

Multinationals: Theory and History

Edited by
Peter Hertner
European University Institute
and

Geoffrey Jones
Business History Unit, London School of Economics

Gower

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7 German Multinational Enterprise before 1914: Some Case Studies

Peter Hertner

After 20 years of growing interest and research in the field of multinational enterprise (MNE), the business historian does not suffer from a shortage of definitions of what constitutes the structure and the behaviour of the firms concerned. If he had to evaluate, in a very pragmatic way, the theories that best fit his sources on the historical development of direct investment, he would probably start with what Dunning calls the 'monopolistic competitive theories' presented by Hymer, Kindleberger and Caves.¹ If he then considered more recent contributions, he would quickly become aware that they try to combine the results of international trade theory, location theory, theories of the firm, and theories of imperfect competition.²

From the historian's point of view there can be no doubt that the internalisation paradigm, first presented by R.H. Coase³ and further developed by O.E. Williamson in the framework of a 'new institutional economics' approach,⁴ gives important insight particularly for empirical research. It is more than evident that industry has been organised in quite different ways as one follows the line of historical evolution from medieval craft to modern trusts, cartels, and giant corporations. Nevertheless, the historian's conceptual framework can only profit from those seemingly obvious statements which are at the origin of the internalisation process, namely that economic 'co-ordination can be effected in three ways: by *direction*, by *co-operation*, or through *market transactions*'.⁵ On the other hand, the historian would find it somewhat difficult to accept the flat statement by A.M. Rugman that 'internalization is the modern theory of the multinational enterprise'.⁶ He would rather take sides with M. Casson who accepts internalisation 'as a key element in the theory of the multinational enterprise' but stresses at the same time that

Internalization is in fact a general theory of why firms exist, and without additional assumptions it is almost tautological. To make the theory operational, it is necessary to specify assumptions about

transactions costs for particular products and for trade between particular locations.⁷

It has been accepted that the multinational type of internalisation takes place when (a) there is a strong incentive to control raw material resources via backward integration; (b) research-and-development-intensive industries want to exploit their knowledge advantage; and (c) tariffs, international tax differentials and foreign exchange controls favour transfer pricing. Casson, however, pleads for an extension to cases where buyer uncertainty can be reduced by internalisation, the MNE thus guaranteeing quality control by international marketing through its established brand names.⁸ Without any doubt this attempt to extend the practical validity of the internalisation concept to the specific needs of consumer industries can, as will be shown later, be most useful to historical research.

Empirical investigations into the long-term development of MNEs will, however, inevitably have to start with the causes that motivate individual firms to go abroad, switching eventually from exporting to licensing or to direct investment. Particularly for these initial phases one can agree with Dunning that 'the internalisation paradigm may be more helpful in explaining degrees of multinationality than discrete acts of foreign investment.'⁹ The business historian might therefore choose Dunning's eclectic approach which, taking into account R. Vernon's stage concept of the 'product cycle', stresses the essential relationship between trade and international production and sees the engagement in foreign production by a firm as dependent on its 'comparative ownership advantages *vis-à-vis* host country firms and the comparative location endowments of home and foreign countries'. If these ownership advantages are obtained and if the advantages of location speak in favour of direct investment then there must be, as a third condition, 'the possibility of internalising the firm's activities and thus substituting in part functions of the market.'¹⁰

There remains the problem, already mentioned in the introduction to this volume, of how a MNE should be defined. Should it be the 'broad definition' adopted by Dunning that MNEs are 'firms that engage in foreign direct investment',¹¹ or should the MNE be seen, following R.E. Caves, as 'an enterprise that controls and manages production establishments—plants—located in at least two countries'?¹² Should we, in the end, agree with L.G. Franko who considers that 'the word "multinational" ... only denotes the existence of manufacturing operations, owned to significant extent by the parent firm, in numerous countries'?¹³ In any case, it will be quite a difficult task to find a definition based on purely structural aspects (equity quotas, number of

foreign subsidiaries) which at the same time satisfies the needs of a majority of economists and business historians.¹⁴ The growing importance assumed by the internalisation concept in recent studies seems, however, to facilitate the problems of historical analysis of the MNE which is now being considered as 'any firm which owns outputs of goods or services originating in more than one country'.¹⁵ Since this definition presupposes only a minimal threshold level of multinationality and includes firms which merely operate foreign sales subsidiaries,¹⁶ it seems to be ideally suited to historical research concentrating on the origins and early phase of development of the MNE and, in fact, it has already been accepted by business historians.¹⁷

We still lack a comprehensive study of German MNE before World War I,¹⁸ and in this chapter only a few cases of German multinational investment can be presented. Nevertheless, an attempt will be made to respond to some of the questions put forward in the introduction to this volume, notably: the transfer of technology via direct investment as an example of a typical 'ownership advantage'; the effects of visible and invisible trade barriers—'location-specific advantages'—on multinational investment; the influence of the size of the firm on multinational investment; some effects of the MNE on the economy of the host countries.

Finally, to a greater degree than has been done so far in empirical studies which cover only the contemporary period, it will be shown how advantages—firm-specific or country-specific—can change over time,¹⁹ thus demonstrating that the process of internalisation can either continue its course, or in certain circumstances, owing to internal or external causes, revert. We should in any case agree with Thomas Horst who wrote over a decade ago '... if we are ever to unravel the complexity of the foreign investment process, a systematic study of the dynamic behaviour of firms must be undertaken'.²⁰

Multinational Activity in the Consumer Goods Sector: Merck and Kathreiner's

The pharmaceutical firm of E. Merck grew out of an apothecary shop founded in 1654 in Darmstadt, then a small residential town south of Frankfurt. It started to produce pharmaceuticals on a larger scale in the 1820s. In 1900 it employed 800 workers, 50 chemists, pharmacists, engineers and doctors and an administrative staff of 150. By 1913, employment had risen to 1629 workers, while the scientific and administrative staff numbered 440. At that time, the firm specialised in alkaloids and organo-therapeutical compounds.²¹ Measured in employment figures, Merck was the largest of the 'purely' pharmaceutical companies existing in Germany before 1914, followed

by Schering of Berlin which in 1913 employed 935 workers and an administrative staff of about 300. Some of these firms were incorporated by that time, but Merck remained a partnership owned by the same family since 1668.²² In addition to these relatively small firms many of the large chemical companies, among them especially Bayer and Hoechst, dedicated part of their activities to the manufacture of pharmaceuticals. This renders the delimitation of the market particularly complicated since it meant a high degree of potential competition due to the technical capacity and the financial power of these very large chemical firms. Bayer's total turnover in 1913, for instance, was about six times as high as Merck's, and Hoechst employed in 1913 more than five times as many workers and staff—10 360 to be exact—as Merck.²³

The Darmstadt firm was an extremely active exporter. In 1900–1 only 23 per cent of its sales went to Germany, 49 per cent to other European countries and 28 per cent to the rest of the world. Germany's share in Merck's sales gradually rose, and by 1912 had reached 33 per cent, while Europe took 43 per cent and the rest of the world 24 per cent.²⁴ The most important foreign markets in 1900–1 were Russia (17.6 per cent of total sales), followed by Latin America (11.4 per cent) and New York which evidently served the US market (11 per cent). Then came Britain (5.5 per cent), Austria-Hungary (5.3 per cent), Spain and Portugal (5.1 per cent), and Italy (4 per cent). These proportions did not change dramatically until 1912. The growth in importance of the German market was accompanied by a shrinking quota of exports to Russia (12 per cent in 1912) and to the United States and Canada (7.5 per cent in 1912).

