BANCA D'ITALIA
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A Country for Incumbent Firms? Evidence on Manufacturing Investments in Italy in the 20th Century

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Abstract

This paper studies the evolution of business dynamism in Italy (1903-1971), as measured by the share of investments made by new firms (a share which is arguably inversely related to barriers to entry). For this analysis, I reconstructed a series of tangible investments in the manufacturing sector based on joint-stock firm-level data.
The analysis shows that until the late 1920s overall capital accumulation was largely driven by young firms. A substantial discontinuity emerged after the Great Depression, however, and was to last throughout the decades of the 'economic miracle' (1948-1973), with investments originating mostly from established firms.
The paper presents and discusses suggestive evidence for two institutional explanations which could account for the latter finding. First, the demise of universal banking, associated with the 1926-1936 banking reform, may have constrained the external financing capacity of new firms. Second, a persistent reduction in product market competition resulted from the collusive practices which the Fascist government promoted during the 1930s.

JEL Classification: N24, N64, O14, L43, L60
Keywords: manufacturing investments, business dynamism, barriers to entry, industrialization, collusion in Fascist Italy, banking reform

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Contents

1 Introduction[1]

Italy's long-run growth and industrialization patterns since the beginning of the 20th century are peculiar, calling for a deeper understanding. The country started as a backward and peripheral one compared to the Western front-runners. From 1900 to 1970, Italy underwent significant industrialization and convergence, which accelerated in the post-WWII period, making Italy one of the largest advanced economies. In this period, the share of industrial employment rose from around 20 to almost 40 per cent, reaching similar levels of other advanced economies,[2] real GDP per capita grew by six times, from around 40 to 80 per cent of the average of the leading European partners.[3]

Since the end of the 20th century, this trend has reversed, as the growth rate has turned particularly dismaying in the international comparison (Toniolo, 2013). Weak business dynamism, particularly the lack of growth among the most productive young and small firms, has been a potential explanation for such poor performance (Bugamelli et al., 2018). Without significant barriers to entry, one would expect a substantial contribution to productivity growth through the entry and selection of new firms (De Loecker and Syverson, 2021), but in Italy, this process seems subdued in the international comparison (Manaresi, 2015). This work aims at exploring the extent to which this issue has historical roots.

A potential interpretation relies on a path-dependence process of a coordinated and collusive form of capitalism which, while being able to catch up during the so-called "economic miracle", was unfit to keep pace once being close to the technological frontier, lagging behind in the challenges of technological innovation and globalization from the end of the XX century (De Cecco, 1997; Barca, 1996). New-Schumpeterian growth models suggest that, as an economy approaches the technological frontier, the intensity of competition becomes increasingly crucial for stimulating growth, while, for countries that are lagging behind, limiting competition might be helpful to promote investment (Aghion and Howitt, 2006; Acemoglu et al., 2006). This has been called a potential explanation for why European countries outperformed the USA during the so-called "Golden Age" (1945-1973), a phase of intense capital accumulation and technological catch-up while lagging behind afterwards (Eichengreen, 2007).[4]

Broadly speaking, the long-run evolution of business dynamism is not only a concern for Italy. A declining trend of indicators of entry intensity and job reallocation has been observed since the 1980s in the USA, typically an economy with high levels of creative destruction, and the underlying drivers are still a puzzle (Decker et al., 2014, 2016, 2017). Still, there is an overall lack

[1]I thank Federico Barbiellini Amidei, Federico Cingano, Matteo Gomellini, Francesco Manaresi, Marco Molteni, Alberto Rinaldi, Michelangelo Vasta, two anonymous referees and the participants to the EHES conference 2023, Wien, to the ASE conference 2023, Naples, for precious comments and suggestions. The views expressed herein are those of the author and should not be attributed to the Bank of Italy.

[2]In 1900 the share of industrial employment was 29.4 in France and 54.4 in the UK, in 1973 it was respectively 40.4 and 41.8 (Giannetti and Vasta, 2005).

[3]The average of UK, Germany and France.Source: elaboration based on Bolt and van Zanden (2020).

[4]On the adoption of foreign technology during the Italian catch-up, see Antonelli and Barbiellini Amidei (2011); Barbiellini Amidei et al. (2011).

of quantitative historical reconstructions of business dynamism in advanced economies, arguably a pre-condition to assess and interpret eventual secular trends in this issue.

This paper exploits firms' balance sheet data to reconstruct manufacturing investments in tangible capital over the 1903-1971 period. This allows for a decomposition of investments according to several individual firms' characteristics: age, sector, capital intensity, public vs. private ownership, business group linkages, size, profitability, and headquarters location. The data (Vasta, 2006), which tracks Italian joint-stock companies over an extended period, enables a comparative evaluation of investment patterns over a large set of institutional and economic changes.

The first contribution is to document manufacturing investments in the long run, detailing them according to a wide set of firm-level characteristics, thus providing new insights into the process of Italian industrialization. To the best of my knowledge, this is the first country in which such a historical reconstruction has been produced.

As a second contribution, the focus on the role of new firms' investments allows to significantly improve the understanding of the intensity of competition, and its relationship with industrialization patterns.

Benchmark literature has proxied the long-run evolution of competition in Italian industrial history, using traditional concentration indexes.[5] Notwithstanding the narrative priors on the collusive nature of its capitalism, overall it has not found levels of concentration that are particularly high in the international comparison,[6] or that significantly and consistently increased during the phases of most intense competition restriction (Battilossi, 1999; Giannetti and Vasta, 2006; Barbiellini Amidei and Gomellini, 2017).[7] Still, concentration indexes may proxy at most a static dimension of competition, and it has been largely regarded as outdated in the industrial economics literature. The most innovative and efficient firms might gain market shares, resulting in increasing concentration, but it does not necessarily mean that markets are not contestable (i.e. a firm may exert monopolistic power). Rather, the possibility of free entry (or lack of entry barriers) is what matters in a dynamic perspective, allowing a process of selection and resource reallocation which explains the nexus between competition and growth (Baumol, 1982; Nickell, 1996; Aghion et al., 2015). In other words, shifting the focus on the new firms' contribution provides a more dynamic perspective on competition, following a Schumpeterian approach.

I show that, up to the 1920s, younger firms were responsible for the vast majority of tangible investments. From the 1930s on, we observe a sharp discontinuity, as most of the investments were undertaken by older firms. Even during the peak of industrial growth of the "economic miracle" in the 1950s and 1960s, investments were driven by incumbent firms.

The paper offers two potential explanations related to two major and persistent institutional

[5]For a comparative reference on historical concentration dynamics in the USA, see (Kwon et al., 2023).

[6]It might be interesting to observe that high concentration levels reflect a historical size dualism of Italian firm structure, characterized by few large firms and a plethora of small firms (Giannetti and Vasta, 2005).

[7]Concentration measures have also been employed for correlation with productivity. Both in Italy (Giordano and Giugliano, 2015) and in the UK (Broadberry and Crafts, 1992, 1996) a negative correlation between concentration and sector-level productivity performance was observed in the interwar period. While this evidence is not causal, it might weaken the hypothesis that low levels of competition, proxied by concentration, have helped growth in this period (O'Rourke, 2017).

changes taking place in the 1930s, providing suggestive evidence on this issue. First, a major banking reform was implemented to nationalize banking activities and forbid universal banking; this reform may have restricted external finance opportunities for new firms. Second, during the 1930s a major wave of anti-competition policies took place. Collusive practices and cartelization became not only allowed but even legally mandated by the Fascist regime. In both cases, these changes persisted to a significant extent after the demise of the regime.

The paper develops as follows. Section 2 describes the data and the methodology employed, section 3 displays the investments series, and a number of decomposition according to firms characteristics, section 4 and 5 discuss, respectively, the external finance and collusion explanation and provide supporting evidence, The concluding section (6) offers final remarks and outlines an agenda for future research.

2 Methodology and data

2.1 Data

This work aims at measuring historical tangible investment dynamics by Italian manufacturing joint stock (JS) firms, based on Imita.db (for details, see Vasta (2006)).[8] The dataset covers all JS firms registered on the Italian stock exchanges and corporations whose share capital at the end of the previous balance was greater than a time-varying predetermined threshold.[9] The dataset encompasses main assets and liabilities figures from the balance sheets, location, sector (defined by 1991 Istat classification), foundation year, and, for benchmark years,[10] the board of directors. The foundation year, from which the age variable has been computed is the year of firm incorporation. The dataset has been built aggregating data from reports published[11] every 2 to 4 years, where each report encompassed firms' data of the last few years. A unique code for firms that changed their business name ensures the tracking of business activities. The dataset has been combined with information on firms belonging to the main State-owned groups by Colli and Toninelli (2010). Interlock linkages and State-owned groups, as resulting from board composition in benchmark years, have been interpolated for the other years.[12]

Regarding sample coverage, the dataset consistently covers over 75 per cent of overall JS capital, and more than 90 per cent from 1921 onward (see Figure B1). The firms in the sample account for between 20% and 45% of the entire population of JS firms. In other words, the source excludes a left tail of smaller JS firms that, by definition, account for a relatively small share of asset investments. A comprehensive check of consistency between the sample data and fixed investments in

[8]The database is available online: imitadb.unisi.ithttp://imitadb.unisi.it.

[9]The threshold is set at 1 million Italian lire for each year until 1940, except for 1914, when it amounted to 500,000 lire. In 1952, the threshold was raised to 10 million, to 25 in 1956, 50 in 1961, and to 100 from 1964 on.

[10]Namely: 1911, 1913, 1921, 1927, 1936, 1952, 1960, 1972.

[11]The reports were published by Credito Italiano, one the major Italian banks, until 1926 and after then by the Association of Italian joint-stock companies.

[12]I expect this interpolation to be more reliable the closer a year is to the closest benchmark. Robustness tests restricting the number of years confirm all the findings that are going to be discussed.

the Italian historical national accounts (NA) reconstruction (Baffigi, 2011) is not feasible, as the latter lacks sector-specific investment details. I compute the ratio between observed investments in the *Imita.db*[13] and the NA figures that I expect to be more closely associated with investments in the manufacturing sector, i.e. investments in plants, equipment and machinery. This number increased consistently as the country industrialized (arguably because of a reduction of the weight of both agriculture and industrial micro-enterprise), up until reaching more than 80 per cent of the national account figures (see Appendix A for details). More precise estimates on investments restricted to the industrial sector are available only from 1951 until 1969 (Lupi and Mantegazza, 1994), providing coverage levels above 80 per cent.

The original reports (on which the database is built) encompassed every firm listed on the stock market and every JS firm above a minimum capital threshold. This minimum threshold changed over time, being in the range of 0.5-4 million of 2020 euros, as shown in Fig. B2. We can conclude that the dataset, if not the full coverage, provides a rather comprehensive picture of manufacturing activities beyond a modest level of scale economies, with coverage of small firms increasing across time, in particular after the first decade.

To provide some baseline descriptive evidence about the data, in Table B1, I show the yearly size of the sample, increasing from a few hundred in the first decade to more than 5 thousand by 1970. In Table B2 I report the age distribution, measured as years since foundation, for benchmark years. The mean age is relatively stable around values slightly below 10 in the first three decades, and steeply increasing after 1930. The age-variability is substantial since the beginning, the older founded JS being in the immediate years after the Unification. Another interesting, although expected, fact is the positive correlation between firm size (as the logarithm of tangible assets) and age, holding across the whole period, but becoming stronger after WWII. Further descriptive evidence on this data source is provided by (Colli, 2010), concerning the issue of foreign ownership. Foreign-owned capital in the sample accounted for around 19 per cent of the total in 1913 and oscillated in the 8-13 per cent range from 1921 on.

2.2 Methodology

A large literature has decomposed business dynamics according to specific firm characteristics using employment growth (Davis et al., 1996; Haltiwanger et al., 2013; Manaresi, 2015). I adapt this approach, replacing employment growth with investment rate in tangible assets, that is the yearly growth rate in tangible assets as measured in balance sheet data. In particular, for each firm i I compute investment rate in tangible assets (TA) in time t as

$$inv_{it} = 2 * \frac{TA_{it} - TA_{it-1}}{TA_{it} + TA_{it-1}} \tag{1}$$

The rationale is to divide the variation of tangible assets between time t and $t-1$, i.e. the net firm investments in absolute terms, by the average of the assets in the two periods. In this way I can account both for the intensive margin, i.e. firms that are present in the sample both at time t

[13] See subsection 2.2 for details.

and $t-1$, and for the extensive margin, i.e. the entry-exit process: the index is indeed bounded between -2, in case of exit and 2, in case of entry (i.e. TA being 0, respectively, in t and $t-1$).[14]

Considering w_{it-1} the weight of firm i in terms of tangible assets, we can compute an aggregate indicator of investment growth encompassing all the N firms who reported tangible assets between t and $t-1$:

$$INV_t = \sum_{i=1}^{N} w_{it-1} * inv_{it} \tag{2}$$

It follows that, for any discrete (or discretized) firms characteristic *C*, taking values $c = 1...C$, we may decompose INV_t as:

$$INV_t = \sum_{c=1}^{C} INV_{ct} \tag{3}$$

where:

$$INV_{ct} = \sum_{i \in c} inv_{it} \tag{4}$$

As discussed in the previous lines, the data does not cover the universe of firms, but a sample censoring the relatively smaller ones. That prevents correctly tracking the entry and exit processes of smaller firms. Nevertheless, given the very high coverage in terms of the overall capital, we expect to catch the contribution of entering firms that either start big enough or grow enough in the very first few years.Intuitively, of the overall "up-or-out dynamics", i.e. new small firms usually either grow rapidly or exit (Haltiwanger et al., 2013), we may only proxy for the "up" side).

I do not report data between 1940 and 1946: in this period the number of available balance sheets significantly shrank, and we cannot distinguish between war-related destruction and the sheer lack of balance sheets.

