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ARTICLE

# EVOLUTION OF THE LARGE FIRM IN FRANCE IN COMPARATIVE PERSPECTIVE

**by Bruce KOGUT**
The Wharton School - University of Pennsylvania

***Les travaux récents sur l'histoire économique de la France soulignent la régularité de sa croissance sur deux siècles. Les sources de cette croissance proviennent avant tout de la vague de création d'entreprises dans le dernier tiers du XIXe siècle, c'est-à-dire dans une période de forte concurrence nationale et internationale. À la veille de la Première Guerre mondiale, la distribution par taille des firmes françaises était comparable à celles des autres grands pays. Le XXe siècle n'a fait qu'accroître ces corrélations. La différence française porte sur la formation des groupes et sur l'intervention de l'État.***

The great advances in capitalist economies over the past two hundred years have ridden on the back of the creation of firms that pursue appropriable gains in return for their organization of capital and labor. This process of birth and growth has varied dramatically across the ensemblage of countries, but has resulted in a common feature of all advanced capitalist economies, namely, the creation, in Prais' terms, of the giant enterprise. Along with the creation of these firms has come remarkable changes in the corporate law governing legal form that has permitted increasingly the separation of risk bearing from direct management.

Because the generation of large firms is frequently considered to be an index of the economic maturation of a large country, the listing of large public companies that have emerged over time has been of considerable interest. The enumeration of the giant firms has been accomplished for a number of countries, especially the United States, the United Kingdom, Germany, and Japan. The efforts of Chandler (1990) are especially well-known(1).

Of the advanced industrial countries, France has been peculiarly neglected in this regard. In an impressive study to which we will repeatedly return, Jacques Houssiaux

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(1) See his appendices, prepared by Takashi Hikino, which cover the countries of the U.K., Germany, and the U.S for three panels. Fruin (1992) provides similar panels for Japan. Many other lists exist for these and other countries, but for different time periods than the ones used in this study.

(1957) analyzed the competitive implications of the 100 largest non-financial firms for 1912, 1936, and 1952, years that correspond closely by chance to the years of Chandler's panel for other countries[2]. Recently, Michael Smith (1993) has prepared a list of the largest industrial 100 firms in France for 1912.

This paper places in comparative perspective the 200 largest French industrial firms using Houssiaux's initial listing. The sectoral distribution of giant French firms is strikingly similar to that found for other countries. As noted by other commentators, French manufacturing firms had been, however, smaller than their counterparts in other advanced industrial countries. In light of what we know about the role played by small and medium size firms in some economies, we argue that this smaller size provides rather weak evidence to support inferences on the relative maturity of a country[3]. Placed in the context of the process of firm birth and growth, France stands out as prominently successful in the creation of new firms at the turn of the century and in the subsequent stability of the survival of its giant firms.

The thesis of the driving force of large firms on capitalist development is a complex one, for the very reason that economic development should also affect the opportunities of growth of individual firms. A good benchmark process to have in mind is the statistical description advanced by Prais (1976) regarding the spontaneous drift of large firms. Given an initial population of small firms, random drift (be the process log normal or not) will generate giant firms over time responsible for a proportionately large share of production. There are many reasons to believe that such a description is inaccurate: markets are limited 10, in size due to demand or legal constraints, growth can be affected by (dis)economies of scale; and mergers can be a predominant influence[4]. Indeed, the entrepreneurial process succeeds only insofar that old institutional constraints on organizational growth are dissolved. But the underlying intuition of Prais is a sound one: the generation of giant firms points to the importance of the conditions of entrepreneurship and opportunity in a sector and country. It is these conditions that we seek to highlight as providing the interpretative context of the analysis of the listing of the largest French industrial firms for 1912, 1936, and 1952.

## OVERVIEW

To what end do these lists serve? The primary purpose has been two fold. The first is to determine in which industries did large enterprises emerge. This exercise was undertaken by Chandler, among others, in the context of the U.S., principally in reference to the adoption of modern forms of management. The second has been to infer the rate of managerial progress among countries. Both of these purposes proceed by comparison, the first among industries and firms, the latter among countries.

The implications of this argument can be expressed as the following. Certain industries tend toward large enterprises due to inherent economies of scale and scope. Scale economies are realized through the building of large factories and operations; scope economies are realized through distribution systems or through the propensity of some kinds of technologies to offer opportunities of diversification into related fields. Within

(2) Kinghorn and Nye (1996) used the Houssiaux listing.

(3) In fact it is unclear, as Kinghorn & Nye (1996) show that France had smaller average plant sizes than the U.S.

(4) See Hannah and Kay (1977).

these industries, a few firms rise to dominance due to their first mover advantages in exploiting these economies and in developing modern methods of management.

The conclusions regarding countries are more subtle, because the general thesis of inherent economies must now be tempered by consideration of the national environment. Thus, in order to understand why Germany and the United States surpassed Great Britain, Chandler (1990) and others propose theses regarding the character of national systems. The U.S. is labeled as « managerial capitalism »; Germany as « cooperative capitalism »; and the U.K. as « personal capitalism ». The latter is viewed as inferior, because of the inefficient intervention of family interests in the management of these large concerns.

This style of argumentation, while heatedly debated regarding its accuracy, has been impressively influential. (See, in particular, Hannah, 1997, for dissenting evidence.) A good example of its influence has been its application to France. At the end of World War II, France appeared as backward in comparison to the U.S., England, or Germany. Its economy was still surprisingly rural; the low investment rates from 1936 to 1945 were reflected in a capital stock at least 10 years old.

The small size of French firms was part of the evidence that led David Landes (1949) to write of the failed entrepreneurship in the French economy. This thesis, amplified by considerations of more complex economic factors as well as cultural aptitudes, was largely accepted by Kindleberger (1964) in his comparison of Britain and France. As late as 1980, Lévy-Leboyer, who in general has been a proponent of the positive characteristics of the evolution of French firms, nevertheless wrote of the « managerial gap » between French firms and their counterparts in other advanced economies.

This view has fallen in disfavor. In a more recent study, O'Brien and Keydar argue against the thesis of Landes and Kindleberger(5):

*Our central point is that something called relative backwardness cannot be inferred from characteristic features of French industrialization, even where they could be shown to differ from the British pattern. Industrialization in France simply took place in a different legal, political, and cultural tradition and it does not seem to be illuminating to single out elements of that process as symptoms of relative backwardness...*(O'Brien and Keydar, 1978: 21).

In the volumes on French industrial history assembled by Braudel and Labrousse, they note that the size distribution of largest establishments in France fell from 1931 to 1954. But they caution, this distribution is common to the pattern found in Italy and Japan, and one cannot infer a departure from a presumed optimum exhibiting greater economies of scale (Braudel and Labrousse, 1979: 774). In a more recent study, Lévy-Leboyer (1991) has also argued that this view of a « Malthusian » France needs to be reconsidered as essentially the effect of a disastrous period in the 1930s and World War II that disrupted an otherwise remarkable French resurgence in the first third and second half of this century.

To develop this thesis further, it would be useful to understand the generation of large firms as arising out of the unusual burst of entrepreneurial energies at the end of the last century. Did France fail, as so often is claimed, to participate in this second industrial revolution?

(5) Cameron (1961: 503) also strikes a positive assessment of French economic accomplishments, even for the period of the 19th century during which France clearly lost ground. He points to the innovations in bank organization, railways, and new industries (e.g. glass, mining, metallurgy).

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The cause of this difference can be partly explained by differences in the timing and nature of national legislation. The Joint-Stock Companies Act came into being in 1856 in Britain. This Act encouraged greater investment at less risk to the investor as the investor was only liable for the capital subscribed. In return for this limited liability the investor\shareholder was entitled to a share of the company profits in the form of dividends. This, coupled with the fact that « British legislation governing the formation and operation of limited liability companies imposed among the least requirement of information disclosure to shareholders or outsiders of any major economy in the world, with the exception of the United States of America », encouraged company formations in the early years of the Act (Foreman-Peck, 1990: 34-35). However, due to the lax rules for incorporation there was a very high failure rate arising from the moral hazard imposed on promoters of new companies. Fraudulent behavior was rife during the first years of the Act especially in the finance, insurance and banking sectors. With the introduction of the 1883 Bankruptcy Act and the 1890 Winding Up Act the incentive to invest became greater. As the figures in Table 1 show, company formation from 1880 onwards increased dramatically.

France introduced its equivalent to the Joint-Stock Companies Act in 1807. The 1807 Code de Commerce recognized three types of businesses:

1. Société en nom collectif (regular partnership);
2. Société en commandite (limited liability to sleeping partners, unlimited liability to managing partners);
3. Société anonyme (both managers and shareholders had limited liability).

The société en commandite could also issue shares (par action) to avoid dissolution at the times of change in ownership, a form particular favored by all the new steel firms in the early to mid 19th century. In general, 400 to 600 new firms were created per year by this vehicle in the 1840s, rising up to a 1000 in the decade after (Woronoff, 1994: 261).

The capital requirements of most of the new firms did not average more than 100,00 francs in the mid 1800s. However some were quite large. To establish a factory along British lines could require 2-4 million francs. The new company established by Le Creusot in 1836 had a capitalized value of 4 million, and would grow to 33 millions by 1881. Its value in 1836 would have placed it at the bottom of the 200 largest industrial companies in France in 1812 (without adjusting for prices).

Despite the earlier legislative recognition of the limited liability type of company, the first 10 years of the Code saw the formation of fewer than 20 sociétés anonymes, and only 616 such company formations between 1817 and 1867[10]. This low rate of formation can be attributed partly to the more stringent laws. The Conseil d'Etat examined all applications for the formation of société anonyme in great detail for legitimacy and even attempted to assess the probable success of such companies. Furthermore all capital had to be subscribed in advance. Existing operations had to be discontinued before a société anonyme application could be made - this obviously discouraged collectif and commandite types of companies from adopting limited liability especially in the light of the fact that the success of the anonyme application was not

(10) Freedeman (1979: 196). Woronoff (1994: 262) cites the number as 617. Similar motives to borrow from Germany influenced the 1925 change in French corporate law that permitted a new kind of company – la Société à responsabilité limitée or SARL – modeled on the Gesellschaft mit beschraenkter Haftung or GmbH.

were imposed on company officials, of net profits were to be transferred to account until the total amounted to nominal capital. While this require- dered the number of company for- the upside was that there were fraudulent or ill-conceived French es » (Foreman-Peck, 1990: 38).

rding to Henderson (1975: 23), the shment of the customs union on 1 1834 and the opening of the - Furth railway on 7 December alded the dawn of the industrial era any » (p.23). In terms of joint-stock formations, there was a boom in the of such registrations from 1870 when approval was no longer required to a joint-stock company[11]. In , 120 new credit banks were establi- ween 1869 and 1872; in Prussia, w companies were set up between 0 and mid-1873 - of these 21 were tion companies, 49 banks and 12 rail- enderson (1975: 163). Again, despite nal boom the figures for joint stock es do not match those of Britain or nce for the corresponding period.

mparison of Scotland and England self includes wide regional variation) at the joint stock company was used broad spectrum of industries. In 30% of companies incorporated bet- 56 to mid-1895 were in manufactu- 6% were in public utilities and 14% e, banking and real estate (Payne, 4). In England, of those companies ated between 1856 and 1883, 5% coal and iron industries, 5% were in other mining industries, 5% were in ing industries, nearly 6% were in the d restaurant business, and 5% in the buildings business. 3% were in the xtiles industry[12].