This latter trend was probably caused by an internal factor. George Merck, a member of the Darmstadt family, had emigrated to the US, where in 1887 he founded a sales affiliate in New York. A contract concluded in 1890 between George Merck and the Merck firm of Darmstadt shows that the former received \$200 000 which constituted his entire participation in a partnership he was establishing together with a certain Theodor Weicker of New York, probably another German emigrant. In 1894 the Darmstadt firm gave another \$50 000 and, in return, George Merck had to deliver his entire profit share to the parent company.²⁵ In 1899 the firm of Merck & Co was founded, and started production of pharmaceuticals in Rahway, NY. When in 1917 it was taken into custody under the Trading with the Enemy Act, its capital amounted to \$1 million. During the last years before the War it had built up an integrated production which no longer depended exclusively on the imports of German intermediates.²⁶ The relatively high American import duties on pharmaceuticals, and the fast growth as well as the dimension of the American market must have been the

principal reasons for this direct investment in manufacturing.²⁷ A further motive might have been supplied by the particular structure of American demand where the ordinary drugstores selling pharmaceuticals were not supervised by scientifically trained pharmacists which meant that preference was given to ready-made and packed drugs.²⁸ The diminishing exports of Merck to the United States were thus probably a consequence of direct investment by the same firm.

If we follow Merck through particular foreign markets, Italy and France might serve as good examples of attempts to increase gradually the degree of internalisation. The Italian market was never a principal one for Merck, but it grew slowly from 1899–1900, when its share in total sales amounted to 3 per cent, until 1912, when it reached 4.3 per cent. Merck had established a number of small sale agencies all over the peninsula (in Genoa, Florence, Rome, Livorno, Naples, Palermo and Catania) whilst Milan was the main bridgehead for the conquest of the Italian market. Around 1900—the exact date could not be determined—the Milan agency was enlarged by the addition of a depot, and from then on the Italian customers were increasingly being served from there. Whereas in 1900–1, 87 per cent of Merck's exports to Italy were delivered directly by the Darmstadt factory, in 1913 this proportion had diminished to a mere 34 per cent.²⁹ Clients increasingly preferred being served from the Milan depot because it released them from the nuisance of getting their orders through the complicated formalities of the Italian customs service.³⁰ Discussions took place on bottling and packing in the Milan depot the products for which there was greatest demand, thereby economising on freight and customs duties. This was finally realised in 1910, and Milan served as example for a corresponding initiative in London in the following year. The entire size of the Milan affiliate remained rather limited. The deposit and its packing and bottling department employed only eight persons; all machines came from Germany; the commercial staff of the agency consisted of seven 'gentlemen', three of them Germans who occupied the leading positions.³¹

In France, where the same problems of passing goods through customs existed, a depot had already been set up in Paris in 1902.³² A limited joint venture with a Paris firm (Bousquet) was started. Merck authorised its French partner to use its brand names for certain so-called 'specialities' which were then bottled and packed in France, a measure certainly provoked by the French prohibition against the import of pharmaceuticals in tablet or capsule form.³³ Moreover, the French patent law of 1844 did not allow the patenting of any type of medicine. This certainly did not favour the growth of a vigorous national industry and, as a result, according to contemporary sources,

shortly before the outbreak of World War I 90 per cent of the fine chemicals needed for French pharmaceutical production came from Germany or passed through French affiliates of German industry.³⁴

The problem of establishing a direct manufacturing investment in France was pondered over and over again by Merck, especially as the joint venture with Bousquet did not prosper as planned. Furthermore, the existing tariff was, if one is to believe the Merck officials, continuously changed whenever a new French 'infant' pharmaceutical competitor entered the scene.³⁵ Finally, in 1910, a small chemical factory at Montereau near Paris was bought and, after considerable investment exceeding all previous calculations, production of some pharmaceutical chemicals, such as glycerophosphate and theobromine, started two years later. The initial difficulties were immense, and in the spring of 1913 Merck almost decided to give up the Montereau plant. Up to that point 574 000 marks had been invested and over the same period a total loss of 128 000 marks had accumulated, including depreciation. Nevertheless, prestige considerations encouraged Merck to keep the Montereau factory open, although the outbreak of World War I prevented its capacity to survive being clearly demonstrated. When the works were seized by the French authorities in 1914, their value was calculated at 671 000 marks (839 000 francs).³⁶

The already mentioned structure of Merck's exports reflects fairly well the overall export figures of the German pharmaceutical industry, which in 1913 held a dominant 30.3 per cent share of world exports, followed by Britain (21.3 per cent), the USA (13 per cent) and France (11.9 per cent). 21.4 per cent of these German exports went to Russia, 13.7 per cent to Austria-Hungary, 11.3 per cent to Britain, 10.7 per cent to the USA, 4.8 per cent to Italy, and 3.4 per cent to France.³⁷ Russia, the principal export market, was a notoriously high-tariff country, and Merck considered direct investment there as almost inevitable in the long run. However, the German firm preferred to establish only a bottling and packing department at its Moscow agency in 1906,³⁸ and when war broke out, it had not yet started manufacturing. Schering of Berlin, one of its major competitors, did, on the other hand, take this step and established in 1905 a pharmaceutical factory in Moscow which imported the chemical raw materials and intermediates from Germany. In addition, a charcoal plant using the immense resources of Russian timber was built at Wydriza in the Mogilev province.³⁹

Another typical example of a producer of a consumer good is the case of Kathreiner's Malzkaffee-Fabriken, founded in 1892 in order to produce malt coffee, a substitute made from barley with odorous substances added to give it at least a certain coffee flavour.⁴⁰ It was a typical low-income product but, with the help of intensive publicity, the

firm tried to persuade the public that its malt coffee, being free of caffeine, was also an extremely 'healthy' product and not only a second-best solution. Special emphasis was laid on the diffusion of the brand name and, particularly in the US, marketing efforts were directed at German immigrants.⁴¹

Up to 1914, the company had built seven factories in Germany. Sales increased from 17 718 quintals in 1891-2 to 57 812 quintals in 1901-2 and to 496 582 in 1913-14, doubtless pushed up after 1910 by the rapid rise in the price of coffee. In 1914 the firm was established in nine different foreign countries. It had given licences to a French, a Swiss, and a US firm, whereas it had undertaken direct investment in manufacturing companies in Austria-Hungary, Sweden, Russia, and, in 1912, in Spain after a sevenfold increase there in customs duties on malt coffee. The tariff situation in Argentina, where sales developed in a very satisfactory way, suggested a similar move but this was then prevented by the outbreak of the First World War. The Belgian and Dutch markets were supplied by a Rotterdam sales affiliate, and in Italy a sales depot was established in 1893 in Milan. One year later, a manufacturing company was created together with Italian partners in Genoa but it had to be closed down very soon afterwards because of internal differences with the Italian co-entrepreneurs and because of a newly established tax on production. There was probably also a misapprehension as to the taste of the Italian consumer who seemingly preferred if not 'real' coffee, at least the substitutes made from chicory with their stronger flavour. Kathreiner's Italian sales showed, in any case, a very slow development between 1900 and 1914.