For the series to be reliable for computing investments, it is necessary to provide a consistent comparison of tangible assets stocks between $t-1$ to t. A considerable effort has been devoted to ensuring the highest feasible level of consistency in this respect. Appendix A discusses each step in detail. The most critical and time-consuming task has been reconstructing a dataset of mergers between JS firms, in order to net out the impact of these operations on acquiring companies. Beyond correcting for mergers, additional analysis and corrections have been conducted in the following issues: age in the database not coinciding with the foundation age, the impact of (changing) minimum thresholds over time, temporary firm exits from the database, and the potential impact of alternative legal forms.

Lastly, a correction has been made to turn asset dynamics from nominal to real terms. Italy experienced significant inflation during WWI and in the immediate years after both the world wars. Assuming historical cost valuation, I set $TA_{it} - TA_{it-1}$, the increase in assets at time t,

[14] A further advantage of this index is that averaging size at the denominator over two periods avoids biases due to regression-to-the-mean (Friedman, 1992).

to be compared with existing assets at TA_{it-1} after having been deflated with production deflator $(1 + i_t)$, from Baffigi (2011).[15] Therefore, the final firm investment rate is computed as:

$$inv_{it} = 2 * \frac{(TA_{it} - TA_{it-1})}{1+i_t} / \left(2 * TA_{it-1} + \frac{(TA_{it} - TA_{it-1})}{1+i_t} \right) \tag{5}$$

3 Empirical evidence: decomposing tangible investments

3.1 Entry, exit, and age

Following equation 3, in Figure 1, I show the investment series, decomposed by the extensive and intensive margins, respectively increases/decrease of aggregate tangible capital because of JS firms entry and exit,[16] and the intensive margin, i.e. investments by firms remaining in the sample. I show the overall investment index, both net and gross of exits. The same graph also displays GDP growth (Baffigi, 2011) on the right axis. It appears that the manufacturing investments pattern broadly follows the economic cycle, with the exception of WWI years (which were characterized by a command economy, with intense resource reallocation towards capital-intensive war-related manufacturing).

We observe a highly cyclical and volatile pattern until WWII, and a relatively more stable one during the economic miracle. The entry process made most of the contribution up until the late 1920s. On the contrary, almost all post-1945 growth is driven by existing firms.

As it is not possible to ascertain the reasons behind firms' exit from the database, from this point on, the analysis will take into account only the extensive margin at entry and the intensive one (the latter, as discussed in section 2, being excluded from the impact of exits resulting from mergers into the remaining firms).

In Figure 2, I decompose the overall investments according to firms' age since foundation. I categorize firms according to the 5-year age cutoff, that is whether the firm is or is not older than 5. Up until 1920, the bulk of investments were driven by young firms, whose age is not above 5. From the 1930s on, the investment pattern was driven by older firms.

This result is not sensitive to an arbitrary choice of age discretization. In Figure 3, I show a finer age disaggregation, that shows the contribution in 5 to 10, 10 to 20, and above 20 years age brackets. The sharp discontinuity from the 1930s on is confirmed. The contribution of firms over 20 years old shifted from negligible to predominant from the 1930s on.[17]

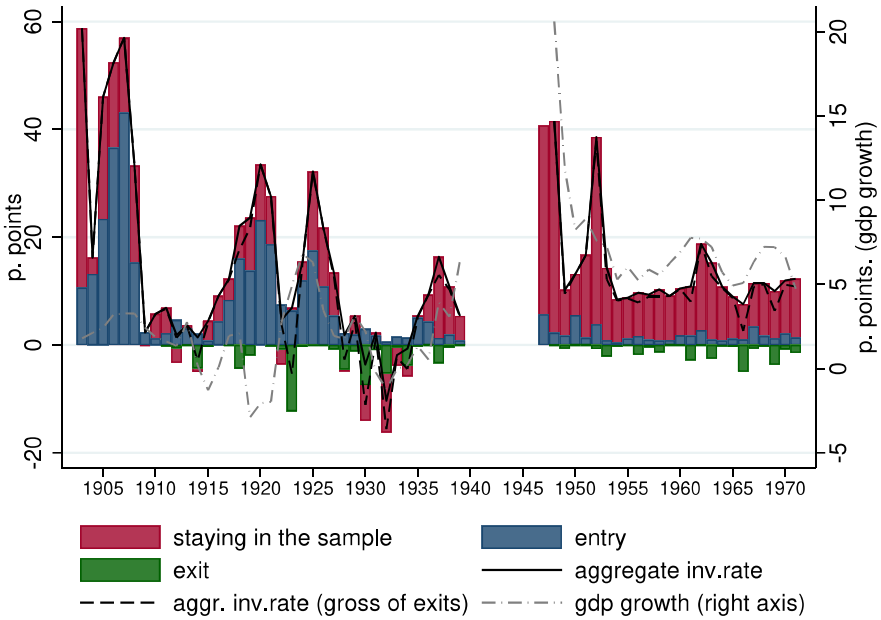
The decline in investment of young firms might just reflect the increasing average firm age. Over the period, as the number of operating joint stock firms progressively increased, so did their average age, from around 10 to 16 over the whole period. In order to rule this out, in Figure 4 I provide an alternative metric for the contribution to investments by firm age: I compute the median firm's age for each year and divide firms between being young or older of the year-specific

[15] The qualitative findings of the paper are robust to alternative choices of dealing with inflation, both assuming partial inflation adjustment and performing the analysis in nominal terms.

[16] For a discussion on cases where entry in the sample does not align with firms foundation, see Appendix A.

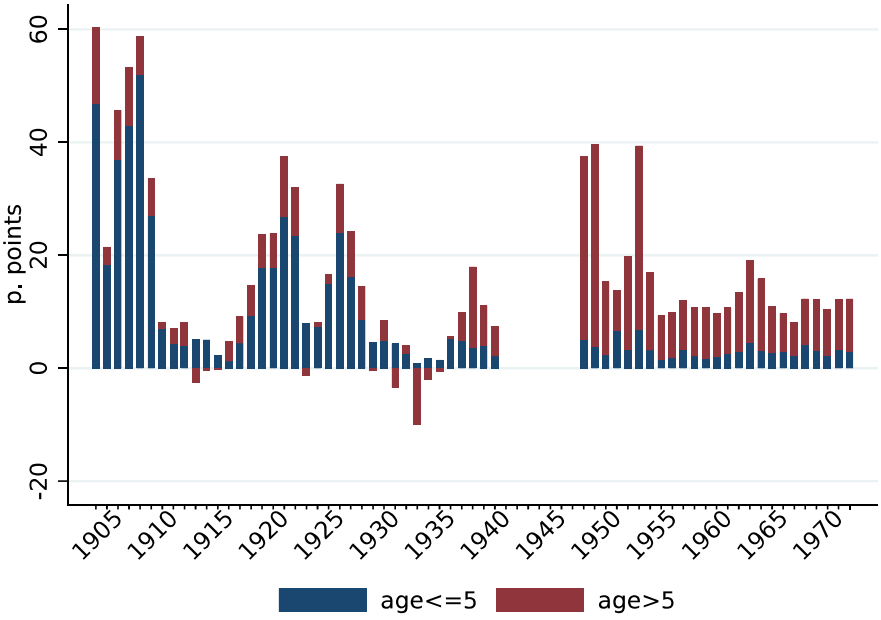
[17] The robustness of the 20-year threshold might be particularly needed in the immediate aftermath of WWII.

Figure 1: Tangible investments dynamics, extensive and intensive margins



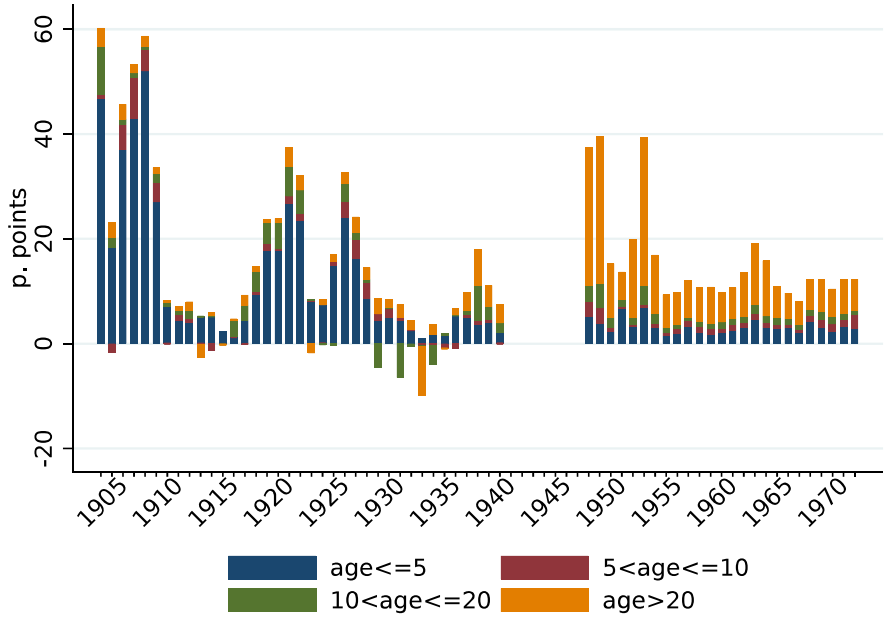
Source: Elaboration based on *Imita.db* and Baffigi (2011).

Figure 2: Investments decomposition, by firms age



Source: Elaboration based on *Imita.db*.

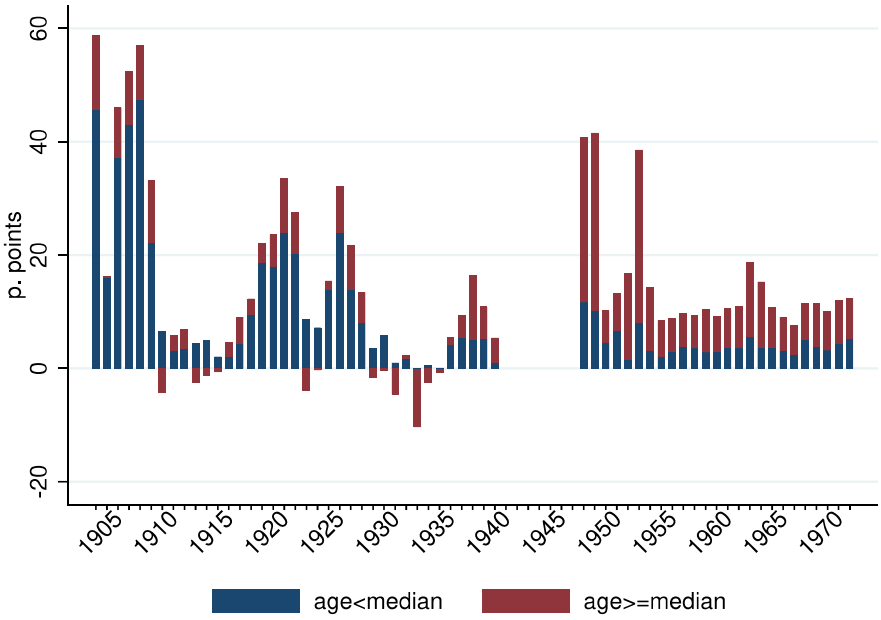
Figure 3: Investments decomposition, by detailed firm age



Source: Elaboration based on *Imita.db*.

average age. The qualitative pattern is confirmed: before 1930, investments were largely driven by firms below the median age, while we observe a reversal from 1930 on.

Figure 4: Investments decomposition, by firm age relative to the median



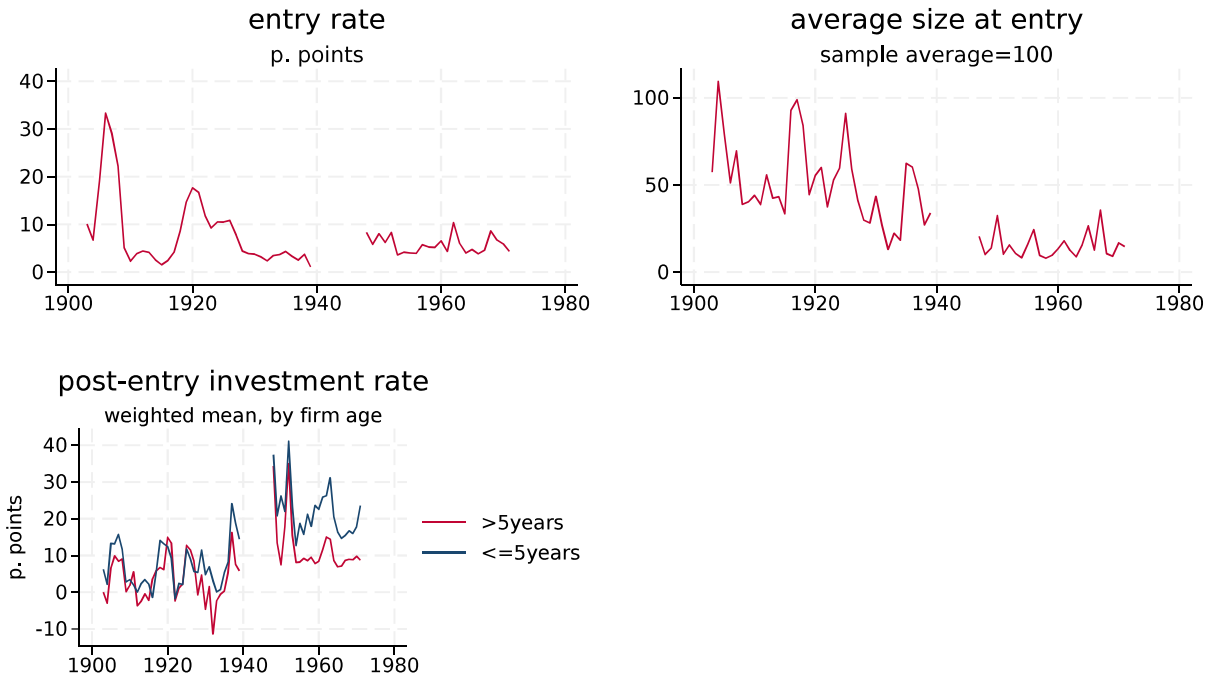
Source: Elaboration based on *Imita.db*.

