ARTICLES

The Growth of Finnish Industry in 1860 - 1913. Causes and Linkages

Sakari Heikkinen - Riitta Hjerppe
University of Helsinki

The years 1860-1913 are usually referred to as Finland's first phase of industrialization. The Grand Duchy of Finland, an autonomous part of the Russian Empire, was a sparsely populated country with a population of only 1.7 million in 1860 which decreased because of the famines in the 1860s. Population growth was, however, rapid after 1870 up to World War I, about 1.3 per cent annually, and the number of inhabitants was 3.0 million in 1913.[1] Finland was an agrarian country with about 60 per cent of its Gross Domestic Product coming from agriculture and forestry in the 1860s and still over 40 per cent in the early 1910s.[2] So, even immediately before World War I, society was still quite agrarian, although the change from the conditions in the 1860s was pronounced.

In European terms, industrialization started late in Finland. In 1860, 4 per cent of the Finnish population was engaged in industry

[1] *Suomen taloushistoria 3. Historiallinen tilasto* (Economic History of Finland 3. Historical Statistics). Helsinki 1983. See also YRJÖ KAUKIAINEN Finland 1860-1913, *Handbuch der europäischen Wirtschafts - und Sozialgeschichte*, Band 5, Hrsg. Wolfram Fischer, Stuttgart 1985.

[2] RIITTA HJERPPE - ERKKI PIHKALA The Gross Domestic Product of Finland in 1860-1913. A Preliminary Estimate, *Economy and History* 1977:2.

and industrial handicraft, and they produced 7-8 per cent of GDP. Half a century later, the labour force engaged in industry and industrial handicraft represented one-tenth of the economically active population. Industry and industrial handicraft accounted for about one-fifth of GDP.

The importance of foreign trade – trade with Russia included – increased considerably between 1860 and 1913. The share of imported goods in GDP was well over 10 per cent in the 1860s and the share of exported goods almost 10 per cent. Before World War I, these shares had grown to 31 and 25 per cent respectively. The share of industrial products in all exports varied between 60 and 70 per cent in 1860-1913.[3]

International prices were declining in the late XIXth century and in Finland the prices of imported goods fell by one-third from the mid-1870s to the early 1880s. Import prices remained then at about this level until nearly World War I. With the exception of the timber boom which raised prices temporarily in the 1870s, the prices of Finnish export products stayed fairly constant from the 1860s up to 1913, with the result that Finland's terms of trade improved by about 50 per cent between the 1860s and World War I.[4]

The following essay will examine industry and industrial handicraft during the first phase of Finland's industrialization.[5] In

[3] Erkki Pihkala *Suomen ulkomaankauppa 1860-1917* (Finland's Foreign Trade, 1860-1917), Bank of Finland Publications, Studies in Finland's Economic Growth II, Helsinki 1970; Hjerppe - Pihkala loc. cit.

[4] Heikki Oksanen - Erkki Pihkala *Suomen ulkomaankauppa 1917-1949* (Finland's Foreign Trade, 1919-1949), Bank of Finland Publications, Studies in Finland's Economic Growth VI, Helsinki 1975, pp. 116-119.

[5] Data on industry are based on Sakari Heikkinen, Riitta Hjerppe et. al. *Suomen teollisuus ja teollinen käsityö 1860-1913* (Industry and Industrial Handicraft in Finland, 1860-1913), Bank of Finland Publications, Studies in Finland's Economic Growth XII, Helsinki 1986. See also Per Schybergson *Hantverk och fabriker I-III*, Finlands konsumtionsvaruindustri 1815-1870, Bidrag till kännedom av Finlands natur och folk, H. 114, 116, 117, Helsingfors 1973-1974 and Kai Hoffman *Suomen sahateollisuuden kasvu, rakenne ja rahoitus 1800-luvun jälkipuoliskolla* (Growth, structure and financing

addition to industrial growth and structural change, the importance of export and home market demand is discussed. Furthermore, attention is paid to supply factors and the role of the central government. Finally, industry's backward linkages are examined.

