THE FINNISH ECONOMY 1860—1985

BANK OF FINLAND PUBLICATIONS

STUDIES ON FINLAND'S ECONOMIC GROWTH XIII

RIITTA HJERPPE

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GROWTH AND STRUCTURAL CHANGE

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Growth and Structural Change

BANK OF FINLAND
GOVERNMENT PRINTING CENTRE/HELSINKI

Original title:
Suomen talous 1860–1985
Kasvu ja rakennemuutos

Translated by Richard Walker

Cover: Petteri Kivekäs

ISBN 951-861-290-0
ISSN 0355-6050

Government Printing Centre
Helsinki 1989

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Preface

The idea of a long-term growth study on the Finnish economy was first put forward as long ago as 1959. The study was inspired by the historical growth studies initiated by Simon Kuznets, an American who was subsequently awarded the Nobel Prize for Economics. Dr. Jouko Paunio, today a professor of economics at the University of Helsinki, was at that time a head of department at the Bank of Finland Institute for Economic Research. He, together with Mr. Erkki Laatto, a researcher with the same institute, were among the first to recognise the need for growth studies on the Finnish economy, and they were both prominently involved in getting the project off the ground. They received valuable support and encouragement from Mr. Klaus Waris, then the Governor of the Bank of Finland.

Researchers at the Central Statistical Office of Finland and the Bank of Finland carried out the early work on the study. Researchers at the University of Helsinki's Department of Economic and Social History became involved during the latter half of the 1960s. The project has so far seen a total of twelve studies published in the Bank of Finland's Growth Studies Series. An even larger number of directly or indirectly related studies have appeared in various publications and periodicals of the University of Helsinki's Department of Economic and Social History, the Finnish Society of Sciences and Letters, the Research Institute of the Finnish Economy, and the Helsinki School of Economics and Business Administration. The Growth Studies Series is listed separately at the end of the book, while the other publications are set forth in the bibliography.

The Growth Studies Committee was set up in 1960 for the purpose of coordinating the work. The Chairman of the Committee was Eino H. Laurila, who at that time was the Director General of the Central Statistical Office of Finland. The entire growth studies project has been based on his distinguished work and highly respected guidance. The Committee continued to function until 1977. In 1982 the Bank of Finland formed a new committee for the concluding stage of the research.

In the early 1980s it began to look as if there were sufficient grounds for

achieving the completion of the entire study. The task of completing the final parts of the study and assembling all the research data was undertaken by Docent Riitta Hjerppe, initially in her capacity as a senior researcher with the Academy of Finland and, between 1986 and 1987, as a researcher with the Bank of Finland. Ms. Hilkka Taimio M.Pol.Sc. and Ms. Päivi Valkama were engaged by the Bank of Finland to work as research assistants. The Bank also arranged research premises and other facilities for the use of the project.

Studies on economic growth provide extremely important information on the economy's long-term development and restructuring process. This study makes it possible for the first time to view economic restructuring against the background of economic development as a whole. It shows structural change during the period 1860–1948 in an entirely new light and brings quite a new perspective to the better-known period after the Second World War. The study will alter many well-established ideas about Finnish economic growth.

The application of the system of national accounts to historical – often heterogeneous – statistical data makes it possible to approach the study in a consistent fashion. The application of the national accounting framework to the long time period of the study has demanded an enormous amount of work in achieving consistency among the various data. The task has involved assembling data from statistical sources, literature, newspapers, official documents and archives, organizing it, comparing different sets of data, gradually filling in the gaps with careful estimates, and carrying out accounting calculations. The fact that more than twenty full-time employees are needed to produce the present-day annual national accounts provides some idea of the work that was necessary to carry out this study.

The deteriorating coverage of statistical data as one goes back into history naturally places its own restrictions on this kind of study. Against this background the findings of the study can be regarded as being most satisfactory. In some cases it has been possible to carry out tests on independent sets of statistical data, and these also testify to the reliability of the findings.

As historical growth studies have also been made in other countries, the completion of the Finnish study will now enable us to make international comparisons and thereby identify differences and similarities between economic growth in Finland and other countries.

Because the growth study clarifies the backgrounds to social development, it can also serve other branches of the social sciences. Indeed, there are many ways in which economic development provides a dynamic impetus to other aspects of social development.

Finally, there is good reason to mention the importance of this kind of project with regard to the training of researchers. Several doctoral, licen-

tiate and master's theses have been completed during the course of the project.

Helsinki, October 1987

Olavi E. Niitamo
Chairman of the Growth Studies Committee

Acknowledgments

The plan that was originally drawn up for the growth study in Finland was so extensive and wide-ranging that there are only two other instances of similar multipartite growth studies: one of these has been carried out in Japan, the other is still being prepared in Sweden. Although it has been necessary to prune our ambitious original plan – e.g. the development of the current account has been omitted at least at this stage – it has been possible to achieve its principal objective: an almost complete yearly record of the balance of aggregate demand and aggregate supply since 1860. Moreover, at least some of the separate studies have been made in even greater detail than was envisaged in the original plan. The studies based on extensive archive material have been the most time consuming; Docent Kai Hoffman's study on the sawmill industry is perhaps the most noteworthy in this respect.

Although many of the growth studies were initiated more or less simultaneously, they progressed for various reasons at different speeds. Amongst other things this meant that researchers were often on their own when it came to solving problems associated with estimating economic development in their particular field. In such circumstances they were deprived of the support provided by an overview of the whole economy. For the most part, however, the researchers appear to have carried out their pioneering work extremely well.

I approached this work by first combining the data from both the Bank of Finland's Growth Studies Series and numerous other growth study publications. I then supplemented this information and investigated the development of the branches and sectors that had remained outside the scope of the earlier studies. There have only been a few instances during the compilation stage when the appearance of new information has been of such fundamental importance that I have been obliged to amend the findings of the earlier growth studies. There have, however, been numerous occasions during the course of my work when I have had to ask for assistance from these researchers. They have always given me friendly guidance and understanding encouragement.

As a senior researcher at the Academy of Finland between 1983 and

1985, I had the opportunity of having some separate studies or tasks carried out by temporary researchers or research assistants using research funds provided by the Academy of Finland. The research workers are or have been staff of the Department of Economic and Social History, University of Helsinki. Matti Peltonen Lic.Pol.Sc. made preliminary estimates concerning the development of the construction industry between 1860 and 1900, and, at the request of the Bank of Finland, calculations on the development of agricultural labour input between 1860 and 1948. Sakari Heikkinen M.Pol.Sc. compiled the time series on the private consumption of goods for the period 1860–1913. Kari Pitkänen M.A. prepared most of the time series on the production of private services for the period 1860–1948. Antti Häkkinen M.Pol.Sc. completed the calculations on the construction industry and calculated the time series on tar burning and the production of hand-sawn goods for the period 1860–1900. Vappu Ikonen M.Pol.Sc. carried out the work involved in recording a large part of the basic time series data in an ADP system.

Tapani Mauranen Lic.Pol.Sc. provided me with access to information from a study he was making on the development and structure of Finnish trade between 1860 and 1960. Antti Suvanto Lic.Pol.Sc. gave me an unpublished time series concerning the activities of the banks and insurance companies for the period 1900–1948.

The growth study has been of central importance to the research work of the University of Helsinki's Department of Economic and Social History ever since its establishment in 1966. The credit for maintaining this interest primarily belongs to Professor Sven-Erik Åström, whose encouragement has been of inestimable importance to me in my work. Frequent discussions with the entire staff of the Department have also provided me with an abundance of information and fruitful viewpoints.

The contribution made by the Bank of Finland to this work has been of crucial importance. The Bank not only provided me with excellent research facilities and equipment but also helped to speed the study to its conclusion by engaging the services of research assistants.

Hilkka Taimio M.Pol.Sc. also made the calculations on the government sector during the period 1860–1948, and on hunting and fishing between 1860 and 1926. Her successor as research assistant was Ms. Päivi Valkama. Without their conscientious and energetic input, the study could not have been completed. It was my very good fortune to be assisted by such friendly and cooperative researchers.

The Growth Studies Committee set up by the Bank of Finland consisted of Mr. Juhani Hirvonen, Dr. Reino Hjerppe, Professor Erkki Pihkala and Docent Per Schybergson, under the chairmanship of Dr. Olavi Niitamo. This group of experts has acted as a steering committee for the project by

discussing its problems and advancement. Mr. Heikki Elonen has acted as the Secretary to the Growth Studies Committee and taken care of practical matters as well as editorial work on the book. The members of the Growth Studies Committee and Mr. Sakari Heikkinen have also read the manuscript and made valuable suggestions and improvements. No one has done more in this respect than Reino Hjerppe. I thank them all for their support and assistance. Naturally, the responsibility for any remaining errors or omissions is entirely my own. Olavi Niitamo has been involved in the growth study work from the very beginning; he has made an important contribution as a driving force behind the scenes and a constant source of encouragement. I was always able to turn to him on the numerous occasions over the years when I encountered problems and difficulties.

The staff of the Division of National Accounts at the Central Statistical Office of Finland, under the leadership of Markku Suur-Kujala, has been most generous in helping me to solve problems associated with calculations and inconsistencies of various databases.

I owe a special debt of gratitude to Professor Angus Maddison from the University of Groningen in the Netherlands and Docent Olle Krantz from the University of Lund in Sweden. They have both followed my work and given great support. Discussions with them have been no less than inspirational, and the study has benefited enormously from their involvement.

I do not know how I would have managed to obtain basic statistics and literature without the friendly cooperation and expertise of the Library of the Bank of Finland. The Bank's Data Processing Department willingly resolved the many awkward situations that cropped up in the use of modern equipment. Kai Eirola B.Sc.(Econ.) assisted greatly during the study in planning and implementing the ADP processing of data on the government sector.

Mr. Richard Walker has translated the Finnish text into English with great expertise and assiduity; it has been a great pleasure to work with him.

Finally, I should like to thank the Bank of Finland for publishing my study in the Growth Studies Series.

Rekola, July 1988

Riitta Hjerppe

1. Starting Point

1.1. Background to the growth study

The title of Simon Kuznets's book, "Modern Economic Growth. Rate, Structure, and Spread" (1966), lists the basic objectives of economic growth studies.[1] Historical national accounts are employed to help describe and explain the economic growth of the industrialized countries, their structural development, and the spread of the growth process.

The statistical data used in early studies of economic history described the development of narrow market economies, and the best of it generally concerns foreign trade. In such circumstances it was all too easy for the emphasis to end up on the kind of changes that were large and took place rapidly. Many of these have subsequently been observed to be somewhat irrelevant to the development of the economy as a whole.

The introduction of the system of national accounts in the 1940s and 1950s essentially improved the research situation. The conceptual breadth of gross domestic product (GDP) and the balance of aggregate supply and aggregate demand made it possible to examine the whole economy and to proportion individual components to the overall development. National accounts provide a solid foundation for research into economic change and define clearly what is meant by the concepts of growth and decline.[2]

Kuznets defines economic growth as a sustained increase in per capita or per worker product.[3] The real growth of domestic product is quite a good indicator when it is necessary to use only one yardstick of economic development. On the other hand, its conceptual limitations in dealing with long-term development should be taken into consideration. Domestic product only describes the materialistic standard of living. Although the development of materialistic welfare represents a central aspect of economic development, welfare also encompasses factors associated with the quality of the environment, spiritual and cultural life, etc.[4]

Neither does domestic product describe the distribution of incomes by population group, region, etc; an important consideration from the standpoint of social development. National accounting is chiefly concerned with the market transactions between individual economic units. Thus, for in-

stance, domestic product does not include any unpaid housework, the importance of which has probably decreased. In this respect the development of domestic product overestimates economic growth. On the other hand, the production of agricultural products, forestry products and buildings for the use of the producer are included in the calculations.

