlining of the manufacturing enterprises is only partially connected to the full development of large scale service sector enterprise. The latter expansion takes place largely due to companies that operate in oligopolistic and sometimes in monopolistic conditions, as in the case of railways and in the network services more generally.

As we have seen, institutional dynamics have a considerable influence on the performance of Italian big business. It is widely known that the role of the State-owned enterprise is fundamentally important in the case of Italy, especially as regards to large scale enterprise, as can be seen from the list of enterprises in the various samples. This theme, even though it has been at the centre of Italian historiographical debate [Bonelli 1978; Posner and Woolf 1967; Barca and Trento 1997; Amatori 2000; Toninelli 2003], cannot be treated

exhaustively due to the lack of a precise mapping of the extremely changeable boundaries [Arrighetti, Stansfield and Virno 1982; Bognetti and Spagnolo 1992] of the Italian State-owned enterprise. It is, however, possible to make a few considerations, limiting the analysis to the top 10 enterprises. As early as the Thirties at least 2 companies (marked with * in table 8) among the top 10 are owned by the State. From 1971, in concurrence with the redefinition of sectorial equilibria, the presence of the State is considerably stronger: 8 companies among the top 10 are State-owned. Once again, in the year 2001, notwithstanding the fact that Italy in the Nineties is involved in one of the greatest privatization processes regarding Western countries [Zanetti and Alzona 1998; Affinito, de Cecco and Dringoli 2000], and also as an effect of the heavy streamlining of the main industrial enterprises, 8 among the top 10 Italian enterprises are still State-owned.

5. *The sectorial structure of big business in the service sector*

After having analyzed the general dynamics of Italian big business, we will now concentrate our attention on large scale enterprise in the service sector observing how the top 200 companies in the sector evolve over time. The limited presence of services enterprises in the top 200 enterprises, if compared with the weight the sector has acquired within the Italian economy, is linked to the poor capacity for growth shown by these enterprises. The large scale enterprises in the services are, in fact, characterized during the twentieth century by great turbulence. As in the case of manufacturing firms [Giannetti and Vasta 2003], we can note, the inability of the Italian large scale enterprises to consolidate their position once they have reached the summit of the ranking. As can be seen from Table 9, only two companies are persistently present in the top 200 for all the benchmark years; 4 are present for 9 years, 6 for 8 and another 9 are present in the top 200 for 7 of the benchmark years considered. Only two enterprises, apart from the two persistently present, are in the top 200 in the initial year and in the final year.

<insert Table 9>

On the whole the dataset of the non financial service sector enterprises contains 1,184 companies for a total of 2,000 available positions (200 enterprises for each of the 10 years selected). Two-thirds of the sample (791 enterprises) appear in the list only once, while 205 are present for two benchmark years. Each enterprise therefore, holds 1.69 positions in the dataset. The same operation carried out for manufacturing enterprises, in comparison, yields 2.3 positions [Vasta 2004]. From this it is evident how enterprises in the service sector are characterized by an even greater turbulence than the already considerable turbulence pertaining to Italian manufacturing enterprises.

The most significant element that arises when reading the list of the enterprises with the most presences (Table 10) is that only a few are among the most important companies of the country. On the contrary, there are often companies which never reach the absolute summit of the ranking. As we have seen, only two companies are present for all the benchmark years from 1913 to 2001. One is a maritime shipping company, the NAI (Navigazione Alta Italia) acquired in 1997 by the Navigazione Montanari from which it acquires its new firm name, and the other is the Ferrovie Nord Milano, a firm which handles railroad links between Milan and the suburbs. The NAI never reaches the summit of the ranking even though until 1960 it is in a stable position among the top 50 Italian service enterprises. The Ferrovie Nord Milano, is among the top 30 companies until 1960, losing positions in the ranking in the last years.

The 4 companies present in 9 benchmark years operate in different sectors: the Risanamento Napoli is in the real estate sector; the Sita, a company first belonging to the Fiat

group and subsequently acquired by Ferrovie dello Stato, is involved in road transport; the Rinascente remains, from its foundation in 1917, one of the main Italian companies involved in commercial distribution and the Ciga is in the hotel sector.

Of the 6 companies with 8 presences, 4 are transport companies founded in the years between the nineteenth and the twentieth centuries: Gondrand and Saima specialize in the goods delivery; the Strade Ferrate secondarie meridionali in railroad transport and Lloyd triestino di navigazione in maritime shipments. The other two are the Nazionale ferro metalli e carboni, specialised in the trade of raw materials and the Sirti, a company continuously present since its foundation in 1921, which installs telecommunication networks.

In the group of companies with 7 presences we find 3 transport companies, among which the Autostrada Torino-Milano, 2 real estate companies, 1 commercial company and 2 very important companies. The first, the Rai, the State-owned radio and television company, founded in 1924 remains stably among the top 20 Italian services companies until the year 2001; while the second, Italcable, founded in 1921 and specialised in telecommunication networks, remains among the top 20 Italian companies until 1991.

<insert Table 10>

A further element that reinforces the hypothesis of turbulence among the Italian large scale services enterprises derives from the comparison between the average rankings for two consecutive years among the enterprises that survive (Table 11). In general, we can observe that the firms able that manage to survive in the interval between two benchmark years are unable to improve their ranking. In the majority of cases, in fact, there is a sometimes even consistent downward movement in the average position, as for example, between 1913 and 1921. An exception to this phenomenon takes place between 1927 and 1936 when the ranking of the permanent enterprises considerably improves, moving from the 99^{th} position to 75^{th} position. Of particular relevance is the decline registered in the interval between 1936 and 1971 when the position of permanent enterprises considerably worsens. The same phenomenon occurs in the last decade analyzed, while there is a slight improvement between 1971 and 1991.

