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Industrial Take-Off in an Under-Developed Country: The Case of Finland

By

Eino Jutikkala

I.

In the third quarter of the nineteenth century Finland was so overwhelmingly an agricultural country that nearly 80 per cent¹ of the population gained a living from farming, i.e. a greater proportion than has been regarded as the maximum likely to be engaged in agriculture and fishing in the simplest of modern economies². An even better illustration of the existing under-developed state of the Finnish economy is the fact that these four-fifths of the country's population were hard put to it to produce the food for themselves and the remaining fifth. It is true that Finland exported small quantities of butter, but even in normal years, not to speak of years of crop failure, many times the amount of foreign currency earned by butter exports had to be spent on grain. In the first five-year period of published foreign trade statistics, 1856—1860 — a period when there were no serious crop failures —, the value of the average annual export of butter was 1,546,000 marks and that of the average net import of grain 6,093,000 marks³. Even then there was not enough grain, and over large areas of the country the poorest complemented their

¹ Calculations from the work of O. K. Kilpi, *Suomen ammatissa toimiva väestö ja sen yhteiskunnalliset luokat vuosina 1815—1875 (The Gainfully Occupied Population in Finland and Its Social Groups, 1815—1875)*, I-III, Helsinki, 1913—1915. — Official records of the occupational structure of the population began in 1880, but are not based on a census until 1950. According to those official statistics, the agricultural population was 74.8 per cent of the total in 1880.

² Colin Clark, *The Conditions of Economic Progress*, 3rd Ed., Largely Rewritten, London and New York, 1957, p. 497.

³ For the pre-1856 period see Karl Mannelin, *Finlands smörexport*, Helsingfors, 1911. — *Aperçu du commerce et de la navigation de la Finlande en 1856—65*, Official Statistics of Finland I: 1. Data are lacking for 1856—1859 on the goods taken across the land frontier by horse and cart (there was no railway then). Their inclusion would obviously increase the passivity of the foodstuffs balance.

bread supplies with such substitutes as pine bark¹. It may, of course, be pointed out that for a part of the year this large farming population was occupied in forest work: peasants felled and hauled logs to small water-driven sawmills, or burnt tar. But only about a million logs were cut yearly for marketing, i. e. 2—3 logs per adult male of the agricultural population. The total of tar burnt was about 150,000 barrels, which works out at less than half a barrel per man². The export value of Finland's forest products was not greater than the net income earned by some ten merchant vessels annually, and of that value, a part naturally derived from processing in the sawmill and was not income originating in the primary industry.

Underlying this very low productivity in agriculture were the same factors as are present in most under-developed countries: lack of mechanical equipment and, during the winter, a state of continuous under-employment in the agrarian population. Among the poorest inhabitants under-nourishment probably reduced the ability to work, though it was possible in winter to reduce the necessary calory intake by sleeping both night and day on the warm oven³. From 1721, the year from which we can trace the growth of the population, up to 1865, the population increased almost five-fold. As the population grew rapidly, natural meadows were ploughed up for arable land and animal husbandry declined compared with crop farming. With the balance upset, the manuring of the expanded field area became still less satisfactory, the standard of growth suffered, and the benefits of land reclamation were thus partially lost. Grain exports turned, within the first half of the nineteenth century, into grain imports. In assessing the results of the work of the agricultural population, one point to be taken into consideration is that farming households were almost completely subsistence economies; the majority of the tools, furniture, clothes and footwear used were made at home.

In early nineteenth century Finland, economic growth was not possible without industrialization and an increase in the productive capacity of agriculture. However, in the agrarian society living on the margin of the subsistence minimum, the new capital was barely enough for clearing a sufficient area of new land to support the increased population, and even this was partly at the expense of natural meadows.

¹ *Atlas of Finnish History*, 2nd, Rev. Ed., Helsinki-Pouvo, 1959, Map 48.

² Nils Meinander, *Vesisahan tarina (A Story of the Water Power Sawmill)*, Helsinki, 1945, p. 217. — Kustaa Hautala, *Suomen tervakauppa 1856—1913, sen viimeinen kukoistus ja häviö sekä niihin vaikuttaneet syyt (The Finnish Tar Trade 1856—1913, Its Last Peak and Subsequent Decline, An Examination of the Factors Responsible)*, Helsinki, 1956, Table 24.

³ Cf. Hugo E. Pipping, "Befolkning och näringar i Sverige och Finland under 1700-talet", *Ekonomisk Tidskrift*, Årg. LII, Stockholm och Uppsala, 1950, p. 164.

II.

The small amount of new capital that was formed in Europe early in the Modern Era came primarily from foreign trade. Prior to 1765, Finland had virtually no foreign trade of her own, for her exports and imports had taken place mostly through Stockholm. Only after 1765, when the rights of direct trade with foreign countries were gradually accorded to the coastal towns of the Gulf of Bothnia — both on the Swedish and the Finnish side — did Finnish merchants start exporting, and subsequently importing, goods straight from abroad in their own ships. The profits from trade and shipping were first used for increasing the stocks and building new ships, but the time was to come when some still remained for manufacturing. So long as Finland was part of the Kingdom of Sweden, one might have thought that capital formed in the more industrialized and wealthier mother country would have been invested in Finland. For political reasons, however, such investment remained negligible, for the Swedes feared that Finland would eventually be lost to them — a fear which proved well-founded.