Historical growth studies were initiated in many countries soon after the introduction of systematic national accounting in the 1950s. Indeed, the first large-scale growth study was prepared with the concepts of its day in Sweden as long ago as the 1930s.[5] One reason for the commencement of growth studies was that in the period following the Second World War economists were interested in the theory of economic growth. Simon Kuznets is regarded as having shaped this initiative.

Growth studies have been made in about twenty industrialized countries. The periods of time covered by these studies as well as their comprehensiveness vary. Some of the studies were carried out by national statistical offices, while others were accomplished in universities by researchers of economics and economic history. The quality of these publications ranges from particularly comprehensive growth analyses to studies which consist of only the time series and brief notes on the calculations. Initially, the work was carried out by members of the International Association for Research in Income and Wealth and the findings were discussed at meetings of the organization.[6]

Kuznets combined statistics from the growth studies of different countries to make the historical analysis of economic growth in his aforementioned book. Later, Angus Maddison examined the industrialization of the OECD countries and Paul Bairoch studied the economic development of Europe by similarly combining the findings of growth studies in different countries and making new estimates. Maddison and Bairoch have also extended the regional coverage of growth studies outside the circle of industrialized countries and have made (or are in the process of making) growth studies on the developing nations.[7]

There was an appreciable revival of interest in growth studies following the economic crisis of the 1970s. The slowdown of growth raised new questions about the nature of growth and the causes of sluggishness and stagnation. The detail and precision of the first estimates of economic growth in the United Kingdom have been improved on a number of occasions. Swedish researchers are currently engaged on the fourth round of Sweden's growth studies.[8] Growth studies have been continued and are still continuing with the objectives of correcting, supplementing and increasing the scope of the calculations as well as extending the period of observation.

1.2. When did modern economic growth begin?

The time series of most growth studies start around the 1820–1860 period. This timing is generally chosen because in many countries the quality of statistics and other quantitative data is better from that period onwards. Furthermore, it is thought that rapid economic development started in many countries around that time. A growth study on the British economy made by Deane and Cole goes back even further to the year 1688, though not on an annual basis.[9]

The year 1860 has been chosen as the starting date for the growth studies in Finland. The reasons for this are the improvement in the statistical base during the 1860s and the special nature of that decade with regard to international and Finnish economic development: it was at that time that Finland's economic policy was liberalized and international relations developed strongly.

Finland became an autonomous grand duchy of the Russian Empire in 1809, when it was ceded by Sweden to Russia by the terms of a peace treaty. Despite this change of imperial master, Swedish legislation remained on Finland's statute book and, subject to the Russian governor general securing the Tsar's final seal of approval, Finland's governmental apparatus retained the authority to determine internal policy – especially in matters related to the handling of the economy. Finland unilaterally declared itself an independent republic at the end of 1917.

Significant legislative reforms were carried out in Finland during the 1860s: a prohibitive order on the establishment of steam-powered sawmills was repealed (1857), Parliament was reconvened after an extended adjournment (1863), Finland gained its own monetary unit (1860–1865), trade guilds were abolished (1859, 1868), and so on. These reforms are regarded as being so important that many researchers have even dubbed the 1860s as the decade of Finland's Industrial Revolution, and the legislative reforms as the starting motor of growth. Nevertheless, other assessments of the turning point of economic growth have also been made, often in accordance with international models.[10]

In recent years attention has focused on the graduality of economic development and the infrequency of large rapid movements (e.g. Per Schybergson, Kai Hoffman); neither did Henrik Ramsay have anything to say about industrial revolution in 1919 when reporting on his study of economic development in the nineteenth century: "We do not notice here any sudden sprouting of large industries but, as we have seen, comparatively slow development." Hugo E. Pipping also stressed the stable growth of the economic activity: "...development as a whole exhibits surprisingly few

sudden leaps compared to the abrupt turns of policy."[11]

This study confirms the notion that growth begins to stir gradually over a fairly long period of time without any abrupt changes. The findings of the study also support the view that growth has initially taken place within narrow sectors and then gradually expanded to encompass the whole economy.

1.3. The structure of the study

The findings of the sectoral growth studies that have been published over the past twenty years have been combined in this study. This information is supplemented by time series for those branches of economic activity not covered in earlier studies. All the data is now presented in the form of time series for the period 1860–1985, which have been prepared in a manner consistent with the system of national accounts. The time series are: gross domestic product by kind of economic activity, the balance of aggregate demand and aggregate supply at current prices and as volume indices, labour input, and the composition of consumption, investment and foreign trade.

The main part of the study examines the structural development and growth of the Finnish economy with the aid of prepared time series; these are set out in the appendix of tables. Because the extensive appendix entitled "Methods of Calculation, Source Materials and Reliability Assessments" has been omitted from the English-language edition of the book, the most important source materials and statistics, some methods of estimation and figures on the reliability of results are dealt with in some supplementary notes at appropriate places. Readers who are only interested in developments that have actually taken place in the economy may wish to skip Chapter 2, Methodology and Sources.

Chapter 3 deals with the development of gross domestic product over the period 1860–1985. The main points of interest are the total amount of growth over the period and the variations in growth. Cyclical fluctuations and wars have disrupted the growth process on many occasions during the past 125 years. The overall growth of gross domestic product and its level are also briefly compared with the corresponding magnitudes of European and certain other industrialized countries.

The supply factors of production dealt with are the increase in the labour force and the population growth that underlies it, the overall development of productivity, and the increase in productivity arising out of structural change. Gross fixed capital formation is a component of aggregate demand, which increases the amount of available capital in the production process.

The combined effect of structural change and growth on development is summarized in a study of the contributions made by different economic activities to the overall growth process. The development of the most important branches of production is dealt with briefly, mainly from the standpoint of their internal structural changes. The section on structural change concentrates on the development of agriculture and forestry, industry and services. The principal features of construction activities are presented in connection with investment, and the production of public services in connection with public consumption.

The chapter dealing with foreign trade examines the development of imports and exports in relation to the framework of trade policy, the balance of trade and the terms of trade.

The balance of aggregate demand and aggregate supply for the period 1860–1948 presented in this study has never before been published in Finland. Balances since the year 1948 have already been included in the official national accounts. The development of aggregate supply comprises gross domestic product and imports. Aggregate demand is divided into private and public consumption, gross fixed capital formation and exports.

Finally, the transition model used by N. F. R. Crafts is employed in a discussion of the features of European industrialization. International comparisons serve not only to illustrate variations in the magnitude of development, but also as a means of testing the reliability of the time series: if similarities are generally observable in development, do deviations stem from special features of national development or from deficiencies in the time series?

As far as the reliability of the time series is concerned, it can generally be stated that thanks to the administrative system developed during the period of Swedish rule, there is a relative abundance of statistics and other quantitative material relating to Finland over the period of observation. It is not, however, always easy to draw any conclusions regarding their reliability. Obviously, the more recent the period, the more reliable is the data.

Efforts have been made to take the published critique of the growth studies into consideration and to assess the reliability of the time series.

1. *Simon Kuznets Modern Economic Growth. Rate, Structure, and Spread. New Haven – London 1966.*

2. *R. C. O. Matthews – C. H. Feinstein – J. C. Odling-Smee British Economic Growth 1856–1973. Oxford 1982, p. 8.*

3. *Kuznets 1966, p. 1.*

4. *An attempt has also been made to construct indicators, which take into account not only the development of gross domestic product but also the effects of leisure time, environmental factors and so on. Some findings indicate only a minor change in growth*

rates (see MATTHEWS, *e.g. 1982, p. 8). Dan Usher, however, obtains a significantly higher rate of growth for private consumption by including the effect of leisure time.* DAN USHER *The Measurement of Economic Growth. Oxford 1980, p. 295.*

5. Wages, Cost of Living and National Income in Sweden 1860–1930 I–III. London 1933–1937.

6. See Income and Wealth 1951–1965 and Review of Income and Wealth 1966–.

7. ANGUS MADDISON *Phases of Capitalist Development. Oxford 1982;* PAUL BAIROCH *Europe's Gross National Product: 1800–1975. The Journal of European Economic History 1976.*

8. In the United Kingdom, C. H. Feinstein has prepared a new, more detailed calculation for the period 1855–1964, and N. F. R. Crafts, among others, has corrected the figures for the period 1700–1840. See C. H. FEINSTEIN *National Income, Expenditure and Output of the United Kingdom 1855–1964. Cambridge 1972;* N. F. R. CRAFTS *British Economic Growth during the Industrial Revolution. Oxford 1985.*

9. PHYLLIS DEANE – W. A. COLE *British Economic Growth 1688–1959. Second ed. Cambridge 1969. Gregory King's famous estimate of the population, national income, consumption and foreign trade of England and Wales from the year 1688. See* DEANE – COLE *1969, p. 1.*

10. At least Keijo Alho, Heikki Waris and Viljo Rasila recognize the 1860s as the beginning of industrialization. Eino Jutikkala has emphasized the importance of the 1870s and the development of sawn goods exports. Martti Kovero sees the years 1850–1880 as a kind of preliminary period of industrial revolution but regards the foundation of large industrial enterprises in the 1880s and 1890s as the point of departure for industrialization. Väinö Voionmaa placed the industrial revolution in the second quarter of the nineteenth century. He considered the supply factors as being decisive: the formation of capital, cheap labour and, above all, "the determined pursuit of a share of European development". See VAPPU IKONEN–MATTI VALKONEN *Milloin ja miksi Suomi teollistui eri kirjoittajien mukaan (When and Why Finland Industrialized according to Various Writers). Kansantaloudellinen aikakauskirja 1987.*

11. IKONEN–VALKONEN *1987.*

2. Methodology and Sources

2.1. From sources to accounts

The system of national accounts is employed in this study as a set of conceptual tools. The accounts describe the economic activity of the entire nation within the framework of a coherent system. These descriptions focus on production and expenditure on production, incomes and their disposal, gross accumulation and its financing, as well as transactions between Finland and other countries. This study concentrates on the description of production and expenditure on production. As a matter of fact, it is a question of so-called functional accounting, which is concerned with the transactions involved in the production and use of economic goods, i.e. merchandise and services.

Labour-input time series since 1860 have also been determined in order to reveal the development of productivity. The development of the volume of production is also proportioned to population growth so that an indication of the materialistic standard of living can be obtained.

The *aggregate supply and aggregate demand account* is examined to determine how the supply of goods is made up of domestic production and imports, and how goods are demanded as final products in private and public consumption, gross fixed capital formation and exports. The components of the balance of aggregate supply and aggregate demand have been determined both at current prices and as volume indices.