Growth

The volume of industrial and handicraft output in Finland grew by more than 5 per cent annually in 1860-1913. The growth in output can be divided into seven cyclical periods, using the troughs of the business cycles as benchmarks: 1860-1869, 1869-1879, 1879-1886, 1886-1893, 1893-1902, 1902-1908, 1908-1913 (See Chart 1). Hence the rhythm of cyclical variations in Finnish industry was approximately the same as elsewhere in Europe.[6]

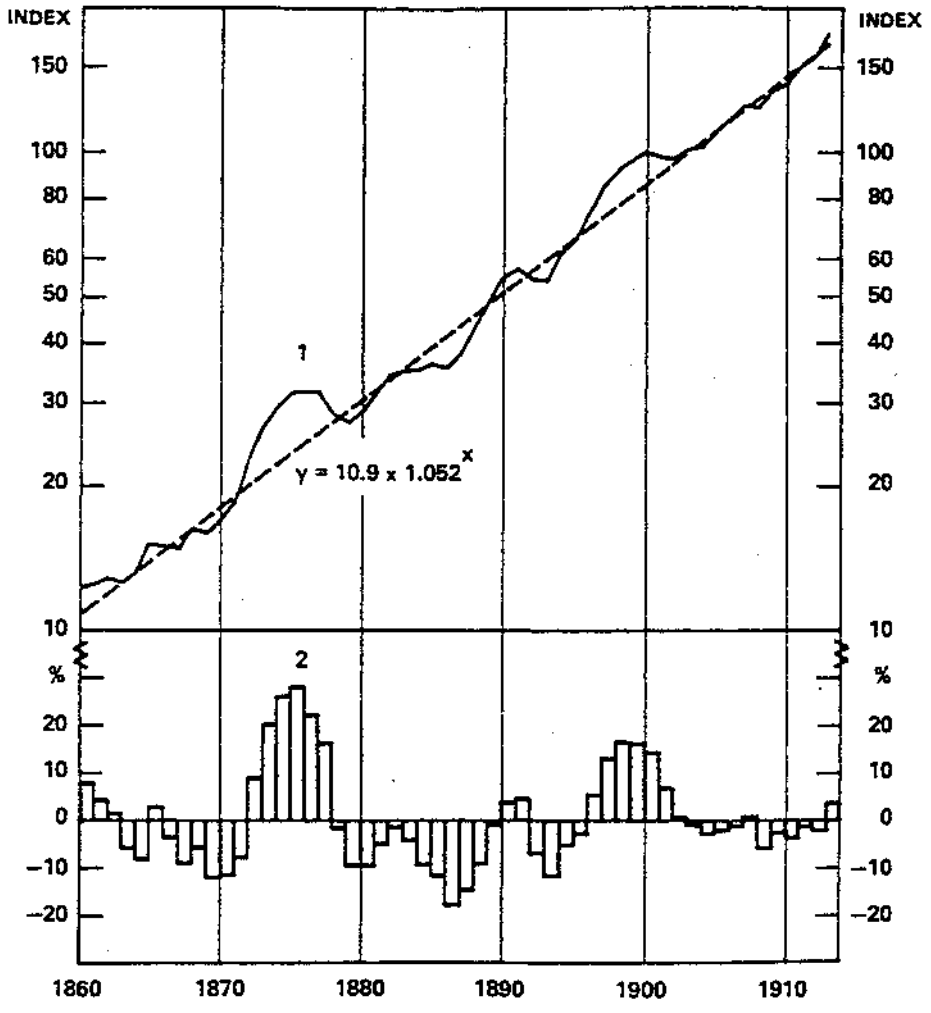
In the 1860s, growth in production was slower than the average for the entire period, a fact which could be ascribed to crop failures at the end of the decade and to the international depression. The upswing in the first half of the 1870s was the most vigorous in the entire 50-year period. In particular, it was a period of expansion for export industries. In the middle of the 1870s, the growth in production came to a halt. Industrial output levelled off for a few years, then fell sharply in 1878-1879. In the decade 1876-1886, growth was slow, averaging only less than one per cent per year.