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nce of new investment opper- cted in the improvement of the ates of companies at the end of y. Using records filed with the nmercial courts, Chevallier rather substantial number of period of 1840 and 1913 sace and two other depart- lures were particularly high od of 1860-70, with a remar- ff toward the end of the cen- and Labrousse (1979: 257) m 1879-1883 to 1909-1913, o times more than deaths; the llier indicate an even higher ere is high regional variation, tanny, and Calais regions sho- ater than average rates of for- Paris region notably had a proportion of bankruptcies at century than in mid-1800s; the on the contrary, experienced a bankruptcy (Chevallier, 1990: in, regions, such as lower en show a substantially higher n births, partly due to the itional industries (Leménorel, f, 1994) The coming of hydro- stimulated growth in the Alps lleys of lower Normandy, as louse. Overall, the impression nortality data is, except for a ne of entrepreneurial vitality, se formations strongly charac- onomy of the late nineteenth .

lt to make meaningful compa- itain or Germany due to diffe- rences in what is being counted. Certainly, French mortality data do not look worse than what is found in Scotland. Payne (1980: 34) estimates the mean average life of Scottish limited liability companies to be 16.4 years. (A measure more appropriate to comparison would have been the median life.) Nenadic (1990) reports Scottish data that show a mortality rate as high as one-third at the end of the first year for some trades, but some of these firms were reconstituted.

Of some note, foreign (primarily) British-owned companies in France became a rarity by mid 1800s, and the role of the British technical émigrés, upon which Landes (1969) had placed such emphasis, diminished. France in fact began to transfer technology elsewhere in Europe (Straus and Verley, 1990). Though France was a major international investor by the late 1800s (primarily mediated by its large banks), the share of investments in French regions increasingly were dominated by capital flows from urban areas (e.g. Lyons and Paris) and Northern Europe (Mayaud, 1990).

## ECONOMIC GROWTH PRIOR TO WORLD WAR I

It is difficult to understand the rapid rise of French capitalist enterprise without looking at the aggregate and sectoral data. To repeat our claim, the size of firms should be linked to the overall growth rate of an economy. If one looks the period of 1815 to 1913, a few sectors stand out. Despite the loss of Alsace and part of Lorraine (which affected both mining and textiles) and a severe depression in the later third of the nineteenth century, France grew at a rather reasonable. rate. Mining and chemical

er (1979: 270) cites 20800 for the société anonyme form.

ta for formations include a more restricted class of firms than for failures, the two series are not comparisons can be made in reference to their trends.

industries grew roughly at 4.2% a year; textiles at about 1.5% The unit production data permit a greater look into these increases, with iron and steel production growing from 165,000 tons in 1780 to over 2 million tons by 1880 (Woronoff, 1994: 317-18).

The remarkable period of French growth, which surely is reflected in the generation of giant firms, occurred in the period following the Great Depression of the 1880s. French industrial growth was faster in the period of 1896 to 1929 than in the years after to 1963, though this difference is due partly to population growth rates (Carré, Dubois, Malinvaud, 1972: 31, 32)[16]. However, overall economic growth was behind comparable nations. (See Tables IIa and IIb.) But these aggregate figures hide the rapid growth of sectors under going rapid technological change in the French economy at the turn of the century, especially those of electricity and water, mechanical and electrical industries, chemicals, and metallurgy. These industries enjoyed annual growth rates (in percent) of 8.9, 4.5, 5.9, and 6.5, respectively, from 1896 to 1913. Of the active industrial labor force, the share of these industries rose from 16% in 1896; to 30% in 1929 (of active industrial labor force).

Table IIa:
**Average Annual Compounded Growth Rate of GDP, 1870-1985 (% change) 1870-1880**

| | 1880-1890 | 1880-1890 | 1890-1900 | 1900-1913 | 1913-1929 | 1929-1938 | 1938-1950 |
|---|---|---|---|---|---|---|---|
| United States | 4,83 | 4,20 | 3,77 | 3,98 | 3,20 | -0,87 | 5,05 |
| Japan | n.a. | n.a. | n.a. | n.a. | 3,63 | 4,62 | -2,68 |
| Germany | 1,94 | 2,76 | 3,58 | 2,88 | 1,24 | 3,77 | -0,42 |
| France | 2,12 | 0,87 | 1,97 | 1,72 | 1,45 | -0,45 | 1,50 |
| United Kingdom | 1,85 | 2,23 | 2,06 | 1,55 | 0,70 | 1,86 | 1,62 |
| Italy | 0,56 | 0,60 | 1,36 | 2,81 | 1,68 | 1,44 | 1,13 |
| Canada | 3,99 | 2,45 | 2,74 | 5,53 | 2,43 | -0,22 | 5,99 |

Note: Annual arithmetic average growth rate
Source: Maddison (1989)

Table IIb:
**Relative rank in rate of growth of GDP**

| | 1870-1880 | 1880-1890 | 1890-1900 | 1900-1913 | 1913-1929 | 1929-1938 | 1938-1950 |
|---|---|---|---|---|---|---|---|
| United States | 1 | 1 | 1 | 2 | 2 | 7 | 2 |
| Japan | n.a. | n.a. | n.a. | n.a. | 1 | 1 | 7 |
| Germany | 4 | 2 | 2 | 3 | 6 | 2 | 6 |
| France | 3 | 5 | 4 | 5 | 5 | 6 | 4 |
| United Kingdom | 5 | 4 | 5 | 6 | 7 | 3 | 3 |
| Italy | 6 | 6 | 6 | 4 | 4 | 4 | 5 |
| Canada | 2 | 3 | 3 | 1 | 3 | 5 | 1 |

Note: Includes territorial change
Sources: Maddison, *Phases of Capitalist Development*, pp.182-187, supplement to Summers and Heston study, of Income and Wealth Department of Labor, unpublished statistics.

(16) From 1906 to 1931: employees increased by 1800 000; from 1931 to 1954, employment grew by only 475,000 more (Braudel and Labrousse, 1979: 773).

An important feature of this period of modernization is the crisis created by the rise in real wages and fall in industrial prices. (Wages grew from an index of 78.8 in 1880 to 100 in 1908-1912). The effect was to speed the use of machines, particularly through importing from England, Germany, and the U.S.. The impact of the use of machinery was felt not only in the metallurgical and textile sectors, but also in areas not earlier influenced by mechanization, such as in shoe production (Woronoff, 1994); two firms in our list of the largest manufacturing firms in France for 1912 come from this sector. The crisis also put a premium on the search for methods to raise productivity, as evidenced in the interest of a few French industrialists in the application of Taylorism (Boyer, 1984; Moutet, 1997). During this period, French growth in French productivity fell dramatically relative to other countries, and then rose substantially throughout the period prior to World War II. In the interwar period, its productivity gains were only second to Japan. (See tables IIIa and IIIb.) One might hypothesize that this record reflects the rather poor training of French workers compared to German counterparts (Lequin, 1978: 314ff), and hence the impact of standardized work methods were especially appropriate for the French environment(17).

The effects of this growth and increased capitalization can be seen in the data on the size distribution of establishment (see Table IV). Again, there are large sectoral diffe-

Table IIIa:
**Relative Rank In Productivity**

| | 1870 | 1880 | 1890 | 1900 | 1913 | 1929 | 1938 | 1950 |
|---|---|---|---|---|---|---|---|---|
| United States | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 |
| Japan | 7 | n.a. | 7 | n.a. | 7 | 7 | 7 | 7 |
| Germany | 5 | 5 | 4 | 4 | 4 | 5 | 5 | 5 |
| France | 4 | 4 | 5 | 5 | 5 | 4 | 4 | |
| United Kingdom | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 3 |
| Italy | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Canada | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 |

Table IIIb:
**Relative Rank In Productivity Growth**

| | 1870-1880 | 1880-1890 | 1890-1900 | 1900-1913 | 1913-1929 | 1929-1938 | 1938-1950 | 1950-1960 |
|---|---|---|---|---|---|---|---|---|
| United States | 3 | 2 | 3 | 3 | 3 | 6 | 2 | 6 |
| Japan | n.a. | n.a. | n.a. | n.a. | 1 | 3 | 7 | 2 |
| Germany | 5 | 1 | 1 | 5 | 7 | 4 | 5 | 1 |
| France | 1 | 6 | 4 | 4 | 2 | 2 | 4 | 4 |
| United Kingdom | 4 | 3 | 6 | 6 | 6 | 5 | 3 | 7 |
| Italy | 6 | 5 | 5 | 2 | 4 | 1 | 6 | 3 |
| Canada | 2 | 4 | 2 | 1 | 5 | 7 | 1 | 5 |

Source: Maddison (1989).

(17) The German productivity figures are almost seriously understated, since they do not include the effect of the introduction of the 8-hour day. (Labor is measured by number of workers.) See Holtfrerich (1990) for a discussion. This bias should also apply to the French data for the same reason.

rences. Four-fifths of workers in mines and metallurgy worked in establishments of more than 500 people in 1906. Only 189 establishments employed more than 1000 people: 44 of these establishments were in textiles, 43 in mines, 23 in metallurgy. (Textile companies are under represented in the list of large firms for 1912, as many were privately held.) By 1931, the number of these establishments rose to over 400 (Braudel and Labrousse, 1979: 260; Woronoff, 1994: 418).

The interplay of institutions and their effect on new industry development in France can be gleaned by looking at the auto industry. France had already seen notable success in the bicycle industry, and was concomitantly rising to importance in the production of tires and aeronautics. However, it is in autos that France achieved a particular success. Though the Germans made the initial innovations, France was the second largest producer in the world prior to World War I, and the largest exporter. The origins of the industry point to particular institutional strengths in the French economy. According to Fridenson, a good third of entrepreneurs of auto firms came from the mechanical equipment sector, another third were entirely new started by usually young men from urban bourgeois homes. But what is particularly remarkable is the role played by well-trained engineers in the more successful start-ups. Levassor, Panhard, and Peugeot were centraliens; Renault however failed to enter the same institution. Citroën graduated from the École Polytechnique[18]. Moreover, financing for new companies - which at this time were not especially capital intensive -appeared to be rather ample[19]. Consequently, the number of entrants was reasonably high, as well as mortality count. Fridenson counts 30 manufacturers of autos in 1900, 57 in 1909, 155 in 1914. However, the average duration was apparently short. Within 2 years, 22 died; from 2-5 years, 58 perished; 6-10 years, 29 died; 11-20, 31 died, and after 20 years, 35 died (Fridenson, 1998: 26-7; there is some ambiguity as to the time span).

Table 4:
**Size of Establishments**

| Number of employees | 1906 | 1931 |
|---|---|---|
| 1-10 | 32.2% | 19.7% |
| 11-100 | 27.% | 30.1% |
| 101-500 | 21.7% | 23.6% |
| More than 500 | 18.5% | 26.6% |

(18) The importance of École Centrale and other engineering schools to the early development of the new industries of electricity and electrical machinery is brilliantly traced in Lévy-Leboyer, 1979; see particularly footnote 17, page 154, where the educational origins of the great entrepreneurs of these two industries are described. Moreover, the allure of business over government service was so great that after World War I, over 1/2 of graduates from Polytechnique worked in private affairs, representing a 3 fold growth numerically from 20 years prior.