<insert Table 11>

By observing the transition between the single benchmark years, as reported in Table 12, we are able to distinguish the phases of major turbulence and advance a series of hypotheses on their causes. It is only in the period from 1952 to 1960 that more than 50% of the same enterprises remain in the sample, while in the other intervals more than half of the enterprises change from one year to another. The periods of major turbulence occur between 1913 and 1921, from 1971 to 1981 and in the last decade. The turbulence, in contrast to the manufacturing sector [Vasta 2004], does not seem ascribable to the impact of technological change (with the exclusion of the last decade).

<insert Table 12>

From Table 13 we can, in fact, note how this is essentially due to changes taking place in three sectors: wholesale trade, water transport and real estate. In the first case, the constant turbulence confirms the inability of commercial enterprises to consolidate their increase in size, which is often linked to the cyclic trend of the economy. The commercial sector is always very fragmented and leading enterprises do not seem able to emerge [Zamagni 1981].

<insert Table 13>

In the second case it seems ascribable to the degree of international openness of the Italian economy in the different periods: we can observe, in fact, a certain stability in the autarchic period, while during the Golden Age, a phase characterized by a strong increase in commercial exchange, the hierarchies are redefined with the rise, often only temporary, of several enterprises and the departure of others that had formerly occupied the top positions. Finally, in the third case, the real estate sector, the high level of turbulence is a specific characteristic of the sector. Real estate enterprises, in fact, were founded for site development. Once the construction of the buildings ended, the latter were sold and the company in the majority of cases ceased to exist or reduced its activities.

It is only in the last decade that the high level of turbulence involves all the sectors in a more homogenous manner and becomes stronger in the sectors linked to ICT.

The high level of turbulence that, as we have seen, characterizes the dynamics of the Italian big business causes a strong variability in the sectorial structure and this is evident both from the number of presences (Table 14) and the quota of assets (Table 15).

<insert Tables 14 and 15>

On the eve of World War I 57% (114 presences) of the top 200 Italian enterprises in the service sector operated in the transport sector, mainly in land transport, and especially in railroads and tramways. This weight is even more evident if we look at the quota of assets, which 69.9% of the total (52.8% for railroad enterprises). The nationalization of the railway system in 1905 did not therefore, prevent the railway companies from remaining at the summit of the Italian big business, with 5 companies among the top 10 positions. The presence of enterprises that manage tramway transports on a local basis is also significant. Still in the transport sector the presence of the shipping companies is conspicuous, with 21 presences in the top 200 and with 15% of the assets. The other two sectors with the major number of presences are the commercial sector with 32 companies, of which 29 specialised in wholesale trade, and the real estate sector with 33 enterprises. In terms of assets however, the weight of the real estate sector amounts to 17.3% of the total, while the commercial sector only amounts to 8.3%, as further proof of the difficulties in development encountered by the commercial distribution. There are also 12 companies managing the first hotels in the country and a further 5 specialised in activities linked to spa tourism.

During the period between the two World Wars a few significant changes can be noted even though, in general, the sectorial structure does not undergo any dramatic transformation. The transport sector greatly reduces its weight among the top 200 enterprises, with 72 companies in 1936 (43 less than in 1913), and only 34.7% of assets compared to 70% in 1913. It is interesting to note how only 2 companies remain among the top 10 in 1936. Real estate sector increase its weight considerably with 58 presences in 1936, compared to 33 in 1913 and place 2 companies among the top 10. There is also a slight increase in the quota of assets. The commercial sector is substantially stable, probably penalized by the inversion of the economic cycle which leads to a general contraction of consumption after the boom experienced in the Twenties. Between the Twenties and the Thirties telephone companies come to the fore (9 presences) placing 5 companies among the top 10 and reaching 27.6% of the total assets in 1936.

The structure of the Italian big business in the service sector does not appear to have undergone any transformation after World War II, even though a few changes ascribable to the war are evident. There is a considerable reduction in the presence of real estate companies, whose property is probably reduced by war destruction, which also caused a contraction in the

presence of land transport companies. The latter were replaced by water transport companies which experience strong growth and move from 11 presences in 1936 to 44 in 1952 taking advantage of the boom in water transport that temporarily replaced land transport.

The Golden Age period, instead, presents various changes with modernization taking place within the sectors of the services. In the commercial sector, wholesale trade businesses remain stable, but overall there is a growth in the presence of commercial enterprises especially due to two phenomena *i*) the increase in companies handling automobile sales, the sale of spare parts and fuel; *ii*) the growth of companies engaged in retail trade. If we observe the quota of assets we can note that this growth has a slower progress, which demonstrates that the boom in the sector also gave rise to increased competition.

In the transport sector there is a strong reduction in enterprises of land and water transports, while there is a strong growth of auxiliary companies which increase from 16 to 34 and move from 3.7% of assets to 27.7% from 1952 to 1971. This phenomenon, as already observed for the commercial sector, is linked to the diffusion of the automobile with the great campaign for the construction of the Italian motorway system. In 1971, in fact, 4 enterprises engaged in the management of the motorways were positioned among the top 10 enterprises in the service sector. The presence of companies supplying services to businesses also emerges in a significant way, moving from 4 presences in 1952 to 13 in 1971 even though their weight on the total assets remains small, amounting to 3% of the total. In this phase, the sector is characterized by companies specializing in collecting money and in advertising.