After the middle of the 1880s, output started to rise rapidly, largely in response to home market demand. In 1892 and 1893, output declined. The world economy was in depression, in addition to which a crop failure in agriculture in 1892 reduced the demand for manufactured goods. The depression was followed by

of Finland's sawmill industry in the latter half of the 19th century), Bidrag till kännedom av Finlands natur och folk, H. 124, Tammisaari 1980.
Industry is here defined as industrial plants with at least five persons working in the plant, industrial handicraft as plants smaller than that.

[6] W. Arthur Lewis *Growth and Fluctuations, 1870-1914*, Cambridge 1978, pp. 17-24.

Chart 1.
THE VOLUME INDEX OF PRODUCTION IN INDUSTRY AND INDUSTRIAL HANDICRAFT
(1900=100) AND ITS DEVIATIONS FROM TREND (PER CENT) IN 1860-1913.



a vigorous upswing. The years 1894-1900 were second only to the early 1870s in terms of the pace of industrial growth during the period examined. From the turn of the century until World War I, industrial output grew at a fairly even rate. Output did fall slightly in 1901-1902, and again in 1908.

In 1860, the number of persons engaged in industry and industrial handicraft was 31,000, rising to 148,000 by 1913. The annual increase averaged 3 per cent. Comparison of the growth figures for employment and the volume of production shows an annual increase in productivity of about 2 per cent. According to this fairly rough comparison, Finnish industrial growth in 1860-1913 was based on an increase in the labour force rather than in the productivity of labour. During the first half of the period examined, the growth rates of employment and productivity were approximately the same, whereas during the latter half of the period, employment grew distinctly faster than productivity (Table 1).

TABLE 1

ANNUAL GROWTH OF PRODUCTION, EMPLOYMENT AND LABOUR PRODUCTIVITY IN INDUSTRY AND INDUSTRIAL HANDICRAFT IN 1860-1912, PER CENT

Period	Volume of production	Employment	Labour productivity
1860/62-1910/12	5.1	2.9	2.1
1860/62-1890/92	5.1	2.6	2.5
1890/92-1910/12	5.1	3.1	1.5

There were significant differences in the development of productivity by industrial sector. In the sawmill industry, labour productivity grew by only 0.3 per cent annually between 1860-1900. Steam did not produce any significant change in the sawmill technology itself,[7] but steam sawmills could be operated for a longer period annually than water sawmills. In the other major

[7] HOFFMAN op. cit. pp. 100-103.

industrial sector of the wood-processing industries, the paper industry, the development of productivity was substantially faster than the average for industry.

Structural changes

In the early 1860s, the largest branch of Finnish industry was mining and quarrying and the production of metals and metal products, including the manufacture of transport equipment (e.g. wooden ships). It accounted for one-third of the value added of total industry (Table. 2). The second-largest sector was the manufacture of textiles, clothing and footwear (27 per cent of the value added). The manufacture of textiles consisted mainly of a few forerunners of mechanical manufacturing, i.e., modern cotton mills, which were among the largest of Finnish industrial plants. A roughly equal proportion of the value added in this sector was produced by shoemakers and tailors and other artisans of the clothing industry. The remainder of the overall total was represented by three virtually equal branches: the food, beverage and tobacco industries, the wood-processing industries, and other, mainly handicraft-type production (12-14 per cent each).

In the period leading up to World War I, the sectoral structure of industry and industrial handicraft underwent a substantial change. The sawmill and other wood industries grew to become the largest sector (20 per cent of the value added). The output of the sawmill industries expanded particularly rapidly in the 1870s (1870-1877), when the volume of production quadrupled. The vigorous upswing was followed by a stagnation of more than ten years, for the level of output reached in 1877 was not exceeded until 1889. Thereafter the output of the sawmill industries grew at the same rate as other industrial production.