Both cases of consumer goods producers examined here illustrate in detail the process and different modes of internalisation. Moreover, the Italian experience of Kathreiner's suggests that it was not a one-way process. In certain circumstances plans had to be rapidly revised, which meant that the dynamics were not limited to expansion only. Finally, the example of Merck shows that it was not necessarily the large oligopolistic firm which went for direct investment.⁴² Particularly in the early phases of development of a specific market, ownership advantages were to be found also with smaller companies and could, if the market subsequently became more differentiated, as was certainly the case with the pharmaceutical industry, eventually be maintained.

Multinationalisation and the Transfer of Technology: Bosch and Mannesmann

In the middle of 1914, the Stuttgart firm of Robert Bosch employed 4 726 workers and staff. Its production consisted almost entirely of magneto ignitions for automobiles and, to a much lesser degree, for

aeroplanes. Shortly before the war a diversification into other electrical equipment for the car industry, such as starters and headlights, was undertaken. In the first half of 1914 Bosch had agencies and factories in 25 countries and 88 per cent of its production was exported.⁴³ The firm had grown out of a small mechanical and electrotechnical workshop founded by Robert Bosch in Stuttgart in 1886. Its growth gained in momentum when Bosch started to produce magneto ignitions for automobiles in 1898. In 1901 his firm employed a work-force of 45, but thereafter it expanded very rapidly in parallel with the rapid growth of the car industry, to 506 employees in 1906 and to more than 4000 in 1914.⁴⁴ Bosch, a self-made man who never gave up control of his company during his lifetime, founded in 1899 the 'Automatic Magneto Electric Ignition Company Ltd', which was made responsible for sales in France and Belgium and later changed its name to *Compagnie des Magnétos Simms-Bosch*. His British partner *Frederic R. Simms* represented the Stuttgart firm in Britain⁴⁵ but sold his share in the French affiliate to Bosch in 1906.⁴⁶ The fact that in 1908 the French firm changed its name to *Société des Magnétos Bosch* reflected the new ownership situation. In 1907 it started to produce magneto ignitions for trucks since subsidies given by the French state to producers of these vehicles depended on the condition that all parts had to be French made.⁴⁷ The French automobile industry, the most important in pre-1914 Europe, was an extremely important customer, and it seems that Bosch had 'un quasi monopole sur le marché français' with annual sales that amounted to 10 million francs just before the outbreak of the war.⁴⁸ In Britain Bosch separated from Simms in 1907 and founded a new affiliate in London called *The Bosch Magneto Company Ltd*.⁴⁹ When it was required that racing cars and all their components had to be made in Britain if they wanted to participate in certain events, production, which seems, however, to have been largely assembly, was started in London. During the first half of 1914 Bosch satisfied approximately 85 to 95 per cent of British demand for magnetos and spark plugs.⁵⁰

When the collaboration with Simms, who was also a general agent for the US came to an end in 1906, Bosch immediately founded an American affiliate in New York.⁵¹ Soon agencies in Chicago (1908), San Francisco (1909), and Detroit (1910) followed.⁵² The US market was of the greatest importance but exports suffered from the cost of freight and especially from a tariff which in the case of magnetos amounted to not less than 45 per cent of their value.⁵³ There were certainly enough ownership advantages due to the firm's technology to induce Bosch to start direct investment in manufacturing. Consequently, in 1910 construction of a magneto factory was undertaken in Springfield, Massachusetts.

Production started in 1912. Two years later, the plant employed 2000 workers and staff and was considered a 'model factory' by American observers.⁵⁴ The US Alien Property Custodian who seized the American Bosch properties in 1918 gave an impressive report on the company's achievements.⁵⁵

The Bosch Magneto Co. was a tremendously powerful organization. Its combined capital and surplus exceeded \$6,500,000. It owned and operated a modern factory at Springfield, Mass., with branches at Detroit, Chicago, and San Francisco. Its main office and sales department was in New York City, but it had agencies and supply depots in over one hundred American cities. Its product had obtained first place in the minds of the American purchasing public and was indeed regarded as the standard with which all other similar products were compared.

In 1912 Bosch acquired 45 per cent of the equity capital of the *Eisemann Magneto Company*, an American affiliate of its principal German competitor. In the same year, there followed the purchase of the *Boonton Rubber Manufacturing Company* of Boonton, NY, 'the largest producer of molded insulation, a product which was essential to the magneto industry. Again, in May 1914, it acquired outright, at a price of \$750,000 in cash, the plant, business and goodwill of ... the *Rushmore Dynamo Works* at Plainfield, N.J. ... This factory was shortly thereafter shut down and dismantled.'⁵⁶ This latter fact speaks for itself and indicates clearly an oligopolistic market structure; as a matter of fact, according to the Alien Property Custodian, Bosch and *Eisemann* together produced 'at least half' of all the magnetos sold in the USA before war broke out in Europe.⁵⁷

Turning now to *Mannesmann*, the company showed great technological originality, but for almost two decades its growth was much more hesitant and never led to a dominant position in its sector. Based on the highly original invention, patented in 1886, for producing seamless rolled tubes, the firm seemed to become a MNE right from the outset.⁵⁸ In practice however, in addition to the original plant owned by the two inventors *Reinhard* and *Max Mannesmann*, between 1887 and 1889 three other companies were created, each of them formally independent: one at *Bous* near *Saarbrücken*, one at *Komotau* in the then *Austro-Hungarian Bohemia* and one in *Britain*, where the *Siemens* family had an interest and took a licence for a plant which was to be installed at *Llandore*. The German and Austrian works were amalgamated in 1890 as the *Deutsch-Österreichische Mannesmannröhren-Werke*, with a capital of 35 million marks and under the

financial guidance of the Deutsche Bank, the two inventor brothers receiving half of the new shares for bringing in their patents. Since the tube rolling process was at the beginning scarcely ripe for continuous production, the first years of the new firm were overshadowed by considerable technical and, consequently, financial difficulties. The two Mannesmann brothers left the firm quite soon and sold out their shares in 1900, the Deutsche Bank becoming the uncontested 'entrepreneur' and financier of the company. No dividend could be distributed until 1906; by then several rationalisation measures and the generally favourable economic climate guaranteed solid further growth.