If, therefore, the period of greatest growth of the world economy, during which Italy modifies its sectorial structure, shows a general modernization of the compartment, the major changes are still linked to the rapid process of diffusion of the automobile, the «fourth technological wave» according to the classification of technological dynamics proposed by Freeman and Soete [1997]. The process of diffusion of the automobile took place with delay in Europe as compared to the US, but from 1950 to 1970 it grew at a spectacular rate. In Italy, for example, the quota of automobiles per 1,000 inhabitants increased from 7 to 192 units [Deaton 1976].

The last three decades of the twentieth century coincide with the advent of the ICT society characterized by the diffusion of the computer technologies which have led to a general streamlining of industrial activities to the advantage of the service sector. For Italy, as we have seen from the macroeconomic data presented in paragraph 2, it is exactly in this last period that the service sector «overtakes» the industrial sector in terms of number of employees. The changes occurring within the structure of large scale service enterprise reflect the discontinuity of the «fifth technological wave» [Freeman and Soete 1997] which marks the movement towards the «informational society» [Castells 1996]. The most relevant changes in terms of proportions occur as an effect of the strong growth of telecommunication enterprises. Between 1981 and 1991, while remaining unchanged in numerical terms, they move from 33.5% to 44.9% quota of the assets, while in the following decade they reach 17 presences while maintaining the same quota of assets as in 1991. This result, however, is underestimated due to the effect of the «entry», in the year 2001 of the companies belonging to the Italian railroads system[8]. The boom registered can be ascribed in large part to the liberalization of telephone services, especially those in the mobile telephony. The magnitude of the transformations linked to technological change is well represented also by the growth of companies specialised in supplying computer services (hardware, software and integrated solutions). This sector, absent until 1971, had 2 presences in 1981 which, in 1991 increase to 10 and reach 30 a decade later. For the major part these are medium large companies which

[8] Not taking this phenomenon, caused by institutional changes, into consideration would lead the telecommunications compartment, in the year 2001, to amount to over 55% of the total assets in the service sector.

overall, in the year 2001, make up only 3% of the total assets. The structural change linked to the advent of the new «technological waves» is clearly visible also in the growth of the presence of the companies in the Research and Development (R&D) compartment which move from 0 to 5 and those engaged in other business activities which grow from 13 to 18 even though, in both cases, their weight in terms of assets remains rather small.

To further highlight the transformation occurring in the last decades in concurrence with technological change, in Table 16 we made use of the Soete and Miozzo [1989] classification in order to subdivide the enterprises in the sample[9].

<insert Table 16>

The results that emerge permit us to perceive two aspects. In the first place the strong growth, in terms of presences, of the most high-intensive technological enterprises, that of specialised category: these in fact move from 14 to 56 presences between 1971 and the year 2001. Their weight in terms of assets grows somewhat slower moving from 3.1% in 1971 to 11.4% in 1991. There is a further drop to 8.3% in the year 2001 due to the already mentioned effect of the transformation into joint stock companies of the railroad companies. It is evident, therefore, how the most technological enterprises although numerous among the top Italian companies, remain small in size. In the second place the growth, in the last decade, of the telecommunications enterprises, classified in to scale category, both in terms of presences (from 4 to 17) and in terms of assets. The latter, in fact, rise, if we do not take in to account the railway companies, from 44.9 in 1991 to 57.1 in 2001.

6. *Conclusions*

The strong development of the service sector that characterizes, though with the delay typical of a latecomer country, the Italian economy, is only partially observable through the study of the dynamics of Italian big business. If on the one hand, we can observe how the top 200 enterprises in the service sector have more than doubled their weight compared to national wealth in the period examined, on the other hand, in analyzing the overall top 200 enterprises, we obtain contrasting information. The Italian large scale service enterprises do not, in fact increase their presence within the group top Italian enterprises and even the increase in the quota of assets held by service companies, especially evident in the last decade, is determined more by the contraction in the weight of manufacturing enterprises than by a consistent capacity for growth in terms of size. This, furthermore, is essentially ascribable to the growth of enterprises involved in activities with a low level of competition such as railway services, postal and telephone services.

The dynamics of top 200 service enterprises are characterized by an even greater turbulence than the already extremely elevated one shown by the top manufacturing enterprises [Giannetti and Vasta 2003]. If, in this last case, the dynamics observed clearly show the effect of the sequence of «technological waves» that characterize the twentieth century, as far as service enterprises are concerned these are instead ascribable to the multiplicity of causes that mark the different phases.

In the first place, it emerges that the turbulence observed, which determines the structural change, is for the most part due to the changes taking place in the long run in three sectors (wholesale trade, water transport and real estate). These changes are respectively ascribable to: *i*) the persistence of a highly fragmented distributive system; *ii*) the different degree of international openness that characterizes the different phases of development of the

[9] For further discussions on relation between service sector and technological change, see the essays in Metcalfe and Miles [2000].

Italian economy; *iii*) the peculiarity of real estate companies that are characterized by a life cycle linked to site development.

Secondly, institutional changes play an important role, with the succession of nationalization and privatization processes that typify, for example, transports and communications, but that in Italy also have an effect on the other sub-sector services.