We are interested in understanding what explains young firms' contribution to growth. Young firms' contribution to overall employment (or asset) growth may be decomposed into the following indicators (Calvino et al., 2016): i) entry rate, the intensity with which new firms start to operate; ii) average firms size at entry, relative to the ones of existing firms; iii) post-entry growth, as conditional on surviving we might expect young firms to growth at a higher pace.[18] In Figure 5 I show how these indicators evolve over time. We do not observe post-entry investment activity to be systematically higher for younger firms, at least until 1947. In other words, the relatively higher contribution of young firms to investment activity before 1930 is due to higher entry intensity and a relatively higher size at entry, rather than by post-entry investment pace.[19]

[18] A fourth one, the survival rate of new firms, has been discarded in this analysis, as negligible, and not being possible to accurately ascertain it.

[19] The relatively low post-entry growth of younger firms might signal a weak capacity for new firms to establish in the market. Nevertheless, it should be remembered that the literature studying post-entry growth usually takes into account employment, rather than tangible assets. Lacking employment data, we cannot exclude that subdued post-entry growth figures are because investments in fixed assets variations are less frequent than employment variation: we may expect that in the first year, new firms make a "one-shot" investment in new machinery/warehouses and gradually grows employment in the following years up to covering the production capacity.

Figure 5: Drivers of young firms contribution



Source: Elaboration based on *Imita.db*. Note: entry rate is computed as the share of new firms on the total number of firms; average size at entry is the average size.

3.1.1 Discussing the decline of young firms investments

Overall, the evidence of a sharp decline in the contribution of new firms appears robust regardless of age measurement choices. It seems reasonable to interpret this decrease in business dynamism as being related to unobservable barriers to entry, i.e. the increased market power of incumbents. In this discussion, I will also consider ancillary evidence to determine whether this decline can be plausibly attributed to an increase in barriers to entry or if there are alternative explanations.

A preliminary concern is whether sample representativity may affect the young firms' share. The sample truncates a left-tail of the size distribution (i.e. smaller firms), but its representativity increases during the first 2 decades, as discussed in section 2 and in Appendix A.[20] The positive correlation between age and size (see Table B2) and the lack of coverage of the smaller firms would lead to an underestimation of the share of young investments. As coverage issues are more severe in the first few years, we expect this underestimation to be stronger during this period. That would imply that the effective discontinuity in the 1930s was even larger than the observed one.

As a main concern, a decreasing share of new JS firms might be interpreted just as a consequence of the process of industrialization and economic development. Such a process at the beginning of the XX century was at an early stage, with a relatively low number of manufacturing JS firms (Table B1), and that could lead to more entries regardless of the presence of barriers to entry. Recent empirical evidence suggests the contribution of new firms to overall growth may be higher in developing economies than in mature ones (Calvino et al., 2018).[21] I deem such an explanation to be unsatisfactory to fully explain the findings of this paper.

First, a monotonic negative relationship between the entry rate and the level of industrialization would imply that the share of new firms would progressively decrease as the size of the industrial base grew. In Figure C1 we observe the size of Italian manufacturing, expressed in real value added, over the period. It kept growing on average at a very moderate pace in the first decades, around doubling in the first four decades. It started to grow exponentially after WWII, increasing by more than 7 times from 1948 to 1970. Nevertheless, during this same period, the average contribution of new firms is relatively stable (figure 2).

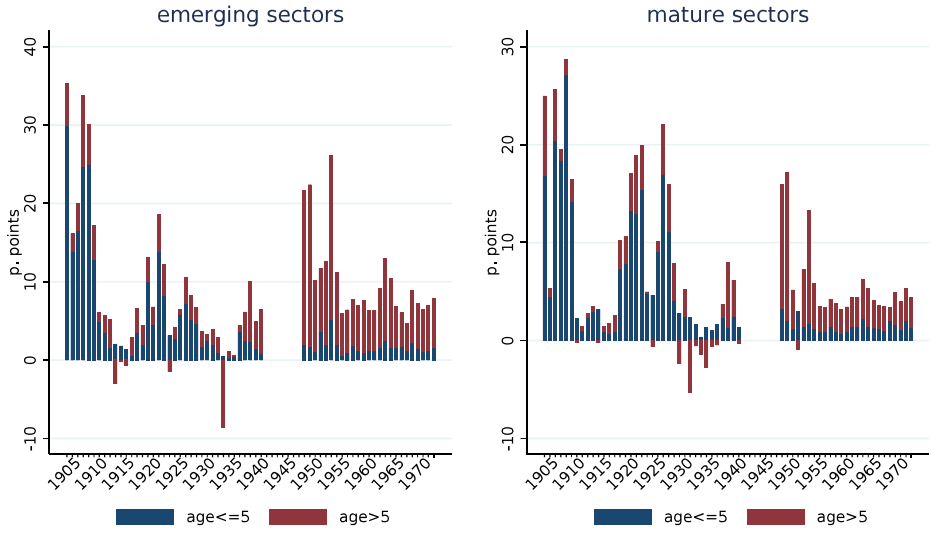
Secondly, if the earlier stage of industrial development were the driver of the higher entry, I would have expected this to hold also within each sector: observing an earlier decline of the entry rate for sectors with a higher stage of maturity of the product, while observing intense entry in later years for sectors emerging later.[22] In Figure 6, I define sectors as "emerging" or "mature", according to whether their growth was relatively higher before or after the 1930s, and show, for each of the two categories, the evolution of the investments. We may expect the decline in the new firms' contribution to be driven by sectors having reached a substantial stage of maturity by 1930, but a similar discontinuity also holds for sectors developing mostly during the second part of the time span.

[20] This emerges both from JS capital coverage, minimum capital thresholds for inclusion and coverage to national account investments.

[21] Relatedly, Imbs and Wacziarg (2003) find that sector diversification typically follows an inversed U-shaped path over time, increasing in the first stages of development and then decreasing as a country specializes in a few sectors.

[22] Products are defined by 4 digits 1991 Istat classification.

Figure 6: Investments decomposition for emerging and mature sectors



Source: Elaboration based on *Imita.db*. Sectors are classified according to whether their relative growth with respect to the manufacturing average, measured in tangible assets, was higher before or after 1930.

Conversely, the interpretation of decreasing business dynamism as a consequence of higher incumbents' market power finds support in existing markup estimates, the benchmark measure to assess market power. Giordano and Zollino (2017) reconstruct markups for the whole of the Italian economy since the Unification, through national account figures and for multi-year periods.[23] Their figures match with the findings of this paper, as shown in Figure 7: they show a relative decrease at the beginning of the 20th century and a significant increase during the Fascist regime and in the immediate post-WWII.

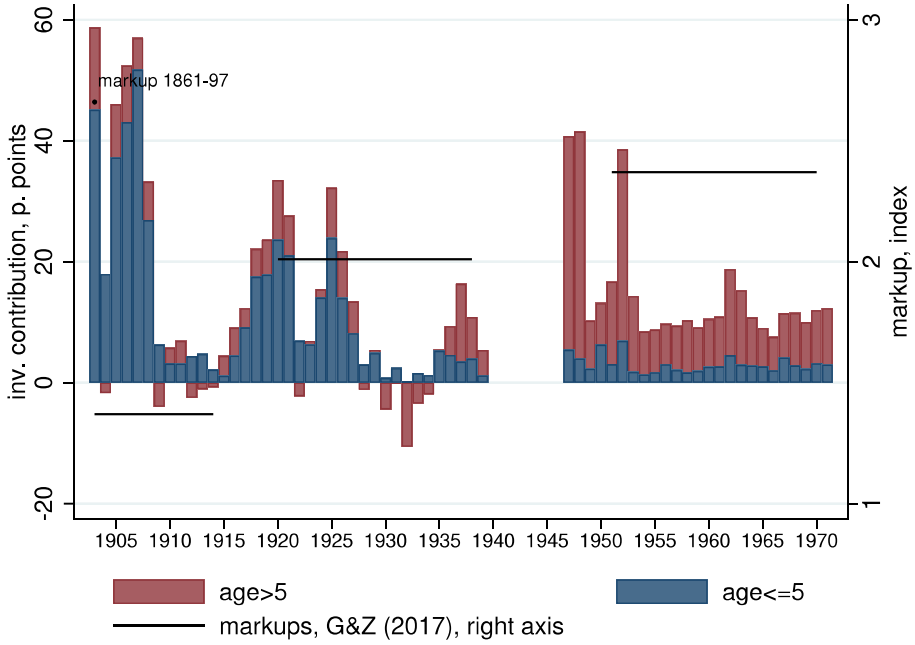
As a last comment, there is a compelling analogy between the reported finding and the evidence of a general decline in business dynamism since the 1980s decades for advanced economies (Criscuolo et al., 2014; Decker et al., 2014, 2016; Biondi et al., 2023), coupled with evidence of increasing market power (De Loecker et al., 2020). Nevertheless, the Italian case at the time span of this paper stands out for two reasons: first, we do not observe a gradual long-term trend but a rather quick structural break, second, it happened not at a mature stage of development but rather a few years before a deep acceleration in the pace of industrialization.

3.2 Sectors and ownership structure

We have ascertained that the shift in the contribution to investments by firm age is robust to age measurement choices and matches with available market power measures. In this subsection, I

[23] The method is the one in Roeger (1995).

Figure 7: New firms investments and markup estimates

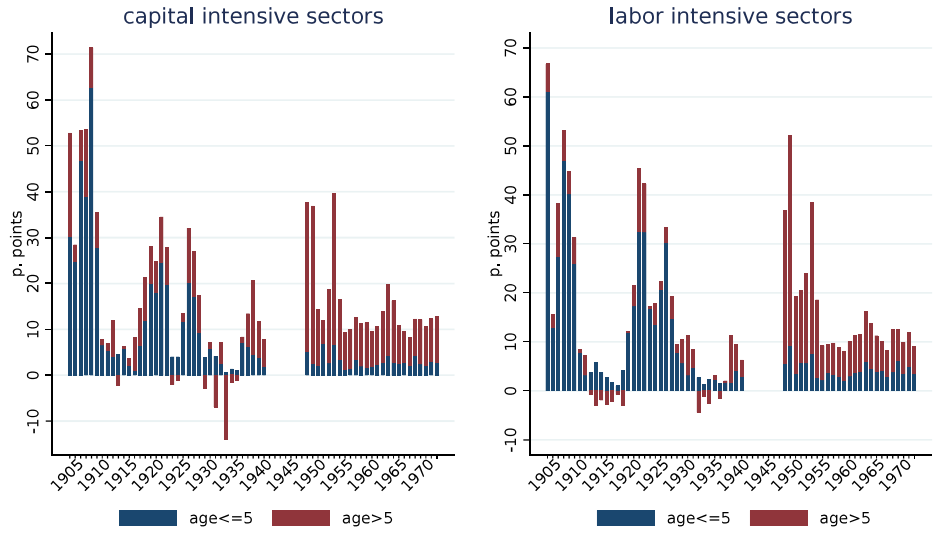


Source: Elaboration based on *Imita.db*, markup estimates are from Giordano and Zollino (2017).

show disaggregation according to sector capital intensity and ownership structure, the latter both in terms of public ownership and group linkages.

As underlined in Felice and Carreras (2012) the Italian industrialization process from the 1930s onwards entailed a progressive shift of relative importance from traditional, labor-intensive manufacturing towards more innovative and capital-intensive sectors. In Figure 8 I distinctly show the investment dynamics for sectors belonging to capital-intensive and labor-intensive manufacturing (the so-called heavy and light manufacturing).[24] Two main facts emerge. First, the average entry dynamics are smaller in capital-intensive manufacturing than in labour-intensive ones throughout the whole period. This can easily be explained as product markets with a higher need for initial fixed costs in capital pose higher barriers for entrants. Nonetheless, the sharp and long-lasting decrease in the contribution of new firms in the 1930s is confirmed for both categories, ruling out that it is due to a higher weight of capital-intensive industry.

Figure 8: Investments decomposition by sector capital intensity

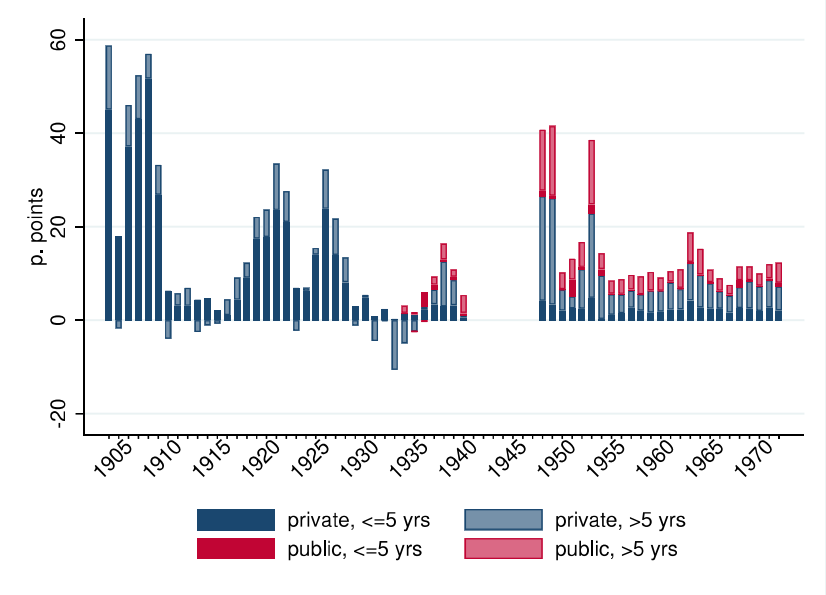


Source: Elaboration based on *Imita.db*.

A finer sector disaggregation by each broad product classification is shown in Figure C2, C3, and C4. As we may expect, growth patterns across sectors are highly heterogeneous, both in terms of size and timing. Nonetheless, the prevalence of young firms' investments before 1930 and a reversal afterwards is a common tendency. We can conclude that such a shift is not driven by some specific shock affecting some specific sectors, or by a shift in sector composition, but rather by some horizontal economic or institutional changes affecting the whole manufacturing.