(19) Fohlen (1978: 372-3) notes that industry often created banks to achieve the intermediation of capital to investments in new industries, such as illustrated by the founding of the Société Generale by iron magnates like Talabot and Schneider; he concludes that France was not handicapped in finance compared to other countries. However, he, like Gille (1959) and Lévy-Leboyer (1985), notes the tendency for financing out of retained earnings (« autofinancement »).

The closely related industry of aeronautics shows a similar pattern to that of automobiles. The Paris region, as in the case of autos, was the principal site of location. Here, again, we see creation of firms arising out of entrepreneurial conditions of entry, growth, and elimination[20]. While many of the early entrepreneurs received their education from less prominent institutions or from experiences in other industries, technical training at one of the grandes écoles characterized the background of many of the early entrepreneurs. The early military pioneers were polytechniciens (e.g. Renard). Of the major commercial entrepreneurs, Louis Blériot, the brothers Louis and Laurent Seguin (principal figures behind the immediate technical success of the Société Gnome), E. Canton and R. Unné (who founded the Société Anonyme des Moteurs Salmson-système) graduated from the École Centrale. One of the most important pioneers, Ferdinand Ferber, graduated from Polytechnique, and like many of his generation, left the military and government service to enter private business (Chadeau, 1987; Lévy-Leboyer, 1979). Though entry and exit data are hard to find, many of the original firms found their initial market shares rapidly eroded due to the easy entrance of powerful suppliers, e.g. Michelin, and of firms in related industries, e.g. Renault, to the industry (Chadeau, 1987). As in the auto industry, we see the combination of entrepreneurial talent of often well-trained engineers rapidly developing a new industry of the second industrial revolution[21].

## THE LIST OF 1912

This burst of entrepreneurial energies is not fully apparent in the 1912 listings. As explained in appendix 1, the restriction of the list to manufacturing eliminates some industries where France clearly had built to importance, such as department stores, transport utility industries, and pure mining operations. According to Houssiaux, transport and rail companies occupy the first three positions in the list of the largest non-financial companies in 1912; Galeries Lafayette (a department store) is number 22. Water companies are a special feature of the French economy; largely private, they played significant roles in overseas markets and in branching into new businesses, but they are treated in these lists as public work companies, unless they were clearly active in the beverage industry. Compagnie Genérale des Eaux is the fifth largest non-financial firm, and plays a significant role in the French and world economy to the current day. Moreover, many of the more remarkable French firms were not public. These include Renault in autos, Michelin in tires, and Amédée Prouvost in textiles[22].

In comparison to firms from America, the U.K., or Germany, French firms were generally smaller. Only two firms make the list of the 100 largest capitalist firms in 1912 put together by Christopher Schmitz (1995) and Leslie Hannah (1997)[23]. In large part, this smaller size can be attributed

(20) Profits, which were historically high for French industry in general at the start of the century, were certainly remarkable in the auto industry for survivors, showing a 20 fold increase between 1900 and 1907 (Fridenson, 1997; Woronoff, 1994)

(21) Another related industry is tires. France had a notable success here too, but since the leading tire firm (Michelin) was closely held, it does not appear in the 1912 list.

(22) Smith (1993) includes a useful indication of the large private firms missing from his list of 100.

(23) Kinghorn and Nye (1996) argue that French firms were similar in size to German firms. The data, however, are not directly comparable across countries due to differences in industry composition and in accounting principles. Still, the observations provide a compelling caution to the argument of the relative smallness of French firms. This impression may have been founded in a too narrow focus on a few industries (e.g. electrical equipment and chemicals – Saint-Gobain was primarily a glass company); certainly French firms in these industries were much smaller by the 1930s.

to the absence of a pre-World War I merger movement. Houssiaux (1958: 340) notes only 17 mergers between 1900 and 1908, 54 between 1909 and 1913. Moreover, there was little vertical or horizontal integration prior to 1914. Still, as Smith (1993) has noted, France does well in a few sectors. The two largest French sugar companies were 3 times the size of Germany, and larger than any other German food company. Brasseries Quilmès is of comparable size to German counterparts.

French firms were relatively small in chemicals, electrical equipment, and steel. Though Saint-Gobain was the largest manufacturing firm in France and held about 16% of world glass output prior to World War I, its chemical operations were not large; the French chemical firms that come later to play a dominant role, such as Rhône, Poulenc Frères, or Gillet, were also not comparable to a DuPont or Bayer of this time. French steel output was only a quarter of German output, and its companies were not surprisingly much smaller (Smith, 1993).

France is slow in the development of electrical equipment companies. Its initial companies worked originally from foreign patents, Thomson-Houston in particular being closely allied with General Electric of the U.S.. Neither Thomson-Houston nor Compagnie Générale d'Électricité were comparable to American companies (including Westinghouse) or AEG or Siemens of Germany, though both were ranked as large by French standards. Equally revealing is that the electrical sector does not show the dynamism of a Germany. Whereas the electrical industry in Germany showed a tight clustering of thousands of small firms located often in the Berlin area, France did not reveal a dynamic growth (Czada, 1969). In 1913, some 30,000 employees worked in the French electrical equipment industry; in Germany, the corresponding number was 140,000 (Woronoff, 1994: 383).

## INTER-WAR AND WORLD WAR II PERIODS

France of the inter-war period made substantial gains in the modernization of its economy. The dominance of the mining processing sector decreased relative to the new industries of petroleum and chemical productions, electrical equipment and generation, and the rubber and paper industries. Even during the bleak period of occupation, these sectors grew from 33% to 39% between 1938 and 1949. It was also a period that French firms began to emulate the techniques of mass production set by the American example. The most notable example were the Citroën works which imported American capital equipment and were designed, unlike the Renault works, to support mass production of a narrow product range (Schweitzer, 1982).Still, French firms remained small in comparison to other countries. Lévy-Leboyer (1991: 366) notes that the sales of the top ten French and American firms had a ratio of 1 to 20 in 1929. The capitalization of the top 50 firms in Paris and London reveal a ratio of 3 to 1 by the late 1920s as well.

The two factors often indicated as an explanation for this persisting smaller size are the small size of the French market and the loss in export shares. The effect of the small size of the French market - exacerbated by a much larger rural sector compared to England or America and Germany - can be inferred by the findings on concentration. A reasonable supposition is that higher industrial concentration would lead to the creation of large firms. French industry became much more concentrated in a number of industries. A study by Malinvaud shows faster growth of total assets of top 10 firms (10.7%) compared to national revenue (6.1%) from 1912 to 1936 (cited in Braudel and Labrousse, 1979, p. 338). (This rate was not maintained in the period up to the 1952 listing.) Lévy-Leboyer (1991) notes that 12 steel firms had 70 to 80%

of market in the 1920s, reflecting a larger fragmentation of the market than found in Germany. Yet, three firms attained this share in chemicals, glass, and petroleum. In autos, Citroën, Renault, and Peugeot had 59% market share in 1923 and 80% in 1938. Some industries were dominated by individual firms; in tires, Michelin 40-45% market share; Alsthom had a similar share in heavy electrical equipment; and Gillet in artificial fibers had an 87% share in 1925. Despite these levels of market concentration, French firms still rarely achieved the sizes of leading international competitors. The French market, it is often noted, was not sufficiently large to generate firms of comparable size, certainly, to U.S. firms, but also to U.K. companies.

The second related cause frequently cited for the stilted growth of the large firm in France is its loss of export shares in world markets, as seen in tables Va and Vb. In 1870, France's share of exports among 6 industrialized countries (our four countries of Germany, U.K., Japan, and U.S., plus Canada) was 24%. By 1913, this share fell to 15.8%, and to 13% by 1938. In terms of absolute share, French exports tripled from 1870 to 1913, but whereas it was not far beyond the U.K. at the start of this period, it lagged Germany and the U.S. substantially by World War I. These data present a picture of an export sector losing relative competitiveness, yet still growing substantially. The absolute importance of the export sector call into question simple state-

Table Va:
**Relative rank country percentages of 6 country total exports**

| | 1870 | 1880 | 1890 | 1900 | 1913 | 1929 | 1938 | 1950 |
|---|---|---|---|---|---|---|---|---|
| United States | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Japan | 5 | 6 | 6 | 6 | 6 | 6 | 2 | 6 |
| Germany | 2 | 4 | 4 | 2 | 2 | 2 | 3 | 5 |
| France | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 2 |
| United Kingdom | 1 | 2 | 2 | 3 | 3 | 4 | 5 | 3 |
| Canada | 6 | 5 | 5 | 5 | 5 | 5 | 6 | 4 |

Sources: Maizels, *Industrial Growth and World Trade*, pp.426-427 - Maddison, *Phases of Capitalist Development*, pp.248-254.
Note: Figures refer to the customs territory of the year specified.

Table Vb:
**Export values, 1870-1986**

| Millions of US $ | 1870 | 1880 | 1890 | 1900 | 1913 | 1929 | 1938 | 1950 |
|---|---|---|---|---|---|---|---|---|
| United States | 322,9 | 869,4 | 1003,5 | 1808,4 | 2484,0 | 3929,7 | 3122,4 | 5579,1 |
| Japan | 9,5 | 21,7 | 41,6 | 92,3 | 315,0 | 812,4 | 1853,1 | 661,8 |
| Germany | 425,7 | 538,7 | 716,7 | 1075,0 | 2405,0 | 2207,8 | 1370,9 | 836,9 |
| France | 422,6 | 591,2 | 720,3 | 837,1 | 1359,0 | 1997,7 | 1236,7 | 2027,6 |
| United Kingdom | 498,8 | 660,8 | 883,8 | 939,9 | 1604,0 | 1304,1 | 919,1 | 1604,0 |
| Canada | 77,3 | 98,9 | 102,0 | 207,4 | 432,0 | 834,6 | 829,4 | 1343,5 |
| 6 Country Total | 1756,9 | 2780,8 | 3467,8 | 4960,1 | 8599,0 | 11086,3 | 9331,6 | 12053,0 |
| World Total | 2807,5 | | | | 11230,0 | | | 17013,5 |

Source: Own calculations from above sources

of a total of 3,120 seats.
ction structure which was
entrated », concluded
« the most essential busi-
under the control more or
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rmed, this tightly knitted
ıg family ownership ties
racteristic of French eco-
ough the current period.
ationalization (e.g. those
, Renault and Gnome &
NECMA) did not eradi-
e of groupings from the
(Morin, 1974). Family
d an important feature of
ontrol through the 1960s
ned in the larger compa-
lecades (Chadeau, 1993).
origins of French busi-
-Leboyer (1979: 141) not
luded that though their
more diverse over the
1973 the striking feature
narrowness of the social
ı they were recruited.

## OMPARISONS
## OUNTRIES

intense alliances and cor-
no doubt influenced the
ne French firms and their
d these groupings, howe-
ent economic forces that
of firms among industries?

es the quick answer: large
pear to populate similar
arge firms elsewhere.
of firms does not address
onship between sector and
lual firms among these top
mple, important to distin-

guish between two large firms belonging to the same industry, or whether certain industries generate larger firms relative to (large) firms in other sectors.

To address this question, we apply a methodology that eliminates the effects of differences in national accounting practices and in nominal currency valuations. This methodology, as described in figure 1 (page 20), converts the size of French firms for each year into z-scores by subtracting the country mean and dividing by the standard deviation for that year. By running a regression of these scores on industry dummies, a set of industry coefficients are estimated. (Industries with no firms are given the value of the minimal size firm on the list). These coefficients indicates the effect of belonging to a particular industry on a firm's size. These coefficients are correlated with the results from five countries for which comparable lists exist[26].