Did the Swedish economic policy affect the slow development of the secondary industries in Finland? Even though discrimination against Finland is evident in individual cases it can hardly be said to represent a systematic policy. By way of example, the Diet resolved in 1741 that licenses for the establishment of new sugar refineries would not be granted outside Finland and "some remote regions." In fact, however, a license for a new sugar refinery in Gothenburg was granted soon after, while at least two applications submitted by Finns were refused before Turku was allowed a sugar refinery in 1756. But the check was primarily a result of fear felt by existing factories that they would lose their markets, and in the same way the shareholders of the Turku plant later opposed applications for the establishment of a second sugar refinery in Finland. When an application for the establishment of a new Finnish sugar refinery was discussed by the Board of Commerce (1784), one of its members pointed out that inhabitants of Finland should not be led away from agriculture, cattle-breeding and fishing, which nature had intended as their principal means of living. He was in a minority, however, and permission was granted. When the quotas for the delivery of military cloth were apportioned to the various mills, Finnish mills might be left with as small a share as 4 per cent, and as is well-known, war — together with luxury — was an important incentive for manufacturing industries. In practice the aforementioned quota was exceeded — and indeed the low capacity of the Finnish cloth industry made it impossible to place with

them really any great living orders¹. Only a trifling part of the state subsidy granted in various forms to the textile industry during the Government of Hats (1738—1765) found its way to Finland; but even then the humble dimensions of the Finnish industry may equally well have been cause as result of the paucity of support².

The Russian Empire was at least as agrarian and as woefully short of capital as was the Grand Duchy of Finland, annexed in 1809. This, admittedly, did not prevent Russian citizens of money from occasionally investing considerable funds in the country near the imperial capital. Some Baltic Germans bought a modest cotton spinning mill in Finland (1835) and expanded it into a plant which, with its 25,000 spindles and 550 power looms was a real giant in the Nordic Countries that day³.

Even though the take-off of industrialization would inevitably have been laborious and slow because of the shortage of capital, it might nevertheless have occurred had other conditions been favourable. To study these other conditions, it may be useful to divide Finnish manufacturing industries existing in the first half of the last century into three groups.

The first group consists of the industries based on the natural raw material, forest products. One by-product, tar, had become Finland's main export in the seventeenth century, and kept this distinction until the 1830's. A refining process, tar production may properly be considered as manufacturing industry. It was, however, carried on as a sideline by the peasants, and not by people engaged in manufacturing. Forestry in the Swedish kingdom became geographically specialized so that the mother country produced and exported deals and boards, while Finland exported tar, and this division has been seen to be an effect of the shortage of capital in Finland⁴. The specialization, however, was primarily a result

¹ Martti Kovero, *Suomen sokeriteollisuus historia (The History of the Finnish Sugar Refining Industry)*, I, Helsinki, 1946, pp. 128sq., 143sq., 258sq., 326sq. — V. Annala, *Suomen varhaiskapitalistinen teollisuus Ruotsin vallan aikana (The Early Capitalistic Industries in Finland During the Period of Swedish Supremacy)*, Helsinki, 1928, pp. 221sq.

² It might be claimed that, from the Finnish point of view, it did not matter whether or not the subsidies were received; the argument has been that, when the subsidies were withdrawn, there was a crash in the late 1760's in the artificially maintained industries, and so the subsidies never became permanently beneficial. This argument no longer holds good for, according to recent studies, the fall in production quantities was not as disastrous as that in the labour force, for production was rationalised and manufacturing concentrated in fewer standard qualities. Eli F. Heckscher, *Sveriges ekonomiska historia från Gustav Vasa*, II: 2, Stockholm, 1949, pp. 601sq. — Per Nyström, *Stadsindustriens arbetare före 1800-talet, Den svenska arbetarklassens historia*, Stockholm, 1955, pp. 172sq.

³ V. Voionmaa, *Tampereen kaupungin historia (The History of the Town of Tampere)*, II, Tampere, 1929, pp. 167sq., 191.

⁴ Heckscher, *op. cit.*, I: 2, Stockholm, 1936, p. 434.

of traffic-geographical factors. Burnt into tar, raw timber fetched a poorer price than sawn into boards, while on the other hand tar was more expensive per weight-unit than boards, and therefore it was exported even from beyond the "zero limit" where sawn-goods production ceased to be a paying proposition. South and Central Sweden and a narrow zone of the Gulf of Finland coast were in the eighteenth century on the profitable side of the zero limit, whereas the Gulf of Bothnia region was, practically in its entirety, beyond it. The rivers discharging their waters into the Gulf of Bothnia on the Swedish side are rapid and the country is mountainous while in Finland there is an extensive plain crossed by rivers navigable to some extent by rowing boats. In Finland, as a result, tar could be transported by boat or sleigh to the Gulf of Bothnia coast from far inland; in Sweden such transport was almost impossible¹.