[24] Sectors are defined as labor or capital intensive according to (Giannetti and Vasta, 2005), see Figures C2,C3 and C4 for details.

Figure 9: Investments decomposition by public/private ownership and age



Source: Elaboration based on *Imita.db*.

Next, I assess the role of state-owned enterprises (SOEs, belonging to three groups, namely IRI, ENI, EFIM). SOEs appeared during the nationalization process of the 1930s, when the State acquired distressed mixed banks' stakes in large industrial companies and played a key role in the post-WWII economic boom (*Storia dell'IRI*, 2012). In Figure 9 I report investments disentangling both for private/public ownership status and for firm age.

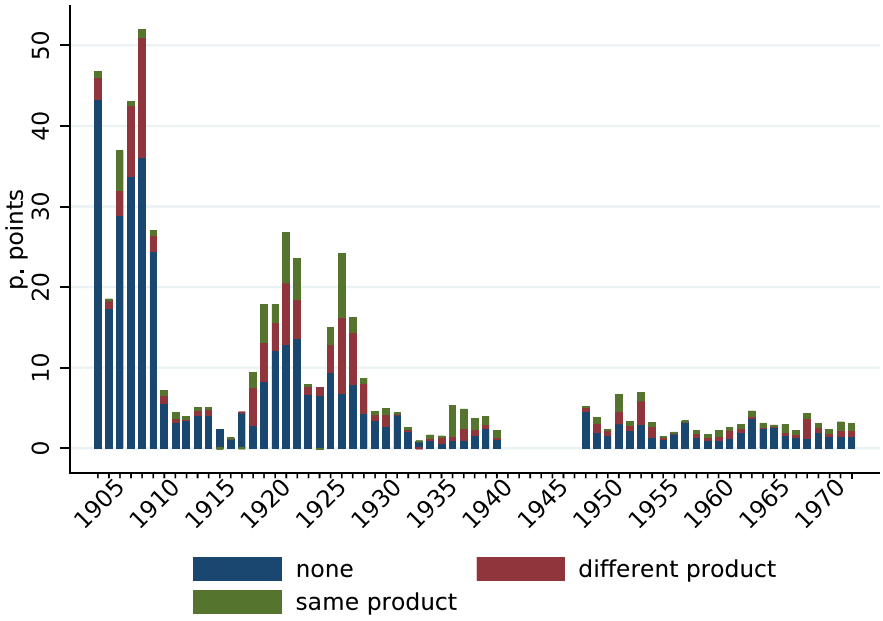
First, SOEs' investments were almost exclusively made by incumbent firms (that is, new firms' investments were almost entirely private). Second, on average, SOE investments account for 20 per cent of the overall aggregate investments: even after the 1930s, the bulk of manufacturing investments were driven by private firms. In the end, it appears that the relative shift from new to incumbent firms is not driven by a public sector "crowding out" new private firms.[25]

Next, we assess the role of business group linkages. Business groups, typically organized as pyramidal structures headed by holding companies, played a major role in Italian business history. If we take them into account, the estimated historical level of concentration of Italian industrial structure significantly increases (Barca, 1996; Vasta and Bargigli, 2006). Their rationale usually was to pursue growth strategies while preserving control stakes by owners with limited investments by them (Colli et al., 2016). It might be worth inspecting whether new firms belonged to pre-established groups. I rely on the existing literature to estimate group ties between firms (Giannetti and Vasta, 2006): I assume that two firms belong to the same group if they share a

[25]The relevance of the public enterprise system might be strengthened by the fact that IRI was indirectly linked through interlocking directorates to almost all the most important industrial groups (Rinaldi, 2006).

directorate member in their top positions.[26] In this way, I disentangle the contribution of young firms which are expected to belong to an established group (whose age is higher than 5 years old). Among the new firms belonging to older groups, I account for whether the group linkages between the new firms and an established group pertain to the same product classification or not.[27] Given the data available, I regard it as the best proxy for established firms expanding into new product lines and, arguably, more likely to venture into innovative activities (that is *de-alio* entries, vs *de-novo* entries, i.e. new firms entering into the market, see for instance York and Lenox (2014)).

Figure 10: Young firms investments decomposition by business-group connection



Source: Elaboration based on *Imita.db*.

As shown in Figure 10, groups played a sizeable but not prevalent role in explaining young firms' investments throughout almost the whole period, except for the 1930s, when group-linked new firms made up almost the entirety of the total of new firms. Hence, restricting the definition of young firms to the ones unconnected to groups, the main finding of a sharp discontinuity from the 1930s is confirmed.

3.3 Size, geography, and profitability

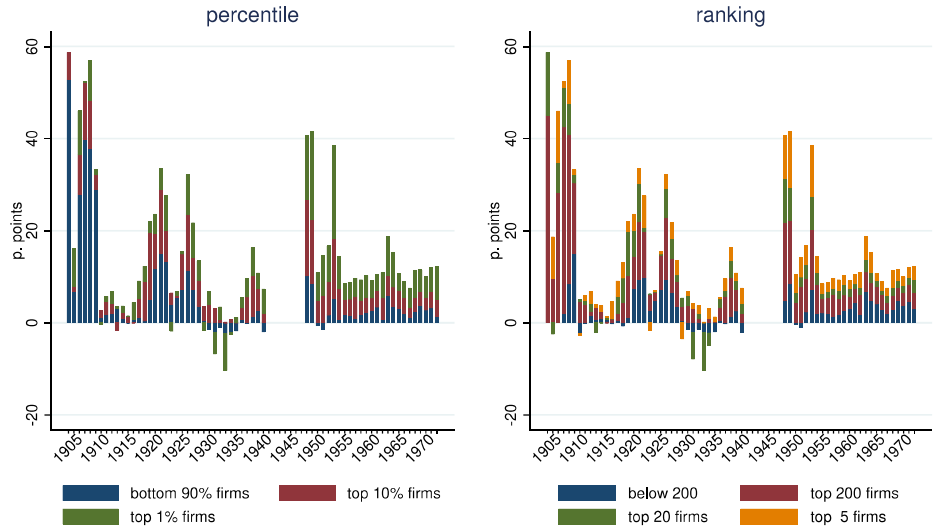
In Figure 11 I classify firms according to tangible assets size: in the left panel according to their percentile in the size distribution, in the right one according to their absolute ranking. Overall,

[26] i.e. director, president, vice-president.

[27] Defined by 4 digits 1991 Istat classification.

the role of the largest firms increased significantly.[28] This reflects the age decomposition result, as the largest firms are usually incumbents well established in time (see Table B2). In Figure C5 I decompose investments both by the age cutoff and the size classification, i.e. between the largest firms (defined as the first percentile in the size distribution) and the other firms. The largest firms account for a sizeable share of the incumbents' investments after WWII, roughly half of them. Nevertheless, the sharp increase in the share of incumbents' investments appears even exclusively considering other firms.

Figure 11: Investments decomposition by relative firm size



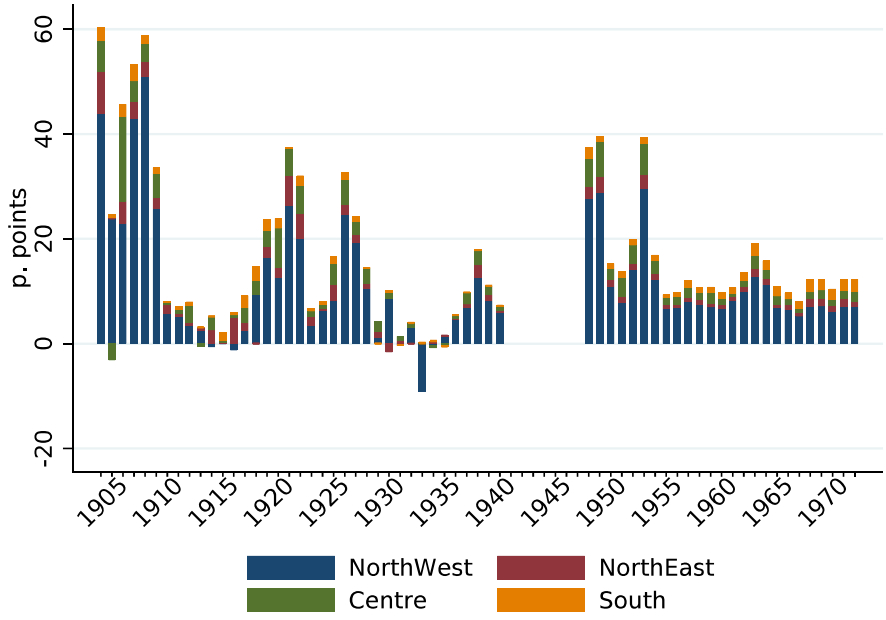
Source: Elaboration based on *Imita.db*. Note: size is defined by tangible assets.

Figure 12 breaks down investments based on the geographical location within one of the main areas of Italy. It supports a well-known finding in Italian economic history, at least until the 1970s: the vast majority of investments were consistently made by firms headquartered in the North-West, also known as the "industrial triangle." It should be noted that this location refers to the firms' headquarters, not their production plants. Considering the location of the plants, the investments might be more evenly distributed across the country.

Figure 13 breaks down investments based on the relative profitability of firms, expressed in quartiles of the yearly distribution of ROE (Return on Equity). On average, we observe a clearer association between profits and investments after the 1930s. This is consistent with our historical understanding that, due to a lack of external financing sources, new investments were increasingly financed through profits.

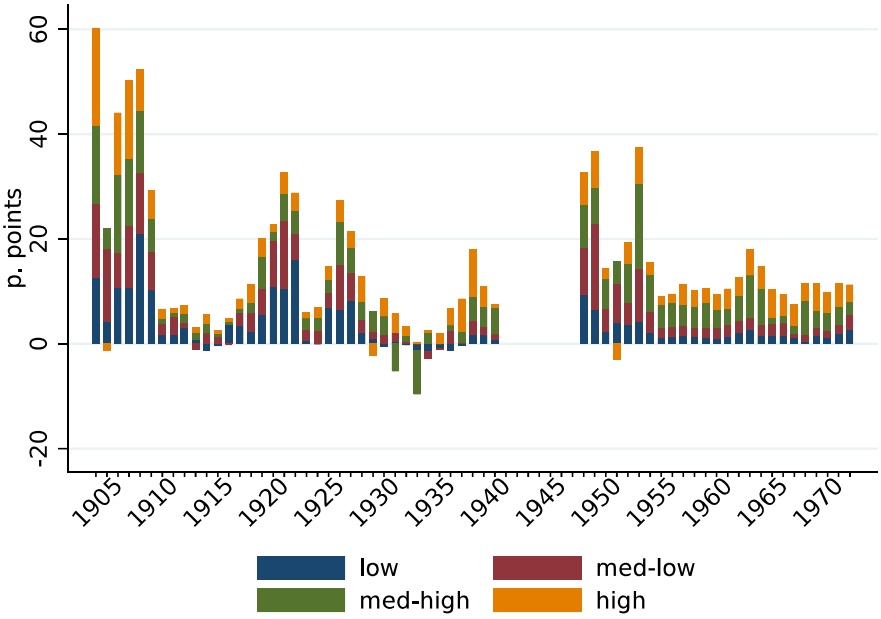
[28] Actually, the role of the largest firms grows more in the relative than in the absolute ranking case, as the number of firms increases over time.

Figure 12: Investments decomposition by geographical area



Source: Elaboration based on *Imita.db*.

Figure 13: Investments decomposition by profitability (ROE year-quartile)



Source: Elaboration based on *Imita.db*.

4 External Finance explanation

4.1 The banking reform and the demise of universal banking

The first hypothesis behind the declining share of young firms' investments is linked to a worsening capacity for external finance. Information asymmetries in credit and capital markets can pose significant barriers to the entry of new economic activities. Ideally, these barriers could be mitigated by sound financial institutions that provide credit and support capital issuance through effective screening and monitoring activities (King and Levine, 1993; Levine, 1997).

Italy has historically been a bank-oriented financial system (Goldshmith, 1985). A major banking reform process took place from 1931 to 1936, a long-lasting institutional change in Italian economic history that marked the end of its universal banking system.[29] In a nutshell, it entailed the bail-out and nationalization of the largest Italian universal banks, which were put under a pervasive supervision mechanism. It forbade commercial banks to engage in investment banking and long-term credit, with the aim of cutting the relationships existing between banks and industry. Specific institutes (*Istituti di Credito Speciale*) were created to provide long-term credit[30] to

[29]The literature that deals with this reform is large. Among the many, I suggest Guarino and Toniolo (1993) and, for international comparison with the USA, Barbiellini Amidei and Giordano (2015).

[30]Mostly in the form of secured mortgages.

industrial firms, on the basis of government backed-securities.[31]

The universal banks, formed in the late 19th century, had played a major role in financing the country's industrial development. According to a seminal interpretation (Gerschenkron, 1962), Italy was a typical case where universal banking supported development in backward countries. Those banks both conceded long-term credit and in many instances even acquired, at least temporarily, equity shares. This mechanism, which persisted until the Great Depression, faced severe issues related to moral hazard and financial stability, leading to systemic banking crises on an almost regular basis.

Nevertheless, in its authoritative account of the crisis of a major bank (*Banca Italiana di Sconto*) in 1921, Sraffa (1922) argued that, despite the underlying dangers, universal banks played a necessary role in providing finance to industrial firms, especially new ones. This was due to the country's characteristics, namely capital scarcity and the reluctance of both savers and potential entrepreneurs to invest in risky activities.