The changes due to the succession of «technological waves» that characterize contemporary economic development together have a less pronounced effect on the sectorial structure of large scale service enterprise than on the manufacturing enterprises. This impact is not, however, null but rather seems to have a different weight according to the advent of the different «technological waves». It is limited for the «entry» of the telephone companies during the phase of the diffusion of the technologies of the Second Industrial Revolution. This is typified by a slight growth of the enterprises gravitating around the automobile industry (automobile sales, sale of petrol, management of motorways) in concurrence with the «fourth technological wave», that of petrol and mass production. It has, however, a very strong impact in concurrence with the diffusion of the «fifth technological wave» linked to the advent of informational society. In line with what we observed in relation to the trend in employment, where there is a strong increase in those employed in services to businesses, it is in the last three decades and in particular in the Nineties that, there is a development, on the one hand of the telecommunications enterprises (especially in mobile telephony and data transmission), and on the other hand of those companies involved in supplying computer services and in R&D activities.

If, therefore, technical change seems to have had a modest effect on the structure of the Italian large scale service enterprises both in the period of the diffusion of the technologies of the Second Industrial Revolution and in the phase of the affirmation of the «fourth technological wave» of petrol and mass production, the effect of the ICT technologies seems to take on a fundamental role.

Tab. 1. Distribution of labour force by sector in Italy (1881-2001)

Year	Agriculture	Industry		Services		Total
		Total	Only manufacturing	Total	Except finance and public administration)	
1901	63.1	19.9	15.7	17.1	14.9	100
1911	59.1	23.5	18.6	17.4	15.0	100
1921	59.1	22.6	17.1	18.4	15.5	100
1931	53.8	25.4	19.2	20.8	17.0	100
1936	52.0	25.6	19.4	22.5	18.6	100
1951	44.3	31.0	22.3	24.8	18.0	100
1961	30.0	39.8	26.8	30.2	22.3	100
1971	17.2	44.4	32.2	38.4	27.4	100
1981	11.1	41.5	30.7	47.4	32.3	100
1991	7.6	35.6	25.8	56.7	33.9	100
2001	5.3	31.9	23.7	62.8	n.a.	100

Source: our own elaboration on Zamagni [1987], Censimenti della popolazione [1991], Mitchell [2003a].

Tab. 2. Distribution of labour force by sector in selected countries (1900-2001)

Japan	A	I	S	United States	A	I	S
1900	71.1	14.1	14.8	1900	38.0	30.5	31.4
1910	64.2	18.0	17.9	1910	32.1	32.1	35.9
1920	54.6	21.4	23.9	1920	27.6	34.6	37.7
1930	49.5	20.9	29.6	1930	22.6	31.9	45.4
1940	45.0	27.1	27.9	1940	18.3	33.9	47.8
1950	48.4	22.6	29.1	1950	12.2	35.5	52.3
1960	30.1	27.5	42.3	1960	6.8	36.6	56.6
1970	19.4	34.4	46.2	1970	4.3	33.8	61.9
1980	11.0	34.2	54.8	1980	3.1	27.9	69.0
1990	7.3	34.1	58.6	1990	2.9	25.9	71.2
2001	5.3	32.2	62.5	2001	2.4	18.8	78.8
Germany	A	I	S	United Kingdom	A	I	S
1900	n.a	n.a	n.a	1900	9.6	54.4	36.0
1907	37.1	41.2	21.8	1910	9.2	54.1	36.7
1925	30.7	41.7	27.6	1920	7.2	48.6	44.2
1933	29.0	40.4	30.6	1930	6.0	46.5	47.5
1939	26.0	42.2	31.8	1940	n.a	n.a	n.a
1950	19.2	45.9	34.9	1950	5.1	49.3	45.6
1960	13.5	47.5	39.1	1960	3.7	47.8	48.5
1970	7.5	48.1	44.4	1970	3.0	38.9	58.1
1980	5.9	44.7	49.4	1980	2.3	37.0	60.7
1990	3.0	35.0	62.0	1990	2.1	27.9	70.0
2001	2.6	32.6	64.9	2001	1.4	25.0	73.6
France	A	I	S				
1900	41.4	29.4	29.2				
1910	41.0	33.1	25.9				
1920	41.5	29.3	29.1				
1930	35.6	33.3	31.1				
1940	n.a	n.a	n.a				
1954	27.0	36.3	36.7				
1962	20.0	38.1	41.9				
1968	15.7	40.4	43.9				
1982	8.2	34.2	57.6				
1990	6.4	28.8	64.9				
2001	4.1	22.3	73.6				

Legend: A = Agriculture; I = Industry; S = Services
Source: our own elaboration on Mitchell [2003a; 2003b; 2003c]; OECD STAN database.

Tab. 3. Total asset of the 25 top industrial firms on GDP for selected countries

	1913-1919	1927-1930	1948-1954
United States	13.1	19.4	11.0
Britain	9.7	23.3	18.0
Germany	7.8	12.2	9.4
Japan	10.1	16.9	n.a.
Italy	4.7	6.1	14.8