The export of Ostrobothnian tar, which until 1765 was destined for Stockholm alone but subsequently went increasingly directly overseas, took up more hold space than did the goods imported on the return journey and the Ostrobothnians, as early as the seventeenth century, therefore began to sell some of their boats together with their cargo in Stockholm. Ship-building developed into an Ostrobothnian industry, even though it was only carried on by the peasants as a sideline. Between 1727 and 1807, it is calculated that some 2,500 ships were sold from Finland to Stockholm, a total tonnage of some 215,000 lasts².

But neither of these industries based on forest utilization — tar-burning or wooden ship building — started industrialization in Finland. Tar exports no longer increased in the nineteenth century, and began to decline after the 1860's. With the shift of the zero limit for sawn timber (see below), forest was put to more rational use, and tar-burning did not provide its practitioner with the standard of living which now began to be demanded on the basis of the progress made in other industries. The building of wooden ships became a home-market industry and ceased altogether after the introduction of iron steamships³.

The principal water-courses of South and Central Finland discharged their abundant waters into the sea through difficult rapids along which logs could not be floated. After the zero limit, with the increasing demand for timber, began to move northward from the Gulf of Finland, and when

¹ E. E. Kaila, *Pohjanmaa ja meri (Ostrobothnia and Sea)*, Helsinki, 1932.

² Aulis J. Alanen, *Der Außenhandel und die Schifffahrt Finnlands im 18. Jahrhundert, Unter besonderer Berücksichtigung der Umbruchsperiode der Handelsfreiheit im Bottnischen Meerbusen und der großen Seekriege*, *Annales Academiae scientiarum Fennicae*, Ser. B., Tom 103, Helsinki, 1957, pp. 275qq.

³ Hautala, *op. cit.*, and the writer's review of it, *The Scandinavian Economic History Review*, Vol. IV, Stockholm, 1956, pp. 1835qq.

the inland forests of East Finland began to be used for sawn boards at the beginning of the nineteenth century, sawmills had to be built where the logs were felled, and the finished products had to be transported at great expense to the ports. They were floated through the rapids, towed in lighters by sailing vessels across the lakes, and finally carried by horse along highways. The burden of the sawmill industry, struggling thus with these transport difficulties, was made even heavier by the traditional sawmill policy which imposed even increasing restrictions. The attitude was dictated by the fear that the forest would be used up. The extent of Finnish forest resources at the middle of the nineteenth century and their annual growth at this time are almost impossible to assess, and it is thus impossible to judge the validity of the worries of the leading early nineteenth century politicians concerning the exhaustion of large-sized timber. The persecuted industry of sawing for export, however, formed only a minute part of total consumption for tar-burning, burning-over for crops, and for wasteful household use by farmers. By strangling sawing exports little timber was saved but the take-off of the industrialization process was obviously postponed¹.

The second group of early nineteenth century industries consists of those that enjoyed the favour of the government of the Grand Duchy of Finland, the iron and copper industries. Unlike its Swedish counterpart, the Finnish industry was such an artificial growth that once industrialization had gathered speed it disappeared completely. It does not merit much attention in the history of industrialization, not even for the reason which justified the above mentioning of foreign sailing shipping which began to contract roughly at the same time as it: it is unlikely that profits from this industry would have produced capital, for ore-mining, quarrying and refining into metal were seldom profitable enterprises.

The third early nineteenth century group consists of the home-market industries. At the end of the Swedish era these were very much more poorly developed in Finland than they were in the mother country. In 1800—1806, the entire recorded "manufacturing industry" which, broadly speaking, contained all industries except sawmill and basic metal industries, employed on an average only 658 workers, and the value of production was only 155,000 rix-dollars. Both these Finnish figures represented only about 6 per cent of the corresponding figures for the whole kingdom of Sweden. The total of master craftsmen, journeymen and apprentices in Finnish towns in 1805 was 2,927; in Swedish towns it was 23,349². The great difference between Finland and Sweden is

¹ Meinander, *op. cit.*, passim.

² Annala, *op. cit.*, p. 419. — Heckscher, *op. cit.*, II: 1, p. 520.

primarily due to economic, and only to a lesser extent to political, factors. Bad communications and a sparse population reduced to a minimum the potential market for a production plant catering for home consumption, and the purchasing power of this market was further reduced by poverty and by the subsistence economy persisting in the countryside and even in towns. An economic expert stated, at the beginning of the nineteenth century, that 20 square miles of rural area were needed to support one merchant¹, and a factory which specialized in the manufacture of a particular commodity naturally needed an incomparably greater area. Finland had no such great and wealthy centre of consumption as Sweden had in Stockholm, with its population of almost 100,000.

For this reason, not even separation from Sweden and the entrusting of economic policy to men with Finland's own interest at heart could herald any sudden change. The mercantile system of privileges was inherited from the Swedish era and stayed firmly in force. Admittedly, this did not fetter the home market industries as badly as it did the sawmill export industry, but it is possible that in the early half of the nineteenth century it already retarded more than accelerated private enterprise. Domestic sales conditions did not improve, nor did the shortage of capital disappear. One innovation was that, based on the Russian market, there developed a cotton industry of considerable importance for that time, but it was not a home market industry, for up to two-thirds of production was exported², and its very basis was artificial in that the continuity of exports depended entirely on the customs exemptions which Finnish yarns and textiles enjoyed in the Empire. Finland had no customs protection against Russian manufacturing industry.