One of the largest banking crises hit after the 1907 international financial crisis,[32] ending an intense investment cycle, during which universal banks were particularly active in the stock market, on the one side providing important support to stock listing, on the other side engaging in risky speculative activities (Vercelli, 2022; Baia Curioni, 1995). On new entrants, sample evidence on one of the largest banks suggests a positive impact on size at entry, but not on post-entry growth (Fohlin, 1998). After 1907 universal banks moved towards a more prudent attitude, reducing involvement in new activities and support of stock listing (Bonelli, 1971; Piluso, 2004).[33] They progressively increased two-way proprietary links with existing larger industrial groups, in particular since the 1920s, with severe moral hazard issues (Battilossi, 2009). In the 1920s a second cycle of sweeping banking sector growth occurred, where medium and smaller-sized universal banks, played the most important part. As in the early 1900s, this process had lights and shadows, encompassing both a robust financing of industrial growth and a large engagement in speculative transactions on the stock markets and in risky (if not fraudulent) practices (Molteni, 2024b,a). This process ended with monetary restriction and the beginning of banking supervision in the second half of the same decade (Molteni and Pellegrino, 2022), while the post-1929 turbulence triggered an even more decisive response by the Italian authorities.

The 1936 reform was highly successful in ensuring financial stability and preventing major banking crises for the rest of the century. However, it may have weakened the system's ability to provide appropriate finance to new firms. Piluso (1999, 2004) argued that the separation between commercial and investment banking resulted in a long-term loss of client screening capacity.[34]

The reform led to a model of banking functional specialization, particularly between short-term and long-term financing, resembling the Anglo-Saxon countries but without adequate financial

[31] On credit policies after WWII see Barbiellini Amidei et al. (2012).

[32] Società Bancaria Italiana.

[33] Bonelli (1971) notice how from 1907 the increased caution by universal banks was not compensated by the emergence of any alternative way to finance industrial investments.

[34] In a similar vein, Battilossi et al. (2011) show a diminishing capacity of the Italian banking system to finance sectors with higher growth opportunities.

market development (Ciocca, 1991; De Cecco and Ferri, 1996).[35] Consequently, during the post-war economic boom, investments were driven by large self-financing within major private and public groups and government-backed credit by *Istituti di Credito Speciale* (Giannetti and Vasta, 2005). However, these institutes did not seem to improve their screening capacity over time (Piluso, 1999). The exception was Mediobanca, established in 1947 as a successor to the former universal banks, which developed the functions and expertise of a proper investment/merchant bank. Mediobanca played a pivotal role in coordinating and allocating private and public capital, becoming the iconic symbol of coordinated Italian capitalism. This central role drew criticism for constraining the entry of new actors (Andreatta, 1984).

In summary, the 1931-1936 reform process entailed a trade-off between financial stability and the capacity to provide external finance to firms, especially new ones. Faced with decades of endemic financial turmoil, Italian authorities were compelled to prioritize stability. Although the universal banking system had already become quite collusive, its demise may have further limited the ability to provide external finance beyond incumbent firms.

4.2 Evidence from bank-firms interlocks

In this subsection, I discuss stylized evidence suggesting a link between young firms' investments and the role of universal banking. Preliminarily, we notice that in the investment series reconstruction (Figure 1) the two cycles of new firms' investments, coincided with two cycles of banking growth. The first one coincided with the growth preceding the 1907 financial crisis. The second one with the banking growth of the 1920s. In order to explore the links between the banking sector and firm investments, I resort to directorate interlocks. Specifically, I check whether the investments are undertaken by a firm that shares at least a directorate member with a bank.

At least until the 1930s, those linkages were systematic proxies of bank-industry relationships for all types of banks (Rinaldi and Spadavecchia, 2021). I expect, if any, this proxy to underestimate the banking relationship, that is I deem it more likely some lending relationships not to be captured by such proxies, rather than interlocking between a bank and a firm with no relationship whatsoever. A further underestimation may be due to the fact that we can link only the banks in the *Imita* directorate linkages, excluding other banks, presumably smaller or not having JS legal form. After the 1930s, the meaning of firms-bank interlock may lose some of its capacity to signal a lending connection. The new supervisory framework entailed strict controls on firms-bank interlocks, explicitly forbidden to bank employees. Nevertheless, extensive bank-firm linkages persisted (Rinaldi and Vasta, 2005; Barbiellini Amidei and Giordano, 2015).

I divide banks between the major four mixed banks, given their importance, and the other banks.[36] Although traditional historiography has focused on the former, medium and smaller-sized banks had an intense interlocking relationship with manufacturing firms (Vasta et al., 2017).

[35] On the underdevelopment of the Italian stock market in the 1950s, see Barbiellini Amidei and Impenna (1999).

[36] The former were Banca Commerciale Italiana, Credito Italiano, Banco di Roma, and Banca Italiana di Sconto. After 1936, they were classified as "Banks of National Interest". I also add "Mediobanca", created after WWII, which played to a large extent the role of major investment banks that those banks could no more play after the 1936 reform.

In Figure 14 I show the investment contribution of young firms according to linkages with one of the major banks, with other smaller banks, and those having no linkage with existing banks.[37] We observe a significant role of large mixed banks in the first decade, declining after the 1907 crisis. This is consistent with historical knowledge: until 1907 the newly-formed major banks acted as real "investment banks", not only providing lending, but also promoting stock listing, acquiring equity, and providing consultancy (Baia Curioni, 1995; Bonelli, 1971). As a result of this, the Italian stock market, which overall played a subdued role in Italian financial history, enjoyed a particularly flourishing period. The system was nevertheless frail in terms of systemic risk, and the 1907 financial crisis, with the bail-out of one of those banks, put an end to this phase. This crisis marked a shift in mixed bank activities, which became more risk-averse, and progressively deepened their links with the pre-existing industrial groups. Bonelli (1971) observes that this shift was not matched by an alternative viable mechanism to channel external finance into new manufacturing activities.

On the other hand, other banks acquired relatively higher importance during the 1920s.[38] [39]

Notably, after the 1920s, investments by new firms associated with bank interlocks virtually disappeared. This was not the case for investments by older firms, which, as shown in Figure 15, persisted after WWII. While the 1936 reform cut long-term credit and shareholding relationships between banks and firms and forbade bank employees from sitting on the boards of shareholder banks, bank-firm interlocks persisted, as Rinaldi and Vasta (2005) points out. I expect that these interlocks may still indicate some external finance capacity for firms; for instance, short-term lending rollovers were a widespread practice (Gigliobianco et al., 1999). Overall, the evidence of interlocks suggests that the new legislation cutting links between banks and industries might have asymmetrically affected younger firms.

Finally, I explore the association between bank linkages and the average size at entry, which is a significant driver of the investment contribution of young firms (Figure 5). In Figure 16, I show the average size of new firms based on their linkages with the banking system: with one of the major banks, with other banks, or with none. As expected, bank linkages, particularly with major banks, are associated with a higher initial size. This extends the findings of Fohlin (1998) for firms connected with *Banca Commerciale Italiana* in the early 1900s. During the 1920s, linkages with smaller banks were also a driver of higher size.

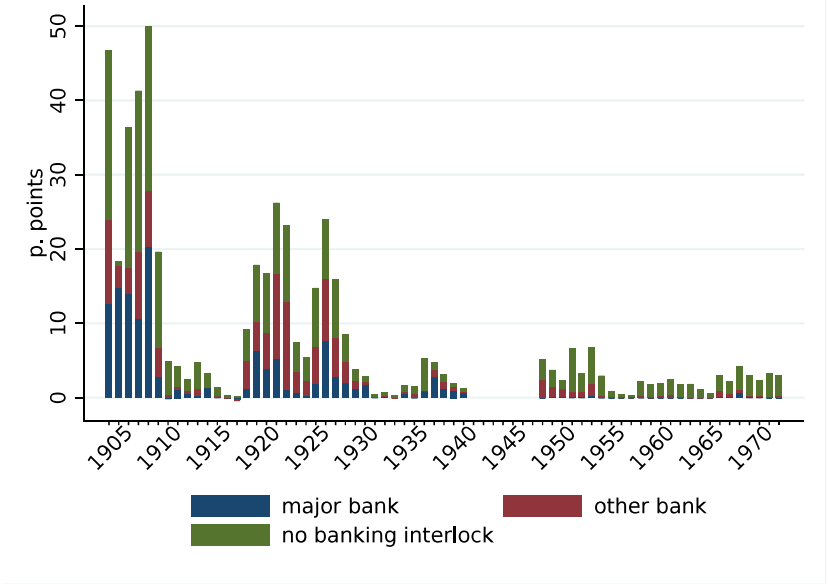
Overall, consistent with prior knowledge, the degree of interconnection with the banking sector

[37] Firms having interlocking ties with both types of banks are classified as having ties with the major ones.

[38] This period saw cross-ownership linkages with major industrial groups to the extent that these banks became de facto holdings of large parts of those groups. For an in-depth discussion, see Battilossi (2009). Nevertheless, the same period was characterized by a boom in credit and banking activity, led by medium and smaller banks (Biscaini et al., 1979). While banking growth was by no means disorderly, with the presence of the so-called "wildcat banking," it was also a period of economic dynamism. Molteni (2024b) argues that rather than a sheer credit bubble ignited by war-led expansion in monetary circulation, this period should be interpreted as a financial deepening process, dramatically halted by the Great Depression.

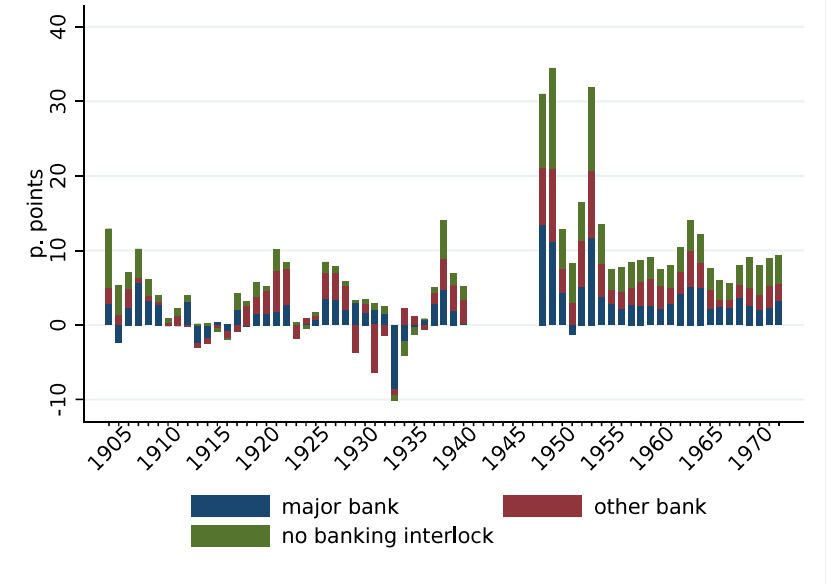
[39] As a robustness check, in Figure C6, for each of these three categories, I consider whether the firm also belongs to a group (i.e., whether it shares a top-directorate linkage with firms older than five years, as described in section 3.2). The declining role of the major banks after 1907 is even more pronounced, as it appears their connection with young firms was mostly associated with existing groups.

Figure 14: Young firms Investments decomposition, by banking interlocks



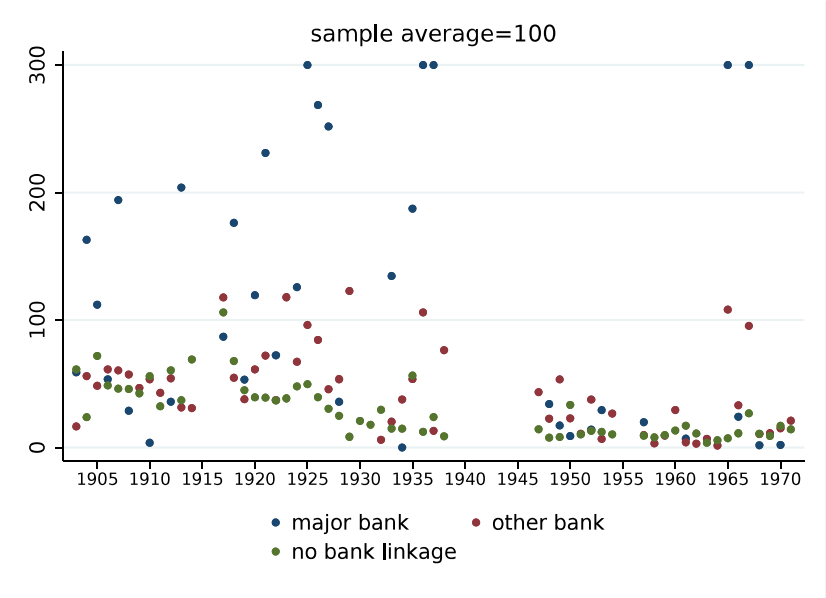
Note: Young firms are defined as firms with less than 5 years old.
Source: Elaboration based on *Imita.db*.

Figure 15: Old firms Investments decomposition, by banking interlocks



Source: Elaboration based on *Imita.db*.

Figure 16: Relative average size of new firms, by banking linkage



Source: Elaboration based on *Imita.db*. Notes: Maximum relative size at entry is censored at 300. New firms include all firms entering into the sample for the first time that are aged less than 3.

is substantial. Throughout the entire period, older firms' investments were usually more connected with banks than those of young firms, and this difference was amplified after the banking reform, when the connections between new firms and banks virtually disappeared. This supports the view that the 1936 banking reform, aimed at severing bank-industry relationships, may have had negative consequences on financing opportunities for new economic activities. Although the objective was to address governance failures and moral hazard issues between banks and industrial firms, the reform was relatively more costly for young enterprises.

5 Collusion explanation

5.1 The 1930s anti-competition backlash

During the 1930s, Italy underwent significant changes in the product market competition regime, resulting in a widespread cartelization process. The Italian government actively encouraged, if not explicitly mandated, firms collusion. In these lines I briefly overview this process, mostly based on the accounts in Giordano and Giugliano (2015) and Amatori and Felisini (2017). Before the 1930s, government intervention in product markets had been relatively mild, taking the form of protectionist policies, public demand for military procurement, and instances of banking bailouts (James and O'Rourke, 2011). Despite the absence of any antitrust law, cartels were uncommon in

Italy, even in comparison to other countries (Vito, 1930). This may be attributed to the difficulty of coordinating a large number of small and medium-sized enterprises.