Around the turn of the century the process of multinationalisation was resumed. In 1899 the Landore Mannesmann Tube Company, which otherwise would have had to be closed down and which was completely independent from the German firm, was taken over. This move into direct investment was motivated by the attempt to get control of the British market for seamless tubes. Moreover, being based in Britain, Landore was able to profit from Empire preferences which were increasingly built up by the dominions.⁵⁹ As a 'national' firm Landore became also one of the main suppliers of boiler pipes for the British navy. In 1913 the construction of a second and larger rolling mill at Newport near Cardiff was decided, its future production intended as a replacement for imports from the German parent firm, notably large-diameter tubes so far not produced in Britain. The Newport works had not yet gone into operation when the war broke out.⁶⁰

In 1906, when, as we have seen, the Mannesmann firm started to distribute its profits, the establishment of a rolling mill in Italy was decided; up to that moment, the peninsula had been an export market of growing significance.⁶¹ The investment was made not so much because of the Italian tariff, but in the hope that it could profit from State orders for the railways, the navy or for the new programme of municipal aqueducts in southern Italy. In practice, State orders went increasingly to national businesses even if its tenders were up to 5 per cent higher than the average tender from abroad. Accordingly a company was founded under Italian law and with an Italian metallurgical firm as a minority partner. The works were built at Dalmine near Bergamo where two electric furnaces were also installed in order to be able to produce the special type of steel needed for rolling seamless tubes. Production started in 1909 but the technical difficulties were considerable, and after two rather unsuccessful years the Italian partner withdrew its participation. A real improvement as far as output and profitability were concerned came only in 1912. Still, technically and financially the Società Tubi Mannesmann depended entirely on the parent company at Düsseldorf. As an example, the parent company

waived its right to the licence fees fixed by contract in order to 'improve' the balance sheet of the Italian affiliate. Credit lines opened by Italian banks were used only at the end of 1913; up to that point all financial means were provided from Germany. When Italy entered the war in May 1915, the firm was seized. Nevertheless, Mannesmann succeeded in selling the Dalmine works in 1916 to a group of Italian banks, a transaction made with the agreement of the Italian government via neutral Switzerland.⁶²

The most important foreign asset of Mannesmann remained, however, the Austrian affiliate, 'which reached about one third of the Mannesmann combine's total turnover in the last pre-war year' when all non-German subsidiaries accounted for 45 per cent of the overall volume.⁶³ The Komotau works certainly profited from high Austro-Hungarian tariffs and soon succeeded in attaining a share of 35 per cent in the tube cartel of the country.⁶⁴

In brief, one could say that both firms, Bosch and Mannesmann possessed strong ownership advantages through their patented technology. Foreign direct investment in manufacturing was, however, only induced when additional country-specific factors such as tariffs or non-tariff trade measures became effective in the particular foreign country. In the case of Bosch, its nearness to important customers such as the French and the American automobile industry certainly also played an important role.

Patent Legislation, Tariffs and Multinationalisation: the Case of the German Chemical Industry

The dominant position of the German chemical industry up to World War I is common knowledge among economic historians. If one excludes petroleum refining, which was particularly important in the US chemical sector, the German chemical industry retained a clear lead in world chemical production. Its exports 'accounted for an estimated 28 per cent of world exports in chemicals'.⁶⁵ The German superiority in the artificial dyestuffs sector was crushing. The total value produced by eight firms and their foreign subsidiaries in 1913 amounted to 75-80 per cent of world production, and some 85 per cent of German production was exported.⁶⁶ It is commonly accepted that the rapid rise of the German chemical industry which started in the 1860s was due to country-specific advantages like the German university system which favoured the training of chemists and chemical engineers. There were industry-specific advantages like the oligopolistic market structure and the access to fuel and raw materials. In some sectors enterprise-specific advantages shrank after 1900 and in the dyestuffs sector this resulted in the formation of two *Interessengemeinschaften*, the so-called Dreibund

(BASF, Bayer and AGFA), and Hoechst, which controlled Casella and Kalle on the other hand. The largest of these firms had gone abroad fairly early. In Russia, BASF, Bayer and Hoechst founded or participated in producing affiliates in 1877, 1883 and 1885 in response, as is generally asserted, to growing Russian protectionism after the tariff moves of 1877.⁶⁷ The smaller chemical firms (Casella, Kalle, and AGFA) came to Russia in the following years. Especially in the dyestuffs sector, production by these affiliates comprised only the final stages; intermediate products on which the duties were much lower were imported from the parent firms; in this specific case they contributed up to 80 per cent of the value added.⁶⁸ Tariff problems, but even more the French patent law which required an immediate start of production in the country by patent holders, were responsible for the foundation by Hoechst in 1881 of the *Compagnie Parisienne de Couleurs d'Aniline* which started production of aniline dyes and pharmaceutical products at Creil (Oise) in 1884.⁶⁹ BASF had started a plant in 1878 at Neuville-sur-Saône near Lyon.⁷⁰ A change in British patent legislation occurred in 1907 which prescribed that a foreign patent, after its transfer to Britain, had to be exploited there or else it would be revoked. As a result Hoechst, representing also Casella and Kalle, established a plant in Ellesmere Port near Liverpool and BASF, acting for the *Dreibund*, founded the *Mersey Chemical Works* not far from there and transferred nearly one-fifth of its patents to this new affiliate. In the following years Hoechst produced practically the whole volume of domestic production of indigo, amounting to about 50 per cent of domestic demand, at Ellesmere Port, whereas the BASF subsidiary concentrated on other aniline dyes. Patent transfers from Germany decreased, however, very soon after it became clear that British jurisdiction had, in practice watered down the enforcement of the 1907 Patent and Designs Act.⁷¹ Looking to the situation of British producers, Haber is probably right when he states that apart from the virtual failure of the new patent legislation, another possible measure, 'a tariff, would not have helped the British producers because they lacked patents, know-how and, above all, research and enterprise'.⁷²

The impact of patent legislation is also shown in the case of the United States where there was no legal obligation to use patents given by the US administration in the country itself. For this reason the BASF thought it useless to establish a factory there. It registered, however, up to 1914 about 1000 patents. Roughly the same number were registered by Bayer, which owned, however, a factory at Albany, NY and another company, the *Synthetic Patents Company, Inc.*, which held all the Bayer patents registered in the US and gave licenses to the American Bayer Company; the latter was thus able to reduce its tax burden

because gains from licenses paid lower taxes than gains from production.⁷³ All the other German dye makers had little in the way of manufacturing in the United States; they did have, however, very extensive commercial organisations.

A final illustration could be given by the Italian case where there was, up to the First World War, no artificial dyestuffs production at all; in 1913, Germany provided 77 per cent of Italian dyestuffs imports. By making concessions to agricultural imports from Italy, the German negotiators succeeded after 1878 in all tariff discussions in keeping dyestuffs and related chemical imports totally free of all duties. Consequently there was not one German chemical plant of any importance in Italy.⁷⁴

The dominant position of the German chemical industry before 1914 was certainly due to patented technology and intangible know-how based on significant outlay on research and development. If at the same time foreign states were not willing to respect the simple registration of patents but demanded that they be actually implemented within the national frontiers, if they constructed tariff walls or if they fell back on non-tariff trade measures, then direct investment was the logical consequence if a specific market was to be conserved.