Gross domestic product at market prices	Exports
Imports	Private consumption
	Public consumption
	Gross fixed capital formation
	Change in stocks and statistical discrepancy
Aggregate supply	Aggregate demand

The *production accounts* describe production from the standpoint of producers, i.e. economic units, classified by economic activity. On the income

side of the account is total output, which comprises the sum of all goods and services produced. The difference between this total and the intermediate products used in production is value added – which comprises the incomes arising out of production. Gross domestic product is obtained by adding up the value added of each economic activity, which is calculated in the following manner:

Production account for economic activity i

Expenses	*Incomes*
Purchases from other sectors	Total output
Value added at factor cost of production	
– compensation of employees	
– operating surplus	
– consumption of fixed capital	
Gross value of production	Gross value of production

Alternatively, the value added of an economic activity can be calculated as the sum of the factor incomes of the economy – i.e. wages and salaries, the consumption of fixed capital, and the operating surplus.

When the value added of all economic activities is aggregated, the result represents gross domestic product at factor cost. Gross domestic product at market prices is arrived at by adding indirect taxes and subtracting subsidies.

The economic units of the economy are institutionally categorized into firms, financial institutions, households, the public sector, non-profit institutions and the rest of the world. As the corporate and public sectors are categorized by economic activity on the basis of their principal production, the division in question is a functional one; firms are divided into economic units and these are categorized by economic activity, because the same firm could be engaged in production belonging to different industries or economic activities. Public sector activities in the form of business enterprises (public utilities, state-owned companies and joint-stock companies) are included in the appropriate economic activity on the basis of the principal production of each economic unit. Other public sector activities are recorded as belonging to central or local government.

Gross domestic product mainly consists of market production, i.e. production intended for resale. There are, however, certain exceptions to this: e.g. agricultural and forestry production for the use of the producer and self-constructed buildings are included in domestic product. Most public sector activities are concerned with the production of collective goods, for which there are no markets. Gross domestic product also includes an imputed item in respect of housing ownership, which represents the "pro-

duction" of housing services. This item reflects the rental value of the nation's housing stock.

In principle, the calculations involved in arriving at national income can be carried out from the viewpoints of either production, income or the disposal of income. The study can be crystallized in the form of accounts covering the whole economy:

Production account	*Incomes account*	*Expenditure account*
Value added	Compensation of	Consumption
– primary production	employees	– private
– refined goods	Operating surplus	– public
– services	Consumption of fixed	Gross fixed
	capital	capital formation
		– private
		– public
		Change in stocks
		Net exports
Gross domestic product	National income	
at factor cost		
plus	minus	
Indirect taxes	Net incomes from the	
minus	rest of the world	
Subsidies		
Gross domestic product	Gross domestic	Gross domestic
at market prices	income	expenditure

The data available for historical calculations of national income places limitations on the choice of viewpoint. Every account that is to be clarified must be estimated with the aid of other accounts. By combining statistics from numerous sources – i.e. time series and cross-sectional data – and exploiting literature and archive material, it has been possible to reconstruct missing time series satisfactorily.

The old and revised systems of national accounts. A system of national accounts appropriate for the circumstances of Finland was developed by the Central Statistical Office of Finland in the 1950s.[1] The main features of this system were based on the so-called old SNA system of the United Nations.[2] Uniform series for the period 1948 – 1964 prepared in accordance with the old SNA were published in 1968. The national accounts of Finland were drawn up in accordance with the old SNA until 1977. Present-day calculations are made in accordance with the revised SNA, which has been applied retrospectively to annual accounts dating back to 1960.[3]

Earlier growth studies made in Finland have conformed to the old SNA. The time series in this study have been prepared in accordance with the old

SNA for the period 1860–1960 and with the revised SNA for the period since 1960. It has been possible to do so because the concepts and differences of coverage of the balance of aggregate demand and aggregate supply in the old and revised SNA systems are small at this level of examination. Old SNA series have been extended with revised SNA series by partially reclassifying the economic activities of the revised SNA. It was also decided that volume indices of production could be chained together, as the differences between the old and revised SNA systems are insignificant. In the appendix of tables, the value added by kind of economic activity for 1960 is drawn up in accordance with both the old and revised SNA. The differences in the comparability of the series can thus be seen. The differences are not so much a consequence of the concepts being changed, but rather because more production than before was included in gross domestic product when the national accounting calculations were revised.[4]

Production account. The best statistics are available on agricultural harvests and livestock numbers, many industrial products, the railways, the postal service, public construction, and the banks and insurance companies. Basic statistics are either missing or in short supply in a number of important areas of the Finnish economy; these include the sawmill industry, forestry, private construction, private transport, private services, and the early activities of the municipalities. Many areas of economic activity covered by deficient basic statistics have now been satisfactorily clarified using a wide variety of sources and in some cases with the aid of substitute series and estimates. Information deficiencies have also been rectified by special studies, such as Kai Hoffman's extensive archive study on the sawmill industry – which was made using growth-study methods – and Erkki Pihkala's study on the government sector during the period 1860–1900.[5]

Income account. A systematic income account has not been formulated here; instead, wage totals have been estimated for most economic activities.

In principle, taxation statistics include appropriation tax statistics 1865–1881, municipal tax studies for 1891 and 1900–1901 as well as statistics on municipal tax and state income and property taxes since the 1920s.[6] The earlier appropriation tax statistics are, however, inadequate because the number of people taxed was small. Presumably, the coverage and reliability of the tax statistics since the 1920s is quite good. On the other hand, it has not been possible to make much use of these, as their occupational classification is crude and deviates from the one used in the SNA.

The recording of accident statistics was started in 1898. These include wage totals and employee numbers; they constitute time series which are classified in a fairly detailed manner.[7] Their coverage, however, did not improve until legislation was gradually extended to encompass most groups of employees.

Expenditure account. Foreign trade statistics are Finland's oldest official series of statistics. Erkki Pihkala and Heikki Oksanen have recast this data in accordance with the national accounts for use in their growth studies on foreign trade. There are no estimates for exports and imports of services before 1948, neither have these been made for this study.

In the study on private consumption it has been possible to exploit a number of consumption studies. The first of these covers working-class families in towns and cities for the period 1907–1908. The others are considerably wider in coverage and start in the 1920s. As is generally the case in growth studies, private consumption, like investment, is principally estimated on the basis of the production account. Thus attention is primarily focused on the production, import and export of products defined as consumer and investment goods.

The central government budgets have been reclassified in order to reconstruct public consumption. Some of the data on local government consumption has been obtained from the reports of provincial governors and national education statistics since the 1880s. The recording of statistics on local government activities was started at the beginning of this century, although annual publications did not appear regularly until the 1930s.

Volume calculations. In addition to the series on the value of production at current prices, constant price series and volume indices of production based on them have been calculated in order to estimate the real development of production.[8] In Finland fixed-price calculations have been made in three different ways: 1) the commodity values in the base year have been "brought forward" with the aid of the commodity volume or a volume indicator; 2) the volumes in the year of calculation have been determined using the unit prices of the commodities in the base year; or 3) current prices have been deflated using price indices. The last method has been employed the most, because price indices have been available.

The change of volume should in principle include qualitative as well as quantitative change. The deflation method best fulfils this requirement. In this case, however, it is essential that the price index is "correct" and that it is the best possible index for the commodity in question.[9]

The long-run volume index is calculated for intervals of a few years at a time, and the indices thus obtained are chained together (Laspeyres-type volume index). In the "orthodox" Laspeyres index the first year of the observation period is the base year. When volume indices are calculated nowadays, the base year is generally round about the midpoint of the time period under observation. Although the "normality" of the base year is regarded as being important, it is impossible to find a year which is normal from every aspect of the economy: there are always irregularities of one kind or another.[10]

As an alternative method of calculating volume indices of production, the use of a Divisia index, in which the weights change continuously, has been discussed.[11] A Laspeyres index is used rather than a Divisia index in national accounts, because of the insufficient availability of information on prices. Dan Usher, a researcher of Canadian national accounts, argues in favour of using a Laspeyres index on the basis of the modest data requirements and the fact that even though the index is known to be inaccurate, the direction of the bias is known. A Laspeyres index overestimates development, because it uses the initial year of the observation period as the base year.[12]

Price and wage indices. The calculation of official indices was started in the 1920s. The base year of the oldest official wholesale price index was 1913, while that of the earliest cost-of-living index was 1914. The index of building costs (1922) and the price index of foreign trade (1919) were started later, and official indices of the level of earnings were not compiled until after the Second World War. The earlier indices were often based on defective and unsystematic data. These basic indices have been improved with the passage of time: their coverage having been widened and their classifications made more detailed.

Information on prices is fairly abundant even for the period before the institution of official price indices. The practice of publishing tax prices (for a group of foodstuffs and other commodities as well as certain agricultural wages) began in Sweden in the eighteenth century and was continued in Finland during the Period of Autonomy.[13] Finnish newspapers of the nineteenth century also published economic information: for example, prices of foodstuffs in the marketplace, agricultural prices gathered by the offices of provincial governors (since 1877) and foreign trade prices recorded by the customs authorities. A wholesale price index (for the period since 1860) and a cost-of-living index (for the period since 1850) were subsequently constructed from these items of information. Wage indices of many areas of economic activities have also been determined during the study.[14]

Despite certain deficiencies in the available indices, it has been possible to evaluate them as being fairly reliable and, for the most part, as providing a good basis for the calculation of constant prices. During periods when the rate of inflation was high, such as in and after the First and Second World Wars, the representativeness of the indices and their ability to reflect real development is, however, problematic.

Employment. The availability of information on employment varies greatly from one area of economic activity to another: the range of variation stretches from annual records through cross-sectional data to a complete absence. The best annual data is available for industry – some groups of employees having been registered annually since the 1840s and the total industrial workforce as often as four times a year from 1909 onwards – the

railways, the postal service, educational establishments and doctors. Accident statistics include long time series of the numbers of some employee groups in the form of work years. Demographic statistics appeared every ten years and these have been the only source of information on some service sectors. Their use is made more difficult by the fact that the concept of a "population engaged in work" used in demographic statistics is too wide to be used as such in a growth study. This is because it includes such groups as the unemployed and part-time workers. Moreover, the classifications used in the demographic statistics differ greatly both from one publication to the next and from those used in the national accounts. Neither has the information assembled every ten years by the clergy from ecclesiastical records always been up to date. It is apparent that some changes of occupation not accompanied by changes of residential location and some instances of people coming into and leaving the country have not been recorded in the church's population register.

In those areas of economic activity for which there are no statistical sources as such on the number of persons employed, it has been possible to divide estimates of wage totals by the average wage in the best cases (central and local government). To some extent it has been necessary to resort to data on the value or volume of production and estimates of the use of labour per unit of output (agriculture) or productivity (industrial handicrafts).

2.2. Estimation problems

In order to ensure that the growth studies would be suitable for use as the basis for an economic, economic-historical or historical analysis of social development, the most important requirement for the data was that it is reliable: it had to give an accurate picture of economic development and the level of economic activity during each time period. The use of the data for analytical purposes is, however, limited by the assumptions employed in the construction of the growth studies: interpolations, productivity assumptions, the interdependency of the series, etc.[15]

The concepts of national accounting form a coherent framework for the observation of long-run economic change and restructuring. Nevertheless, the accounting classifications developed principally in the middle of this century have sometimes been difficult to apply to nineteenth-century society. The growth researcher is obviously in difficulty when, for example, the classification of economic activities divides farming-related activities into at least agriculture, forestry, house building, land and water construction (clearing land for cultivation) and manufacturing (production for sale of small cottage industries, tar burning). How much production should be

apportioned to which economic activity? Can we be sure that all production will be included? It is also difficult to distinguish between parochial, municipal and state activities in the local government of rural districts at the end of the nineteenth century – a time when areas of responsibility were not clearly delineated. Some material required a great deal of time-consuming work on reclassification (government accounts).