In the first few years of the fascist regime, there was continuity with the previous regime in terms of a liberal economic policy. However, things began to change in the late 1920s, with the adoption of incentives for merger law and the introduction of new protectionist policies. The real turning point, however, was the 1929 crisis, which led to the emergence of a new economic ideology known as "corporatism", seeing the State as a key economic actor that fostered "cooperation" among producers and viewing competition in a negative light. Behind the ideological justification, policy capture, for the sake of monopolistic rent-seeking, played a significant role (Rossi, 1965). In the early 1930s, several laws were enacted that severely hampered the ability of new firms to enter the market. In 1932, cartels/agreements became mandatory for firms belonging to the same sector.[40] Although the law was poorly enforced,[41] it signalled the government's attitude in favour of harsh competition restrictions. The overall number of cartels increased rapidly, reaching 500 by 1941 (Figure 17). The cartelization process was magnified by a 1933 law,[42] which required a government permit to start new plants. Incumbent firms started to acquire these permits preventively, regardless of their interest in expanding production, in order to bar new firms from entering the market (Gualerni, 1976).

Two additional elements reinforced the collusive nature of product markets in the 1930s. First, in 1933, a large system of state-owned enterprises was created when the industrial stakes of the major mixed banks were acquired by the IRI. Second, the new autarchic regime from 1935 onward enacted harsh foreign trade restrictions, with both imports and exports centralized and authorized by a government authority (Ministry of Exchanges and Currencies).

After World War II, the impact of this collusive process persisted, although to a lesser extent. Restrictive agreements appeared to be widespread, but the phenomenon cannot be accurately measured, due to opaque and fragmented information, with many agreements not even formally codified. Overall, agreements that involved a larger number of small firms (e.g. clothing) were less likely to survive because of coordination. A 1957 survey (Ministero dell'Industria e del Commercio, 1957) confirmed the existence of several restrictive agreements that were still active.

Even in the following decades, Italy lagged behind other Western countries in terms of public attention to the issue of competition and on analysis devoted to that issue (Battilossi, 1999).[43] Attempts to introduce competition legislation in the following decades failed (Cavazzuti, 2017), until, in 1990, Italy introduced its first antitrust legislation.

Although the post-World War II decades marked the demise of autarchic policies, leading to a progressive opening of international markets, the aforementioned estimated markups (see Figure 7, (Giordano and Zollino, 2017)) suggest that incumbent firms managed to maintain a significant

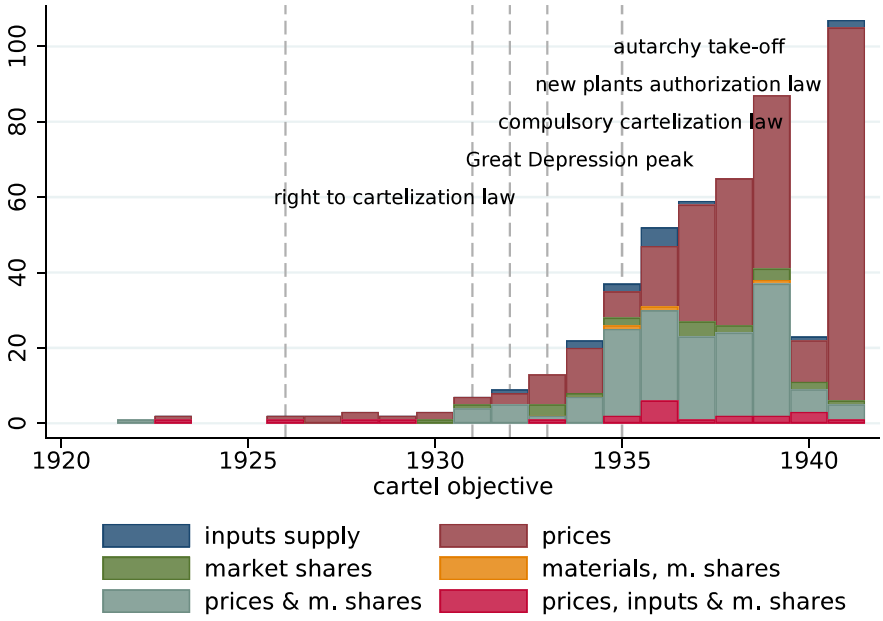
[40] Law n. 834, 16 June.

[41] Most of the cartels created in the following years were voluntary, rather than following the normative mode of that same law.

[42] N. 141, 12 January.

[43] It is the only country out of the comparative analysis "OCED, Concentration and Competition", during the 1970s. In the 1960s a Parliamentary commission (Battara, 1965) acknowledged the lack of a tradition of surveys and research on the market structure and restrictions on competition.

Figure 17: *Consorzi* (cartels) created by year and aim



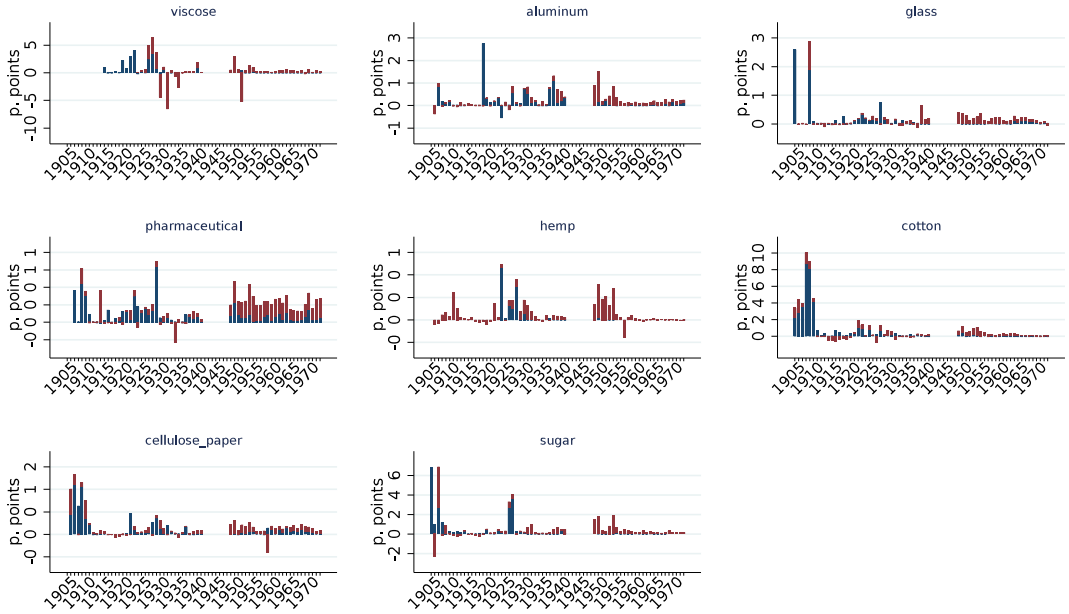
Source: Amatori and Felisini (2017).

level of market power.

It is quite telling to observe the prevailing sentiment on the need to tackle domestic barriers to entry in Italy in a relevant inquiry on Italian industrial structure in 1961 (Zanetti and Filippi, 1967). The authors regarded the Schumpeterian concept of "creative destruction" as completely outdated, in the light of the currently prevailing managerial Fordist economy, characterized by large conglomerates exploiting significant economies of scale.

5.2 Evidence on cartels surviving in 1957

Figure 18: Investments decomposition, by firm age, for the sectors in which cartels were reported in 1957



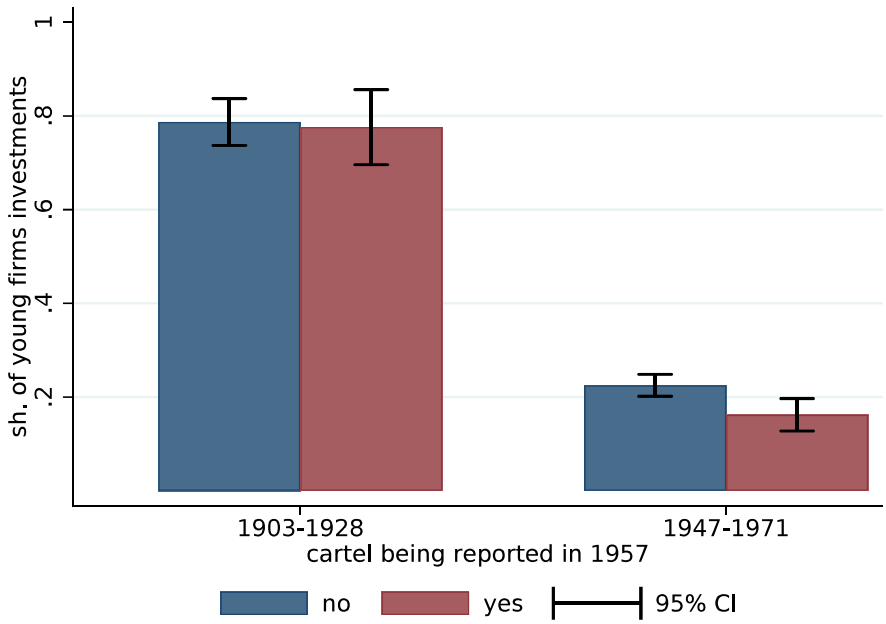
Note: firms with more than 5 years are in red, with 5 years or less are in blue. Source: Elaboration based on *Imita.db*.

The information on cartels is sparse and insufficient, especially after 1945, leading us to heavily underestimate the number of sectors affected by cartels (Amatori and Felisini, 2017).

The most systematic review of cartels still operating after the demise of the Fascist regime is arguably the survey conducted by the Ministry of Industry and Commerce (Ministero dell'Industria e del Commercio, 1957) in 1957. In this subsection, I report the investment dynamics of the products for which some kind of restrictive agreements were reported, disentangling the contribution of new and old firms (Figure 18) of the nine restrictive agreements, namely viscose, aluminium, glass, pharmaceuticals, sulfur, hemp, cotton, rice, cellulose, paper, and sugar. A clear-cut shift from the 1930s on, consisting of a consistent reduction of the relative contribution of young firms

appeared. Interestingly, the pharmaceutical sector is the sector characterized by the most intense investment patterns in the post-1945, due to technological innovation which characterized it. Even in this case, there is evidence of a long-run shift in favor of incumbent firms.

Figure 19: Share of young firms investments by reported cartelization in 1957, yearly means



Source: Elaboration based on *Imita.db* and Ministero dell'Industria e del Commercio (1957).

We are interested in understanding whether the presence of cartels impacted the contribution of young firms' investments. A precise causal identification of the impact of cartelization does not appear feasible. The process of cartel formation and persistence is a highly endogenous one: for instance, the larger the number of operating firms, the more difficult it is to keep a cartel operating; furthermore, growth opportunities in a given sector may affect future expected profits, and therefore incentives to coordinate.

Any counterfactual analysis on the impact of observed cartels would be biased, as we do not know the extent of collusion in the sectors where cartels have not been reported, leading to an expected underestimation of the impact of the cartels.[44]

I perform a very simple descriptive analysis, comparing the average of the yearly share of investments of young firms in sectors for which an agreement is reported in 1957 with the ones for which it is not, in two periods between 1903 and 1928 and after 1947. The results are shown

[44]Furthermore, potential matching according to observable features might even exacerbate this downward bias, as sectors with similar observable characteristics (notably concentration levels), which would be selected as a control sample, may have a higher chance of unreported collusion.

in Figure 19. Before the Great Depression, the 1957-cartelized sectors had an average intensity of new firms' investments on the same level as the other sectors, suggesting the lack of time-invariant characteristics affecting the entrant firms' capacity. After WWII, both average shares declined significantly, from almost 80 per cent to about 20 per cent. At the same time, we observe a significant difference between sectors for which cartels have been reported and other sectors. I expect this difference to provide a lower bound for the effective impact of collusive agreements, its real size being likely larger if it were possible to have information on covert or not accounted-for restrictive agreements.

6 Conclusions

In this paper, I reconstruct tangible Italian manufacturing investments over most of the 20th century, a period of overall industrialization and catch-up with respect to the most advanced Western economies after WWII. The analysis is based on joint-stock firm-level data, providing a broad picture of medium and large-scale manufacturing. This allows us to disentangle the characteristics of the firms that contributed the most to Italian industrialization.

The most outstanding fact is the sharp and long-lasting fall in business dynamism from the 1930s, measured in terms of young firms' contribution to investments, which appears very robust, both in terms of age measurement choices and sector disaggregation. This fall just precedes the decades of the most intense economic growth and industrialization in the country's history. This finding is consistent with the hypothesis of an incumbents-based form of capitalism consolidating in Italy since the 1930s and persisting during the following decades.

I link the sharp and long-lasting reduction in young firms' investment shares to two institutional changes that could, potentially in conjunction, contribute to explaining this finding. On the one side, a decrease in product market competition due to increasing collusion between firms, more or less explicitly backed by the government, and at least partially persisting after the demise of the Fascist regime. On the other side, the 1926-1936 banking reform process, while extremely successful in terms of financial stability, might have negatively affected the external finance capacity of new firms. Descriptive evidence suggests that both explanations may have played a role. First, collusive agreements in the 1950s are correlated with lower entry; second, the magnitude of bank-firm interlocking linkages evolved asymmetrically between entrant and incumbent firms after the banking reform, surviving in the latter case but disappearing in the former.

In the end, Italian industrialization may fit well with the predictions of Schumpeterian growth theory on the impact of competition from entrants (Aghion and Howitt, 2006; Acemoglu et al., 2006): the fact that investments were driven by incumbents, if not helpful for growth, at the very least did not impair a particularly intense economic catch-up after WWII. On the other side, the persistence of previous barriers to entry might have been harmful as the country got close to the technological frontier. The latter point can be only stated as an educated guess, as it would need more recent data to expand the analysis but open the rationale for a future research agenda. For a future project, it would be compelling to test the extent to which the discontinuity set in the 1930s, that is a pattern of incumbents-based investments, persisted beyond the 1970s to more recent years,

and whether it explains a lower business dynamism in comparison to the other Western partners.