Table VI:
**Industrial Distribution of the Largest Firms by Country and Sector**

| SIC Industry | | | | | | |
|---|---|---|---|---|---|---|
| United States (1917) | Great Britain (1919) | Germany (1913) | France (1912) | Japan (1918) | Group | |
| 30 | 63 | 23 | 18 | 31 | 20 | Food |
| 6 | 3 | 1 | 1 | 1 | 21 | Tobacco |
| 5 | 26 | 13 | 8 | 54 | 22 | Textiles |
| 3 | 1 | 0 | 3 | 3 | 23 | Apparel |
| 3 | 0 | 1 | 1 | 3 | 24 | Lumber |
| 0 | 0 | 0 | 0 | 0 | 25 | Furniture |
| 5 | 4 | 1 | 3 | 12 | 26 | Paper |
| 2 | 5 | 0 | 11 | 1 | 27 | Printing and publishing |
| 20 | 11 | 26 | 30 | 23 | 28 | Chemicals |
| 22 | 3 | 5 | 3 | 6 | 29 | Petroleum |
| 5 | 3 | 1 | 3 | 0 | 30 | Rubber |
| 4 | 0 | 2 | 3 | 4 | 31 | Leather |
| 5 | 2 | 10 | 8 | 16 | 32 | Stone, clay and glass |
| 29 | 35 | 49 | 33 | 21 | 33 | Primary metals |
| 8 | 2 | 8 | 4 | 4 | 34 | Fabricated metals |
| 20 | 8 | 21 | 10 | 4 | 35 | Non-electrical machinery |
| 5 | 11 | 18 | 12 | 7 | 36 | Electrical machinery |
| 26 | 20 | 19 | 36 | 9 | 37 | Transportation equipment |
| 1 | 0 | 0 | 10 | 9 | 38 | Instruments |
| 1 | 3 | 1 | 3 | 1 | 39 | Miscellaneous |
| 200 | 200 | 200 | 200 | 200 | | Total |

*Note:* Ranked by total assets, except for Great Britain where ranking is based on the market value of quoted capital. Alfred D. Chandler, Jr., and Takashi Hikino, « The large industrial entreprise... », *art. cit.*, p.32; author's data for France.

(26) See Kogut (1992). The data are from appendices 3, 4, and 5; Chandler (1990), and Fruin (1992). The methodology has a few obvious problems, but it is consistent with the primary purpose of these lists to identify the size of firms with the underlying technological opportunities in a sector.

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| 0.4757 |
| 0.8446 |

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HISTOIRE

ed with other firms, existed at the turn of century. In chemicals, Rhône-Poulenc, iney, Saint- Gobain, l'Air Liquide were ded in the previous century, as was pagnie Générale d'Électricité and nson-Houston in electrical equipment. list can be extended to many of the most rtant French corporations: Lafarge- ée, Renault, Compagnie Générale des , and Michelin. Using dates of incorpo- , Houssiaux (1958: 295) found, in fact, of the 100 companies in 1952, 15 were than 75 years, 30 more than 50 and less 75. More striking, only 15% of his list of firms from 1912 died by 1952; another changed names by merger. However, 71 of left the list by 1952.

crude comparison can be made between e and other countries by using informa- generated from Chandler's tables by (1993). He measures in how many sec- did the top 1 or 2 firms retain their posi- over the 3 panels, and from this, gene- survival probabilities. For the U.S., 57% top firms survived in their ranks bet- the two panels of (approximately) 1917 948; for the U.K., 56% survived; and for any, 31%. For France, only 14% of the firms survived at the top between 1912 1936, whereas 39% survived between and 1952. (We exclude foreign and free- ing firms.) Again, we have an image of a lent inter-war period, with a more stable, h hardly quiescent, industry between and 1952[27].

should be recalled, however, that these ures do not capture fully the picture. For ple, the old mining and metallurgical of France under went the appearance of l change, partly in response to the pres- of the French government. The French industry was gradually consolidated gh founding of a holding company cal- délor, created by the merger of Société des Aciéries de Rombas, Aciéries de Micheville, Aciéries de la Marine et Homécourt, et Fonderies de Pont-à-Mousson. The creation of Usinor was the merging of the Société Denain-Anzin and Forges et Aciéries du Nord et de l'Est, but also was structured as a holding. Similarly, the Chantiers de Saint-Nazaire-Penhoët and Chantiers de la Loire disappeared but in the form of submitting to a holding structure. These are ancient names in the history of French industry, but their real disappearance awaited the more intense pressures of the 1960s and 1970s when even the oldest of the companies, Saint-Gobain, was forced to change radically its ownership and portfolio (Daviet, 1989).

## CONCLUSION

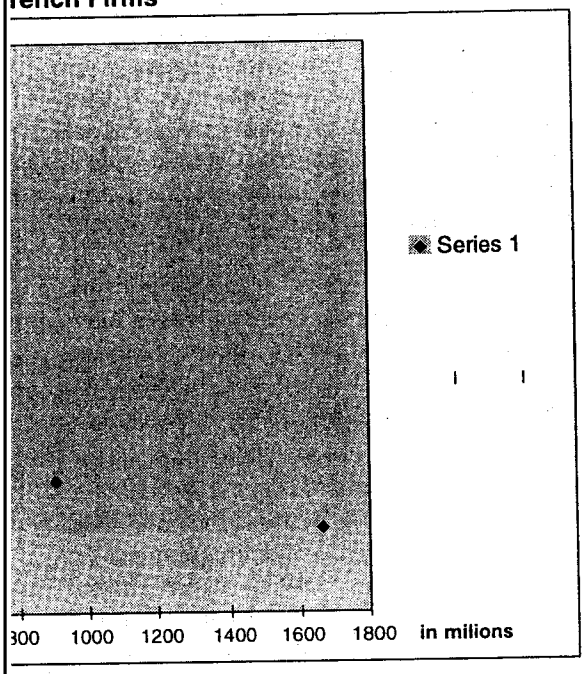
A comparison of the evolution of large firms in France with other countries reveals a number of significant commonalities in the sectoral distribution of large firms. No doubt part of this commonality is the result of conscious efforts to consolidate such industries as chemicals and electrical equipment to correspond to Germany or America. Indeed, this conscious borrowing was to be all the more enforced in the period of state intervention and nationalization that characterized France in the post-war period. The Chandler thesis of the importance of size is, in this sense, vindicated partly because French industrialists and bureaucrats believed precociously in the argument.

But France has also evolved along lines evident in the 1800s. The industries that have come to be important to France, e.g. autos, chemicals, aeronautics, and food, were founded amid an impressive burst of entrepreneurship at the turn of the last century. Though this period was marked by an intensive struggle for survival, the resulting industrial

we perform this same calculation including the listing given by the magazine *L'Expansion* for 1970, only 14 firms listed in the top two positions in 1952 survive in this position by this latter date.

sarily its physical dimension. The measure of the actual complexity of operations is better gauged by asset valuations than by market values, assuming the data are reasonably accurate. It is the word reasonable that remains the point of contention.

igure II:
**rench Firms**




ppendix II:
**and Foreign Companies**

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embodied in French law. At the same time, the growth of these firms is largely affected by the prospects in a foreign country.

Since the frequency of free-standing firms among the largest French companies fell dramatically in the later lists, we included them in the 1936 and 1952 listings. Moreover, many of these companies had developed French activities over time, and it could also be argued that French colonies were fairly integrated into the overall economy by 1952. However, they are quite important in 1912, especially in the mining,

oil and metal processing, and food industries. We consequently left them out from the 1912 200 list, but have provided information on these 51 firms in appendix 6. All of these firms are larger than the smallest firm listed for 1912.

Wilkins (1988) noted that most of the free-standing firms from England were located in colonial and less industrialized countries. Those established in the U. S. were prone to failure. For the most part, the French pattern shows an even more striking tendency to be located outside of western Europe and North America. Like Britain, France was exporting considerable capital internationally by the end of the 1800s, and its financial markets offered comparatively low cost financing compared to those of other countries. Braudel and Labrousse (1979: 226) note that 50% of French savings may have been exported in the late 1800s, a large percentage though not unlike that found in the UK or Germany. « The exportation of capital, » they note, « was largely the work of the large French banks, to which the state often lent aid and protection, with French industry playing only a very weak role. » While some French firms established foreign subsidiaries prior to World War I, these companies, e. g. Saint-Gobain, were exceptional.

It is reasonable to infer, as did Wilkins, that the explanation of the French free-standing company is associated with imperfections in international capital markets that rendered it advantageous to incorporate in France, borrow money from the French stock exchange, and yet operate entrepreneurial activities in foreign locations. Apparently, investors required local incorporation as a way to benefit from French corporate law regarding oversight and to have easy access to press charges against resident corporate officers.

Foreign firms (i. e. firms with French affiliates but with headquarters located outside of France) play an increasing important role in the French economy. Some foreign firms are simply traded on the French market, such as AT&T or the Virginia Carolina Chemical Company. This kind of firm was excluded in all the lists. No foreign firms appear to qualify for the top 200 listing in 1912. Smith (1993) includes a few, e. g. Westinghouse, in his list.