When resorting to old statistical sources, it is particularly important to focus attention on what has been measured. In principle, different sources can often be used to obtain information on the same subject; the data obtained from each source would not be the same, however, due to such reasons as inconsistencies of definition. For example, industrial statistics record the labour input or the number of people in work; demographic statistics record the population engaged in industrial work – which includes such groups as the unemployed; and tax statistics record the number of people whose incomes exceed the lowest threshold of taxable income.

The necessity for imputations associated with national accounts has been a problem in itself. This difficulty had to be faced primarily when measuring public services, estimating housing services, determining imputed interest rates and calculating subsidies.

As much time as possible has been spent gathering and preparing statistical material for use in the construction of the time series. If annual data has not been available, information on intermediate years has been interpolated, for example, with the aid of an assumption of steady growth, a linear trend or some auxiliary series.[16] In some cases it has been necessary to resort to extrapolation with the aid of data on some base year and either an auxiliary series or a development assumption. These kinds of estimates can distort the reality of cyclical fluctuations, and extrapolation may also do the same for the level of activity. Interpolation or extrapolation based on an assumption of steady or linear growth may destroy or alter the cyclical picture. Estimations made with the aid of auxiliary series may result in additional, exaggerated or diminished cyclical fluctuations in time series. These estimations also clearly restrict the possible use of the findings as a tool for accurate cyclical analysis.

A comparison of the results obtained with both independent source materials (e.g. tax statistics) and international data suggests that the cyclical profiles have come out rather well.

As appropriation tax was collected on more or less the same basis over the years, it probably reflects the annual development and fluctuation of incomes, even though it clearly underestimates their level. It is most unlikely that the bases upon which incomes have been estimated would have fluctuated randomly from one year to the next. Because of the aggregated occupational classification used in appropriation tax statistics and the fact

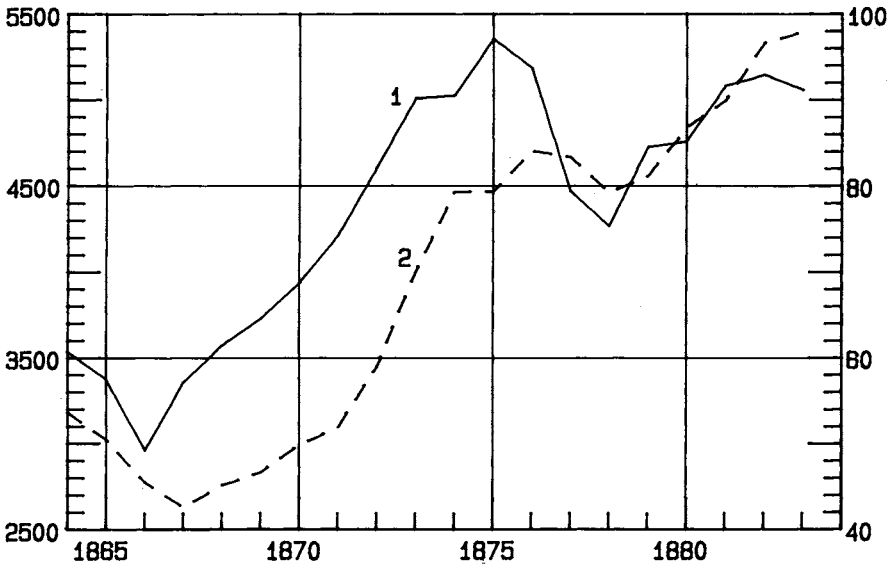


Chart 1. Gross Domestic Product and Appropriation Tax Receipts, 1865–1884, Thousands of FIM

1 Gross domestic product at market prices (left-hand scale)
2 Appropriation tax receipts (right-hand scale)

Source: Official Statistics of Finland SVT III, Kertomus Suomenmaan suostuntaverosta, 1881 (Appropriation Tax Report 1881), p. 12.

that they significantly underestimate incomes, these tax statistics have been little used as a source in the growth studies. On the other hand, a comparison of the appropriation tax receipts with the gross domestic product series of this study is interesting and also functions as a reliability test for the GDP series.

Fluctuations in income appropriation receipts during the period 1865–1885 generally follow the curve of gross domestic product at current prices with a one-year lag (Chart 1).[17] The curves of taxes and gross domestic product also have very similar profiles. Income appropriation tax receipts amounted to about 1.5 per cent of GDP at market prices during the years 1865–1867 and then dropped to 1.2–1.3 per cent between 1868 and 1873. In 1873 the proportion began to rise and was 1.7–1.9 per cent between 1878–1885.

It has not always been possible to preserve the independence of individual series. Often, the only road to an estimation of the value of production has been via the labour input, wage total and a productivity estimates. It has been necessary to use the volume or value of production as the basis for

estimates of labour input in large sectors like agriculture, forestry and construction. It has frequently been possible to obtain additional assistance in the form of comparative data from other sources, e.g. demographic, accident and tax statistics. Measuring the production and productivity of services – with the possible exception of transport and communication – presents a conceptual problem, as the value of production for non-market services (e.g. administration) is conventionally calculated on the basis of inputs. Generally, the value of private services has not been available either. Even if the value could have been measured conceptually, it would still have been necessary to settle for estimates of production using inputs – in most cases, employment.[18]

Factors such as these should be taken into consideration when using the time series: Do the results provide information on real development or merely the assumptions of the time series' maker? There is cause to exercise caution particularly with observations of productivity, as problems with the source material mean that one can not be sure whether labour input is consistently defined throughout the whole observation period. The concept of employment (wage earners, salaried staff and self-employed persons) ranges from the number of work years to persons in work or receiving their principal livelihood from some economic activity or another. The marked seasonal fluctuations typical of the Finnish economy also cause problems: for example, in agriculture, construction and certain areas of industry, far more work is done at some times of the year than at others. Underemployment may have been fairly widespread a hundred years ago.

Cottage industry products for the producers' own use have not been estimated here, even though, in principle, this is recommendable according to national accounting practices. The boundary line between domestic production for resale and for the producers' own use is not constant. It is possible that some market production from side-lines could have been inadvertently omitted from the estimate.[19]

The production of many household necessities has changed to become market production as tasks formerly carried out by the households have been replaced by the purchasing of goods and services from markets; unpaid household work is not, by definition, included in gross domestic product. On the other hand, other transitional processes have simultaneously been taking place in the opposite direction. New relatively cheap and easy-to-use domestic appliances have reduced market purchases (from laundries, barber's shops, etc.) at the same time as increased wage costs have resulted in the decline of domestic assistants and the general prevalence of self-service. On the other hand, it should be remembered that many commodities produced for the producers' own use – agricultural products being the most important of these – and which formerly accounted for a

larger slice of GDP than they do nowadays are included in gross domestic product. In such circumstances it is a question of the national accounting framework not being particularly well suited to providing a description of such changes in the division of labour and economic structure. The growth of gross domestic product is ostensible in so far as the relocation of unpaid household production to markets exceeds the transference of productive activities in the opposite direction. In a new growth study made in Sweden, alternative estimates of unpaid household work have also been made. Thus the Swedish researchers have recorded a somewhat slower growth rate of gross domestic product than that indicated by the national accounts themselves.[20]

2.3. New and old time series

The earliest calculation of Finland's national income is contained in the appropriation tax statistics of 1880. K. E. F. Ignatius used a method based on income statistics to estimate total taxed incomes as well as those household incomes which did not fall within the scope of taxation (average value 3.60 mk). Ignatius arrived at a total for "the permanent income of the Finnish nation", which is the equivalent of FIM 3.3 million. In the same publication Ignatius used a method based on production statistics to estimate the national income for 1882 at FIM 3.93 million.[21] According to this study, gross domestic product at market prices was FIM 5.2 million in 1882. Although the explanation of definitions given by Ignatius on his production-based estimate and its coverage is extremely meager, it is worth comparing his findings with the GDP components of corresponding economic activities determined in this study.[22]

Ignatius's calculation	FIM 1,000	*The findings of this study*	FIM 1,000
Arable farming	1,060	Agriculture	1,777
Animal husbandry	810		
Forestry	700	Forestry	610
Hunting and fishing	60	Hunting and fishing	130
Industry and industrial handicrafts	800	Industry and industrial handicrafts	621
Trade and sea-traffic	500	Trade, transport and communication	428
Total	3,930	Total	3,566

The value of primary production (arable farming, animal husbandry, forestry, hunting and fishing) is therefore FIM 2,630 million in Ignatius's calcula-

tion and FIM 2,517 million in this study – a variation of 4.5 per cent. The difference between the results obtained by Ignatius and the findings of this study with regard to industry and industrial handicrafts is, however, proportionally larger. It is obvious that Ignatius's industry also includes production which nowadays falls under the category of construction, because it was also recorded in the industrial statistics of the 1880s. Trade, transport and communication in the comparative series bear a close resemblance to each other, despite the fact that there are apparent differences in their concepts. Ignatius hardly included any over-land transport or internal waterway traffic in his calculations. Ignatius's domestic product does not include any public sector activities or private services, not to mention housing services. The concept of national income at that time still lacked definition. Ignatius, himself, pondered over this issue: "It should also be remembered that the basic notion of national income being the same size as the total annual income of the nation's citizenry is wrong, because in this group can be found sizable classes whose incomes are not a direct product of industry or capital, but born out of the taxes paid by others and therefore already counted..."[23]

The estimate of national income calculated by means of taxed incomes is low, even though Ignatius added in estimated incomes for shopkeepers, industrial entrepreneurs, farmers and others. Ignatius, himself, did not regard appropriation tax statistics as being a sufficiently reliable basis for estimating national income, and they have not been employed to any great extent in this study.[24]

In 1977 the author of this report and Erkki Pihkala published an initial estimate of the gross domestic product of Finland for the years 1860, 1870, 1880, 1890 and 1913. Its findings are 7–12 per cent lower than the corresponding figures of this study. Gross domestic product at current market prices grows at an annual rate of 3.06%, compared with the figure of 3.13% for the GDP of this study. The difference in the rate of growth is small.[25]

After Ignatius, the next estimates of the magnitude of national income were made in the 1920s, when the state income and property taxes were reintroduced and statistical data on them was recorded. Valter Lindberg used income and property tax statistics to arrive at a figure of FIM 1,400–1,500 million for the Finnish national income of 1924. The figure obtained in this study for the gross domestic product of that year is about FIM 2,000 million.[26]

Jaakko Kahma made an estimate of the national income for 1922 using a method based on production statistics.[27] Kahma's concept differs markedly from the concept of national income in use nowadays. It includes agriculture, forestry (including a yield from the annual growth of forests), hunting

and fishing, industry and handicrafts as well as some aspects of transport and trade (the transportation of goods to markets and possibly their exchange, i.e. trade) reduced by the balance of payments deficit. Kahma's estimate of the national income for 1922 was FIM 113 million. The combined total of the corresponding economic activities in this study, i.e. agriculture, forestry, industry, trade and transport, amounts to FIM 121 million, which is 7 per cent larger than Kahma's estimate. The concept of Kahma's study is, however, so vague that the similarity of the findings is largely coincidental.