From the 1860s onwards, the manufacture of paper and paper products also started to become part of the wood-processing industries. The first mechanical pulpwood mill was established in

TABLE 2

THE BREAKDOWN OF VALUE ADDED IN INDUSTRY AND INDUSTRIAL HANDICRAFT IN 1860-1913, PER CENT, BY BRANCH

Branch	Breakdown of value added			
	1860-64	1880-84	1890-94	1909-13
Food beverage and tobacco industries	13.7	13.6	15.5	15.8
Manufacture of textiles, footwear, other wearing apparel and made-up textile goods	26.7	19.8	23.1	15.7
Manufacture of wood, cork, furniture and fixtures (except metal furniture)	12.2	23.4	14.0	20.1
Manufacture of paper and paper products	1.7	6.4	6.4	14.1
Mining and quarrying, Manufacture of metal and metal products, Manufacture of transport equipment	33.2	25.3	24.1	19.0
Other manufacturing industries	12.5.	11.5	16.9	15.3
Total industry	100.0	100.0	100.0	100.0

1860, and by the turn of the 1860s and 1870s it had been joined by a number of others. Even after the outset of the production of wood pulp, the traditional raw material, rag pulp, was used abundantly in the manufacture of paper, as mechanical pulp was not suited to the manufacture of finer qualities of paper. The raw material problem was eased after a chemical manufacturing method for wood pulp was developed. The manufacture of chemical pulp started in Finland in the 1880s, although production expanded into large-scale industry only during the decade preceding World War I. The manufacture of paper and paper products grew from being an insignificant branch to account for 14 per cent of total industry. Whereas the paper industry employed only 400 workers in 1860, the number had reached more then 12,000 by 1913, and output grew even more rapidly and uninterruptedly, while cutbacks in the volume of output were temporary and insignificant.

Mining and quarrying and the manufacture of metals and metal products fell to 19 per cent. The former major metal industry, the manufacture of iron, originally and mainly based on Swedish ore, shrank almost into obscurity. In 1913, the most important sector in the manufacture of metals and metal products was the engineering industry, which also included the manufacture of steel ships and rolling stock.

The manufacture of textiles, footwear, and clothing was also relatively smaller in 1913. The share of cotton mills in the output of the textile industry slightly declined, whereas that of woollen mills increased. The food, beverage and tobacco industries as well as the miscellaneous sector of other industries and handicrafts had maintained their positions.

In the 1860s, industrial handicraft (establishments with less than five employees) accounted for 30 per cent of the value added of total industry and handicraft, and for half of the overall employment. As industrialization proceeded, the share of handicraft declined. Immediately prior to World War I, handicraft accounted for one-fifth of the total industrial labour force and for less than one-tenth of the value added. Although handicraft expanded, it did so much more slowly than industry. In 1860-1913, employment in handicraft increased from 16,000 to 26,000, whereas industrial employment grew from 15,000 to 121,000 during the same period.

The growth in industry certainly did not cause the disappearance of handicraft. By contrast, industrialization and related growth in income, the expansion of the monetary economy and urbanization increased the demand for many handicraft products. Handicraft partly offset home production (e.g., tailors, bakers); it partly satisfied new needs (repairs of agricultural machinery and tools). True, in some industrial sectors, the position of handicraft was already shaken by mechanized large-scale production - this was also the case with the footwear and leather industries. However, many industrial products did not compete with handicraft. They substituted home production, such as yarns, textile goods and tobacco or they were exported. Moreover, new industry

manufactured entirely new products, created and satisfied new needs (cigarettes, wallpapers, matches), and consumer goods, which had previously been rare (sugar, cotton materials, glassware) gained ground.

Exports and domestic demand

Throughout the period examined, the rapidly-expanding sawmill industry was an export industry, as was the new, wood-consuming paper industry from the late 1860s. Exports were of significance in the manufacture of textiles, industry and in several minor branches during the first half of the period examined. At the beginning of the second decade of the XXth century, the bipartite structure of Finnish industry was, however, already distinct: export industries consisted of the wood and paper industries, and domestic industries of other branches (Table 3).