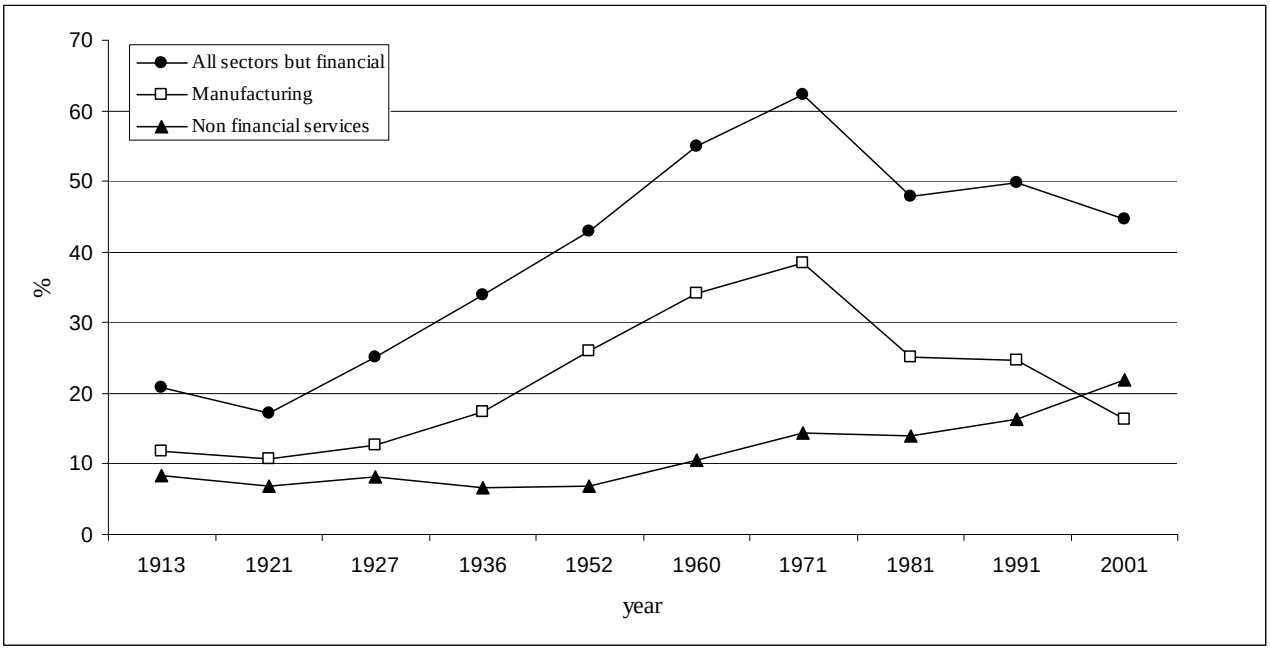
Note: market capitalisation used for Britain. The dates are as follows: US (1917; 1930; 1948), Britain (1919; 1930; 1948), Germany (1913; 1929; 1953), Japan (1918; 1930; 1954), Italy (1913; 1927; 1952).
Source: our own elaboration on Chandler [1990], Fruin [1994], Mitchell [2003a; 2003b; 2003c] and, for Italy Imita.db, Rossi, Sorgato and Toniolo [1993], Istat [2004].

Tab. 4. Total asset of the 200 top firms on GDP (1913-2001)

Years	Italy manufacturing	US manufacturing	D manufacturing	UK manufacturing	Italy non financial services	Italy All sector (excluding financial services)
1913	11.8	28.2 (1917)	16.3	19.6 (1919)	8.5	20.7
1921	10.8				6.8	17.1
1927	12.7	37.9 (1930)	21.0 (1929)	39.8 (1930)	8.2	25.2
1936	17.4				6.6	34.0
1952	26.0	21.9 (1948)	18.7 (1953)	33.8 (1948)	6.9	42.9
1960	34.2				10.6	55.0
1971	38.5				14.3	62.3
1981	25.2				13.9	47.9
1991	24.8				16.4	49.8
2001	16.3				21.9	44.7

Source: our own elaboration on Chandler [1990], Mitchell [2003a; 2003b] and, for Italy Imita.db., Rossi, Sorgato and Toniolo [1993], Istat [2004].

Figure 1. Total asset of the 200 top firms on GDP (1913-2001)



Source: as for table 4.

Tab. 5. Distribution of top 200 enterprises by sector (1913-2001). All enterprises but financial

Sector	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Agriculture, hunting and forestry	3		5	3	2					
Fishing		1								
Agriculture, forestry and fishing	**3**	**1**	**5**	**3**	**2**	**0**	**0**	**0**	**0**	**0**
Mining of energy producing materials	1		1	1	2	6	4	4	2	1
Mining except energy producing materials	4	4	5	3	4	3	2	1		
Mining and quarrying	**5**	**4**	**6**	**4**	**6**	**9**	**6**	**5**	**2**	**1**
Food products and tobacco	15	10	8	10	10	6	10	8	16	12
Textiles and dressing	30	28	19	14	17	10	7	5	4	3
Leather and leather products	1	1								1
Paper products, publishing and printing	2	1	2	1	2	3	8	3	3	6
Coke and petroleum products			1	5	15	19	22	14	14	9
Chemicals and chemical products	8	8	16	17	17	22	23	18	20	17
Rubber and plastic products			1	3	3	3	2	5	3	2
Other non-metallic products	3	3	2	2	5	8	9	7	9	5
Basic metals and metal products	15	17	13	18	19	18	23	17	10	8
Machinery and equipment	5	2	1	3	5	3	9	18	9	9
Electrical and optical equipment	5	7	5	6	13	13	22	21	30	21
Transport equipment	14	20	15	18	13	11	11	15	13	15
Other manufacturing	2	3	1	1	1	1	1			
Manufacturing	**100**	**100**	**84**	**98**	**120**	**117**	**147**	**131**	**131**	**108**
Electricity, gas and water supply	39	41	55	59	43	40	3	3	7	31
Construction	3		3	4			3	15	16	11
Industry	**142**	**141**	**142**	**161**	**163**	**157**	**153**	**149**	**154**	**150**
Wholesale and retail trade; repair	4	12	8	3	3	4	4	12	9	12
Hotels and restaurants	1		1	2	1	2	1	1	1	
Transport, storage and communication	37	29	29	22	20	24	31	21	21	25
Real estate, renting and business activities	8	12	8	4	3	3	4	11	10	9
Other community, social and personal services		1	1	1	2	1	1	1	3	3
Services	**50**	**54**	**47**	**32**	**29**	**34**	**41**	**46**	**44**	**49**
Total	200	200	200	200	200	200	200	200	200	200

Source: our own elaboration on Imita.db.