Technology and Finance: the German Electrical Industry

The last sector that will be considered here is electrotechnical production where German industry shared world-wide leadership with US trusts. According to one estimate, Germany in 1913 had a share of about 35 per cent of world production as compared to a United States share of 29 per cent,⁷⁵ whereas another estimate gives a figure of 31 per cent for Germany and 35 per cent for the United States.⁷⁶ There is agreement, however, that German industry dominated world exports of electrotechnical material with its share of 46 per cent, followed by the British with 22 per cent and their American competitors with 16 per cent.⁷⁷

This is not the place to discuss the rise of the German electrotechnical industry as such.⁷⁹ I should only mention that Siemens & Halske started as early as 1847 and owed its success during the first three decades of its existence mainly to business in the telegraph and later in the slowly developing telephone sector. Its main competitor, the *Allgemeine Elektrizitäts-Gesellschaft* (AEG), only started in 1883 as the German license-holder of Edison. During its first decade it depended, apart from its technical ties with the American Edison companies, quite heavily on the *Deutsche Bank* and Siemens itself, both of which took equity participations. The rise of the AEG took place in the high-voltage sector right from the beginning and still more so when it had finally

gained complete independence from Edison and Siemens in 1894. Siemens, the older firm and more conservative in its outlook, fell back comparatively because it did not involve itself so much in the high-voltage business during the late 1880s and the early 1890s. However, at the turn of the century, it began to expand again in this sector too, when it had been transformed into a limited liability company and its liquidity problems had been solved. Like a considerable number of smaller companies, the third competitor, Schuckert, founded in 1873, could hardly survive the crisis of 1901 which hit the German economy particularly hard and above all its too rapidly growing electrical industry. In 1903 Schuckert merged its plant with Siemens which combined it with its own high-voltage activities in the new firm of Siemens-Schuckert, although Schuckert remained independent as a holding company detaining participation in a considerable number of domestic and foreign power, tram and lighting companies. In any case, after 1903 the German electrotechnical industry was characterised by a virtual duopoly of Siemens and AEG which dominated the market, leaving space however to a host of smaller so-called 'specialised' firms.

What interests us in this context is the international dimension of this sector, and there can be no doubt that it was important right from the beginning. It started at a very early stage in the case of Siemens, which, as a consequence of considerable orders from the Russian government for the construction and maintenance of a telegraph network, established a plant at St Petersburg as early as 1855, where parts sent from Berlin were assembled. The Russian business was directed on the spot by Carl Siemens, brother of Werner, the firm's founder, and it was another brother, William, who represented the Siemens interests in Britain from 1850 and directed the British Siemens subsidiary (founded in 1858), which started with the production of sea cables in 1863.⁷⁹ In order to settle disputes about responsibility and profit distribution which had arisen between the brothers, the whole firm was reorganised in 1867 under the roof of a common business (*Gesamtgesellschaft*) with its seat at Berlin; it split up into two companies, Siemens & Halske in Berlin and Siemens Brothers in London; the Russian branch was assigned as an affiliate to Siemens & Halske.⁸⁰ One could talk, of course, at first sight of a multinational group, which had been formed with a centre in Berlin and direct investments in Britain and Russia. But if one looks more closely, one sees that at least in the British case William Siemens operated quite independently, relying financially on his brother Werner in Berlin on occasions. The whole family enterprise structurally was more similar to more traditional models, for instance to the business of Huguenot bankers and merchants in the Refuge operating contemporaneously in Geneva, Amsterdam and London, if

not in Paris.⁸¹ Even after the turn of the century 'the great principle of international family unity' characterised the different Siemens branches,⁸² and this meant that when there were problems a member of the family was called in to manage the various foreign affiliates. Expansion abroad continued in the sense that in 1903, for instance, there were 30 so-called technical bureaux installed, eight of them in European countries.⁸³ Some of these started production, normally at first by assembling parts sent from the mother firm, as for instance in 1879 in Vienna and in 1903 in Bratislava, in the Hungarian part of the Habsburg Empire, where after the merger with Schuckert its plant was incorporated.

In some countries, as for instance France, where anti-German feelings after 1871 certainly did not favour sales and autonomous direct investment, joint ventures proved to be a viable solution. Thus in 1889 Siemens & Halske, Siemens Brothers (London) and the Société Alsacienne de Constructions Mécaniques (Mulhouse) founded a jointly-owned company which was supposed to produce high-voltage material in Belfort, just on the French side of the border. The Mulhouse firm which held a share of 37.5 per cent was to provide all the non-electrical mechanical equipment, and Siemens the electrical parts. In the longer run the Belfort company proved to be quite successful but Siemens had to withdraw from it in 1904 since the merger with Schuckert the year before had left Schuckert's French subsidiary, the Compagnie Générale d'Electricité de Creil, founded in 1897, practically at Siemens' disposal. Consequently, Siemens rented the Creil works from the Schuckert holding which formally was still independent. With the Société Alsacienne a jointly-owned cable factory at Belfort was nevertheless continued.⁸⁴

In Russia production for low- and high-voltage material started in 1880-2. The reason must be seen not so much in the increasing Tsarist tariff duties as in the growing pressure from the Russian administration which insisted on domestic production for continuing State orders.⁸⁵ The AEG for its part resisted such pressures for quite a long time and tried to look after its Russian business through local agents. In 1898 it founded an affiliate for Russia which was simply a sales company based in Berlin and had to transfer its legal seat in 1902 to St Petersburg so as to avoid being thrown out of business. Only in 1905, after its merger with the Union Elektrizitäts-Gesellschaft, previously controlled by General Electric, could the AEG get hold of the Union's electrotechnical factory at Riga.⁸⁶

We could go on listing other examples of direct investment by the German electrotechnical industry, but looking at the motives we would find in most cases State intervention in the form of tariffs or non-tariff

trade measures, especially if the State was an important customer, as in the case of Russia. However, there must have been still other factors at stake if, for instance, in 1913, 87 per cent of all electrotechnical imports to Russia came from Germany,⁸⁷ if in the same year in the Italian case the quota of imports from Germany reached 70 per cent⁸⁸ and if the German electrotechnical industry succeeded in taking up regularly about half of Argentinian imports in this field between 1903 and 1913.⁸⁹ The reason must be found in the so-called *Unternehmensgeschäft*, which meant that the large German trusts created their own market by founding local and regional power, tramway and lighting companies in those countries (for example Russia, Italy, Spain, Latin America) and for those customers (particularly local public authorities) which suffered from chronic lack of capital, and because these new companies were forced by statute to buy their electrotechnical material from their big industrial founders.⁹⁰ No doubt these operations were further steps in internalisation bound to reduce the risks of selling in a foreign market. On the other hand, the risk was created of accumulating a growing volume of equity capital and bonds in the portfolio of the electrotechnical producers and a dangerous reduction of their liquidity. The solution lay in founding financial holdings together with the great banks. These financial holding companies took over the shares and bonds of the newly created public utility companies, held them in their portfolio during the period of construction and initial development and sold most of their holdings to the general public as soon as they had 'matured' and yielded a profit, afterwards in general only retaining controlling minority holdings.⁹¹ Each of the German producers possessed such an intermediate financial holding. AEG had the Bank für elektrische Unternehmung, founded in 1895 in Zürich by itself and a number of German and Swiss and, to a minor extent, Italian and French banks. The same holds for Siemens with its Basel-based Schweizerische Gesellschaft für elektrische Industrie, created in 1896, and its Elektrische Licht- und Kraftanlagen AG, founded at Berlin in the same year. Schuckert and the minor electrotechnical producers possessed, of course, their own *Finanzierungsgesellschaften*. The fact that part of these financial holdings were based in Switzerland or Belgium (in the latter country, for instance, was the AEG-controlled SOFINA) arose mainly from the very liberal company law and stock exchange regulations of these countries. In part, it probably owed something to the participation of the influential Swiss and Belgian banks in these holdings.⁹² One can further observe an increasing regional specialisation by the creation of national or regional subholdings controlled directly by the electrotechnical producer and its banks or by one of its financial holdings such as, for instance, the