TABLE 3

THE COMPOSITION OF EXPORTS OF INDUSTRIAL PRODUCTS IN 1860-1913, PER CENT

Branch	1860-1864		1880-1884		1890-1894		1909-1913	
	A	B	A	B	A	B	A	B
Manufacture of textiles and wearing apparel	17.1	95.7	12.9	97.9	9.4	97.3	3.9	96.8
Manufacture of wood, cork, furniture and fixtures (except metal furniture)*	39.3	5.4	53.9	2.1	56.8	2.0	63.3	4.9
Manufacture of paper and paper products	1.7	99.3	13.1	99.3	15.6	72.3	25.9	60.3
Manufacture of metal and metal products, Manufacture of transport equipment	32.4	99.1	13.6	90.2	9.8	96.0	2.9	83.9
Other manufacturing industries**	9.5	68.3	6.5	88.4	8.4	96.1	4.0	81.8
Total industry	100.0	58.6	100.0	44.7	100.0	37.3	100.0	28.2

A = Share in total exports of industrial products.

B = Russia's share in the exports of the respective industrial branch.

* For the period 1860-1864, it was assumed that the exports of the sawmill industry equalled its production; the export data for 1880-1884 and 1890-1894 are taken from Kai Hoffman's study.

** Excluding tar and butter.

Sources: Pihkala, *op. cit.*, Hoffman, *op. cit.*

Manufactured goods were exported to Russia and Western Europe, where the United Kingdom was the major export market. In the early 1860s, Russia received more than half of the manufactures exported and in the 1880s more than 40 per cent, whereas in the first decade of the XXth century no more than about 30 per cent. This change was attributable to a downswing in textile and metal industry exports to Russia after the mid-1880s. At the same time, paper industry exports to Western Europe started to expand. They accounted for 25-30 per cent of total paper industry exports in the late XIXth century and increased to 40 per cent by World War I. While it was mainly paper that was exported to Russia, Western Europe primarily imported mechanical and chemical pulp, and paperboard. Sawn goods were exported almost exclusively to Western Europe, where the United Kingdom, Germany and France were the major recipient countries. The purchasing area for timber had gradually extended further afield from the economic centres of Western Europe. A fall in freight rates made transport over longer distances more attractive than previously.

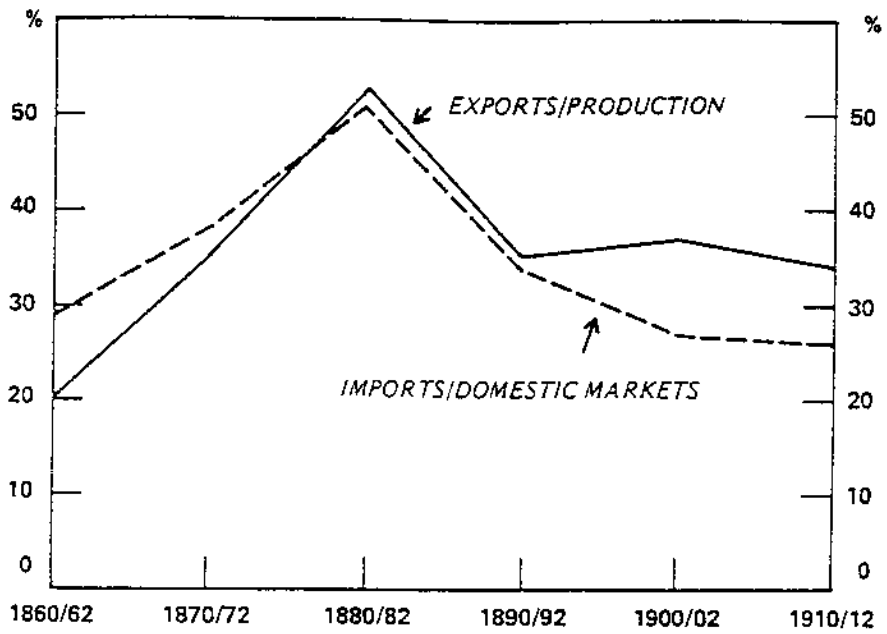
Other industrial exports went to Russia, and from the 1860s to the 1880s, exports to Russia stimulated an expansion in the cotton and metal industries. Many Finnish manufactures enjoyed exemption from customs duties in the Russian market, being thus in a favourable competitive position compared with actual «foreign» exports. During the peak export period of the 1870s, two-thirds of the manufactured cotton materials had been exported to Russia.