The most important determination of national income to be made before official calculations were initiated in 1948 was Valter Lindberg's study "Suomen kansantulo vuosina 1926–1938" (The National Income of Finland 1926–1938).[28] It followed his estimates of Finland's national income in some years since the 1920s.[29] Lindberg's basic concept is chiefly net national product (which does not include the consumption of fixed capital). Lindberg additionally defined the public sector activities in his national income more narrowly than the national income concept of the old SNA and included in it only "the sum of the public expenses used for consumption", i.e. health, education, social and welfare activities. Lindberg omitted defence and administrative costs from his national income combination, although he did make an alternative series ("A Broader Study of the Public Sector") in which he included administration as a sort of "upper limit of public sector activity".[30] In all other respects Lindberg's concept of national income and his computational solutions are fairly close to the concepts of national income used in the old SNA. The development of Lindberg's national income series is very similar to the development of this study's gross domestic product at market prices. Lindberg's figures are 15–20 per cent lower than those of this study, which to some extent at least reflects his use of net national product and the conceptual difference between the two studies with regard to the public sector.

In 1950 Eino H. Laurila published a series for the national income of Finland over the period 1926–1949, using a large portion of Lindberg's figures for the period 1926–1938.[31] Laurila's figures for public sector activities differ from Lindberg's in that they include public administration and defence.

Laurila's study is conceptually close to the national income of the old SNA, but there, too, only net national product has been calculated, and its results cannot be compared directly with the findings of this study. Laurila's estimate of the value of private services is clearly lower than in later studies. The figures of both Lindberg and Laurila also indicate a lower level of construction and forestry than do the findings of this study.

Lindberg only had a series at current prices. Laurila, however, also

estimated a real national income index for the period 1926–1949. The gross domestic product volume index of this study is very similar to Laurila's real national income index over the period 1926–1949. The only deviations are a few years in the 1940s (1940, 1945 and 1946).

Laurila's study is associated with the national income calculations initiated by the Central Statistical Office of Finland in 1948. The results of these calculations have been published in the "Economic Survey" of the Ministry of Finance's Economics Department, and in the Bulletin of Statistics (Tilastokatsauksia) since 1956. A comparison with figures conforming to the old SNA which were published in 1964 indicates that the level of these 1950s' calculations are somewhat lower throughout than subsequent estimations.

In 1959 O. E. Niitamo published an employment estimate for the years 1938–1959.[32] His estimate of total employment for 1938 was 1,522,000, which corresponds exactly with the result of this study (1,521,600). An examination of Niitamo's employment figures by kind of economic activity shows that his estimate of 74,000 work years for agricultural employment is as much as 10 per cent higher than the corresponding figure in this study. Correspondingly, with the exception of the ownership of dwellings and private services, his estimates of employment in other areas of the economy are about 10 per cent lower than those presented here.

In the 1970s completed growth studies as well as others still being prepared were used as the basis for an estimate of the volume index of gross domestic product for the period since 1900. This index – a combination of value-added volume indices for agriculture, forestry, manufacturing and industrial handicrafts, construction, transport and communication, trade, and housing services; i.e. a volume index of predominantly material production – develops in much the same way as the total volume of gross domestic product in this study.[33] Eino H. Laurila has made a very detailed study on private consumption in Finland for the period 1900–1975, in which he has published a gross domestic product series for the same period, both at current and 1938 prices. It too is very close to the findings of this study.[34]

1. *See* PAAVO GRÖNLUND – O. E. NIITAMO *Suomen kansantalouden tilinpito vuosina 1948–1964, Käsitteet ja menetelmät (National Accounting of Finland 1948–1964, Concepts and Methods). Tilastollinen päätoimisto, Monistettuja tutkimuksia N:o 5, Helsinki 1968;* HEIKKI SOURAMA – OLLI SAARIAHO *Kansantalouden tilinpito, Rakenne, määritelmät ja luokitukset (National Accounting, Structure, Definitions and Classifications). Tilastokeskus, Tutkimuksia N:o 63, Helsinki 1980;* REINO HJERPPE – O. E. NIITAMO *Uuden SNA:n mukaisen kansantalouden tilinpidon perusrakenne (The Basic Structure of the New System of National Accounts). Tilastokeskus, Tutkimuksia N:o 15, Helsinki 1971.*

2. A System of National Accounts and Supporting Tables. Studies in Methods, Series F, 2, United Nations, New York 1953; also see EINO H. LAURILA *Suomen kansantalouden kirjanpito (National Accounting in Finland). Kansantaloudellinen aikakauskirja 1953;* EINO H. LAURILA *Suomen kansantulotilaston kehityksestä vuosina 1948 – 1963. Kokonaistaloudellisia ongelmia (The Development of National Income Statistics in Finland 1948 – 1963. Macroeconomic Problems), Kansantaloudellisia tutkimuksia XXV, Helsinki 1964;* PERTTI MARJOMAA *Suomen kansantalouden tilinpidon historiaa. Taulukoinnista tietoyhteiskuntaan (National Accounting in Finland, Historical Aspects. From Tabulation to Information Society), Helsinki 1986.*

3. Suomen kansantalouden tilinpito vuosina 1948 – 1964, Taulut (National Accounting in Finland in 1948 – 1964, Tables). Tilastollisia tiedonantoja N:o 43, Helsinki 1968; Kansantalouden tilinpito, Aikasarjat vuosilta 1960 – 1981 (National Accounts, Time Series for 1960 – 1981). Tilastollisia tiedonantoja N:o 75, Helsinki 1984; Kansantalouden tilinpito 1980 – 1985 (National Accounts 1980 – 1985). Tilastotiedotus, KT 1986:6.

4. This rise in the level of domestic product seems to have continued during the 1970s and 1980s due to estimates having been revised to conform with the revised SNA.

5. KAI HOFFMAN *Suomen sahateollisuuden kasvu, rakenne ja rahoitus 1800-luvun jälkipuoliskolla (The Growth, Structure and Financing of the Finnish Sawmill Industry in the Second Half of the Nineteenth Century). Bidrag till kännedom av Finlands natur och folk H. 124, Tammisaari 1980;* ERKKI PIHKALA *Valtion tulojen ja menojen rakenne 1800-luvun jälkipuoliskolla (The Structure of Government Revenues and Expenditure in the Second Half of the Nineteenth Century). Helsingin kauppakorkeakoulun julkaisuja B 23, Helsinki 1977.*

6. KYÖSTI JÄRVINEN *Suomen maalaiskuntain finanssitilasto I – II (Financial Statistics of Rural Municipalities in Finland I – II). Jyväskylä 1899;* AUG. HJELT – O. A. BROMS *Kunnallinen tuloverotus ja tulosuhteet Suomessa, I ja II, Kaupungit ja Maalaiskunnat (Municipal Income Taxation and Incomes in Finland, I and II, Urban and Rural Municipalities), Tilastollinen tutkimus. Helsinki 1904 ja 1905.*

7. Official Statistics of Finland SVT XXVI. Työtilastoa (Labour statistics); Official Statistics of Finland SVT XXVI A. Tapaturmatilastoa (Accident statistics).

8. The volume index of total gross domestic product was calculated using a Laspeyres index formula. The volume indices of individual economic activities were weighted by their value added in the middle year of various eleven-year periods and added together (i.e. the base year is 1865 for the period 1860 – 1870, 1875 for the period 1870 – 1880,... 1944 for the period 1940 – 1948). These were chained together into totals for sectoral value added at constant prices and total gross domestic product, which were used to calculate the volume indices of production, 1926 = 100. The GDP volume index of the old official system of accounting (1954 = 100) was used for the years 1948 – 1960, and this was chained onto the index calculated here from the year 1948. The volume of private services was assumed to have developed as in the old system of accounting, although an adjustment was made to the level of their value added. The volume index of value added according to the revised SNA for the years 1960 – 1985 has been chained onto the volume index of gross domestic product for the period 1860 – 1960 and the sectoral volume indices up until 1960. See the note on Table 4 in the appendix: Comparability of the old and revised national accounts (page 230).

9. Olle Krantz criticizes the use of price indices which are not constructed specifically for calculating volume indices, see OLLE KRANTZ *Techniques for Measuring Economic Growth in Sweden. Workshop on Quantitative Economic History, 2 – 4 September 1985, University of Groningen.*

10. Sourama – Saariaho 1980, Krantz 1985.

11. See Usher 1980, pp. 177–182; Bent Hansen – Edward F. Lucas On the Accuracy of Index Numbers. The Review of Income and Wealth 1984:1.

12. See Usher 1980, p. 183. A volume index of the whole gross domestic product for the period 1860–1948 was calculated using the Divisia-Törnqvist index and the so-called Vartia II index. The volume index of production calculated by means of the Divisia index generally indicates growth of almost the same magnitude as a Laspeyres index. In the periods of intense inflation that occurred during and after the First and Second World Wars, however, GDP volume calculated by means of the Divisia index grows significantly faster than the result obtained with a Laspeyres index. See Yrjö O. Vartia Relative Changes and Index Numbers. ETLA A4, Helsinki 1976, pp. 110, 128.

13. Tax prices are prices which have been officially confirmed as the basis for paying tax, and to some extent they may have diverged from current prices. In most cases they apparently lagged behind changes in market prices.

14. Heimer Björkqvist Guldmyntfotens införande i Finland åren 1877–1878 (The Introduction of the Gold Standard in Finland in 1877–1878). Publikationer utgivna av Finlands Banks institut för ekonomisk forskning, Serie B:13, Helsingfors 1953; Heimer Björkqvist Prisrörelser och penningvärde i Finland under guldmyntfotsperioden 1878–1913, En struktur- och konjunkturanalys (Price Movements and the Value of Money in Finland during the Gold Standard in 1878–1913, A Structural and Business Cycle Analysis). Publikationer utgivna av Finlands Banks institut för ekonomisk forskning, Serie B:19, Helsingfors 1958; Sakari Heikkinen et al. Palkat, toimeentulo ja sosiaalinen rakenne Suomessa 1850–1913 (Wages, Livelihood and Social Structure in Finland 1850–1913). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja N:o 13, Helsinki 1983; Väinö Luoma Virkamiesten järjestäytyminen Suomessa I–II (Civil Servant Unionism in Finland I–II). Virkamiesliiton julkaisuja N:o 8, Turku 1962; Verner Lindgren Valtion virkamiesten palkat, Kehitys vuosina 1914–1927 ja 1927–1938 (The Development of Civil Service Pay 1914–1927 and 1927–1938). Suomen virkamiesyhdistyksen julkaisuja, Helsinki 1928 ja 1938.

15. Also see Eino H. Laurila Mittausongelmista kasvututkimuksissa, Kokonaistaloudellisia ongelmia (On the Problems Concerning Long-Term National Accounting, Macro-economic Problems). Kansantaloudellisia tutkimuksia XXV, Helsinki 1964.

16. Milton Friedman Interpolation on Time Series. American Statistical Association Journal, Dec. 1962.

17. For reasons of clarity, tax for the year 1876 has been omitted from the appropriation tax data in Chart 1. The annual data for the years 1877–1884 has therefore been advanced by one year. Up until 1876 tax was paid – according to the tax statute – on the principle of income received during the year of payment; after 1876, it was paid on the principle of income from the preceding year. In practice, it is clear that income received during the preceding year was used between 1865 and 1876 as the basis for the tax paid at the beginning of the next year. Tax receipts during the period 1875–1877 were equal in amounts and subsequently followed the development of incomes with a lag of about two years.