Società per lo sviluppo delle imprese elettriche in Italia and the Deutsche Überseische Elektrizitäts-Gesellschaft, the one 'responsible' for Italy, the other for Argentina, Chile and Uruguay, both of them emanations of AEG.⁹³ As a result, in 1913 about 50 per cent of the capital of the Italian and about 40 per cent of the Russian companies producing electrical energy were controlled by German capital.⁹⁴

Even if one can agree that the German *Elektrokonzerne* enjoyed substantial ownership advantages because of their superior quality of management, their advanced technology in electrotechnical mass production, their thorough marketing techniques and their after-sales service, the high-voltage material itself was by the mid-1890s technically 'mature' and in the medium term few observers expected radical innovations. For German industry this meant probably slowly shrinking advantages and growing competition on the world market, especially from its US rivals. It could, up to a certain degree, meet this challenge—particularly in countries where investment capital was relatively difficult to obtain—through the extraordinary process of internalisation described above, which was made possible by the advantage of easy access to factor markets, that is, in this case to international capital via its financial holdings and ultimately via its close ties to the German type of mixed banks.

When the First World War ended this access to the international capital markets and led to the loss of the major part of German direct investment, the high-voltage business of the type described above found itself in considerable difficulties. But—and the Italian example shows this quite well—the then technologically faster advancing low-voltage sector (above all the telephone installation business) survived much more easily and its exports performed comparatively better in the inter-war period.

Summing up, it must be emphasised that the examples and brief case studies offered in this chapter do not provide a comprehensive study of German MNE before 1914. What is needed in the future are studies that concentrate on the historical development of a specific German multinational as well as the type of synthetic overview that Mira Wilkins has done for US MNE. At the same time the point must be made that the astonishing vitality of the pre-1914 German economy and its rapid international expansion cannot be described in a convincing way without reference to the MNE, its concept and its gradual evolution.

Notes

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2. B. Swedenborg, *The Multinational Operations of Swedish Firms. An Analysis of Determinants and Effects* (Stockholm, 1979), p. 39.
3. R.H. Coase, 'The Nature of the Firm', *Economica* (1937), pp. 386-405.
4. O.E. Williamson, *Markets and Hierarchies: Analysis and Anti-trust Implications* (New York, 1975), especially chapter 1; O.E. Williamson, 'The Modern Corporation: Origins, Evolution, Attributes', *Journal of Economic Literature* (1981), pp. 1537-68.
5. G.B. Richardson, 'The Organisation of Industry', *The Economic Journal* (1972), p. 890 (italics in original).
6. A.M. Rugman, 'Internalization and non-equity forms of international involvement' in A.M. Rugman (ed.), *New Theories of the Multinational Enterprise* (London, 1982), p. 11.
7. M. Casson, 'Transaction Costs and the Theory of the Multinational Enterprise' in A.M. Rugman (ed.), *New Theories of the Multinational Enterprise*, p. 24.
8. *Ibid.*, p. 36ff.
9. J.H. Dunning, 'Explaining the International Direct Investment Position of Countries: Towards a Dynamic or Developmental Approach', *Weltwirtschaftliches Archiv* (1981), p. 33.
10. J.H. Dunning, *International Production and the Multinational Enterprise* (London, 1981), p. 27.
11. *Ibid.*, p. 3.
12. R.E. Caves, *Multinational Enterprise and Economic Analysis* (Cambridge, 1982), p. 1.
13. L. Franko, 'The Origins of Multinational Manufacturing by Continental European Firms', *Business History Review* (1974), p. 279, note 10.
14. Y. Aharoni, 'On the Definition of a Multinational Corporation' in A. Kapoor and P.D. Grub (eds), *The Multinational Enterprise in Transition* (Princeton, NJ, 1973), pp. 4ff; F. Grünärl, 'Kritische Anmerkungen zu einer merkmalspezifischen Typologie multinationaler Unternehmen', *Jahrbuch für Sozialwissenschaft* (1975), pp. 228-43.
15. M. Casson, op. cit., p. 36 (emphasis added).
16. *Ibid.*
17. See, for example, M. Wilkins, 'Modern European Economic History and the Multinationals', *Journal of European Economic History* (1977), pp. 575-95, particularly p. 578, note 11.
18. See, however, the various contributions mentioned in notes 28-30 of the introduction to this volume.
19. See, for instance, P.J. Buckley, 'New Theories of International Business: Some Unresolved Issues' in M. Casson (ed.), *The Growth of International Business* (London, 1983), pp. 34-50, particularly p. 42.
20. T. Horst, 'Firm and Industry Determinants of the Decision to Invest Abroad: An Empirical Study', *Review of Economics and Statistics* (1972), p. 265.
21. Cited in L.F. Haber, *The Chemical Industry 1900-1930. International Growth and Technological Change* (Oxford, 1971), p. 133; see also J.H. Merck, *Entwicklung und Stand der pharmazeutischen Grossindustrie Deutschlands* (Berlin, 1923), p. 12; W. Vershofen, *Wirtschaftsgeschichte der chemisch-pharmazeutischen Industrie*, vol. 3 (Aulendorf, Würt., 1958), p. 39ff.
22. L.F. Haber, op. cit., p. 133ff; J.H. Merck, op. cit., p. 14.
23. L.F. Haber, op. cit., p. 121, 131; Merck archives, Darmstadt, F3 Nr. 17.