From the 1880s, Russia started, like many other countries, to increase the customs protection of her own industry. The rise in customs duties naturally weakened the export prospects of Finnish industry, even though Finland's position remained favourable compared to other nations. However, the increase in customs duties was not the only reason for the less favourable trend in Finnish exports eastwards. From the 1880s, Russia's own industry began to expand rapidly and satisfy domestic demand. Obviously, Finnish industry did not fare well in competition with the new Russian production. The paper industry was an exception, howev-

er, and Finnish paper accounted for one-third of the Russian paper consumption in the 1910s.

From the early 1860s until the mid-1880s, the growth in Finnish industry was, on the whole, highly export-led. Exports of manufactures to both Western Europe and Russia grew rapidly, and the share of exports in manufacturing output reached its peak in the early 1880s (see Chart 2). In the 1880s, the course of development changed. The period of export-led growth was followed by a decade during which the expansion in manufacturing output was fuelled by an increase in domestic demand. The share of exports in manufacturing output fell to a level that was then maintained until the first World War. This change could be ascribed on the one hand to the prolonged international recession

Chart 2.
THE SHARE OF EXPORTS IN INDUSTRIAL PRODUCTION AND THE SHARE OF IMPORTS IN DOMESTIC MARKETS FOR INDUSTRIAL PRODUCTS IN 1860-1912. PER CENT



and Russia's protective measures, and on the other hand to the growth in domestic demand.

In the Finland of 1860, the level of income was relatively low; agriculture and forestry were the sectors dominating the economy, and the networks of transport and communication and of commerce were undeveloped. At this stage, domestic demand could not be a significant stimulus to industrial growth. After the years of famine in the 1860s, the level of income began to rise and the population growth continued at a rapid rate. A growth in forestry brought money to the countryside. This was channelled into consumption and agricultural investment. Urban expansion reduced the area of subsistence economy and enlarged the scale of local market demand. As the real prices of textiles and other manufactures fell, home production was replaced by manufacturing. The economic integration of the country was fostered by the construction of railways and the increased density of other transport networks. This also fuelled demand for railway equipment and steamships.

The growth in domestic demand did not automatically increase domestic industry, which was forced to compete for the markets with imported goods. In the 1860s and 1870s, the share of imported goods in the market for manufactures increased (see Chart 2). The 1880s saw a change, and the market share of domestic industry increased, with the same trend continuing into the 1890s. However, the domestic metal industry was not able to increase its market share from the level to which it had fallen in the 1860s and 1870s.

Domestic manufactures also enjoyed customs protection, the degree of which varied by sector. As customs duties were collected on the basis of imported volumes, a fall in product prices meant an increase in customs protection and a rise in prices a fall therein. Hence, the relative import duties on manufactures rose when, for example, prices fell in the 1880s, whereas the duties fell after the middle of the 1890s when prices generally rose. However, the customs duties were primarily fiscal: they were the central govern-

ment's major source of income. Moreover, it should also be recalled that no import duties were levied on imports of Russian manufactures.

Supply factors, finance and the central government

In the short term, industrial development depended mainly on change in demand. In the long term, changes in the growth and structure of production were markedly affected by supply factors, which in Finland were mainly natural resources and labour force. Finland's major natural resources from the point of view of industrial development were forests and hydropower, which were easy to utilize even by using fairly simple technology. In other respects, the impact of natural resources on industrial growth was insignificant.

The availability of labour depended naturally on demographic developments and the structure of the economy. In 1860-1913, the increase in the resident population averaged one per cent annually, and in 1870-1913 1.3 per cent per year. In 1870, the population of working age accounted for 62 per cent of the total population and in 1913, for 59 per cent. The supply of labour was fundamentally influenced by the economic and social structure of the rural areas. A rapid growth of population in the countryside led to an excess of population in rural areas, which provided a labour reserve for industry. The excess population in the agrarian sector tended to maintain a low wage level, a trend which was also bolstered by the fact than no customs duties were levied on imported corn. The difference in the wage level was appreciable as compared with that in Sweden: in 1900-1913, the average wage in the Finnish sawmill industries was two-thirds of the average wage of a Swedish sawmill worker.