Tab. 6. Percentage of assets of top 200 enterprises by sector (1913-2001). All enterprises but financial

Sector	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Agriculture, hunting and forestry	1.2	-	1.5	1.2	0.2	-	-	-	-	-
Fishing	-	0.2	-	-	-	-	-	-	-	-
Mining and quarrying	2.5	2.7	1.7	1.1	1.5	3.6	4.0	7.0	4.9	3.2
Manufacturing	43.9	51.6	38.2	42.4	54.1	55.3	57.8	47.4	44.1	29.4
Electricity, gas and water supply	21.1	17.2	34.9	42.3	32.2	26.9	20.0	17.4	21.4	23.2
Construction	1.0	-	0.6	1.6	-	-	0.5	4.7	2.7	1.9
Wholesale and retail trade; repair	1.5	5.8	5.0	0.7	0.6	0.9	1.2	2.9	2.2	2.9
Hotels and restaurants	0.4	-	0.2	0.3	0.2	0.3	0.1	0.2	0.1	-
Transport, storage and communication	23.0	18.2	15.2	9.0	9.8	11.7	15.0	15.4	20.7	36.2
Real estate, renting and business activities	5.5	3.9	2.2	1.4	0.9	0.7	0.9	4.5	2.6	1.9
Other community, social and personal services	-	0.4	0.3	0.2	0.4	0.6	0.6	0.6	1.3	1.2
Total	100	100	100	100	100	100	100	100	100	100
Services	30.5	28.4	23.1	11.6	11.8	14.2	17.8	23.5	26.9	42.2

Source: our own elaboration on Imita.db.

Tab. 7. Distribution of top 10 enterprises by sector (1913-2001). All enterprises but financial

Sector	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Agriculture, hunting and forestry										
Fishing										
Mining and quarrying		1					1	2	2	1
Manufacturing	4	6	4	4	5	4	5	4	4	
Electricity, gas and water supply	1		4	6	4	5	2	1	2	5
Construction								1		
Wholesale and retail trade; repair		1	1							
Hotels and restaurants										
Transport, storage and communication	4	2	1		1	1	2	2	2	4
Real estate, renting and business activities	1									
Other community, social and personal services										
Total	10	10	10	10	10	10	10	10	10	10

Source: our own elaboration on Imita.db.

Tab. 8. Ranking of top 10 enterprises (1913-2001). All enterprises but financial

Ranking	1913		1921		1927		1936		1952	
	Name	Assets	Name	Assets	Name	Assets	Name	Assets	Name	Assets
1	Società italiana per le strade ferrate del mediterraneo	230	ILVA	1,012	Edison	1,810	Edison	3,048	Edison	391,867
2	ILVA	144	Italiana Gio. Ansaldo & c.	969	SNIA Viscosa	1,744	Montecatini	1,852	FIAT	293,070
3	Italiana Gio. Ansaldo & c.	106	FIAT	571	Montecatini	1,343	SME	1,780	Montecatini	291,421
4	Navigazione generale italiana	106	Navigazione generale italiana	442	FIAT	1,085	Generale elettrica cisalpina	1,776	SIP	171,413
5	Compagnia reale delle ferrovie sarde	95	SNIA Viscosa	391	SIP	1,003	SADE	1,329	SME	145,947
6	Società anglo romana per l'illuminazione di Roma	92	Montecatini	377	Terni	955	SIP	1,308	Terni*	140,334
7	Società italiana per le strade ferrate secondarie della Sardegna	90	Società italiana per le strade ferrate del mediterraneo	325	Navigazione generale italiana	806	ILVA*	1,265	SADE	125,087
8	Istituto romano di beni stabili	84	Società italo americana pel petrolio	308	ILVA	760	FIAT	1,099	ILVA*	121,030
9	Terni	72	Breda	300	SME	631	Terni*	1,092	STIPEL	108,189
10	Alti forni fonderie e acciaierie di Piombino	65	Pirelli	279	Società italo americana pel petrolio	605	Cantieri Riuniti dell'Adriatico*	977	Cantieri Riuniti dell'Adriatico*	107,636
Ranking	**1960**		**1971**		**1981**		**1991**		**2001**	
	Name	**Assets**	**Name**	**Assets**	**Name**	**Assets**	**Name**	**Assets**	**Name**	**Assets**
1	FIAT	861,964	ENEL*	8,205,602	ENEL*	37,348,475	ENEL*	109,148,000	RFI – Rete Ferroviaria Italiana*	85,733,232
2	Montecatini	681,269	Montedison	2,927,956	SIP*	20,550,384	SIP*	90,913,864	Telecom Italia*	85,218,833
3	Pirelli	556,936	FIAT	2,765,773	Italsider*	9,552,859	FIAT auto	28,831,921	Poste italiane*	74,165,409
4	Edison	476,245	SIP*	2,574,237	AGIP*	6,907,930	SNAM*	19,264,155	ENEL*	63,529,135
5	Edisonvolta	356,380	Italsider*	2,444,718	ENI*	6,903,654	ENI*	17,345,358	ENI*	34,179,292
6	SIP	288,533	ENI*	1,369,341	FIAT auto	6,618,637	Autostrade*	14,570,894	ENEL distribuzione*	33,136,701
7	Italsider*	273,283	Autostrade*	1,316,069	SNAM*	5,251,381	AGIP*	14,477,605	SNAM*	27,327,942
8	STIPEL*	267,993	AGIP*	1,217,511	FIAT veicoli industriali	3,876,609	IBM semea	12,372,988	TIM - Telecom Italia Mobile	27,319,081
9	SADE	265,458	ANIC*	745,033	AGIP petroli*	3,725,799	ILVA*	12,318,839	ENEL produzione*	25,527,017
10	SME	259,757	SNAM*	717,974	Autostrade*	3,605,474	Fincantieri*	10,026,227	SNAM rete gas*	18,889,445