24. Merck archives, F3 Nr. 5 and Nr. 16.
25. *Ibid.*, H 1 Nr. 45/46.
26. T.R. Kabisch, *Deutsches Kapital in den USA. Von der Reichsgründung bis zur Sequestrierung (1917) und Freigabe* (Stuttgart, 1982), p. 234; 65th Congress, 3rd Session, Senate Documents, vol. 8 (Washington, D.C., 1919), p. 59 (hereafter referred to as *Alien Property Custodian Report*).
27. See T.R. Kabisch, op. cit.
28. R. Schmitt, 'Die pharmazeutische Industrie und ihre Stellung in der Weltwirtschaft' (unpublished thesis, Frankfurt am Main, 1932), p. 124.
29. Merck archives, F3 Nr. 5-17.
30. *Ibid.*, F3 Nr. 9.
31. *Ibid.*, F3 Nr. 14, H1 Nr. 9.
32. *Ibid.*, F3, Nr. 5/6.
33. *Ibid.*, F3 Nr. 6.
34. R. Schmitt, op. cit., p. 123; E. Grandmougin, *L'essor des industries chimiques en France*, (Paris, 1917), p. 173ff.
35. Merck archives, F3 Nr. 6, 9.
36. *Ibid.*, H1, Nr. 22, 23, 24, 25, 29; see also R. Poidevin, *Les relations économiques et financières entre la France et l'Allemagne de 1898 à 1914* (Paris, 1969), p. 740.
37. R. Schmitt, op. cit., pp. 218, 164.
38. Merck archives, F3 Nr. 10.
39. H. Holländer, *Geschichte der Schering Aktiengesellschaft* (Berlin, 1955), p. 36ff.; Schering, or at least a member of the Schering family, participated in the New York firm of Schering & Glatz in the late 1870s and took in 1897 a short-lived participation in a borax mine in Chile, a typical raw-material venture (*ibid.*, p. 15, 19).
40. For the following see above all *Denkschrift anlässlich des 25-jährigen Bestehens von Kahreiners Malzkaffee-Fabriken, 1892-1917* (München, 1917); H. Aust, *Organisation eines Markenartikel-Grossunternehmens der Nahrungs- und Genussmittelindustrie* (undated typewritten manuscript in the library of the Institut für Weltwirtschaft at Kiel, Germany), particularly p. 35ff., 167ff.
41. For an analogous strategy in the same market but with another type of coffee surrogate see the case of the Heinrich Franck firm of Ludwigsburg mentioned by T.R. Kabisch, op. cit., p. 280ff.
42. R.E. Caves, 'International Corporations' and T. Horst, 'The Multinational Corporation and Direct Investment. A comment' in P.B. Kenen (ed.), *International Trade and Finance. Frontiers for Research* (Cambridge, 1975), pp. 368-9 see the typical MNE as a large oligopolistic firm whereas B. Swedenborg, op. cit., pp. xiv, 153ff., looking at the historical development of Swedish multinationals, comes to the conclusion that 'large firms do not have a higher propensity to produce abroad than small firms do' (*ibid.*, p. 188).
43. O. Debatin, *Sie haben mitgeholfen. Lebensbilder verdienter Mitarbeiter des Hauses Bosch* (Stuttgart, Robert Bosch GmbH, 1963), p. 37ff; *Fünfzig Jahre Bosch 1886-1936* (Stuttgart, 1936), pp. 27, 290.
44. O. Debatin, op. cit., p. 46; see also T. Heuss, *Robert Bosch. Leben und Leistung* (München, 1975; 1st edn Tübingen 1946); *75 Jahre Bosch 1886-1961. Ein geschichtlicher Rückblick* (Stuttgart, Robert Bosch GmbH, 1961).
45. *Der Bosch-Zünder. Eine Zeitschrift für alle Angehörigen der Robert-Bosch-AG und der Bosch-Metalwerk AG, Stuttgart und Feuerbach*, vol. 1, no. 4. (1919), p. 59.
46. *Ibid.*, p. 60; O. Debatin, op. cit., p. 23.
47. O. Debatin, op. cit., p. 20.
48. R. Poidevin, op. cit., p. 20.
49. *Fünfzig Jahre Bosch*, p. 25.
50. O. Debatin, op. cit., p. 32ff.

51. Der Bosch-Zünder, p. 60; 75 Jahre Bosch, p. 31, T. Heuss, op. cit., p. 121.
52. Der Bosch-Zünder, p. 61ff; 75 Jahre Bosch, p. 34.
53. O. Debatin, op. cit., p. 68ff; T. Heuss, op. cit., p. 122; T.R. Kabisch, op. cit., p. 32.
54. Debatin, op. cit., p. 55ff; T. Heuss, op. cit., p. 150ff.
55. Alien Property Custodian Report, p. 109.
56. Ibid.
57. Ibid., p. 108.
58. See especially 75 Jahre Mannesmann. Geschichte einer Erfindung und eines Unternehmens, 1890-1965 (Düsseldorf, Mannesmann Aktiengesellschaft, 1965), p. 27ff; P. Hertner, 'Fallstudien zu deutschen multinationalen Unternehmen vor dem Ersten Weltkrieg' in N. Horn und J. Kocka, *Recht und Entwicklung der Grossunternehmen im 19. und im frühen 20. Jahrhundert* (Göttingen, 1979), pp. 388-419, particularly p. 400 ff; H. Pogge von Strandmann, *Unternehmenspolitik und Unternehmensführung. Der Dialog zwischen Aufsichtsrat und Vorstand bei Mannesmann 1900 bis 1919* (Düsseldorf, 1978); A. Teichova, 'The Mannesmann Concern in East Central Europe in the inter-war period' in A. Teichova and P.L. Cottrell, *International Business and Central Europe, 1918-1939* (Leicester, 1983), pp. 103-37, particularly pp. 103-6.
59. 75 Jahre Mannesmann, p. 82; for the problem of Empire preferences see, for instance, F. Capie, *Depression and Protectionism: Britain between the Wars* (London, 1983), pp. 23, 42.
60. R. Bungeoth, *50 Jahre Mannesmannröhren 1884/1934* (Berlin, 1934), p. 135.
61. See P. Hertner, 'Fallstudien', p. 403ff; P. Hertner, 'Deutsches Kapital in Italien: Die "Società Tubi Mannesmann" in Dalmine bei Bergamo, 1906-1916', *Zeitschrift für Unternehmensgeschichte* (1977), pp. 183-204, (1978), pp. 54-76.
62. P. Hertner, 'Deutsches Kapital in Italien', p. 66ff.
63. A. Teichova, op. cit., p. 105.
64. Ibid.
65. L.F. Haber, op. cit., p. 108.
66. Ibid., p. 121.
67. P.A. Zimmermann, *Patentwesen in der Chemie* (Ludwigshafen am Rhein, 1965), p. 113; C. Schuster, *Vom Farbenhandel zur Farbenindustrie. Die erste Fusion der BASF* (Ludwigshafen am Rhein, 1973), p. 71ff; N. Kirchner, 'Die Bayer-Werke in Russland, 1883-1974. Ein deutscher Beitrag zur Industrialisierung Russlands', H. Lemberg et al., *Osteuropa in Geschichte und Gegenwart. Festschrift für Günther Stökl zum 60. Geburtstag* (Köln 1977), pp. 153-70; *Dokumente aus Hoechst-Archiven*, 43 (Frankfurt am Main, 1970), p. 7, 11ff.
68. F. Redlich, *Die volkswirtschaftliche Bedeutung der deutschen Teerfarbenindustrie* (doctoral thesis, Berlin, 1914), p. 83; L.F. Haber, op. cit., p. 173; L.F. Haber, *The Chemical Industry during the Nineteenth Century* (Oxford, 1958), p. 142.
69. *Dokumente aus Hoechst-Archiven*, 44 (Frankfurt am Main, 1970), p. 7.
70. P.A. Zimmermann, op. cit., p. 113; *Die Badische Anilin- & Soda-Fabrik* (1921), p. 17; for these subsidiaries and others founded in France by Casella and AGFA see also R. Poidevin, op. cit., p. 29.
71. L.F. Haber, *The Chemical Industry 1900-1930*, p. 146ff.; P.A. Zimmermann, op. cit., p. 121ff; F. Redlich, op. cit., p. 81; *Dokumente aus Hoechst-Archiven*, 45 (Frankfurt/Main, 1971), p. 7ff, 14ff; it was for the same reasons that Schering, the above mentioned pharmaceutical firm, decided after 1908 to establish a manufacturing subsidiary near London which was to cover the markets of Britain and its Empire (H. Holländer, op. cit., p. 37).
72. L.F. Haber, *The Chemical Industry 1900-1930*, p. 148.
73. T.R. Kabisch, op. cit., p. 164ff., 225ff.
74. P. Hertner, 'Das Auslandskapital in der italienischen Wirtschaft, 1883-1914. Probleme seiner Quantifizierung und Auswertung' in H. Kellenbenz (ed.),