The comparative perspective may tackle another challenging question, that is how much is the observed pattern is specific to Italy or rather a common experience of Western countries as they reacted to Great Depression changes, while at the same time moving towards an economic structure characterized by a higher level of scale economies (Schumpeter, 1942). According to Eichengreen (2007), the European countries shared a common form of "coordinated" capitalism, which would have worked well after WWII, but became an issue when Europe had to switch from growth based on brute-force investment and the acquisition of known technologies to growth based on increased efficiency and innovation. Nevertheless, both markup estimates (Giordano and Zollino, 2017) and qualitative assessment on the absence of competition policies suggest that Italy may have been a country characterized by even lower levels of product market competition in the international comparison. On the other side, the sharp demise of universal banking and the implementation of a strict banking regulation framework, combined with highly underdeveloped financial markets, could have set up a particularly challenging context for external finance for new ventures.

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Appendices

A Sample representativeness and reconstruction methodology

Here I discuss the main challenges and the steps taken to ensure the highest level of consistency in the comparison of tangible assets stocks between $t-1$ to t, as mentioned in section 2. The largest effort has been devoted to netting out the impact of mergers between companies, which could bias the figures by overestimating investments for the acquiring companies. Lacking comprehensive information on mergers, the largest 200 exits (in terms of percentage contribution to aggregate investment dynamics in the given year) have been individually investigated through miscellaneous sources. These exits account for an average of around two-thirds of overall exits contribution. A dataset on the resulting mergers has been reconstructed.

For the remaining exits, I assumed that a merging took place if, for an exiting company, a group link is estimated (through a top-tier directorate interlock linkage) and if the relationship is between companies belonging to the same manufacturing sector (2-digit Istat 1991 classification). Indeed, we expect the within-group operations to be one of the most likely drivers of mergers of distinct companies.[45] For more details on the relative size of the accounted and estimated mergers, see Figure B3. Based on the dataset of mergers that I created, if a company i has acquired in time t one or more companies $j = 1...J$, I net out the investment rate of i for a correction term $corr_{it}$, equal to the sum of the assets of the acquired firms in their last balance sheet, setting the maximum level of correction to i asset increase. Formally, the new investment rate for firm i is:

$$inv_{it} = 2 * \frac{TA_{it} - corr_{it} - TA_{it-1}}{TA_{it} - corr_{it} + TA_{it-1}}$$

where

$$corr_{it} = \min\{\sum_{j=i}^{J} TA_{j,t-1}, TA_{it} - TA_{it-1}\}$$

As a second methodological point, I am concerned with the first year of the appearance of a firm in the database not coinciding with the foundation/incorporation, i.e. the firm entered in the dataset years after its foundation. In Figure B4 I assess the size of those instances and found that they were quite limited in terms of overall magnitude and that in any case, they usually refer to very recently founded companies, within a 5-year time span in the vast majority of the instances. Furthermore, while I do not have figures on firm assets before entry, I expect the first appearance in the database to be associated with significant size expansion. Therefore, accounting for those firms' entries would arguably yield a marginally limited postponement of investment estimation.

Third, as the minimum equity threshold for the inclusion of non-listed JS firms changed over time, we might expect such a cut-off to affect firm exits. To do so, I checked the relative magnitude of the exits that are linked to firms being below those thresholds. Furthermore, I also check

[45] In a few instances, I observe mergers between two distinct legal entities within a group to follow a few years of the acquisition of the merging company within a group.

for exiting firms whose level of capital is between the threshold and a value 20 per cent higher, assuming that firms close to the threshold could have been more likely to fall below it in the interval between reports (which, as mentioned in Section 2, were published for several years). In both cases, the relative magnitude of those exits is very small with respect to overall exits, as shown in Figure B5, suggesting that thresholds do not significantly affect aggregate series.

Fourth, some firms temporarily exit from the sample and appear again one or a few years later.[46] In order to deal with that, I assume the following: for a firm disappearing at time t and reappearing at time $t+k$, if $TA_{it} > TA_{it+k}$ I assume that the investments were done in $t+k$, if $TA_{it} < TA_{it+k}$, that the asset depreciation has happened in t.

As a last concern, the introduction of new legal forms for firms could affect the representativeness of the analysis. Until 1942, joint stock (JS) companies were the sole type of limited liability company in Italy. In that year the new form *società a responsabilità limitata* (SRL, literally limited liability company, although not totally equivalent to the US-specific form) was introduced, as an intermediary form between JS companies and individual firms. While systematic data on these firms is lacking, contemporary sources indicate that JS status was primarily suitable for managing substantial manufacturing activities (Zanetti and Filippi, 1967). Medium or large firms not structured as JS entities were rare, and tended to be converted to this form. Two prominent examples, belonging to the food sector, are Barilla and Ferrero, both originally artisanal family-run businesses that transitioned to JS companies in 1960 and 1962, respectively, as they grew into larger-scale industrial operations. In the dataset, the entry year is when a company was incorporated as a joint stock entity. We anticipate that such a legal change would correspond with a significant increase in company size. Investments made prior to this legal transformation may cause a lag in our data, potentially overstating the contribution of younger firms after the creation of SRL form. Furthermore, the comparison of sample investments with national accounts fixed investments (see Section 2 and Figure B1) shows that the coverage of fixed investments in the dataset was notably higher after 1942 and remained so until the end of our study period, being over 90 per cent in 1969, in terms of industrial sectors investments. This suggests that introducing a new legal form for relatively smaller firms did not significantly impair the manufacturing sector representativeness in the dataset.

[46] This phenomenon has some relevance in the immediate post-WWII, as a large number of firms did not have balance-sheet data during the war years.

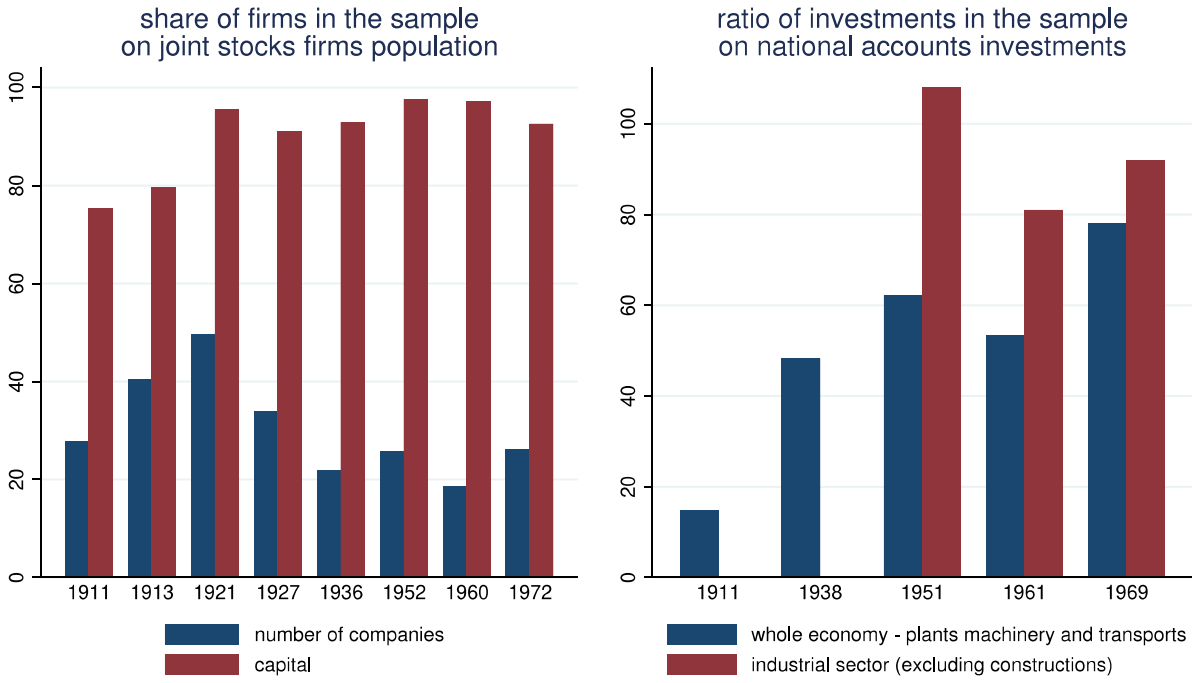
B Additional graphs and tables, Sec. 2

Table B1: Sample size, by year

year	sample	year	sample	year	sample
1903	99	1924	1398	1951	2506
1904	118	1925	1562	1952	2947
1905	155	1926	1765	1953	3060
1906	244	1927	1922	1954	2592
1907	359	1928	2011	1955	2605
1908	504	1929	1919	1956	2708
1909	541	1930	1965	1957	2673
1910	562	1931	1758	1958	2829
1911	592	1932	1794	1959	3015
1912	631	1933	1703	1960	3236
1913	675	1934	1758	1961	3379
1914	688	1935	1688	1962	3338
1915	640	1936	1740	1963	3565
1916	655	1937	1805	1964	3527
1917	689	1938	1719	1965	4068
1918	759	1939	1732	1966	4276
1919	837	1940	1652	1967	4189
1920	993	1947	1089	1968	5019
1921	1202	1948	2014	1969	5430
1922	1365	1949	2168	1970	5580
1923	1486	1950	2344	1971	5760

Note: Manufacturing firms included in the *Imita.db*.

Figure B1: Sample coverage, in relation to joint stock firms population and national accounts investments (perc. points)



Notes and sources: Joint stocks coverage are taken from Vasta (2006). The ratio of investments has been computed as the ratio between the increase of investments in material assets in *Imita.db*, and national account estimates on fixed investments. Fixed investments for the whole economy in plants, machinery, and transport equipment are from Baffigi (2011); fixed investment bought by the industrial sector in a restrictive definition (excluding the construction sector) are available from 1951 in Lupi and Mantegazza (1994).

Table B2: Age since foundation, descriptive statistics

year	mean	max	sd	size-age corr.
1905	9.8	50	10.7	0.22
1911	8.2	56	8.3	0.33
1913	9.4	58	8.3	0.47
1921	9.5	67	10	0.34
1927	9.9	73	9.9	0.42
1936	15.4	87	11.7	0.47
1952	18.1	98	15.2	0.42
1960	19.6	106	17.2	0.44
1971	16.7	117	16.9	0.49

Note: Manufacturing firms included in the Imita.db. The correlation coefficient is computed between age and log. of assets.

Figure B2: Minimum capital threshold for firm inclusion in the source (2020 euros)

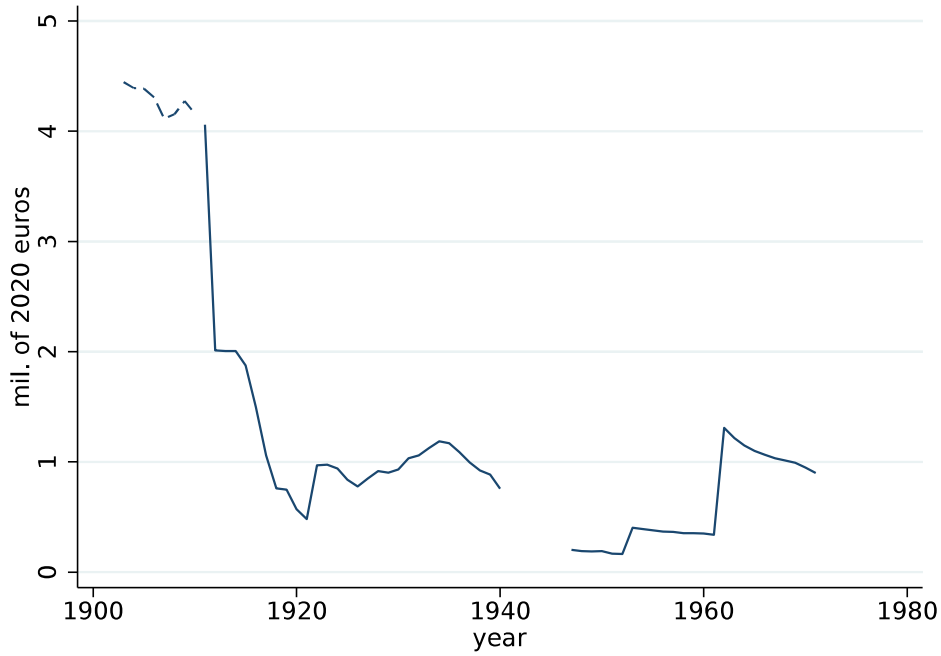
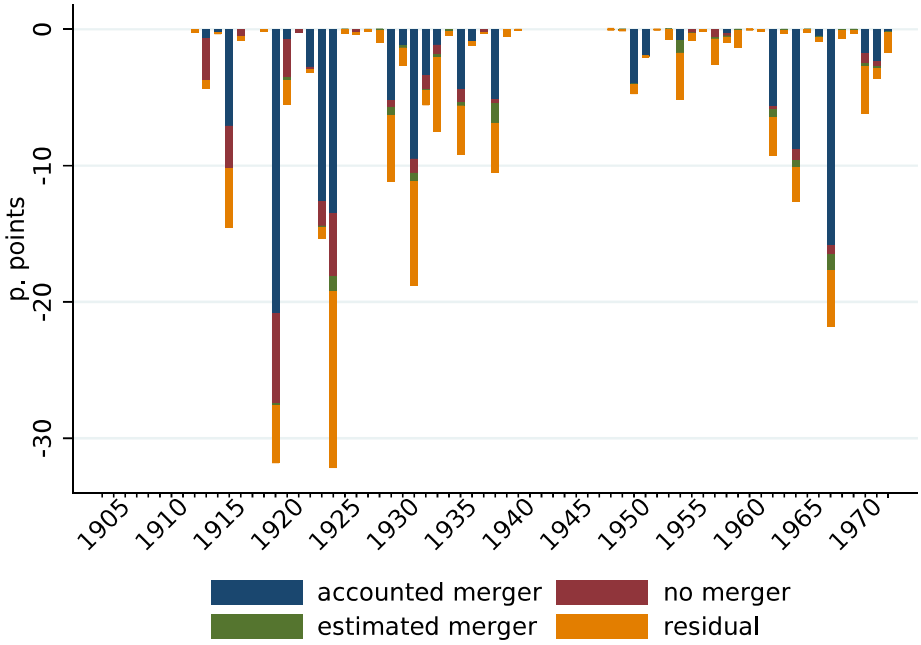
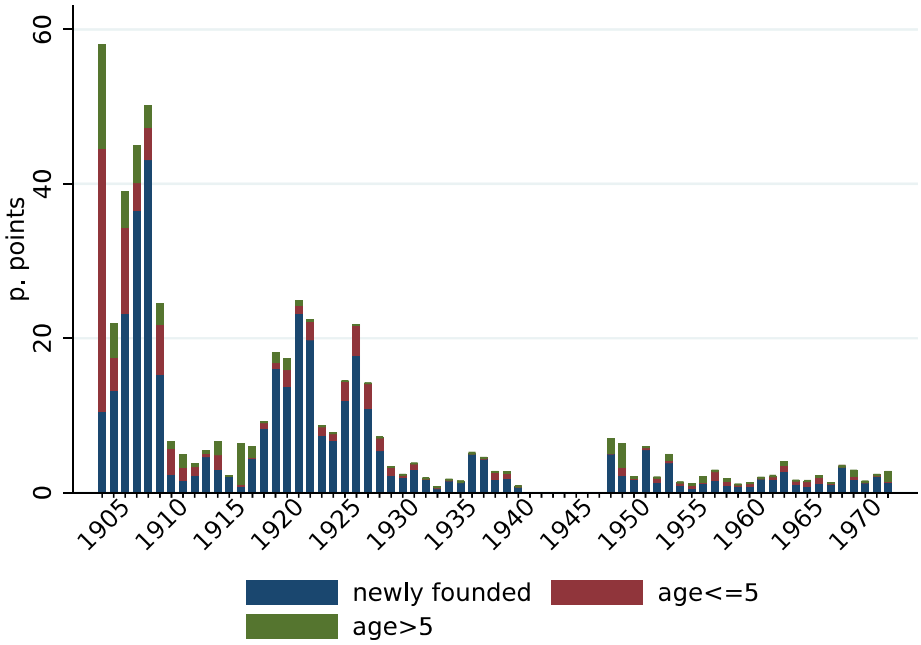