Note: assets in million of current Italian Lira. * State owned enterprise.
Source: our own elaboration on Imita.db.

Tab. 9.Frequency of presence in the top 200 non financial services enterprises (1913-2001)

Frequency of presence	Number of enterprise
10	2
9	4
8	6
7	9
6	15
5	18
4	50
3	84
2	205
1	791
Total	1,184

Source: our own elaboration on Imita.db.

Tab. 10. Rank of surviving (more than 6 presences) non financial services enterprises (1913-2001)

Company	Date of foundation	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
10 presences											
Ferrovie Nord Milano esercizio	1985	9	33	25	5	12	28	53	51	34	123
Navigazione Montanari	1889	39	50	49	38	30	43	131	22	177	77
9 presences											
La Rinascente	1917		11	20	12	21	16	11	12	8	10
Risanamento Napoli	1888	6	14	34	25	17	29	71	114	66	
SITA	1912		71	141	105	36	25	62	123	76	106
CIGA gestioni	1980	19	67	30	21	19	22	37	27		131
8 presences											
SIRTI	1921			36	13	22	24	40	21	9	39
Lloyd triestino di navigazione	1936		12	10		4	8	13	16	25	44
Saima innocente mangili adriatica	1907	66	60	100	50	44	66	123		99	
Strade ferrate secondarie meridionali	1890	26	128	127	27	16	34	50	24		
Gondrand	1901	81	87	111	76	32	44	52	60		
Nazionale ferro metalli carboni	1906	120	69	79	98	94	77	75	120		
7 presences											
RAI - Radiotelevisione italiana	1924				18	11	10	5	7	5	14
Italcable	1921			13	7	13	17	22	19	13	
Autostrada Torino-Milano	1928				17	25	36	41	106	75	45
Autostrade meridionali	1925				49	87	52	93	200	149	190
Ferrometalli Safem	1919		65	120	187	142	119	164		163	
Generale immobiliare di lavori di utilità pubblica ed agricola	1862	7	26	31	14	9	13	9			
Istituto romano di beni stabili	1904	5	22	24	6	14	19	17			
STEFER Società delle tramvie e ferrovie elettriche di Roma	1899	35	94	122	59	33	37	58			
Ferrovie complementari della Sardegna	1911	116	90	102	78	182	55	77			

Note: Name reported is the last one adopted by each company.
Source: our own elaboration on Imita.db.

Tab. 11. Comparison between average ranking for surviving non financial services enterprises for two benchmark years (1913-2001)

Year	Rank	Year	Rank	Year	Rank	Year	Rank
1913	54	1936	74	1971	77	1913	19
1921	90	1952	77	1981	75	2001	87
1921	74	1952	78	1981	74		
1927	77	1960	89	1991	68		
1927	99	1960	68	1991	78		
1936	75	1971	87	2001	89		

Source: our own elaboration on Imita.db.

Tab. 12. Comparison between surviving and «entering» non financial services enterprises (1913-2001)

Period	Number of surviving enterprises	%	Number of «entering» enterprises	%
1913-1921	69	34.5	131	65.5
1921-1927	89	44.5	111	55.5
1927-1936	91	45.5	109	54.5
1936-1952	75	37.5	125	62.5
1952-1960	106	53.0	94	47.0
1960-1971	83	41.5	117	58.5
1971-1981	74	37.0	126	63.0
1981-1991	85	42.5	115	57.5
1991-2001	74	37.0	126	63.0
1913-2001 (mean)	82.9	41.4	117.1	58.6

Source: our own elaboration on Imita.db.

Tab. 13. Distribution of «entering» non financial services enterprises by sector (1913-2001)

Sector	1921-1913	1927-1921	1936-1927	1952-1936	1960-1952	1971-1960	1981-1971	1991-1981	2001-1991
Sale, maintenance and repair of motor vehicles; retail		1	2			7	**11**	8	8
Wholesale and commission trade, except of motor vehicles	**43**	**34**	**22**	**26**	**16**	**22**	**38**	**37**	8
Retail trade, except of motor vehicles and motorcycles; repair	1	1		1	1	6	9	**12**	**11**
Hotels and restaurants	1	**11**	4	5		4	4	3	8
Land transport; transport via pipelines	8	**19**	**16**	**17**	7	2	6	1	4
Water transport	**28**	8	6	**39**	**46**	**21**	9	5	3
Air transport		3	1	2		2	1	1	4
Supporting and auxiliary transport activities; travel agencies	7	3	6	6	4	**22**	**10**	9	**16**
Post and telecommunications		9	1			2			**15**
Real estate activities	**40**	**18**	**42**	**17**	**12**	**13**	**12**		
Renting of machinery and equipment and of personal goods						1		1	4
Computer and related activities							2	**12**	**27**
Research and development							3	3	2
Other business activities		1	3	2	5	7	**16**	**20**	9
Education						1			
Health and social work						1			
Sewage and refuse disposal, sanitation and similar activities									2
Activities of membership organization n.e.c.									1
Recreational, cultural and sporting activities	3	2	4	9	1	4	3	3	4
Other service activities		1	2	1	2	2	2		
Total	**131**	**111**	**109**	**125**	**94**	**117**	**126**	**115**	**126**

Source: our own elaboration on Imita.db.