The development of both manufactures and handicrafts, was therefore slow. In 1870, manufacturing plants excluding sawmill and basic metal industries employed a total of 8,807 masters and workers, over half of whom (4,579) were in the cotton and linen industry. The high percentage growth of industrial workers since the beginning of the nineteenth century does not therefore mean very much, since the initial figure had been close to zero.

III.

In the third quarter of the last century, a member of factors emerging simultaneously created the prerequisites for the start of the industrial-

¹ J. R. Danielson-Kalmari, *Aleksanteri I: n aika (The Age of Alexander I)*, Povo, 1920, p. 164.

² Production figures for 1867, 1875 and 1879 from Martti Kovero, *Suomen kotimarkkinateollisuus (The Home Market Industry in Finland)*, Helsinki, 1928, p. 314, export figures for the same years from official statistics.

zation process and enabled Finland to escape from the vicious circle of a low income level producing a capital shortage and a capital shortage producing a low income level. One of these factors was the abolition of domestic controls on trade and industry. This occurred mainly between 1859—1868, and delay in this cannot be given more than a small part of the responsibility for the postponement of the industrial take-off. And even the blame for this postponement cannot be laid in its entirety on the national government of the Autonomous Grand Duchy, for the abolition of the controls required the summoning of the Diet, and this the autocratic Czar Nicholas I (1825—1855) was unwilling to do.

In the sixties, the propeller replaced the paddle wheel in steamers, and these became serious competitors for sailing-vessels. Freight rates fell sharply: the cost of transport from Pori, on the Gulf of Bothnia, to England dropped by a half from the 1860's to the 1880's. Since freight rates around the middle of the century had in the Swedish Norrland anyway, at least equalled the f.o.b. price of export articles, their reduction implied a really remarkable change in cost factors¹. At the beginning of the century, England had decreed high customs duties on European timber in order to provide firm support for the forestry of colonial Canada. This duty rate appreciably reduced the prices Norwegian, Swedish and Finnish exporters got for deals and boards. As free trade ideology gained ground in England, the duties imposed on sawn-goods were reduced, and after the decisive steps taken in 1851 and 1861 the duty was only a formality. It was completely abolished in 1866. The fall in freight costs and the abolition of duties brought chief benefit to exporters, since the timber trade was then experiencing a seller's market. The boom of the 1870's increased timber prices, and even in the declining phase of the price cycle (around 1875—1895) they did not fall so far as the general price level (see below).

The Saimaa canal, completed in 1856, opened up a direct route to the port of Viipuri for the forest products of the Vuoksi watercourse area in East Finland, and the first railways in Finland, completed in 1862 and 1870, connected the central lakes of the two big western watercourses with the sea. The sawmill owners succeeded in floating logs through the bigger rapids and while the water-driven sawmills had up to then had their logging-areas in the immediate vicinity, the steam-driven sawmill established at the mouth of the river now began to buy timber from the upper courses. Sawmills began to accept as raw material logs of smaller dimensions than hitherto, and added spruce to pine.

¹ H. Rinne, *Trävaruproduktion och trävaruhandel i Björneborgs distrikt 1856—1900*, Vammala, 1952, p. 16. — Ernst Söderlund, *Swedish Timber Exports, 1850—1950*, Stockholm, 1952, p. 150.

About this time, unforeseen possibilities opened up for forest products. Mechanical pulp, discovered in the forties, could be used in the paper industry, largely replacing the rags which were increasingly difficult to obtain. Some time later, the chemical method for making cellulose from wood was invented. This chemical pulp is suitable raw material for paper-making even without rags, and has thus solved the world's paper problem. These discoveries essentially enhanced the economic importance of forest-growing countries, and Finland had a larger forest area per head of population than any other European country. It could no longer be claimed that Finland remained practically without any share in natural industrial raw materials. The first mechanical pulp plant was established in Finland in 1860, but a cellulose industry requires considerable capital, and it was a long time before the sulphate method had been usefully developed and before the sulphite method had been invented. In Finland both these new methods of production were not adopted until the 1880's.

As a result of these facts the zero limit for timber suddenly retreated far to the watershed areas, the eastern frontier and the virgin forests of Lapland. Inland farmers were used to receiving for timber sold to the sawmill a price that barely covered their logging and haulage costs; timber trees now fetched a stumpage price too. A farm's forest area, hitherto considered worthless, began to yield unimagined income. One report, which may be considered reliable, from the northern courses of the Kokemäki River upper water-system area, claims that nine-tenths of the farmers had been paid during some twenty years, over 10,000 marks (8,000 of the then *DM*) for the products they sold, "and there was no small number" of those who received over 100,000 marks¹. The farmless rural population, harassed by perpetual winter unemployment, were now able to make money by logging while the soil was frozen, later by preparation of pulpwood and, in the spring, by floating; and furthermore, the daily wages rose. Money flowed into the rural districts in sufficient quantities to increase consumption and to improve the productive capacity of farming. The rising standard of living, the growth of investment, and the rejection of the subsistence economy all increased the purchasing power of the rural population. Indeed, in a country in which four-fifths of the population derived their living from agriculture the purchasing power and propensity of this section to buy regulated the demand for goods from the home market industries. Only now was it possible to start large-scale production of consumer and capital goods for the domestic market.