Foreign firms were included in the 1936 and 1952 list for two reasons. The affiliatesí assets are located in France, and they provide information on the growth of the French economy. Arguably, if they were historically not present, the size of competing firms would be larger. Given the large role of foreign companies in modern capitalist economies (some 20% of U. S. manufacturing assets are foreign owned), the deletion of foreign owned companies would give highly incomplete view of an economy. Second, rules of exclusion would be hard to apply. Acquisitions of French companies or partial ownership (e. g. Brown Boveri's stake in the Compagnie Electromécanique) are cases in point. There is also the historically interesting phenomenon that some foreign companies revert back to French control. Goodrich's minor position in Kléber-Colombes is a minor example; a more recent example is Machines Bull.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 75 | 200 | Société la Soie Végétale Française | 11 | 2824 | | | | 1 | 2824 |
| *Group 29: Petroleum and Coal Products* | | | | | | | | | |
| 76 | 56 | Compagnie Industrielle des Pétroles | 199 | 2911 | | | | 1 | 2911 |
| 77 | 115 | Maison Bernot Frères (Ch. Bernot et Cie) | 73 | 299 | | | | 1 | 299 |
| 78 | 138 | Société Lorraine Industrielle | 58 | 14 | 2992 | 2999 | 101 | 6 | 14, 2992, 2999, 1011,1311,122 |
| *Group 30: Rubber and Miscellaneous Plastic Products* | | | | | | | | | |
| 79 | 36 | Société Générale des Etablissements Bergougnan | 379 | 30 | | | | 1 | 30 |
| 80 | 53 | Établissements Hutchinson | 223 | 30 | | | | 1 | 30 |
| 81 | 178 | Établissements Bognier et Burnet | 28 | 306 | | | | 1 | 306 |
| *Group 31: Leather and Leather Products* | | | | | | | | | |
| 82 | 54 | Société Anonyme des Anciens Établissements | 204 | 311 | | | | 1 | 311 |
| 83 | 119 | Société Anonyme des Chaussures Incroyable | 72 | 314 | | | | 1 | 314 |
| 84 | 126 | Société Générale des Chaussures Françaises | 65 | 314 | | | | 1 | 314 |
| *Group 32: Stone, Clay and Glass Products* | | | | | | | | | |
| 85 | 1 | Saint-Gobain | 1358 | 32 | 28 | | | 2 | 32, 28 |
| 86 | 70 | Société des Ciments Français et des Portland de Boulogne-sur-Mer | 163 | 324 | | | | 1 | 324 |
| 87 | 107 | Compagnie Nouvelle des Ciments Portland du Boulonnais | 85 | 3274 | 3241 | 3271 | | 3 | 3274, 3241, 3271 |
| 88 | 125 | Société des Établissements Porcher | 66 | 3261 | | | | 1 | 3261 |
| 89 | 127 | Compagnie Franco-Russe des Ciments Portland de Guelendjik | 64 | 3241 | 3274 | | | 2 | 3241, 3274 |
| 90 | 141 | Société des Plâtrières Réunies du Bassin de Paris | 56 | 327 | 3271 | 325 | 324 | 4 | 327, 3271, 325, 324 |
| 91 | 163 | Société Centrale des Briqueteries de Vaugirard | 40 | 3255 | 3251 | 1459 | 1429 1446 | 5 | 3255, 3251, 1459,1429,1446 |
| 92 | 198 | Usines Toy-Riont et Radisson Réunies | 12 | 3251 | 3253 | 3255 | | 3 | 3251, 3253, 3255 |
| *Group 33: Primary Metal Products* | | | | | | | | | |
| 93 | 3 | Compagnie des Forges et Aciéries de la Marine et d'Homécourt | 1207 | 332 | 331 | | | 2 | 332, 331 |
| 94 | 4 | Schneider et Compagnie | 1102 | 101 | 332 | | | 2 | 101, 332 |
| 95 | 6 | Aciéries de Longwy | 960 | 332 | | | | 1 | 332 |
| 96 | 8 | Aciéries de Micheville | 885 | 331 | | | | 1 | 331 |
| 97 | 9 | Aciéries de France | 824 | 332 | | | | 1 | 332 |
| 98 | 10 | Châtillon, Commentry et Neuves-Maisons | 824 | 332 | | | | 1 | 12 |
| 99 | 11 | Compagnie Française des Métaux | 801 | 3331 | | | | 1 | 3331 |
| 100 | 17 | Tréfileries et Laminoirs du Havre | 648 | 333 | 335 | | | 2 | 333, 335 |
| 101 | 20 | Forges et Aciéries du Nord et de l'Est | 612 | 332 | 331 | | | 2 | 332, 331 |
| 102 | 23 | Denain-Anzin | 549 | 331 | | | | 1 | 331 |
| 103 | 28 | Hauts-Fourneaux et Aciéries de Caen | 455 | 331 | | | | 1 | 331 |
| 104 | 30 | Usines Métallurgiques de la Basse-Loire | 412 | 332 | | | | 1 | 332 |
| 105 | 31 | Compagnie Industrielle du Platine | 406 | 333 | | | | 1 | 333 |
| 106 | 33 | Société Française de Constructions Mécaniques | 395 | 332 | | | | 1 | 332 |
| 107 | 37 | Société d'Electricité-Métallurgie de Dives | 377 | 3331 | | | | 1 | 3331 |
| 108 | 38 | Société Métallurgique de Senelle-Maubeuge | 376 | 332 | | | | 1 | 332 |
| 109 | 41 | Société Anonyme des Usines de l'Espérance à Louvroil | 303 | 332 | 1011 | | | 2 | 332, 1011 |
| 110 | 49 | Établissements Arbel | 241 | 33 | 10 | | | 2 | 33, 10 |
| 111 | 60 | Société Anonyme des Forges et Fonderies de Montataire | 179 | 332 | 101 | | | 2 | 332, 101 |
| 112 | 75 | Société des Aciéries de Sambre-et-Meuse | 156 | 332 | | | | 1 | 332 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 113 | 77 | Société Métallurgique de Montbard-Aulnoye | 154 | 33 | | | | | 1 | 33 |
| 114 | 82 | Société de Aciéries de Paris et d'Outreau | 143 | 331 | 332 | | | | 2 | 331, 332 |
| 115 | 95 | Usines Métallurgiques de la Basse-Loire | 112 | 332 | | | | | 1 | 332 |
| 116 | 102 | Société Métallurgique du Périgord | 94 | 331 | 332 | 101 | | | 3 | 331, 332, 101 |
| 117 | 104 | Société Anonyme des Hauts-Fourneaux, Forges et Aciéries Saut-du-Tarn | 89 | 332 | 342 | 3493 | 3444 | | 4 | 332, 342, 3493, 3444 |
| 118 | 111 | Société Française pour la Fabrication des Tubes à Louvroil-Sous | 79 | 3317 | | | | | 1 | 3317 |
| 119 | 114 | Société des Établissements Keller-Leleux pour les Alliages Electro | 74 | 3313 | 28 | | | | 2 | 3313,28 |
| 120 | 124 | Forges de Recquignies | 68 | 332 | 336 | | | | 2 | 332, 336 |
| 121 | 132 | Compagnie Française du Bi-Métal (Brevets Édouard Martin) | 62 | 3313 | | | | | 1 | 3313 |
| 122 | 137 | Société Anonyme J. Bocuze et Cie | 59 | 331 | 334 | | | | 2 | 333336 |
| 123 | 140 | Société d'Affinage de Métaux | 57 | 333 | | | | | 1 | 333 |
| 124 | 197 | Ancien Établissement Cochaux | 14 | 332 | 3444 | | | | 2 | 332, 3444 |
| *Group 34: Fabricated Metal Products* | | | | | | | | | | |
| 125 | 55 | Société Générale des Cirages Français | 201 | 3471 | 289 | | | | 2 | 3471, 289 |
| 126 | 127 | Société de Constructions de Levallois-Perret | 64 | 34 | 16 | | | | 2 | 34, 16 |
| 127 | 166 | Affiches Gaillard | 39 | 346 | | | | | 1 | 346 |
| 128 | 179 | Société des Anciens Établissements Brissonneau et Lotz | 27 | 344 | 36 | 35 | | | 3 | 344, 36, 35 |
| *Group 35: Industrial Machinery and Equipments* | | | | | | | | | | |
| 129 | 13 | Forges et Chantiers de la Méditerranée | 761 | 35 | 373 | | | | 2 | 35, 373 |
| 130 | 112 | Société des Moteurs à Gaz et d'Industrie Mécanique | 76 | 351 | 3585 | 3594 | 3563 | 3621 | 5 | 351, 3585, 3594,3563,3621 |
| 131 | 145 | Transports et Manutentions Automatiques | 53 | 35 | | | | | 1 | 35 |
| 132 | 148 | Société Anonyme des Établissements J. Voirin | 50 | 3555 | | | | | 1 | 3555 |
| 133 | 160 | Usines Bouhey Société Française de machines-outils | 42 | 354 | 3553 | | | | 2 | 354, 3553 |
| 134 | 168 | La France | 37 | 352 | | | | | 1 | 352 |
| 135 | 171 | Établissements Ballot | 35 | 35 | | | | | 1 | 35 |
| 136 | 179 | Société des Établissements Egrot | 27 | 3559 | 3556 | | | | 2 | 3559, 3556 |
| 137 | 181 | Société Française Stigler | 26 | 3534 | 3535 | | | | 2 | 3534, 3535 |
| 138 | 200 | Ateliers de Constructions du Nord et du Centre | 9 | 35 | | | | | 1 | 35 |
| *Group 36: Electronic and Other Electrical Equipment* | | | | | | | | | | |
| 139 | 2 | Thomson-Houston | 1353 | 361 | | | | | 1 | 361 |
| 140 | 22 | Ateliers de Constructions de Jeumont | 551 | 361 | | | | | 1 | 361 |
| 141 | 67 | Compagnie Continentale Edison | 170 | 36 | 1 | 36 | | | | |
| 142 | 76 | Compagnie Électro-Mécanique | 155 | 361 | 362 | 364 | | | 3 | 361, 362, 364 |
| 143 | 78 | Maison Bréguet | 153 | 3661 | 364 | 38 | | | 3 | 3661, 364, 38 |
| 144 | 100 | L'éclairage électrique | 96 | 36 | | | | | 1 | 36 |
| 145 | 119 | Compagnie Universelle d'Acétylène et d'Électro-Métallurgie | 72 | 364 | | | | | 1 | 364 |
| 146 | 134 | Appareillage Électrique Grivolas | 61 | 36 | | | | | 1 | 36 |
| 147 | 151 | Société Gramme | 48 | 36 | | | | | 1 | 36 |
| 148 | 161 | Établissements Paz et Silva | 41 | 361 | 382 | 363 | 364 | 3661 | 5 | 261, 382, 363, 364,3661 |
| 149 | 184 | Société Internationale d'Éclairage par le Gaz d'Huile | 25 | 362 | 363 | | | | 2 | 362, 363 |
| 150 | 189 | Compagnie Industrielle des Procédés Raoul Pictet | 20 | 3632 | 3585 | 281 | | | 3 | 3632, 3585, 281 |
| 151 | 201 | Compagnie Française des Accumulateurs Electriques Phoenix | 8 | 369 | 1 | 369 | | | 1 | 369 |
| *Group 37: Transportation Equipment* | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| 152 | 5 | Penhoët | 1020 | 3731 | 3743 | | | 2 | 3731, 3743 |
| 153 | 7 | Compagnie Internationale des Wagons-Citerne en Vrac | 887 | 3795 | | | | 1 | 3795 |
| 154 | 12 | Ateliers et Chantiers de la Loire | 769 | 373 | | | | 1 | 373 |
| 155 | 16 | Compagnie de Fives-Lille | 676 | 374 | 373 | | | 2 | 374, 373 |
| 156 | 18 | Société Anonyme des Automobiles et Cycles Peugeot | 631 | 3711 | 3751 | | | 2 | 3711, 3751 |
| 157 | 21 | Société Parisienne pour l'Ind. des Chemins de fer, Tramways | 565 | 374 | 40 | | | 2 | 374, 40 |
| 158 | 24 | Société des Chantiers et Ateliers de la Gironde | 538 | 373 | 1 | 373 | | | |
| 159 | 27 | Société Anonyme de Travaux Dyle et Bacalan | 513 | 3743 | 373 | | | 2 | 3743, 373 |
| 160 | 32 | Compagnie Française des Tramways électriques et Omnibus de Bordeaux | 401 | 379 | 411 | | | 2 | 379, 411 |
| 161 | 35 | Compagnie des Tramways de Nice et du Littoral | 381 | 379 | 411 | | | 2 | 379, 411 |
| 162 | 39 | Chemins de Fer Economiques du Nord | 328 | 3743 | 401 | | | 2 | 3743, 401 |
| 163 | 42 | Compagnie Générale de Traction | 294 | 374 | 379 | 40 | | 3 | 374, 379, 40 |
| 164 | 43 | Société Lorraine des Anciens Établissements de Dietrich de Lunéville | 289 | 374 | 371 | | | 2 | 374, 371 |
| 165 | 48 | Compagnie Française des Automobiles de Place | 250 | 3711 | | | | 1 | 3711 |
| 166 | 50 | Société Franco-Belge de Matériel de Chemin de fer | 239 | 374 | 373 | | | 2 | 374, 373 |
| 167 | 59 | Ateliers et Chantiers de Bretagne | 187 | 373 | | | | 1 | 373 |
| 168 | 61 | Omnium Lyonnais de Chemins de Fer et Tramways | 175 | 374 | | | | 1 | 374 |
| 169 | 61 | Société Nouvelle des Établissements Decauville Ainé | 175 | 374 | | | | 1 | 374 |
| 170 | 64 | Compagnie Générale de Construction | 174 | 374 | | | | 1 | 374 |
| 171 | 73 | Société des Ateliers et Chantiers de France | 159 | 373 | | | | 1 | 373 |
| 172 | 81 | Delahaye | 147 | 371 | | | | 1 | 371 |
| 173 | 85 | Union des Tramways | 136 | 374 | | | | 1 | 374 |
| 174 | 88 | Compagnie Française de Matériel de Chemins de Fer | 119 | 374 | | | | 1 | 374 |
| 175 | 91 | Compagnie Auxiliaire des Chemins de Fer et Travaux Publics | 118 | 374 | 16 | | | 2 | 374, 16 |
| 176 | 99 | Compagnie des Autos-Fiacres | 97 | 371 | | | | 1 | 371 |
| 177 | 105 | Établissements Mestre et Blatgé | 87 | 3714 | 3751 | 3728 | 3562 | 4 | 3714, 3751, 3728,3562 |
| 178 | 110 | Compagnie des Chargeurs Français (Plisson et Cie) | 82 | 373 | | | | 1 | 373 |
| 179 | 122 | Société d'Automobiles Mors | 70 | 3711 | | | | 1 | 3711 |
| 180 | 141 | Société des Automobiles Brasier | 56 | 3711 | 3751 | | | 2 | 711, 3751 |
| 181 | 143 | Société des Anciens Établissements Chenard et Walcker | 54 | 3711 | | | | 1 | 3711 |
| 182 | 167 | Société Anonyme des Établissements Fournier, Ostertag et le Boul. | 38 | 3714 | 3743 | 308 | | 3 | 3714, 3743, 308 |
| 183 | 177 | Société Anonyme du Temple | 29 | 3743 | | | | 1 | 3563, 3714, 3743 |
| 184 | 181 | Société des Établissements L. Blériot | 26 | 3714 | | | | 1 | 3714 |
| 185 | 181 | Société des Wagons-Foudres | 26 | 3795 | 3799 | | | 2 | 3795, 3799 |
| 186 | 189 | Société Générale des Freins Lipkowski | 20 | 3714 | 3743 | 3751 | | 3 | 3714, 3743, 3751 |
| 187 | 191 | Auto-Fram (Société générale de Camions Automobiles) | 19 | 374 | | | | 1 | 374 |
| | | *Group 38: Instruments and Related Products* | | | | | | | |
| 188 | 15 | Compagnie Générale des Établissements Pathé Frères Phono. | 708 | 3861 | 78 | | | 2 | 3861, 78 |
| 189 | 19 | Compagnie Continentale pour la fabrication des compteurs et matériel d'usines à gaz | 614 | 382 | | | | 1 | 382 |
| 190 | 68 | Société Anonyme de la Grande Distillerie E. Cusenier Fils Ainé & Cie | 166 | 38 | | | | 1 | 38 |
| 191 | 83 | Union Photographique Industrielle | 139 | 3861 | 2771 | 2678 | 229 | 4 | 3861, 2771, 2678, 229 |
| 192 | 109 | Société des Établissements Gaumont | 83 | 3861 | 722 | 78 | | 3 | 3861, 722, 78 |
| 193 | 112 | Compagnie Anonyme Continentale pour la Fabrication des | 76 | 382 | | | | 1 | 382 |
| 194 | 147 | Établissements Continsouza | 51 | 38 | | | | 1 | 38 |