18. Also see Olle Krantz Productivity Changes in Scandinavia in the 19th and 20th Centuries. International Productivity Comparisons and Problems of Measurement, 1750–1939, Ed. Patrick O'Brien, Ninth International Economic History Congress, Berne 1986, pp. 57–58.

19. Matti Peltonen has made a study on the secondary earnings of farms at the end of the nineteenth and the beginning of this century. Log and freight haulage as well as fishing were the most important sources of secondary income. A large number of farms had

secondary incomes, but the proportion of these to the total income of farms was small. See MATTI TAPANI PELTONEN *Suomalaisen maatilatalouden murros autonomian ajan lopulla, Maataloushistoriallinen tutkimus (The Transformation of Finnish Agriculture at the End of the Period of Autonomy, Agricultural History Study). Talous- ja sosiaalihistorian lisensiaattityö, Helsingin Yliopisto 1986.*

20. The development of Sweden's gross domestic product with and without unpaid household work. GDP has grown as follows (annual percentage increases):

	Without	With
1851/55 – 1891/95	2.1	1.8
1891/95 – 1906/10	2.7	2.4
1906/10 – 1926/30	1.8	1.6
1926/30 – 1951/55	3.5	3.4
1951/55 – 1971/75	4.2	3.7
1971/75 – 1976/80	0.8	0.8

OLLE KRANTZ Utrikeshandel, ekonomisk tillväxt och strukturförändring efter 1850 (Foreign Trade, Economic Growth and Structural Change after 1850). Stockholm 1987, p. 58. Unpaid household work is included in Lindberg's estimate of Finland's gross domestic product, see VALTER LINDBERG *Suomen kansantulo vuosina 1926 – 1938 (The National Income of Finland, 1926 – 1938). Suomen Pankin suhdannetutkimusosaston julkaisuja, Sarja B:1, Helsinki 1943.*

21. Official Statistics of Finland SVT IV 3. Varallisuuden suhteita, Kertomus Suomenmaan suostuntaverosta vuonna 1881 (Condition of Wealth, Appropriation Tax Report 1881), p. 12.

22. Georg Luther examines Ignatius's first calculation of national income and the circumstances in which it came about. GEORG LUTHER *Suomen ensimmäiset kansantulolaskelmat. Suomen kansantalouden tilinpitoa sata vuotta (The First Calculations of Finland's National Income. A Hundred Years of National Accounting in Finland). Tilastokeskus, Tutkimuksia, 83, Helsinki 1982, pp. 83 – 91.*

23. Official Statistics of Finland SVT IV, Kertomus Suomenmaan suostuntaverosta vuonna 1865 (Appropriation Tax Report 1865), p. 7.

24. Ilkka Nummela used taxation data to study the distribution of income in the Finnish city of Kuopio. He also observed that the tax office made higher income tax assessments for municipal taxation than they did for state appropriation taxation. ILKKA NUMMELA – ERKKI K. LAITINEN *Distribution of Income in Kuopio 1880 – 1910. The Scandinavian Economic History Review 1987.*

25. RIITTA HJERPPE – ERKKI PIHKALA *The Gross Domestic Product of Finland. Economy and History, Vol. XX:2, 1977.*

26. VALTER LINDBERG *Incomes in Finland. Bank of Finland Monthly Bulletin 1926:11, pp. 22 – 28.*

27. JAAKKO KAHMA *Tullikysymys kansantaloudessamme (The Question of Customs Duty in our Economy), Helsinki 1924.*

28. LINDBERG *1943.*

29. LINDBERG *1926;* VALTER LINDBERG *The National Income of Finland, Bank of Finland Monthly Bulletin 1937:2;* VALTER LINDBERG *En uppskattning av Finlands nationalinkomst (An Estimate of the National Income of Finland). Unitas 1936, pp. 65 – 69.*

30. LINDBERG *1943, pp. 121 – 124.*

31. Eino H. Laurila Suomen kansantulo 1926–1949, Ennakkoarviointien tuloksia (The National Income of Finland 1926–1949, The Results of Preliminary Estimates). Tilastokatsauksia 1950.

32. O. E. Niitamo Työllisyyden kehitys Suomessa vuosina 1938–1959, Ennakkolaskelma (The Development of Employment in Finland 1938–1959, Preliminary Report). Tilastokatsauksia 1959:12.

33. See Eero Heikkonen Asuntopalvelukset Suomessa 1860–1965 (Housing in Finland, 1860–1965). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia III, Helsinki 1971, p. 234; Osmo Forssell Kauppa Suomessa 1860–1960 (Finland's Domestic Trade, 1860–1960). Suomen Pankin julkaisuja, Kasvututkimuksia X, Helsinki 1979, Appendix 15; O. E. Niitamo National Accounting and National Statistical Service on the Threshold of the 1980s. Liiketaloudellinen Aikakauskirja 1980:1, pp. 37–38. In 1977 Laurila published preliminary data on the development of national income in the twentieth century: Eino H. Laurila Suomen kansantalouden kasvu ja rakennemuutokset kasvututkimuksen valossa (Growth and Structural Change in Finland in the Light of Various Growth Studies). Taloustieteellisen Seuran vuosikirja 1977, Helsinki 1978.

34. Eino. H. Laurila Kulutus Suomen kansantaloudessa vuosina 1900–1975 (Consumption in Finnish Economy in the Years 1900–1975). ETLA B 42, Helsinki 1985.

3. The Development of Gross Domestic Product 1860–1985

3.1. Growth before 1860

The rapid and sustained growth of gross domestic product per capita is, historically speaking, a relatively new phenomenon. Paul Bairoch thinks it unlikely that the annual rise in gross domestic product per capita in Europe from the sixteenth to the eighteenth century would have been more than 0.2–0.3 per cent. Had growth been any faster than that, it would have meant an initial level of income below the subsistence minimum. Angus Maddison thinks that per capita growth was only 0.1 per cent in the sixteenth and seventeenth centuries. He further supposes that economic growth rose to 0.2 per cent in the eighteenth century, when the annual rate of population growth doubled from 0.2 per cent in the previous century to 0.4 per cent.

It is generally accepted that the phenomenon of rapid industrial growth made its first appearance in the United Kingdom during the latter half of the eighteenth century. France, Belgium, Switzerland and the United States followed closely behind in the early nineteenth century.[1]

The population of Finland grew by about 1 per cent per annum between 1820 and 1860. It is even possible to make fairly reliable estimates for some components of national income during that period. Indeed, it has been calculated that the value added of industry and handicrafts quadrupled, that the tonnage carried by the merchant fleet tripled and that there was something like a five-fold increase in the value of exports. The export volumes of the most important forestry products, i.e. tar and sawn goods, actually rose at a slower rate than exports overall. On the other hand, for example, the amounts of iron and iron products exported increased quickly. With the aid of these indicators it is possible to roughly estimate the overall growth of manufacturing, transport and communication, and trade at just over 2 per cent. If we assume that agriculture as well as public and private services grew at the same rate as the population, we arrive at an estimate of 1.3–1.4 per cent for the annual growth of total output. In that case the annual growth of

production per capita would have been 0.3 – 0.4 per cent. However, this can be regarded as a minimum estimate, because in agriculture, for example, livestock numbers and the yields of some cereals are known to have increased somewhat faster than the population. No attempt was made to estimate the development of services.[2]

Per capita income obviously rose between 1820 and 1860, but it is possible to conclude that this growth proceeded rather slowly. The Finnish economy of this period remained agrarian and, despite the rapid growth of the narrow commercial sector, the economy as a whole experienced only modest changes: in 1860 about 85 per cent of the labour force was still employed either on the land or in the forest. The proportion engaged in rural occupations was even higher: over 90 per cent.[3]

3.2. Accelerating growth 1860 – 1985

Gross domestic product amounted to about FIM 3.2 million in 1860 and FIM 334,870 million in 1985. These figures are at current prices, however, and it is pointless to compare them in this form because of the changes that have taken place in the level of prices. GDP in 1860 converted to the price

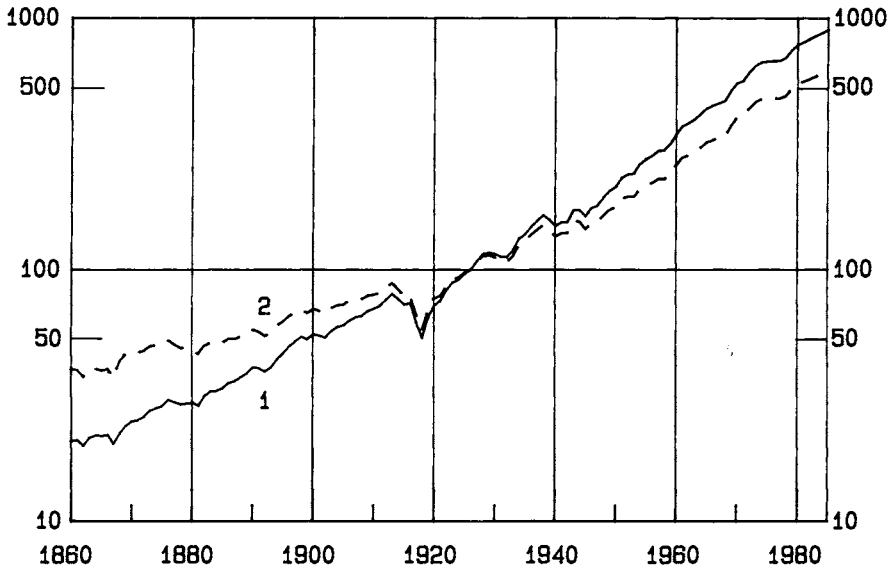


Chart 2. Gross Domestic Product and Gross Domestic Product per Capita, 1860–1985, Volume Index Numbers 1926 = 100

1 Gross domestic product at market prices
2 Gross domestic product per capita

level of 1985 amounted to FIM 7,780 million. Thus the average annual real growth rate of gross domestic product over the period 1860–1985 is 3.1 per cent (Chart 2).

The country had a population of 1,750,000 in 1860 and 4,910,000 in 1985. Gross domestic product per capita calculated at 1985 prices was about FIM 4,500 in 1860 and FIM 68,180 in 1985, i.e. a fifteen-fold increase, which represents an annual growth rate of almost 2.2 per cent.[4]

With the exception of the First and Second World Wars, both gross domestic product and gross domestic product per capita have grown almost continuously (Table 1). Observation of the development trend shows that the growth rate has not been steady; rather, there has been a slight, but still distinct, acceleration. This acceleration has not been an apparent manifes-

Table 1. Gross Domestic Product at Market Prices, Volume Index of Gross Domestic Product, Price Index of Gross Domestic Product and Volume Index of Gross Domestic Product per Capita for Selected Years as well as Average Annual Changes over Different Periods

	GDP, 1 000 FIM	GDP volume index, 1926 = 100	GDP price index, 1926 = 100	GDP per capita volume index, 1926 = 100
1860	3 140	20.9	6.6	40.1
1875	5 026	28.8	7.7	50.5
1890	5 954	40.9	6.4	57.7
1913	15 967	80.0	8.8	88.4
1920	136 660	72.4	83.8	77.2
1938	384 650	164.3	103.4	150.1
1946	2 187 800	175.0	550.0	153.0
1960*	16 199 000	345.0	2 040	260.0
1974*	90 055 000	667.0	5 870	476.0
1985*	334 870 000	899.0	16 200	614.0
		Average annual percentage change		
1860 — 1890	2.1	2.2	— 0.1	1.2
1890 — 1913	4.4	3.0	1.4	1.9
1913 — 1920	35.9	— 1.4	38.0	— 2.0
1920 — 1938	5.9	4.7	1.2	3.8
1938 — 1946	24.3	0.8	23.3	0.3
1946 — 1960	15.4	5.0	9.8	3.9
1960 — 1974	13.0	4.8	7.8	4.4
1974 — 1985	12.7	2.7	9.7	2.3
1860 — 1985	9.7	3.1	6.4	2.2

* Revised SNA.

tation of recoveries from the setbacks of world wars and depressions. In the aftermath of these events, growth has in fact followed new and permanently higher paths of development. The annual growth of gross domestic product has averaged 2.7 per cent since the mid-1970s. This ten-year span is regarded here as a period of slow growth; in Charts 2 and 3 it can be seen to resemble earlier cyclical declines. Growth during this period has been round about the level that predominated during the years 1890 – 1913, a period of time which earlier had been generally regarded as an era of rapid growth in the economic development of Finland.