The raw material costs of sawn goods did not, particularly in the early 1870's, rise rapidly, as the price fetched by the products might suggest,

¹ Eino Jutikkala, *Suomen talonpojan historia (The History of the Finnish Farmers)*, 2nd Ed., Helsinki, 1958, p. 348.

and the ample profit represented by the difference seems to have been ploughed back in the enterprise.

The industrial take-off can be regarded as having occurred in the 1870's in Finland. The main problem was, in Professor Rostow's words about industrial take-off, "the accelerated application of modern techniques to natural reserves in order to earn increased foreign exchange necessary for the further modernisation of the economy"¹. This problem was resolved but no sudden changes in occupational structure followed. The urban population percentage increased in the 1870's from 7 to 8. No fully reliable statistics on the distribution of population by occupation exist for the period prior to 1880, but still in this year the industrial population — even including all rural artisans — accounted for only 6.5 per cent of the population². Both the farmer and the farmless rural worker had improved their positions, the former in his capacity as forest-owner, and the latter as a seasonal worker in the forest, but neither had turned into an urban dweller or turned to a livelihood other than that which he and his forefathers had previously shared. A revolution in forestry had occurred, and with it one industry, predominantly a rural one, viz. the sawmill industry, had suddenly expanded and developed technically.

Finland's other industries lost their importance for exports. From the beginning of 1886, the privileges granted by the Empire to the Grand Duchy's bar iron and pig iron, yarns and textiles, glass and leather, with few exceptions, were withdrawn, and Finland could not compete with the big industrial countries as an exporter of these products. Her metal industry underwent a complete transformation. The smelting of iron and copper from lake and swamp ores lifted with difficulty, or from mountain ores poor in metal, ceased, and the production of iron ships, railway engines, wagons, agricultural and industrial machines and the innumerable other iron articles increasingly in demand by people in their everyday life, began from imported iron. Before 1886, two thirds of the bar iron output was exported, and if most of the pig iron made in Finland remained in the home country this was only because it was processed further into bar iron at home; in 1913 only one tenth of Finnish metal industry products was exported³. At the same time the industry moved from the out-of-the-way eastern districts to the South Finnish cities. A similar

¹ W. W. Rostow, "Industrialization and Economic Growth", in: *First International Conference of Economic History, Contributions, Communications*, Stockholm, 1960, p. 31.

² Finnish official statistics.

³ Evert Laine, *Suomen vuoritoimi 1809—1884 (Basic Metal Industries in Finland) 1809—1884*, I, Helsinki, 1950, p. 522. — Kovero, *op. cit.*, pp. 190sq.

change-over from an export industry to one catering for the home market occurred in cotton and linen spinning and weaving. Hitherto, Finland, whose inhabitants had been unable to buy manufactured textile goods, had produced yarn and cloths for foreign markets from raw material bought abroad. This anomaly was now removed. Exports to Russia ceased but domestic demand increased as the standard of living rose and commercial economy gained ground.

Paper industry products had also been exported to Russia, and they were also subject to the new imperial tariff regulations. Paper, however, was an export made from domestic raw material in adequate supply, and could stand the price out involved in the duty rates. Russia remained the most important market for Finnish paper, but Russian protectionism made Finnish industrialists look for buyers of this article in the countries where sawn-goods had been exported of old: Western Europe. In order to be able to maintain these exports throughout the year, state icebreakers began to help winter shipping in 1891.

Information on the workers in all manufacturing and handicraft plants is available for the first time for 1885. When handicraft enterprises are excluded as accurately as possible, the total obtained for industrial workers and salaried employees is approximately 28,565. The corresponding figure for 1913 was 113,369¹. This increase had been respectable, but as late as 1920 only one-seventh of the Finnish population lived on industry and handicrafts while two-thirds obtained their living from agriculture, and the agricultural population had since 1880 increased by half a million. Of those employed in industry and handicrafts, only 50 per cent can be estimated as having earned their living in factories, while the other 50 per cent were engaged in the technically and socially largely unchanged handicrafts, or in building trades. Even in the mills, technical progress had not been rapid; the shortage of capital made caution compulsory. The handling of goods was still at the turn of the century mostly manual. In the economic history of Europe, the nineteenth century has been called the century of steam but even at its close running water developed just as much horse power as did steam engines in Finnish factories. Admittedly, there is plenty of water power available in Finland, and turbines gradually replaced the primitive water-wheel in harnessing the rapids. After the turn of the century, the renaissance of water power began, both in Finland and throughout the world, with the discovery of

¹ Figures from a manuscript of Lauri Korpelainen, of which an abbreviated version was published as "Trends and Cyclical Movements in Industrial Employment in Finland, 1885—1952", *The Scandinavian Economic History Review*, Vol. V, 1957, No. 1, pp. 26sqg.

the secret of its transformation into electricity and its transmission to other localities¹.