| NOS. | NOMS | TOTAL ASSETS | RANK | SIC-2 | P-SIC-4 | 2SIC | 3SIC | 4SIC | NUMBER OF SICs | FOREIGN SIC0=no 1=yes | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Compagnie des Chemins de fer de Bône-Guelma | 1803 | 1 | 40 | 401 | | | | 1 | 401 | 1 |
| 2 | Compagnie Française du Ch. de fer de Djibouti à Addis-Abeba | 965 | 2 | 40 | 401 | | | | 1 | 401 | 1 |
| 3 | Compagnie Générale des Eaux pour l'Etranger | 773 | 3 | 49 | 494 | | | | 1 | 494 | 1 |
| 4 | Union Minière et Métallurgique de Russie | 683 | 4 | 10 | 10 | 33 | | | 2 | 10, 33 | 1 |
| 5 | Société des Ateliers et Chantiers de Nicolaieff | 671 | 5 | 37 | 373 | | | | 1 | 373 | 1 |
| 6 | Compagnie du Chemin de fer de Dakar à Saint-Louis | 651 | 6 | 40 | 401 | | | | 1 | 401 | 1 |
| 7 | Société Métallurgique de l'Oural-Volga | 642 | 7 | 33 | 331 | | | | 1 | 331 | 1 |
| 8 | Société Anonyme des Usines Franco-Russes | 609 | 8 | 10 | 10 | 33 | | | 2 | 10, 33 | 1 |
| 9 | Société des Sels Gemmes et Houilles de la Russie Méridionale | 545 | 9 | 12 | 12 | | | | 1 | 12 | 1 |
| 10 | Compagnie des Phosphates et Chemins de fer de Gafsa | 538 | 10 | 14 | 1422 | | | | 1 | 1422 | 1 |
| 11 | Union des Pétroles d'Oklahoma427 | 11 | 13 | 13 | | | | | 1 | 13 | 1 |
| 12 | Compagnie des Minerais de Fer Magnétique de Mokta el Hadid | 414 | 12 | 33 | 33 | | | | 1 | 33 | 1 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 13 | Société Générale des Hauts-Fourneaux, Forges et A. En Russie | 406 | 13 | 33 | 331 | | | | 1 | 331 | 1 |
| 14 | Compagnie Française pour l'exploitation Chemins de fer étrangers | 385 | 14 | 40 | 40 | 374 | | | 2 | 40, 374 | 1 |
| 15 | Société Anonyme des Minerais de fer de Krivoi-Rog | 358 | 15 | 10 | 1011 | 332 | | | 2 | 1011, 332 | 1 |
| 16 | Société Industrielle des Téléphones | 339 | 16 | 36 | 3661 | 367 | | | 2 | 3661, 367 | 1 |
| 17 | Société Française et Italienne des Houillères de Dombrowa | 322 | 17 | 12 | 12 | | | | 1 | 12 | 1 |
| 18 | Société Cotonnière Russo-Française | 317 | 18 | 22 | 221 | | | | 1 | 221 | 1 |
| 19 | Société Anonyme des Hauts-Fourneaux, Forges et Aciéries de Pompey | 316 | 19 | 33 | 331 | 332 | | | 2 | 331, 332 | 1 |
| 20 | Société Franco-Russe des Houillères de Berestow-Krinka | 300 | 20 | 12 | 12 | | | | 1 | 12 | 1 |
| 21 | Compagnie d'Electricité de Varsovie | 241 | 21 | 49 | 491 | | | | 1 | 491 | 1 |
| 22 | Compagnie Française des Mines de Bor | 240 | 22 | 10 | 102 | | | | 1 | 102 | 1 |
| 23 | Société Industrielle et Métallurgique du Caucase | 232 | 23 | 10 | 10 | | | | 1 | 10 | 1 |
| 24 | Société Anonyme des Mines de Czeladz | 214 | 24 | 12 | 12 | | | | 1 | 12 | 1 |
| 25 | Hauts-Fourneaux, Forges et Aciéries du Chili | 194 | 25 | 33 | 331 | 332 | | | 2 | 331, 332 | 1 |
| 26 | Société Anonyme des Forges et Aciéries de la Kama | 172 | 26 | 33 | 332 | 331 | | | 2 | 332, 331 | 1 |
| 27 | Société Générale de Mines d'Algérie Tunisie | 159 | 27 | 10 | 10 | | | | 1 | 10 | 1 |
| 28 | Société Anonyme des Forges et Aciéries de Huta-Bankowa | 148 | 28 | 33 | 332 | | | | 1 | 332 | 1 |
| 29 | Société des Mines de Cuivre de Nattagua (Chili) | 141 | 29 | 10 | 102 | | | | 1 | 102 | 1 |
| 30 | Société Anonyme des Mines de Malfidano | 126 | 30 | 10 | 10 | | | | 1 | 10 | 1 |
| 31 | Société de Sucreries Brésiliennes | 122 | 31 | 20 | 206 | 2085 | | | 2 | 206, 2085 | 1 |
| 32 | Société Française des Distilleries de l'Indochine | 122 | 32 | 38 | 38 | | | | 1 | 38 | 1 |
| 33 | Messageries Fluviales de Cochinchine | 121 | 33 | 37 | 373 | | | | 1 | 373 | 1 |
| 34 | Socéité Française de Charbonnages du Tonkin | 91 | 34 | 12 | 12 | | | | 1 | 12 | 1 |
| 35 | Société Anonyme des Mines de la Doubovaia-Balka | 88 | 35 | 10 | 10 | | | | 1 | 10 | 1 |
| 36 | Société des Mines et Usines de Cuivre de Chanaral (Chili) | 88 | 36 | 10 | 102 | | | | 1 | 102 | 1 |
| 37 | Sucrerie Centrale Coloso de Porto-Rico | 80 | 37 | 20 | 2062 | | | | 1 | 2062 | 1 |
| 38 | Compagnie des Phosphates du Dyr | 79 | 38 | 14 | 1422 | 1475 | | | 2 | 1422, 1475 | 1 |
| 39 | Compagnie de Charbonnages de Puertollano | 68 | 39 | 12 | 12 | | | | 1 | 12 | 1 |
| 40 | Messageries Françaises de Madagascar | 67 | 40 | 37 | 373 | | | | 1 | 373 | 1 |
| 41 | Compagnie Générale des Phosphates de la Floride | 65 | 41 | 14 | 1475 | | | | 1 | 1475 | 1 |
| 42 | Est Asiatique Français 64 | 42 | 37 | 373 | | | | | 1 | 373 | 1 |
| 43 | Société des Mines du Zinc de Guergour | 63 | 43 | 10 | 10 | 12 | | | 2 | 10, 12 | 1 |
| 44 | Mines de Cuivre de Campanario | 60 | 44 | 10 | 10 | 14 | | | 2 | 10, 14 | 1 |
| 45 | Société Franco-Russe de Produits Chimiques et d'Explosifs | 57 | 45 | 28 | 2892 | 147 | | | 2 | 2892, 147 | 1 |
| 46 | Compagnie Occidentale de Madagascar | 52 | 46 | 14 | 14 | 1 | | | 2 | 14, 01 | 1 |
| 47 | Société Minière du Kanguet (Tunisie) | 52 | 47 | 10 | 10 | | | | 1 | 10 | 1 |
| 48 | Compagnie Anonyme des Houillères d'Ahun | 51 | 48 | 12 | 12 | | | | 1 | 12 | 1 |
| 49 | Société Générale des Huileries du Sahel Tunisien | 39 | 49 | 20 | 2076 | | | | 1 | 2076 | 1 |
| 50 | Société des Ciments Portland Artificiels de l'Indochine | 26 | 50 | 32 | 3274 | 3241 | 3271 | 177 | 4 | 3274, 3241<br>3274, 177 | 1 |
| 51 | Sociedade Editora do Brasil 17 | 51 | 27 | 272 | | | | | 1 | 272 | 1 |
| 52 | Compagnie Française des Huileries et Savonneries de Tunisie | 13 | 52 | 20 | 2076 | 2841 | | | 2 | 2076, 2841 | 1 |