- Weltwirtschaftliche und währungspolitische Probleme seit dem Ausgang des Mittelalters (Stuttgart, 1981), pp. 93-121, particularly p. 105.
75. P. Czada, *Die Berliner Elektroindustrie in der Weimarer Zeit* (Berlin, 1969), p. 48ff.
76. G. Jacob-Wendler, *Deutsche Elektroindustrie in Lateinamerika. Siemens und AEG (1890-1914)* (Stuttgart, 1982), p. 11.
77. Ibid.; P. Czada, op. cit., p. 48ff.; see also the statistical tables in the Siemens Museum, München, Firmenarchiv (hereafter referred to as Siemens archives), SAA 11/Lb 581 (Liedtke).
78. See, among others, G. Siemens, *Geschichte des Hauses Siemens*, 3 vols. (Munich, 1947/1952); '50 Jahre AEG' (printed manuscript, Berlin, Allgemeine Elektrizitätsgesellschaft, 1956); J. Kocka, 'Siemens und der aufhaltsame Aufstieg der AEG', *Tradition* (1972), pp. 125-42; G. Eibert, *Unternehmenspolitik Nürnberger Maschinenbauer (1835-1914)*, (Stuttgart, 1979), pp. 182-281, 311-404 (on Schuckert).
79. S. von Weiher and H. Goetzeler, *Weg und Wirken der Siemens-Werke im Fortschritt der Elektrotechnik 1847-1972, Tradition*, Beiheft 8, (1972), p. 15; J.D. Scott, *Siemens Brothers 1858-1958* (London, 1958), pp. 31, 52.
80. G. Siemens, op. cit., vol. 1 (Munich, 1947), p. 87.
81. See the monumental work by H. Lüthy, *La banque protestante en France de la révocation de l'édit de Nantes à la Révolution*, 2 vols. (Paris, 1959).
82. J.D. Scott, op. cit., p. 79.
83. G. Siemens, op. cit., vol. 2, p. 206.
84. Siemens archives, SAA 68/Li 177.
85. I. Mai, *Das deutsche Kapital in Russland 1850-1894* (Berlin, DDR, 1970), p. 99ff., 197; G.S. Holzer, 'The German electrical industry in Russia: from economic entrepreneurship to political activism, 1890-1918' (PhD thesis, University of Nebraska, 1970), pp. 29ff., 41; W. Kirchner, 'The Industrialization of Russia and the Siemens firm 1853-1890', *Jahrbücher für Geschichte Osteuropas*, new series, 22 (1974), pp. 321-57, particularly p. 330; S. von Weiher, 'Carl von Siemens 1829-1906. Ein deutscher Unternehmer in Russland und England', *Tradition* (1956), pp. 13-25, particularly p. 23.
86. *50 Jahre AEG*, 94ff., 132, 158; G.S. Holzer, op. cit., p. 34, 41ff.; 83; J. Mai, 'Deutscher Kapitalexport nach Russland 1898-1907' in H. Lemke and B. Widera (eds), *Russisch-deutsche Beziehungen von der Kiever Rus' bis zur Oktoberrevolution* (Berlin, DDR, 1976), pp. 207ff.; V. Djakin, 'Zur Stellung des deutschen Kapitals in der Elektroindustrie Russlands', *Jahrbuch für Geschichte der UdSSR und der volksdemokratischen Länder Europas* (1966), p. 122ff.
87. V. Djakin, op. cit., p. 142ff.
88. P. Lanino, *La nuova Italia industriale*, vol. 2 (Rome, 1916), p. XXVIII.
89. G. Jacob-Wendler, op. cit., p. 69.
90. See the fundamental contribution by R. Liefmann, *Beteiligungs- und Finanzierungsgesellschaften. Eine Studie über den modernen Kapitalismus und das Effektenwesen* (Jena, 1913), in particular p. 103ff.
91. F. Fasolt, *Die sieben grössten deutschen Elektrizitätsgesellschaften. Ihre Entwicklung und Unternehmertätigkeit*, doctoral thesis, Heidelberg (Borna-Leipzig, 1904), p. 31ff.; M. Jürgens, *Finanzielle Trustgesellschaften*, doctoral thesis (Stuttgart, 1902), p. 117ff.
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93. P. Hertner, *Banken und Kapitalbildung*, p. 526f.; G. Jacob-Wendler, op. cit., p. 71ff.

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8 Swedish Multinational Growth before 1930

Ragnhild Lundström

Introduction

In comparison with the foreign direct investments of the United States and Great Britain, those emanating from Sweden are rather insignificant: in the early 1980s, Sweden accounted for a mere 2 per cent of the total world figure, compared with 48 per cent from the United States and 11 per cent from Britain.¹ However, Sweden ranks second after Switzerland in foreign direct investment per capita and fifth for such investments relative to gross national product. The percentage is very close to that for the United States, although of course 7–8 per cent of the United States' GNP is very much larger than the same percentage of Sweden's GNP.

From a national point of view, Sweden's foreign direct investment is certainly not insignificant and Swedish multinationals play an important role in the Swedish economy. In the early 1980s, almost 50 per cent of the Swedish industrial labour force was employed by Swedish multinationals, and they also accounted for nearly 60 per cent of total Swedish exports.² Manufacturing industry clearly dominates the Swedish foreign direct investment scene—accounting for 75 per cent—with a high concentration in the engineering sector. This is quite different from the pattern of American and British investment.³

As much as 80 per cent of Swedish foreign direct investment originates in firms that were already multinational by the middle of the 1920s.⁴ Consequently, when analysing Swedish multinationals, it is important to go back in time to the period when these firms entered the international scene.

The aim of this paper is to examine the early period of Swedish multinational growth before 1930. In so doing I shall stress both the preconditions and the direct reasons for their starting production abroad. I shall also examine the relevance of some of the better known theories of multinational enterprise to the history of early Swedish multinationals.

The paper is based mainly on company biographies and the scattered