Although agriculture was still predominant as a means of livelihood in 1917 when Finland became independent, the country was still not self-sufficient in foodstuffs: in the three-year period before World War I (1911—1913), the annual value of agricultural imports exceeded that of agricultural exports by an average of 64 million marks². However, nobody now ate pinebark bread, and although two-thirds of the population were incapable of producing food for themselves and for the remaining third, it must be remembered that timber felling and floating took up much more of the peasants' time than it had half a century earlier. Exports of sawn-goods in the three years 1911—1913 before World War I, were fifteen times greater than in the three years, 1857—1859³, immediately after the Crimean War. In addition, there was now the work of logging, barking and hauling pulpwood.

The area under the plough — it is true that information on this point for the nineteenth century is unreliable — probably almost doubled between the 1860's and World War I⁴. Agricultural production increased with the expansion of the cultivated area, improved yields per hectare and increased milk production per cow, but productivity remained low and agriculture continued to employ a disproportionately large labour force. Even in the more advanced areas, it was still customary as late as the end of the nineteenth century to cut rye with a sickle⁵. Primitive working methods survived probably because cheap labour was readily available, and low productivity possibly resulted from the fact that more people remained in agriculture than the industry really required.

In the period from 1878(79) to 1913(14) the growth rate of the crop yield was 0.93 per cent per annum, and of the crop value, 1.34; for milk and butter output it was 2.81, and for the value of that output, 4.61; for agricultural income as a whole the figure for growth rate was 2.76 per cent. Sawn timber exports increased in the same period by 3.33 per cent per annum. Because of the variety of timber and the lack of a uniform unit of measurements, it has not been possible to calculate accurately the

¹ K. O. Alho, *Suomen uudenaikaisen teollisuuden synty ja kehitys, 1860—1914* (*The Rise and Development of Modern Finnish Industry in 1860—1914*), Suomen Pankin Taloustieteellisen Tutkiskumu laitoksen Julkaisuja, Sarja B: 11, Helsinki, 1949, pp. 131, 210sq.

² Seppo Simonen, *Lypsykarjatalousvaltainen maataloudellinen tuotantojärjestelmä Suomessa* (*The Agricultural Production System in Finland, Based on a Predominance of Dairy-Farming*), Helsinki, 1949, pp. 156sq.

³ Finnish official statistics.

⁴ *Ibid.*

⁵ Cf. Simonen, *op. cit.*, pp. 187, 224.

fairly considerable volume of timber exported unsawn. It is possible, however, to calculate the rate of growth in the total value of timber exports and this has been given as 4.95 per cent per annum. Sawlog prices rose more rapidly than board prices and thus at the end of the period a greater part of the profits accumulating from timber exports accrued to the farmer and a smaller portion to industry than at the outset¹. Prof. Björkqvist calculated total economic growth in this period to be 4.13 per cent per annum. Of this percentage, 0.56 was attributed to the increase in the price level. Since it is our concern to compare the expansion of the different trades and industries with overall economic expansion, and since in forestry the increase can be given only in terms of value and not volume, it is not necessary to allow for the advance in the price level. On the other hand, it must be emphasized that Björkqvist, in the absence of sources necessary for the calculation of national income, arbitrarily equated total economic growth with the changes in the total value of foreign trade. Even though the actual growth rate remains unknown, it is likely that farmers' forest income, which rose by over 5 per cent, increased more rapidly than the total national income.

These figures also show that Finland's economic growth in the period of early industrialization occurred principally in the primary industries. The significance of the other industries was still so small that they could not possibly be responsible for the overall expansion. Furthermore, the motive power of industrialization was the increment of value of the forests; and of the factors which brought this about, the increased demand for timber arising from the industrialization of Western Europe was only one.

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Zusammenfassung: Der industrielle Aufstieg (Take-Off) in einem unterentwickelten Land: Das Beispiel Finnlands. — Mitte des vorigen Jahrhunderts zeigte Finnland die typischen Merkmale eines wirtschaftlich unterentwickelten Landes: vier Fünftel der Bevölkerung arbeiteten in der Landwirtschaft, ohne in der Lage zu sein, für sich und den Rest der Bevölkerung genügend Nahrungsmittel zu erzeugen. Der Bevölkerungszuwachs scheint wenigstens in der ersten Hälfte des neunzehnten Jahrhunderts schneller gewesen zu sein als die Zunahme der landwirtschaftlichen Produktion. Die Kapitalbildung war äußerst schwach, und der Mangel an Kapital war ein Grund für die langsame Industrialisierung. Die merkantile Politik der schwedischen Regierung, die das Mutterland und die Hauptstadt bevorzugte, kann kaum als Grund dafür angesehen werden, daß Finnland hinter Schweden zurückblieb — ausgenommen, daß vor dem Jahre 1765 der Außenhandel Finnlands der einschrän-