It is more difficult to estimate how industrial development was affected by the quality of the labour force. While technical knowledge had no traditions, the technology needed by industry was adopted mainly from abroad. It was there that machinery was

acquired and technicians, foremen, skilled workers and some entrepreneurs immigrated. In the major industrial branches — for example, the wood-processing industries — the requirements set for workers' professional qualifications were modest, so that the quality of the labour force should not have impeded the growth of output. On the other hand, as a consequence of the low level of technical knowledge, the industries which demanded more developed technology were insignificant. Literacy rates were high, but it is difficult to assess their importance for industrial development.

There are very few studies on the importance of capital for the industrialization of Finland. On the whole, researchers have been content with explaining the lack of capital as a barrier to industrialization or as the reason for the postponement of industrialization.[8] It was not until the 1860s that the Finnish banking system began to take shape. Subsequently, the role of banks in the channelling of monetary flows increased rapidly. Previously, the money needed for industrial investments had come from private persons, such as civil servants and farmers, state funds, the Bank of Finland, the central bank founded in 1812, the commercial sector, pension funds, and savings banks. Merchant houses played a central role in financing and setting up the wood-processing industries. Direct investment by foreign investors in Finnish industry was insignificant. Capital from St. Petersburg was invested in Finlayson's, the largest cotton mill, and the iron industry in Eastern Finland received capital from Russia, while a few wood-processing firms obtained capital from Western Europe. All in all, however, the role of actual foreign investment capital remained small.

When examining Finland's industrialization, it has been common to emphasize the legal reforms which were implemented

[8] Eino Jutikkala Industrialization as a Factor in Economic Growth in Finland. *First International Conference of Economic History*, Paris 1960.

mainly between the late 1850s and the late 1870s.[9] That period saw the abolition of a number of restraints on economic activity and the creation of a legal framework for the development of a market economy (freedom of trade, the ensuring of the free mobility of labour, company legislation, abolition of the restraints on sawmill activities, etc.).

Nevertheless, the central government interfered even more directly in the economy and industrial development. During the first half of the XIXth century, the central government supported particularly mining and quarrying and the manufacture of metal and metal products. The first cotton mills and certain other industrial plants — not sawmills — also received loans or subsidies for starting up their activities. Central government lending to industry played a significant role until the beginning of the 1860s, during the very earliest phase of industrialization when the banking system was still undeveloped. Subsequently, the role of the central government's direct financing declined and the emphasis was shifted over to the construction of the infrastructure, e.g. railroads, other transport, and education.

Using Alexander Gerschenkron's famous tripartition, it can be claimed that Finland by no means represented an "English" model of industrialization nor even a "German" one. On the other hand, the central government's direct interference in industrial development was, with the exception of the middle of the XIXth century, so insignificant that there is no reason for describing it as an "East European" model either.[10]

[9] EINO JUTIKKALA Suomen teollistuminen (Industrialization of Finland), *Suomen talous - ja sosiaalihistorian kehityslinjoja*, Porvoo 1968. See also K.O. ALHO *Suomen uudenaikaisen teollisuuden synty ja kehitys 1860-1914* (Origins and development of the Finnish modern industry, 1860-1914), Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja B: 11, Helsinki 1949, p. 49-52.

[10] ALEXANDER GERSCHENKRON *Economic Backwardness in Historical Perspective. A Book of Essays*, Harvard 1962.