The development of gross domestic product is described fairly closely by a quadratic function, i.e. the exponential trend in Chart 3 that is indicative of steadily accelerating growth. An evaluation of the acceleration of growth based on this trend gives a result of 0.022 per cent per annum.[5]

The gradual process of accelerating growth does not fit in well with the "take-off" or industrial revolution theories. According to these, a supply or demand shock suddenly elevates the development of gross domestic product to a new and higher path of growth. This would also require a leap in the savings and investment ratios of the economy: such development is not likely. New products, machines and technologies that improve productivity are first taken into use in narrow sectors of the economy. They set in motion a process of rapid growth in these narrow sectors, which expands them. For

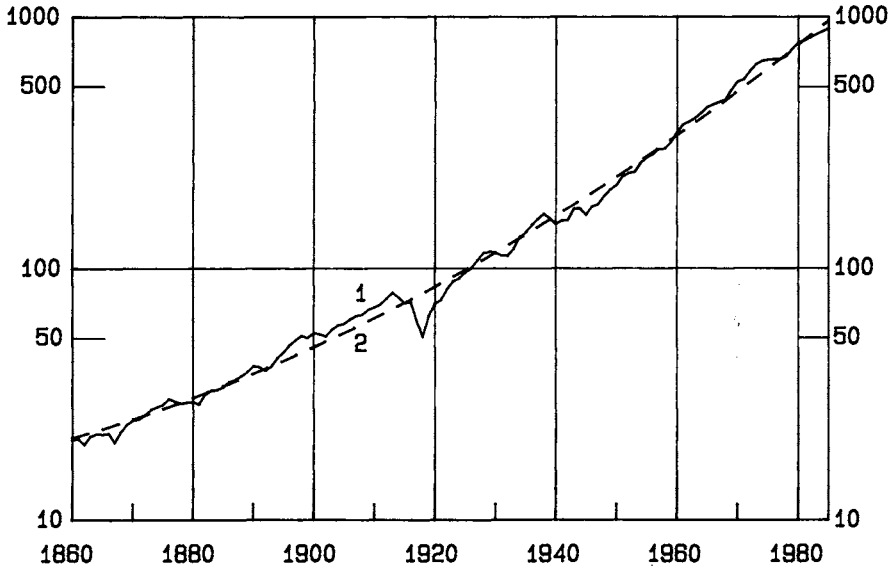


Chart 3. Volume Index of Gross Domestic Product, 1860 – 1985, 1926 = 100

1 Gross domestic product at market prices
2 Trend (see Footnote 5, p. 58)

the most part, however, the economy continues along its traditional path of slow development and the growth of the economy as a whole continues steadily. Very gradually, new impulses spread throughout the whole economy, and the pace of technological development and innovation quickens. This results in an acceleration of growth. As we shall see later, the growth of productivity has also been accelerating slowly in Finland and the investment ratio of the economy has gradually risen to its present level.

Neither has there been any occurrence of the kind of sudden movements in the level of incomes that would have elevated the savings ratio to a new level. The legislative reforms of the 1860s do not appear to have led to any sudden acceleration in the rate of growth. There is therefore a group of factors in existence which form the basis of fairly reliable explanation of the gradual acceleration of growth.[6]

There are clearly distinctive stages to the development of the price index of gross domestic product. In general, an increase in the volume of gross domestic product is associated with a rise in prices, and, correspondingly, a decrease in volume with a fall in prices.

Price development during the period 1860–1913 was unstable and annual price fluctuations were large. (This does not show up clearly in Chart 4 due to the scale used.) In addition to these price fluctuations, a long wave-like price motion was also observable during this period of time. The

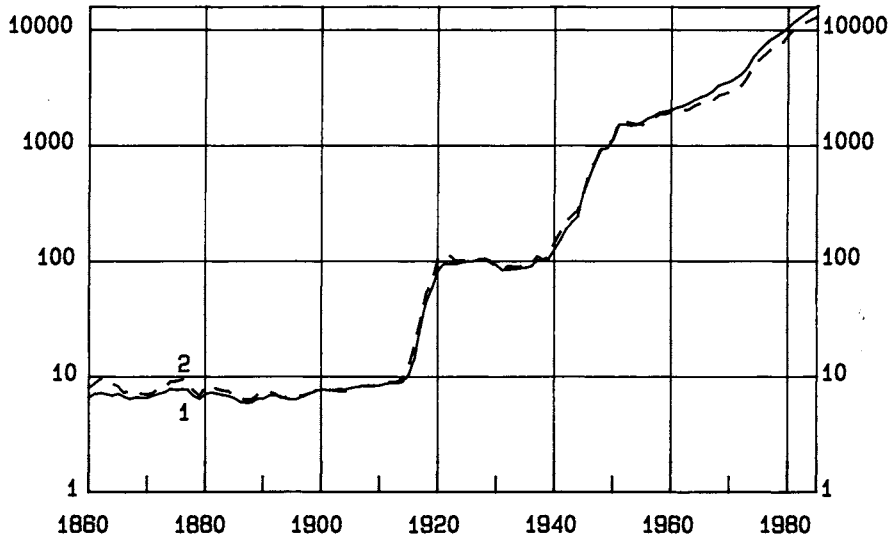


Chart 4. Price Index of Gross Domestic Product and Wholesale Price Index, 1860–1985, 1926 = 100

1 Price index of gross domestic product
2 Wholesale price index

wave began to rise in the early 1860s, peaked in 1874, then fell (23 per cent altogether) to a trough in 1887, and rose again to a new peak in 1913.

During and immediately after the First World War, there was a large inflation shock. Prices rose almost eleven fold. This was followed in the 1920s by a period of stable prices. In the depression of the 1930s, prices fell sharply in line with the international price development. Prices fell by 20 per cent between 1928 and 1931. The slow passage back to the level of prices that predominated prior to the depression was not completed until the end of the decade.

The Second World War set off another round of soaring inflation, which continued after the end of the war. After a short breathing space, inflation once again picked up speed during the so-called Korean Boom of 1951–1952. The GDP price index rose fifteen fold between 1938 and 1952. With the exception of short breaks, prices have since risen almost continuously; the price level in 1985 was ten times higher than it had been at the beginning of the 1950s, and the average annual rate at which prices rose during the period 1951–1985 was as much as 7.2 per cent.

The recession of the 1970s was accompanied by an extraordinary phenomenon: a high rate of inflation. In fact, this brought a new term into our vocabularies – stagflation, the simultaneous occurrence of stagnation and inflation.

3.2.1. Period of instability 1860–1890

The average annual growth of gross domestic product during the period 1860–1890 was 2.2 per cent, which means that there had been a marked increase in the pace of economic growth since the early part of the Period of Autonomy. Even so, growth per capita was only half this figure, owing to the high population growth.

Annual fluctuations of growth were large. Rises were as high as nearly 10 per cent, while the greatest decline (1867) was over 8 per cent. It was at this time that a major crop failure resulted in Finland suffering the last peacetime famine to occur in Western Europe.

Development during the 1860s was unstable. Crop failures, the *de facto* devaluation against the rouble that was associated with the introduction of the country's new monetary unit, the civil war in the United States, and the international recession of 1866 all served to disrupt the development of the economy.

Between 1868 and 1876 gross domestic product grew at varying rates but without faltering once. In the early 1870s the international economy went through a period of growth following the Franco-Prussian War. Finland too got in on this rise.

By the mid-1870s the international boom was over and a period of either decline or slow economic growth set in. This period is referred to as the Long Depression and it continued right up until halfway through the 1890s. Prices plummeted when new cheap industrial products hit the market and grain from Russia and the United States began to flow into Central and Western Europe along improved supply routes.[7]

Finnish exports began to decline in 1875 and the depression was at its deepest between 1877 and 1881. During this five-year period gross domestic product either fell or remained stationary. The greatest fall in volume was 5.3 per cent of the 1876 level, which was as much as 11 per cent at current prices. The year 1882 saw the beginnings of a recovery which led to the return of rapid economic growth (4 per cent per annum during the period 1882–1890). A peculiar feature of this recovery was that exports remained depressed almost the whole time. Indeed, growth during this period was largely bolstered by domestic demand.

3.2.2. Toward greater stability 1890–1913

The volume of gross domestic product grew by 3.0 per cent per annum during the period 1890–1913. In the early 1890s exports declined as a consequence of an international recession and the fact that a crop failure reduced agricultural yields in 1891. At the same time, a slump in the building industry deepened the depression of the domestic market. At this stage the rapid growth which had continued for almost ten years came to a halt and GDP fell by more than 4 per cent.

The crisis of the early 1890s was, however, relatively short-lived. The years 1893–1898 saw the return of rapid growth, which averaged 5.5 per cent per annum. This period of growth was broken by the bad harvest in 1899, and the international economic recession – initially caused by a downturn in the Russian economy – developed into a full-blown depression. In 1902 the harvest was once again a poor one, and growth did not speed up again until the following year. The average annual rate of growth during the period 1902–1913 was 3.7 per cent. Finland coped with the international depression of 1907–1908 without incurring serious damage to its economy; growth slowed down to 1.2 per cent in 1908.[8]

Immediately after the start of the First World War gross domestic product fell by more than 4 per cent. The decline continued throughout the war years with the exception of 1916, when deliveries of war materials to the Russian Army were at their peak. In the spring of 1917 exports to Russia became more difficult; in the autumn they stopped almost completely. The Finnish Civil War broke out in the early part of the following year, and production in many areas of the economy was almost completely halted for

several months. GDP in that year was at its lowest: 33 per cent down on the level of 1913 – the last year of peace. It was not until 1922 that the pre-war level of gross domestic product was once again achieved.