Tab. 14. Distribution of top 200 non financial services enterprises by sector (1913-2001)

Sector	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Sale, maintenance and repair of motor vehicles; retail			1	3	1	1	8	14	14	15
Wholesale and commission trade, except of motor vehicles	29	56	52	35	38	31	34	49	50	18
Retail trade, except of motor vehicles and motorcycles; repair	3	1	2	2	2	4	11	18	22	18
Hotels and restaurants	12	2	13	12	7	5	6	8	5	13
Land transport; transport via pipelines	80	42	48	49	36	28	11	11	5	6
Water transport	21	36	26	11	44	66	43	20	15	11
Air transport			3	1	2	1	3	3	3	6
Supporting and auxiliary transport activities; travel agencies	13	10	8	11	16	14	34	27	27	30
Post and telecommunications	1	1	9	9	8	8	5	4	4	17
Real estate activities	33	48	31	58	29	26	22	16	2	
Renting of machinery and equipment and of personal goods							1		1	4
Computer and related activities								2	12	29
Research and development								3	4	5
Other business activities			1	3	4	8	13	19	31	18
Education							1			
Health and social work							1			
Sewage and refuse disposal, sanitation and similar activities										2
Activities of membership organization n.e.c.										1
Recreational, cultural and sporting activities	3	3	5	4	11	4	5	4	5	7
Other service activities	5	1	1	2	2	4	2	2		
Total	200	200	200	200	200	200	200	200	200	200

Source: our own elaboration on Imita.db.

Tab. 15. Percentage of assets of top 200 non financial services enterprises by sector (1913-2001)

Sector	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Sale, maintenance and repair of motor vehicles; retail			0.2	1.4	1.7	1.8	2.5	5.4	2.5	1.8
Wholesale and commission trade, except of motor vehicles	7.8	21.2	22.7	8.4	5.5	5.6	4.8	8.9	8.0	2.3
Retail trade, except of motor vehicles and motorcycles; repair	0.5	1.9	1.3	1.5	1.3	1.9	4.3	4.2	5.2	5.5
Hotels and restaurants	2.7	0.5	2.9	3.5	2.1	1.7	1.1	1.3	0.9	1.1
Land transport; transport via pipelines	52.8	17.2	17.9	25.7	9.9	6.5	2.5	2.0	2.5	23.6
Water transport	15.0	38.6	30.4	4.2	30.4	27.3	13.7	6.4	3.2	1.6
Air transport			0.6	0.5	1.1	3.5	5.7	3.7	3.3	2.0
Supporting and auxiliary transport activities; travel agencies	2.1	2.1	1.5	4.3	3.7	9.5	27.7	13.5	13.5	7.0
Post and telecommunications	0.1	0.2	9.9	27.6	30.8	30.0	25.9	33.5	44.9	43.7
Real estate activities	17.3	16.8	10.5	19.8	8.6	6.5	5.5	3.4	0.6	
Renting of machinery and equipment and of personal goods							0.1		0.2	0.5
Computer and related activities								0.1	1.1	3.0
Research and development								0.3	0.3	0.3
Other business activities			0.2	1.2	0.6	1.3	3.0	14.8	9.8	4.5
Education							0.1			
Health and social work							0.1			
Sewage and refuse disposal, sanitation and similar activities										0.2
Activities of membership organization n.e.c.										0.1
Recreational, cultural and sporting activities	0.5	1.5	1.9	1.6	4.0	3.7	2.8	2.2	4.0	2.8
Other service activities	1.1	0.2	0.2	0.4	0.3	0.6	0.2	0.3		
Total	100	100	100	100	100	100	100	100	100	100

Source: our own elaboration on Imita.db.

Tab. 16. The top 200 non financial services enterprises by technological classification (1913-2001)

a. Distribution

Technological category	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Scale	180	194	180	179	176	179	171	162	142	121
of whom communication	*1*	*1*	*9*	*9*	*8*	*8*	*5*	*4*	*4*	*17*
Supplier dominated	20	6	19	18	20	13	15	14	10	23
Specialised	-	-	1	3	4	8	14	24	48	56
Total	200	200	200	200	200	200	200	200	200	200

b. Percentage of assets

Technological category	1913	1921	1927	1936	1952	1960	1971	1981	1991	2001
Scale	95.7	97.9	95.0	93.3	93.0	92.6	92.5	81.1	83.7	87.5
of whom communication	*0.1*	*0.2*	*9.9*	*27.6*	*30.8*	*30.0*	*25.9*	*33.5*	*44.9*	*43.7*
Supplier dominated	4.3	2.1	4.9	5.5	6.5	6.1	4.4	3.7	4.9	4.2
Specialised	-	-	0.2	1.2	0.6	1.3	3.1	15.2	11.4	8.3
Total	100	100	100	100	100	100	100	100	100	100

Note: for details concerning classification, see note 3.
Source: our own elaboration on Imita.db.

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