FRANCE-1936:

**200 French companies in manufacturing (SIC 20-39) ranked by SIC**

(Includes Free-Standing and Foreign Firms)

| NOS. | Rank | Firm | Total Assets | Product Major | Lines Others | (SIC codes) | | | Number Of SICs | SIC | FOREIGN 0=No 1=Yes | FOREIGN SIC-20=No 1=Yes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Group 20: Food and Kindred Products* | | | | | | | | | | | | | |
| 1 | 35 | Brasserie Quilmès | 400 | 2082 | | | | | 1 | 2082 | 0 | 20 | 0 |
| 2 | 41 | Société des Raffineries et Sucreries Say | 355 | 2063 | | | | | 1 | 2063 | 0 | 20 | 0 |
| 3 | 60 | Raffinerie de Sucre de Saint-Louis | 242 | 206 | 2063 | 2062 | | | 3 | 2063, 2062 | 0 | 20 | 0 |
| 4 | 61 | Docks Rémois | 240 | 20 | | | | | 1 | 20 | 0 | 20 | 0 |
| 5 | 66 | Établissements Pernod | 218 | 208 | 2084 | 2085 | | | 3 | 2084, 2085 | 0 | 20 | 0 |
| 6 | 69 | Grands Moulins de Paris | 195 | 2041 | | | | | 1 | 2041 | 0 | 20 | 0 |
| 7 | 97 | Maison Olida | 129 | 201 | | | | | 1 | 20, 201 | 0 | 20 | 0 |
| 8 | 104 | Grands Moulins de Strasboug | 123 | 2041 | | | | | 1 | 2041 | 0 | 20 | 0 |
| 9 | 105 | Société Française des Distilleries de l'Indochine | 122 | 20 | 2085 | 204 | | | 3 | 2085, 204 | 1 | 20 | 1 |
| 10 | 112 | Société Saint-Raphaël | 111 | 2084 | | | | | 1 | 2084 | 0 | 20 | 0 |
| 11 | 113 | Union Sucrière de l'Aisne | 111 | 20 | 206 | 2085 | | | 3 | 206, 2085 | 0 | 20 | 0 |
| 12 | 119 | Établissements Julien Damoy | 104 | 20 | | | | | 1 | 20 | 0 | 20 | 0 |
| 13 | 120 | Compagnie Fermière de l'Établissement Thermal de Vichy | 103 | 2086 | | | | | 1 | 2086 | 0 | 20 | 0 |
| 14 | 126 | Société Anonyme de la Grande Distillerie E. Cusenier Fils Ainé & Cie | 96 | 2085 | | | | | 1 | 2085 | 0 | 20 | 0 |
| 15 | 133 | Établissements Goulet-Turpin Comptoir Général d'Approvisionnement | 91 | 20 | 2084 | 2086 | 225 | 314 | 5 | 20, 2084, 2086, 225, 314 | 0 | 20 | 0 |
| 16 | 134 | Rizeries Indochinoises | 91 | 204 | | | | | 1 | 204 | 1 | 20 | 1 |
| 17 | 135 | Brasseries et Malteries de Franche-Comté-Alsace | 89 | 208 | 2082 | 2086 | | | 3 | 2082, 2086 | 0 | 20 | 0 |
| 18 | 136 | Distillerie de la Suze | 88 | 2085 | | | | | 1 | 2085 | 0 | 20 | 0 |
| 19 | 151 | Brasseries de la Meuse | 81 | 2082 | | | | | 1 | 2082 | 0 | 20 | 0 |
| 20 | 158 | Compagnie Sucrière | 73 | 206 | | | | | 1 | 206 | 0 | 20 | 0 |
| 21 | 161 | Société d'Industries Agricoles de Meaux, Nantes et Algérie (S.I.A.M.N.A.) | 72 | 20 | 206 | 2085 | | | 3 | 206, 2085 | 0 | 20 | 0 |
| 22 | 168 | Grands Moulins de Corbeil | 69 | 2041 | | | | | 1 | 2041 | 0 | 20 | 0 |
| 23 | 179 | Société de Sucreries Brésiliennes | 63 | 206 | 2085 | | | | 2 | 206, 2085 | 0 | 20 | 0 |
| 24 | 185 | Sucreries Millet Réunies | 59 | 206 | | | | | 1 | 206 | 0 | 20 | 0 |
| 25 | 186 | Société Anonyme des Laves et des Producteurs Réunis de Roquefort | 58 | 2022 | | | | | 1 | 2022 | 0 | 20 | 0 |
| 26 | 187 | Société Vinicole de Champagne | 58 | 2084 | | | | | 1 | 2084 | 0 | 20 | 0 |
| 27 | 188 | Malteries Franco-Belges et Moulins de Prouvy | 58 | 20 | 2041 | 2083 | | | 3 | 2041, 2083 | 0 | 20 | 0 |
| 28 | 192 | Société Générale des Eaux Minérales | 57 | 2086 | | | | | 1 | 2086 | 0 | 20 | 0 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 29 | 198 | Société Française des Anciens Établissements Cinzano | 54 | 208 | 2084 | 2085 | | | 3 | 2084, 2085 | 0 | 20 | 0 |
| 30 | 199 | Sucrerie-Raffinerie de Nassandres | 53 | 206 | | | | | 1 | 206 | 1 | 20 | 1 |
| *Group 21: Tobacco Products* | | | | | | | | | | | | | |
| 31 | 143 | Société Internationale de Régie Co-Intéressée des Tabacs au Maroc | 86 | 21 | 211 | 212 | | | 3 | 211, 212 | 1 | 21 | 1 |
| *Group 22: Textile Mill Products* | | | | | | | | | | | | | |
| 32 | 18 | Gillet-Thaon | 552 | 226 | 721 | | | | 2 | 226, 721 | 0 | 22 | 0 |
| 33 | 34 | Société Saint Frères | 402 | 2284 | 2298 | 2296 | 2392 | 267 | 5 | 2284, 2298, 2296,2392,267 | 0 | 22 | 0 |
| 34 | 39 | Compagnie Générale des Industries Textiles | 361 | 22 | | | | | 1 | 22 | 0 | 22 | 0 |
| 35 | 47 | Dollfus-Mieg et Compagnie | 319 | 22 | 2284 | | | | 2 | 22, 2284 | 0 | 22 | 0 |
| 36 | 85 | Les Établissements Maréchal | 153 | 2295 | 30 | | | | 2 | 2295, 30 | 0 | 22 | 0 |
| 37 | 93 | Établissement Agache Fils | 136 | 22 | | | | | 1 | 22 | 0 | 22 | 0 |
| 38 | 122 | Filatures de Schappe (de Lyon) | 101 | 22 | 224 | 226 | | | 3 | 224, 226 | 0 | 22 | 0 |
| 39 | 128 | Le Blan et Cie | 94 | 221 | | | | | 1 | 221 | 0 | 22 | 0 |
| 40 | 139 | Société Textile La Czenstocho-Vienne | 87 | 22 | | | | | 1 | 22 | 1 | 22 | 1 |
| 41 | 146 | Établissements Charles Tiberghien | 84 | 226 | | | | | 1 | 226 | 0 | 22 | 0 |
| 42 | 148 | Manufacture Française de Tapis et Couvertures Précédemment Ed. Lainé et Cie | 83 | 227 | 2392 | | | | 2 | 227, 2392 | 0 | 22 | 0 |
| 43 | 169 | Établissements Badin et Fils | 69 | 22 | 221 | | | | 2 | 22, 221 | 0 | 22 | 0 |
| 44 | 171 | Société Anonyme de l'Industrie Textile | 68 | 22 | | | | | 1 | 22 | 0 | 22 | 0 |
| 45 | 172 | Société de Blanchiment, Teintures et Impressions | 68 | 226 | | | | | 1 | 226 | 0 | 22 | 0 |
| 46 | 195 | Tricotage de l'Ariège et Bonneterie de la Garonne Réunis (Anciens Établissements J. Doler-Pulg) | 55 | 225 | | | | | 1 | 225 | 0 | 22 | 0 |
| 47 | 196 | Soieries F. Ducharne | 55 | 224 | | | | | 1 | 224 | 0 | 22 | 0 |
| *Group 23:Apparel and Other Textile Products* | | | | | | | | | | | | | |
| 48 | 114 | Établissements Revillon Frères | 110 | 2371 | | | | | 1 | 2371 | 0 | 23 | 0 |
| 49 | 132 | Société des Vêtements Conchon-Quinette | 92 | 23 | | | | | 1 | 23 | 0 | 23 | 0 |
| *Group 26: Paper and Allied Products* | | | | | | | | | | | | | |
| 51 | 55 | Papeteries Navarre | 262 | 2621 | 2631 | | | | 2 | 2621, 2631 | 0 | 26 | 0 |
| 52 | 68 | Société des Papeteries de France | 204 | 26 | 261 | 262 | 263 | | 4 | 261, 262, 263 | 0 | 26 | 0 |
| Group 27: | | Printing and Publishing | | | | | | | | | | | |
| 53 | 176 | L'Annuaire du Commerce Didot-Bottin | 65 | 272 | | | | | 1 | 272 | 0 | 27 | 0 |
| 200 | | Société de Publications Périodiques(Imprimerie E. Desfossés) | 53 | 272 | | | | | 1 | 272 | 0 | 0 | |
| Group 28: | | Chemicals and Allied Products | | | | | | | | | | | |
| 54 | 4 | Pechiney | 1151 | 28 | | | | | 1 | 28 | 0 | 28 | 0 |
| 55 | 10 | Établissements Kuhlmann | 887 | 2816 | | | | | 1 | 2816 | 0 | 28 | 0 |
| 56 | 17 | Ugine | 566 | 281 | | | | | 1 | 281 | 0 | 28 | 0 |
| 57 | 22 | L'Air Liquide | 496 | 2813 | | | | | 1 | 2813 | 0 | 28 | 0 |
| 58 | 32 | Compagnie des Produits Chimiques et Raffineries de Berre | 410 | 28 | 291 | | | | 2 | 28, 291 | 0 | 28 | 0 |
| 59 | 33 | Société des Usines Chimiques Rhône-Poulenc | 407 | 2834 | | | | | 1 | 28, 2834 | 0 | 28 | 0 |

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|---|---|---|---|---|---|---|---|---|---|---|
| 94 | 7 | Compagnie Générale des Établissements Michelin | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |
| 95 | 37 | Société de Pneumatiques Dunlop | 376 | 3011 | 1 | 3011 | 0 | 30 | 0 | |
| 96 | 77 | Société Générale des Établissement Bergougnan | 175 | 30 | 1 | 30 | 1 | 30 | 1 | |