Backward Linkages

The macroeconomic significance of industry cannot be described merely in terms of its share of total output, as the growth of industry also affected the other sectors of the economy and its dynamics. Using Alfred Hirschman's terminology, we can talk about the backward and forward linkages of the industrial sector. Here we shall deal only with the backward linkage which refers to an increase in the domestic supply of production inputs by a growth in output.[11]

If backward linkage is measured in terms of the contribution of domestic raw materials and semi-finished products to the gross value of output of each industrial branch, the backward linkage was high in the timber industry (63 per cent) and the paper industry (49 per cent) in 1910-1913. In other branches it was low: the food, beverage and tobacco industries 33 per cent; the mining, quarrying and metal industries 23 per cent; the textiles and clothing industries 14 per cent, and other industries 16 per cent.

If we examine the total of the value added and domestic raw materials, the contribution to industry of the timber and paper industries is much larger than when measured in terms of employment or only the value added. During the second decade of the XXth century, the woodprocessing industries represented almost half of the macroeconomic weight of total industry (Table 4).

We can hardly agree with Lennart Jörberg's claim that "the Finnish export industry was an 'enclave' within the economy".[12] Although true for the cotton industry of the 1850s to 1870s, it does not apply to the major export industry, the wood-processing industries. The multiplier effects of the wood-processing industries on other industries were fairly insignificant, although the sawmill industry and the pulp industry utilized domestic machin-

[11] Albert O. Hirschman *The Strategy of Economic Development*, Forge Village 1965 (1958), p. 100.

[12] Lennart Jörberg The Industrial Revolution in the Nordic Countries, *The Fontana Economic History of Europe 4*, The Emergence of Industrial Societies 2, p. 463.

TABLE 4

EMPLOYMENT, VALUE ADDED AND VALUE ADDED PLUS DOMESTIC RAW MATERIALS IN 1910-1913 (per cent)

Branch	Employment	Value added	Value added plus domestic raw materials
Food, beverage and tobacco industries	13.3	15.3	19.5
Manufacture of textiles and clothing	20.4	15.3	11.0
Manufacture of wood, cork, furniture and fixtures (except metal furniture)	24.6	20.6	29.4
Manufacture of paper and paper products	8.8	14.1	16.1
Mining and quarrying industries, Manufacture of metal and metal products	18.7	19.4	13.6
Other industries	14.2	15.3	10.4
Total industry	100.0	100.0	100.0

ery to a greater extent than the average. By contrast, the growth in the wood-processing industries was reflected outside industry, in forestry, agriculture and the transport and communication sector. The expansion of forestry brought capital and labour income to the countryside. Capital income spread fairly widely, because the ownership of forests was not very concentrated.[13]

Conclusions

The development of Finnish industry in 1860-1913 can be divided into three main phases:

1) From the 1860s to the 1880s, export demand was the major growth factor. Exports to both Western Europe (sawmill industry) and Russia (paper, textiles and metal industries) accelerated the growth of industry.

[13] See also DIETER SENGHAAS *The European Experience. A Historical Critique of Development Theory*, Dover, New Hampshire 1985, p. 72-80.

2) From about the mid-1880s up to the mid-1890s, export developments were unfavourable. The growth of domestic demand and an expansion in the market share of domestic industry fuelled the growth of industry.

3) From the 1890s up to World War I, both exports and the domestic market were significant growth factors. Paper exports to Western Europe now grew considerably. At the same time, the bipartite nature of industry became increasingly pronounced: the wood-processing industries were export industries, whereas the other sectors were for the most part home market industries consuming foreign raw materials. Exports of manufactures were fostered by a marked improvement in the terms of trade.

Finland was part of the Russian Empire and in the Russian market she enjoyed a customs benefit which the paper industry, the textiles and metal industries were able to utilize. On the other hand, whereas Russian products were duty-free in the Finnish market, Finnish industry fared well in this competition.

The major supply factors of industrial growth were forest and hydropower resources and the labour reserve in the rural areas. Industry was labour-intensive, and the degree of processing relatively low. The growth of output was based on an increase in the labour force rather than on a rise in productivity. By West European standards, the level of industrial wages was low. From the point of view of the dynamics of the economy, the wood-processing industries as a whole was the crucially expanding branch: it was an export industry, whose multiplier effects on the economy (forestry, agriculture, transport and communication) were substantial and direct.