¹ Heimer Björkqvist, *Prisrörelser och penningvärde i Finland under guldmynnfotsperioden, 1878—1913, En struktur- och konjunkturanalys*, Publikationer utg. av Finlands Banks Institut för Ekonomisk Forskning, Serie B: 19, Helsingfors, 1958, pp. 51, 55sq., 99, 133, 137, 160sq.

kenden Bestimmungen wegen gering geblieben war. So veränderten die Trennung von Schweden (1809) und die Entstehung eines autonomen Großfürstentums die Voraussetzungen der Industrialisierung im wesentlichen nicht. Eine Binnenmarkt-industrie in großem Ausmaß konnte nicht entstehen, weil in den Städten nur 5 bis 6 v. H. der Bevölkerung wohnten und weil die arme Landbevölkerung fast alles, was sie benötigte, zu Hause herstellte. Den natürlichen Rohstoff für die Export-industrie boten die Wälder, aber der größte Teil Finnlands lag noch zu Beginn des neunzehnten Jahrhunderts so weit von den westeuropäischen Konsumzentren für Holzwaren entfernt, daß die Nullgrenze für Sägewaren in der Nähe der Südküste verlief. Ein wichtigeres Exportgut als Bretter war der Teer, aber den brannten die Bauern als Nebenerwerb, und seine Produktion hatte keine Zukunft. Dank der von Rußland gewährten Zollerleichterungen entwickelte sich Mitte des neunzehnten Jahrhunderts zu einer künstlichen Exportindustrie die Metallveredlung, die sich auf die armen und verkehrsmäßig abgelegenen Erzvorkommen des Landes gründete, sowie das Spinnen und Weben von Baumwolle, die eingeführt wurde.

Durch das Zusammenwirken von mehreren Faktoren verschob sich die Nullgrenze von Sägeholz in den sechziger und siebziger Jahren des neunzehnten Jahrhunderts bis in die östlichen und nördlichen Grenzgegenden, und Holz begann man auch als Rohstoff für Holzschliff sowie in den achtziger Jahren für Zellulose zu gebrauchen. Ein Durchbruch der Forstwirtschaft und Sägeindustrie ging vor sich, der Wohlstand des Landes begann zuzunehmen und die Selbstversorgerwirtschaft auf dem Lande zu verschwinden. Der Industrialisierungsprozeß kam in Gang, aber bis zum Ersten Weltkrieg vollzog sich das wirtschaftliche Wachstum jedoch in erster Linie in den primären Erwerbszweigen.

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Résumé: L'industrialisation dans un pays sous-développé: Le cas de la Finlande. — Au milieu du siècle passé la Finlande accusait les phénomènes caractéristiques d'un pays sous-développé: les quatre cinquièmes de la population travaillaient dans l'agriculture sans, toutefois, pouvoir produire toutes les denrées alimentaires nécessaires pour eux-mêmes et le reste de la population. Il paraît qu'au moins pendant la première moitié du siècle, l'augmentation de la population dépassait celle de la production agricole. Il y avait une formation de capital extrêmement faible, et ce manque de capital fut la cause de la lenteur frappante du progrès de l'industrialisation. La politique mercantiliste du gouvernement suédois, qui accordait préférence à la Suède et son capitale, ne saurait être considérée responsable de ce que la Finlande resta en arrière de la Suède, exception faite des restrictions légales, à cause desquelles le commerce extérieur de la Finlande demeura insignifiant avant 1865. Par conséquent, la dissociation du pays de la Suède et la création d'une principauté autonome ne changea pas grand'chose au progrès de l'industrialisation. Une industrie importante nationale ne pouvait se former, parce que les villes ne réunissaient que le 5—6 pour-cent de la population, et que la population rurale était pauvre et fabriquait presque tout dont elle avait besoin à la maison. L'exportation de matières premières trouvait son objet naturel dans les forêts de Finlande, mais la plupart de la Finlande se trouvait, même au début du vingtième siècle, si loin des centres de consommation de bois en Europe occidentale, que la frontière zéro pour le bois scié n'était pas bien loin de la côte méridionale de la Finlande. Plus important que le bois scié fut le goudron exporté, dont la distillation formait une occupation secondaire des paysans. Mais cette production n'avait pas de perspectives futures. Grâce aux privilèges douaniers accordés par la Russie, l'industrie métallurgique fut développée artifi-

ciellement en une industrie d'exportation, basée sur les gisements de minerais en Finlande, qui n'étaient ni riches, ni facilement abordables. Autre industrie d'exportation fut le filage et tissage du coton importé.

Plusieurs facteurs coincidèrent, dans les 1860 et 1870, pour repousser la frontière zéro du bois scié jusque dans les régions limitrophes du nord et de l'est du pays. Puis, on commençait, dans les 1880, à utiliser le bois pour la pâte de bois et la cellulose. L'économie forestière et l'industrie de sciage avancèrent, le pays commença à devenir plus riche, l'autonomie rurale commença à disparaître, l'industrialisation commença à marcher. Mais avant la première guerre mondiale, la croissance économique eut lieu surtout dans la production primaire.