*Group 31: Leather and Leather Products*

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | de Produits Chimiques) (Ancienne Société Industrielle de Produits Electro-Chimiques Bozel-Lamontte) | | | | | | | | | | | |
| 132 | 73 | Société Française de Constructions Mécaniques | 189 | 332 | 35 | | | | 2 | 332, 35 | 0 | 33 | 0 |
| 133 | 75 | Aciéries du Nord | 180 | 332 | 3331 | 493 | | | 3 | 332, 3331, 493 | 0 | 33 | 0 |
| 134 | 154 | Société des Hauts Fourneaux de Rouen | 76 | 331 | 332 | | | | 2 | 331, 332 | 0 | 33 | 0 |
| 135 | 165 | Société des Mines et Fonderies de Pontgibaud | 72 | 3357 | 3356 | 3351 | 1031 | 102 | 5 | 102, 1031, 3351, 3356, 3357 | 0 | 33 | 0 |
| 136 | 178 | Aciéries de Paris et d'Outreau | 64 | 331 | 332 | | | | 2 | 331, 332 | 0 | 33 | 0 |
| 137 | 183 | Forges de Strasboug | 61 | 331 | 1011 | 12 | | | 3 | 331, 1011, 12 | 0 | 33 | 0 |
| 138 | 189 | Compagnie des Forges d'Audincourt et Dépendances | 58 | 331 | 332 | | | | 2 | 331, 332 | 0 | 33 | 0 |
| 139 | 197 | Établissements Arbel | 55 | 331 | 35 | | | | 2 | 331, 35 | 0 | 33 | 0 |
| *Group 34: Fabricated Metal Products* | | | | | | | | | | | | | |
| 140 | 24 | Société Escaut et Meuse | 484 | 349 | | | | | 1 | 349 | 0 | 34 | 0 |
| 141 | 103 | Société Française des Constructions Babcock et Wilcox | 124 | 3433 | | | | | 1 | 3433 | 0 | 34 | 0 |
| 142 | 108 | Société Française des Munitions de Chasse de Tir et de Guerre | 117 | 348 | | | | 1 | 348 | 0 | 34 | 0 | |
| 143 | 109 | Forges de Gueugnon (Établissements Campionnet) | 116 | 3444 | 331 | | | | 2 | 3444, 331 | 0 | 34 | 0 |
| 144 | 175 | Ateliers de Constructions Schwartz-Hautmont | 66 | 3446 | | | | | 1 | 3446 | 0 | 34 | 0 |
| *Group 35: Industrial Machinery and Equipments* | | | | | | | | | | | | | |
| 145 | 19 | Forges et Chantiers de la Méditerranée | 552 | 35 | 373 | | | | 2 | 35, 373 | 0 | 35 | 0 |
| 146 | 43 | Société Alsacienne de Constructions Mécaniques | 338 | 35 | 36 | | | | 2 | 35, 36 | 0 | 35 | 0 |
| 147 | 83 | Société d'Outillage Mécanique et d'Usinage d'Artillerie | 156 | 354 | 3553 | | | | 2 | 354, 3553 | 0 | 35 | 0 |
| 148 | 91 | Compagnie d'Applications Mécaniques | 140 | 3562 | | | | | 1 | 3562 | 0 | 35 | 0 |
| 149 | 121 | Établissements Delattre et Frouard Réunis (D.F.R.) | 102 | 35 | | | | | 1 | 35 | 0 | 35 | 0 |
| 150 | 138 | Compagnie de Construction Mécanique (Procédés Sulzer) | 88 | 35 | | | | | 1 | 35 | 0 | 35 | 0 |
| 151 | 173 | Société Anonyme Française du Ferodo | 68 | 35 | | | | | 1 | 35 | 0 | 35 | 0 |
| 152 | 190 | Ateliers de Constructions Mécaniques (Anciennement l'Aster) | 58 | 35 | | | | | 1 | 35 | 0 | 35 | 0 |
| *Group 36: Electronic and Other Electrical Equipment* | | | | | | | | | | | | | |
| 153 | 15 | Alsthom | 576 | 36 | 35 | | | | 2 | 36, 35 | 0 | 36 | 0 |
| 154 | 44 | Thomson-Houston | 326 | 361 | | | | | 1 | 361 | 0 | 36 | 0 |
| 155 | 53 | Société des Établissements Industriels de E.C. et A. Grammont | 296 | 3661 | 361 | | | | 2 | 3661, 361 | 0 | 36 | 0 |
| 156 | 63 | Compagnie Électro-Mécanique | 230 | 36 | 491 | | | | 2 | 361, 363, 364 | 0 | 36 | 0 |
| 157 | 80 | Grandes Compagnie des Télégraphes du Nord | 163 | 3661 | 3669 | | | | 2 | 3661, 3669 | 0 | 36 | 0 |
| 158 | 82 | Compagnie Générale de Télégraphie sans Fil | 162 | 3661 | | | | | 1 | 3661 | 0 | 36 | 0 |
| 159 | 99 | Compagnie des Lampes | 127 | 3641 | 3645 | 3646 | | | 3 | 3641, 3645, 3646 | 0 | 36 | 0 |
| 160 | 100 | Société d'Applications Industrielles | 127 | 36 | | | | | 1 | 36 | 0 | 36 | 0 |
| 161 | 101 | Société Électro-Cable | 126 | 361 | | | | | 1 | 361 | 0 | 36 | 0 |
| 162 | 142 | S.A.T.A.M | 87 | 36 | | | | | 1 | 36 | 0 | 36 | 0 |
| 163 | 152 | Société des Téléphones Grammont | 79 | 3661 | 3669 | | | | 2 | 3661, 3669 | 0 | 36 | 0 |
| 164 | 180 | Maison Bréguet | 63 | 3661 | 364 | 38 | | | 3 | 3661, 364, 38 | 0 | 36 | 0 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 165 | 191 | Société des Lampes Fotos | 58 | 3641 | 366 | | | | 2 | 3641, 366 | 0 | 36 | 0 |
| 166 | 194 | Compagnie Française des Cable Télégraphiques | 56 | 3661 | | | | | 1 | 3661 | 0 | 36 | 0 |
| *Group 37: Transportation Equipment* | | | | | | | | | | | | | |
| 167 | 5 | Penhoët | 1083 | 3731 | 3743 | | | | 2 | 3731, 3743 | 0 | 37 | 0 |
| 168 | 9 | Société Anonyme André Citroën | 1011 | 371 | | | | | 1 | 371 | 0 | 37 | 0 |
| 169 | 16 | Ateliers et Chantiers de la Loire | 568 | 373 | | | | | 1 | 373 | 0 | 37 | 0 |
| 170 | 23 | Société Anonyme Peugeot | 488 | 3711 | 3751 | | | | 2 | 3711, 3751 | 0 | 37 | 0 |
| 171 | 42 | Compagnie Industrielle Maritime | 350 | 373 | | | | | 1 | 373 | 0 | 37 | 0 |
| 172 | 48 | Compagnie de Fives-Lille | 313 | 374 | 373 | | | | 2 | 374, 373 | 0 | 37 | 0 |
| 173 | 49 | Ateliers et Chantiers de France | 311 | 373 | | | | | 1 | 373 | 0 | 37 | 0 |
| 174 | 51 | Société des Moteurs Gnome et Rhône | 303 | 371 | 373 | | | | 2 | 371, 373 | 0 | 37 | 0 |
| 175 | 64 | Atelier et Chantier de Bretagne | 225 | 373 | | | | | 1 | 373 | 0 | 37 | 0 |
| 176 | 71 | Automobiles M. Berliet | 193 | 371 | 3713 | 3711 | 3728 | 3011 | 5 | 371, 3713, 3711, 3728, 3011 | 0 | 37 | 0 |
| 177 | 74 | Société Française Hispano-Suiza | 188 | 37 | 371 | 3724 | 373 | | 4 | 371, 3724, 373 | 0 | 37 | 0 |
| 178 | 79 | Forges et Chantiers de la Gironde | 166 | 373 | 332 | | | | 2 | 373, 332 | 0 | 37 | 0 |
| 179 | 84 | Société des Moteurs et Automobiles Lorrairne | 155 | 3724 | 3714 | 379 | | | 3 | 3724, 3714, 379 | 0 | 37 | 0 |
| 180 | 88 | Ford (S.A.F.) | 147 | 371 | | | | | 1 | 371 | 1 | 37 | 1 |
| 181 | 102 | Atelier d'Aviation Louis Bréguet | 126 | 3714 | 3724 | 379 | | | 3 | 3714, 3724, 379 | 0 | 37 | 0 |
| 182 | 106 | Automobiles Industriels Latil | 122 | 3711 | 3713 | | | | 2 | 3711, 3713 | 0 | 37 | 0 |
| 183 | 110 | Les Ateliers de Construction du Nord | 116 | 3743 | 1622 | | | | 2 | 3743, 1622 | 0 | 37 | 0 |
| 184 | 111 | Compagnie Générale de Construction de Locomotives | 112 | 3743 | | | | | 1 | 3743 | 0 | 37 | 0 |
| 185 | 127 | Établissement Carel, Foudré et Cie | 95 | 374 | | | | | 1 | 374 | 0 | 37 | 0 |
| 186 | 129 | Compagnie des Freins et Signaux Westinghouse | 94 | 3743 | 364 | | | | 2 | 3743, 364 | 0 | 37 | 0 |
| 187 | 130 | Compagnie Delmas-Vieljeux | 93 | 3731 | 348 | 3559 | 3949 | | 4 | 3731, 348, 3559, 3949 | 0 | 37 | 0 |
| 188 | 131 | Société Lorraine (Société Lorraine des Anciens Établissement de Dietrich et Cie de Luneville) | 93 | 3743 | 3711 | | | | 2 | 3743, 3711 | 0 | 37 | 0 |
| 189 | 145 | Automobiles Industriels Saurer | 85 | 3711 | 3713 | 3714 | | | 3 | 3711, 3713, 3714 | 0 | 37 | 0 |
| 190 | 155 | Compagnie Industrielle de Matériel de Transport | 76 | 37 | | | | | 1 | 37 | 0 | 37 | 0 |
| 191 | 156 | Compagnie Française de Matériel de Chemins de Fer | 74 | 3743 | | | | | 1 | 3743 | 0 | 37 | 0 |
| 192 | 166 | Société des Automobiles Delahaye | 71 | 3711 | | | | | 1 | 3711 | 0 | 37 | 0 |
| 193 | 167 | Société Franco-Belge de Matériel de Chemins de Fer | 70 | 374 | | | | | 1 | 374 | 0 | 37 | 0 |
| 194 | 170 | Société des Moteurs Salmson | 69 | 3724 | | | | | 1 | 3724 | 0 | 37 | 0 |
| *Group 38: Instruments and Related Products* | | | | | | | | | | | | | |
| 195 | 52 | Compagnie pour la fabrication de Compteurs à gaz | 303 | 382 | 3825 | | | | 2 | 382, 3825 | 0 | 38 | 0 |
| 196 | 107 | Établissements Japy Frères | 118 | 387 | 345 | | | | 2 | 387, 345 | 0 | 38 | 0 |
| 197 | 147 | Compagnie de Signaux et d'Entreprises Electriques | 84 | 382 | | | | | 1 | 364, 382 | 0 | 38 | 0 |
| 198 | 157 | Société Lumière | 74 | 386 | 2679 | | | | 2 | 386, 2679 | 0 | 38 | 0 |
| 199 | 174 | Société d'Optique et de Mécanique de Haute Précision (Anciens Établissements Lacour-Berthiot) | 67 | 3861 | 3827 | | | | 2 | 3861, 3827 | 0 | 38 | 0 |
| *Group 39: Miscellaneous Manufacturing Industries* | | | | | | | | | | | | | |
| 200 | 124 | Pleyel | 99 | 393 | | | | | 1 | 393 | 0 | 39 | 0 |

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