Figure B3: Accounted and estimated mergers, on the overall value of exits



Source: Elaboration based on *Imita.db*. Note: *accounted mergers* are the mergers reconstructed within the largest 200 exits, while *no merger* refers to exits not attributable to mergers within those exits; *estimated mergers* are the exits associated with group linkages in the same sector.

Figure B4: Firms entry in the sample after the foundation, by age



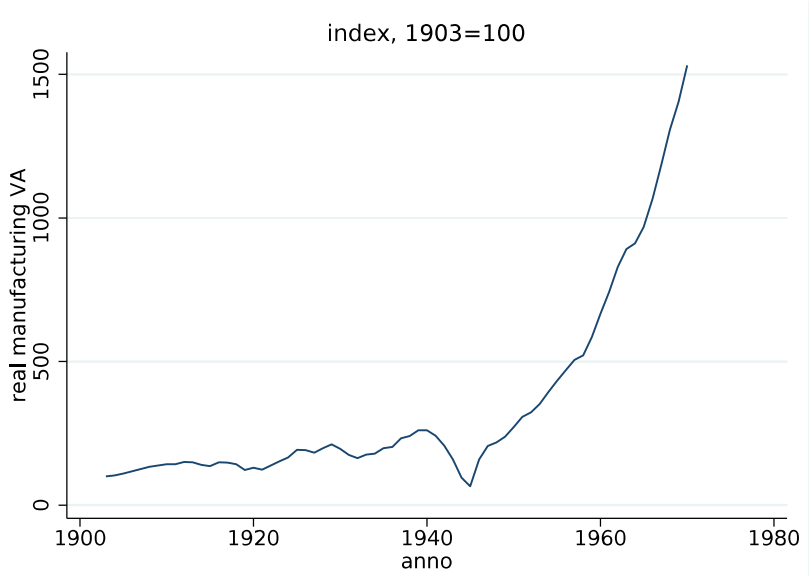
Source: Elaboration based on Imita.db.

Figure B5: Investments of firms in exit, according to capital thresholds

Source: Elaboration based on Imita.db. Dashed vertical lines refer to changing source reports; solid vertical lines to changing the minimum capital threshold to be in the report.

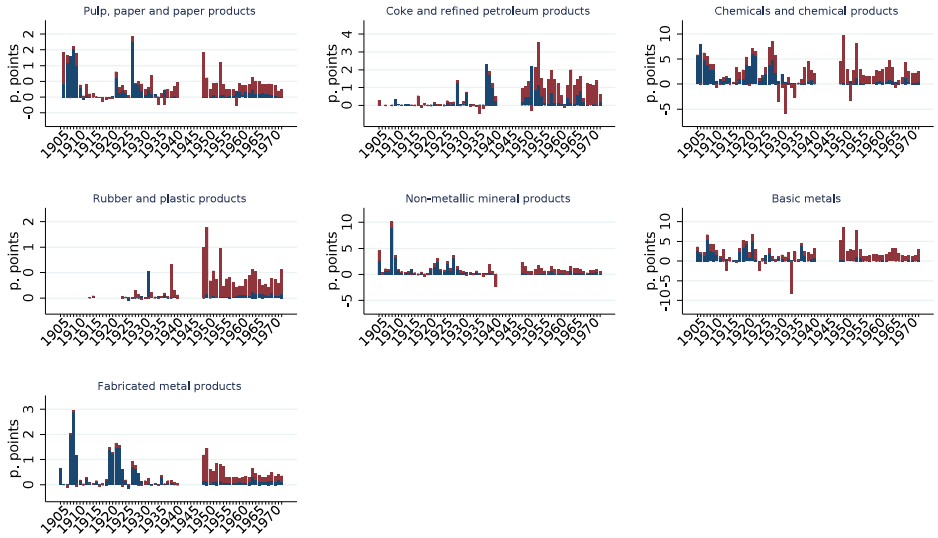
C Additional graphs - Sec. 3-5

Figure C1: Manufacturing value added, real terms



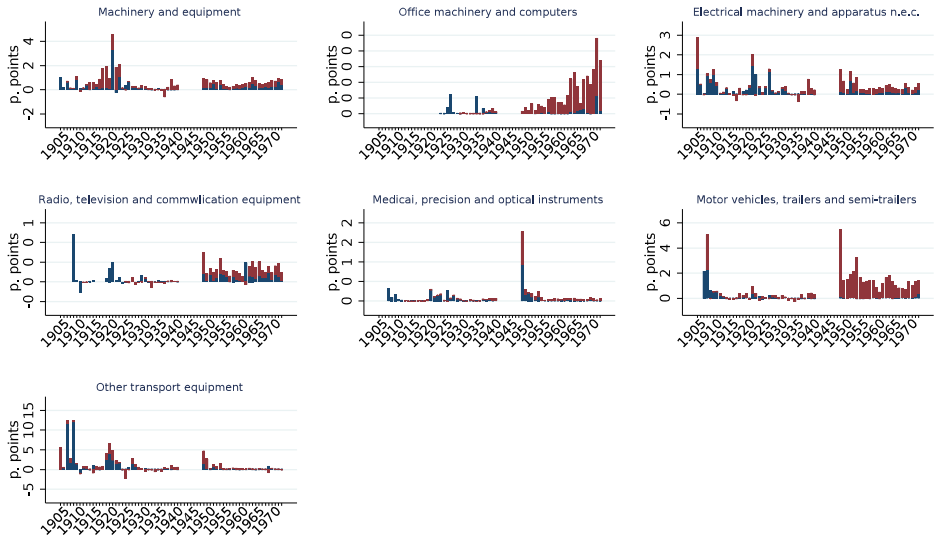
Source: Elaboration based on National Accounts from Baffigi (2011).

Figure C2: Detailed capital intensive sectors 1/2



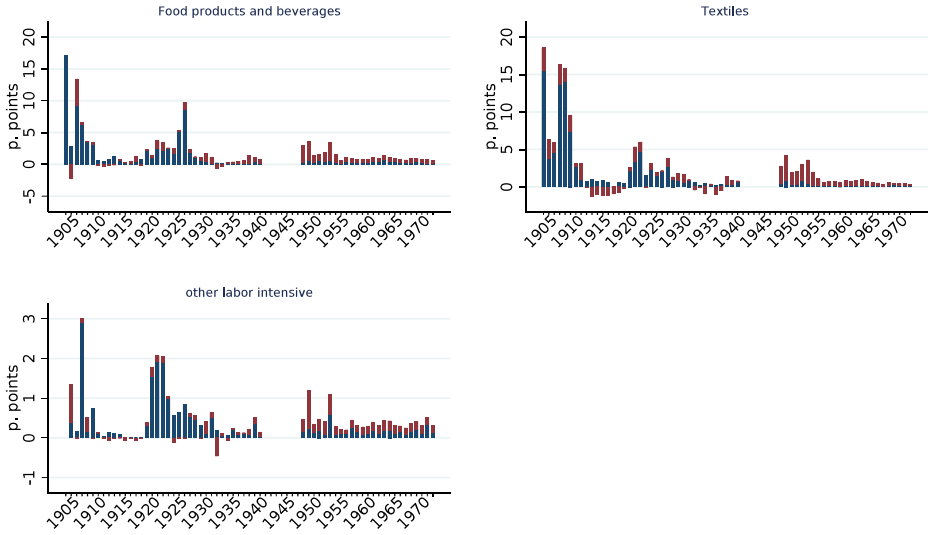
Source: Elaboration based on *Imita.db*. Blue bars encompass firms whose age is not above 5, the red ones those above 5.

Figure C3: Detailed capital intensive sectors 2/2



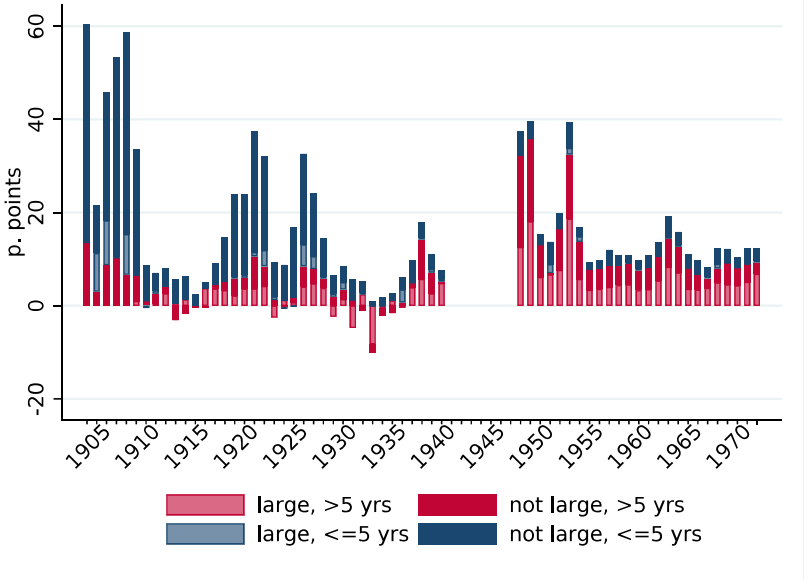
Source: Elaboration based on *Imita.db*. Blue bars encompass firms whose age is not above 5, the red ones those above 5.

Figure C4: Detailed labor-intensive sectors



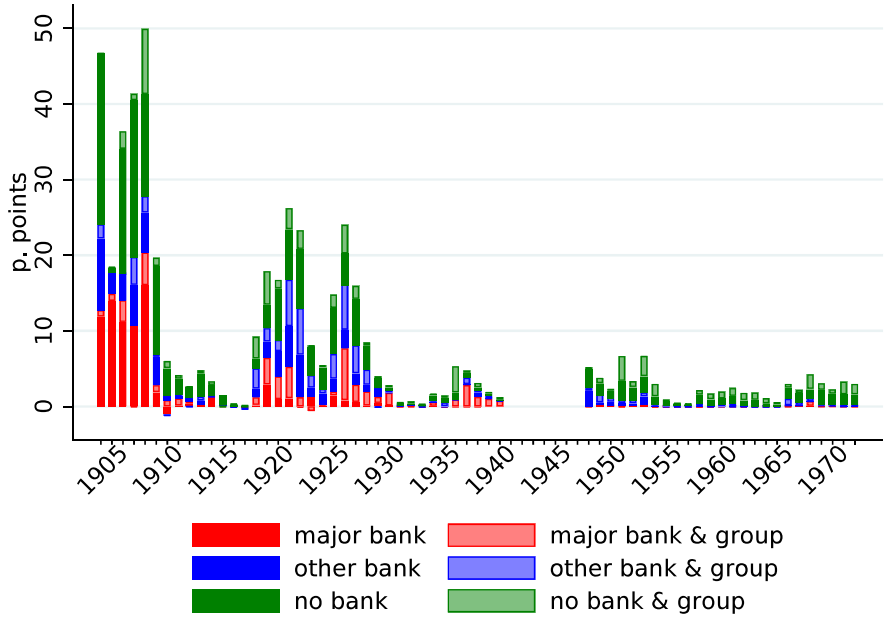
Source: Elaboration based on *Imita.db*. Blue bars encompass firms whose age is not above 5, the red ones those above 5.

Figure C5: Investments decomposition, by firm age and firm size



Source: Elaboration based on *Imita.db*. Note: large firms are defined as the ones in the first percentile of the yearly size distribution.

Figure C6: Young firms Investments decomposition, by banking and groups interlocks.



Note: Young firms are defined as firms with less than 5 years old.

Source: Elaboration based on *Imita.db*.

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