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Resumen: El proceso de la industrialización en un país subdesarrollado: El caso de Finlandia. — A mediados del siglo pasado Finlandia mostró los rasgos típicos de un país económicamente subdesarrollado: Las cuatro quintas partes de la población trabajaron en la agricultura sin estar en condiciones de producir suficientemente víveres para ellas mismas y para el resto de la población. Parece que por lo menos en la primera mitad del siglo XIX el crecimiento de la población haya sido más rápido que el aumento de la producción agraria. La formación del capital fué muy insignificante y la falta de capital fué un porqué del desenvolvimiento lento de la industrialización. La política mercantilista del Gobierno sueco, prefiriendo Suecia, y la capital, apenas puede considerarse como la razón, por la que Finlandia se quedó atrás de Suecia — con excepción de que antes del año de 1765 el comercio exterior de Finlandia había quedado poco importante por causa de las disposiciones restrictivas. Así la separación de Suecia (1809) y la formación de un Gran Ducado autónomo no cambiaron en sustancia las condiciones de la industrialización. Una industria para el mercado interior no pudo formarse, porque en las ciudades habitaron solamente 5—6 por ciento de la población y porque la población rural pobre produjo todo lo que necesitó en casa propia. Los bosques ofrecieron la materia prima natural para la industria exportadora, pero todavía al principio del siglo XIX la mayor parte de Finlandia tanto distó de los núcleos consumidores de la Europa Occidental para artículos de madera que la frontera cero para artículos serrados se extendió no lejos de la costa Sur. Un bien de exportación más importante que las tablas fué el alquitrán, pero los campesinos lo produjeron ellos mismos en trabajo accesorio y su producción no tenía perspectivas. Gracias a las facilidades aduaneras concedidas por Rusia a mediados del siglo XIX se desarrolló a una industria exportadora artificial el mejoramiento de metales, el cual se basó en los yacimientos metalíferos del país pobres y distantes del tráfico, así como la hilatura y la tejeduría de algodón importado.

A consecuencia de la coincidencia de varios factores se desplazó la frontera cero de madera serrada en la década del 1860 y del 1870 hasta en las regiones fronterizas del este y del norte y se comenzó a usar madera también como materia prima para pasta de madera así como en la década del 1880 para celulosa. Abrióse paso la silvicultura y la industria de la sierra, comenzó a aumentar el bienestar del país y a desaparecer el autoabastecimiento en el campo. Empezó a desarrollarse el proceso de la industrialización, pero hasta la primera guerra mundial el crecimiento económico se efectuó sobre todo en los ramos industriales primarios.

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Riassunto: Il processo dell'industrializzazione in un paese sottosviluppato: Il caso della Finlandia. — Nel mezzo del secolo passato la Finlandia mostrò le caratteristiche tipiche di un paese economicamente sottosviluppato: I quattro quinti della popolazione lavorarono nell'agricoltura senza essere in grado di produrre sufficientemente viveri per sé e per il resto della popolazione. Pare che per lo meno nella prima metà del secolo XIX l'accrescimento della popolazione sia stato più rapido che l'aumento della produzione agricola. La formazione del capitale fu molto insignificante e la mancanza di capitale fu una causa dello sviluppo lento dell'industrializzazione. La politica mercantilistica del Governo svedese, preferendo la terra madre e la città capitale, appena può essere considerata come la ragione per cui la Finlandia restò indietro alla Svezia — eccetto che prima dell'anno 1765 il commercio estero finlandese fu rimasto poco importante a causa delle disposizioni restrittive. Così la separazione dalla Svezia (1809) e la formazione di un granducato autonomo non cambiarono essenzialmente le condizioni dell'industrializzazione. Un'industria per il mercato interno non poté formarsi, perchè nelle città abitarono soltanto 5—6 per cento della popolazione e perchè la popolazione rurale povera produsse tutto quel che abbisognò in casa propria. Le foreste offrirono la materia prima naturale per l'industria esportatrice, però ancora in sul principio del secolo XIX la maggior parte della Finlandia tanto distò dai centri consumatori dell'Europa occidentale per merci di legno che la frontiera zero per articoli segati si allungò non lontana dalla costa meridionale. Un bene di esportazione più importante che le tavole fu il catrame, però questo fu fatto dai rurali stessi in lavoro accessorio e la sua produzione non aveva prospettive. Mercè le facilitazioni doganali concesse dalla Russia nel mezzo del secolo XIX si sviluppò ad una industria esportatrice artificiale il miglioramento dei metalli, il quale si basò sui giacimenti metalliferi del paese poveri e distanti dal traffico, com'anche la filatura e la tessitura di cotone importato.

In conseguenza della coincidenza di vari fattori si spostò la frontiera zero di legno segato nella decade del 1860 e del 1870 fino alle regioni limitrofi dell'est e del norte e si cominciò ad usare legno anche come materia prima per pasta di legno com'anche nella decade del 1880 per cellulosa. Nacque la silvicoltura e l'industria della sega, si cominciò ad aumentare il benessere del paese e a disparire l'autoapprovvigionamento nella campagna. Cominciò a svilupparsi il processo dell'industrializzazione, però fino alla prima guerra mondiale l'accrescimento economico si realizzò soprattutto nei rami industriali primari.