3.2.3. Acceleration 1920–1938

The First World War was followed by a period of accelerating growth that lasted until the end of the 1920s. The average annual rate of growth was 6.4 per cent between 1922 and 1928. The international depression of 1921, which was caused by a decline in the peak level of post-war demand and international deflationary policies, only resulted in a slowdown of Finland's economic growth, because the external value of Finland's currency was simultaneously lowered.[9]

The Great Depression of the 1930s began earlier in Finland than elsewhere in Europe; growth slowed down as early as 1929. In the previous year the building industry had overheated, the money market had become tighter and the agricultural harvest had been poor. The growth in the value of exported sawn goods was halted when Russian sawn goods came onto the international market in greater quantities and at lower prices than before.[10]

Between 1929 and 1932 the volume of gross domestic product fell by more than 4 per cent and GDP at current prices by as much as 22 per cent. Nevertheless, Finland, like other Nordic countries, weathered the Great Depression with a less severe and shorter lived decline in its gross domestic product than other European countries. Many countries did not fully recover from the depression before the end of the decade. Unemployment in these countries remained high: in the United States, for example, the volume of GDP per capita fell by 32 per cent between 1929 and 1933, and in 1939 it was still below the level of 1929. After 1932 Finland's GDP rose at a record-breaking pace: 6.6 per cent per annum up until 1938. Although exports declined in 1938 due to a deterioration in the international economic climate, total output was only slightly affected.[11] The average rate of growth during the years 1920–1938 rose to 4.7 per cent.

The Second World War did not have such a destructive effect on gross domestic product as the first global conflict, even though production fell in every area of the economy except the government sector. The reason for this is that total output includes the production of war materials and war efforts both at and behind the front line. GDP declined only about 10 per cent between 1938 and 1940 and even rose during some war years to reach the 1938 level. The pre-war level of gross domestic product was once again achieved in 1946. Private consumption did, however, fall by almost a quarter, the volume of investment was halved and exports in 1945 were just

under one fifth of their pre-war level. This provides some indication of the seriousness and extent of the economic difficulties experienced during the war.

3.2.4. Growth peaks 1946 – 1974

The average annual rate of growth between 1946 and 1974 was 4.9 per cent; thus the five-per-cent level had almost been attained. Cyclical fluctuations were slight in comparison with the preceding period, although they remained large when viewed in their international context. Post-war development also differed from that of early periods in so far as gross domestic product did not fall on a single occasion. Formerly, declines in GDP were normal in circumstances of depression or crisis.

The winter slump of 1949 – 1950 took its toll on employment and total output; growth slowed from six per cent in 1949 to three per cent in 1950. An increase in private consumption signalled the dawn of a new period of growth. An increased demand for exports brought on by the Korean War led to a doubling of export prices in 1951, an increase of a sixth in the volume of exports and an 8.5 per cent rise in GDP. The end of the war was accompanied by a sharp fall off in the demand for exports, and the growth of GDP dropped to about 1 per cent in 1953. When demand picked up again in Western Europe, the recovery of the Finnish economy was retarded by import controls and tight monetary policy.

The depression of 1958 (growth rate 0.5 per cent) was preceded by a lull in international trade, the Finnish general strike of 1956 and the introduction of tight economic policies in Finland. Thanks to the large devaluation of 1957, the competitiveness of Finnish exports was high during the international upswing that followed.

The three-per-cent growth rate attained during the recession of 1962 – 1963 was low in comparison with the of 7.6-per-cent average achieved over the preceding three-year period. This "EFTA Recession" was caused by a deterioration in competitiveness when Finland liberalized its trading practices on becoming an associate member of EFTA in 1961.

Domestic cost-push inflation and an international slump slowed growth down to the two-per-cent level between 1966 and 1968. This led to another large devaluation in 1967, stabilization of wages and prices, the discontinuation of indexation and the introduction of rent controls. The economy boomed strongly. There was a short recession in 1971 due to tight economic policy and a strike in the metals industry. In 1972 and 1973 Finland, like the rest of world, experienced an upswing tinged with a high rate of inflation.[12]

3.2.5. *Slackening growth 1974–1985*

After the Second World War, rapid growth continued up until the oil crisis of the early 1970s. The price of oil increased ten fold between 1974 and 1979. This was a period of worldwide inflation and recession. Although the downturn began in 1973, growth in Finland did not slacken until 1974. The severity of the recession in Finland was alleviated by the growth of exports to the Soviet Union: this was necessary to offset the more expensive purchases of oil and preserve the balance of bilateral trade.

In the period of slow growth between 1974 and 1985 the average annual growth rate of Finland's gross domestic product was 2.7 per cent, i.e. almost the same average rate of growth as over the period 1890–1913. In the mid-1970s the growth rate of GDP did not rise for three years, but in the early 1980s economic growth was higher than the average level of other European countries.

Despite the relatively rapid development of the economy, the high level of unemployment inherited from the mid-1970s has still not abated at the time of writing. This unemployment has been structural in nature during the 1980s, i.e. employment applicants have not been suitable for the vacancies available. The number of people in work has gone up every year with the exception of 1985. Nevertheless, there has been a shortage of professionally skilled workers in certain areas of the economy despite the level of unemployment. The Twilight Industries – large-scale process industries such as the steel, textiles and shipbuilding industries – have experienced difficulties in the industrialized countries. On the other hand, the Sunrise Industries – such as the electronics industry and the manufacture of products associated with various leisure-time activities – have developed strongly.

3.3. The standard-of-living gap is narrowed

With the exception of the two world wars, an accelerating growth process is observable in the development of the gross domestic products of all European countries up until the 1970s (Table 2). Since the mid-1970s the level of growth has been the same as it was at the turn of the century.

Finland's gross domestic product per capita at the beginning of the 1860s was about 25 per cent lower than the average level of the rest of Europe. The fact that the European average level was fairly low at that time gives an indication of just how poor a nation Finland was. In the following decades the Finnish economy grew at a faster rate than the European average. Indeed, Finland's gross domestic product per capita had already caught up

Table 2. Growth of Gross Domestic Product and Gross Domestic Product per Capita of Europe and Finland over Selected Periods, Average Annual Percentages

	Europe		Finland	
	GDP	GDP per capita	GDP	GDP per capita
1860 — 1890	1.6	0.8	2.2	1.2
1890 — 1913	2.5	1.4	3.0	1.9
1913 — 1950	1.4	0.9	2.7	1.9
1925 — 1938	3.0	2.1	4.2	3.4
1950 — 1974	5.5	4.5	4.9	4.2
1974 — 1982	2.5	1.9	2.7	2.3
1860 — 1982	2.5	1.7	3.1	2.2

Sources: The figures for Europe have been calculated on the basis of the following sources: BAIROCH 1966, pp. 277 – 279; National Accounts Statistics: Analysis of Main Aggregates 1982, United Nations 1985.

with the average level of European countries just prior to the outbreak of the First World War. Nevertheless, in the rich countries of Europe, i.e. the United Kingdom, Switzerland, Belgium and Denmark, incomes remained considerably higher.

The First World War put an end to the favourable development of the European economies. It was followed by a period of instability that continued until the end of the Second World War. In addition to these two devastating conflicts, economic development was also badly disrupted by the Great Depression of the 1930s. The European average level of GDP per capita in 1946 was about the same as it had been in 1913.[13]

The outlook in Finland during the inter-war years was better than in the rest of Europe. Growth was about one and a half times higher than the European average. Just prior to the Second World War, Finland's gross domestic product per capita had already risen to become the eighth largest in Europe and about a third again higher than the European average.

After the Second World War an incomparable period of rapid growth began both in the industrialized countries and in many developing nations. Naturally, this also took place in Finland, albeit at a somewhat slower pace than in Europe as a whole. War reparations, the need for resettlement, and the institution of wide-spread regulation that was to last for many years were all millstones around the neck of the nation. Despite this, however, growth was still higher than during any preceding period.

Since 1974 the growth of gross domestic product in Europe has only been about half what it was during the period 1950 – 1974. During this ten-year

period of slow growth, Finland has again performed slightly better than the European average. Finland's GDP per capita has been about the tenth highest in Europe during the 1980s.

A comparison of the development of gross domestic product per capita in Finland, Sweden, the United Kingdom and the United States is shown in Chart 5. Initially, during the 1860s and 1870s, the standard of living in Finland was considerably lower than the average of these other countries. The standard of living in Sweden was about twenty per cent higher and the GDP per capita in the United Kingdom was about two and a half times greater than that of Finland.

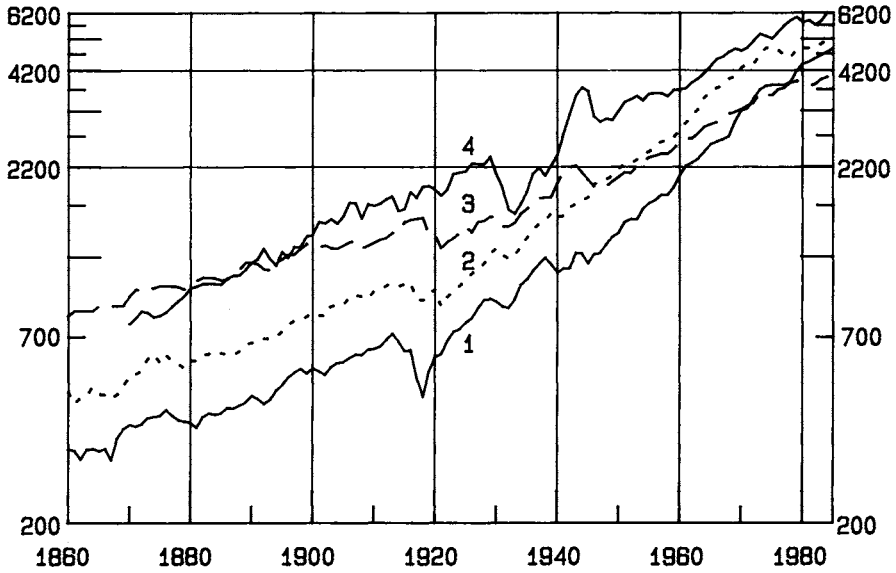


Chart 5. Gross Domestic Product per Capita of Finland, Sweden, the United Kingdom and the United States at 1970 Purchasing Power Parities, 1860–1985 (United States 1870–1984), US dollars

1 Finland
2 Sweden
3 United Kingdom
4 United States

Calculated on the basis of the following sources: MADDISON 1982, pp. 173–175, 183–187; FEINSTEIN 1972; National Accounts Statistics, U.N. 1982; The figures for Sweden are derived from the preliminary results of a research project by OLLE KRANTZ et al. Strukturförändringar i svensk ekonomi 1800–1985, Konstruktion och analys av nationalproduktsserier (Structural Change in the Swedish Economy 1800–1985, Construction and Analysis of the National Product Series). Department of Economic History, University of Lund.

Averaged out over the period from the 1860s to the 1980s, the annual rate of economic growth per capita in Finland has been almost the same as or slightly higher than in Sweden, i.e. 2.1 – 2.2 per cent. Sweden's growth curve is characterized by its smoothness. Finnish development has been disrupted by wars especially; these have primarily halted growth and resulted in a deterioration of productive capacity. The overall size of the labour force has not been affected to the same extent as gross domestic product. The market situation in Finland changed dramatically following both world wars; after the First World War the cessation of trade with Russia brought about a violent change. Trade with the Soviet Union revived gradually after the end of the Second World War. The periods of rapid growth that followed on immediately after the two world wars have enabled Finland to close the gap on Sweden.

The rise in Finland's gross domestic product per capita that occurred at the end of the 1860s primarily stemmed from population losses during the famine of 1867 – 1868. The gap widened in Sweden's favour between 1870 and 1913 due to the slower rate of population increase in Sweden, which itself was a consequence of greater emigration and other factors.

The gap between the gross domestic products per capita of Finland and Sweden during the inter-war years was, on average, somewhat smaller than it was before the First World War. After the Second World War the gap gradually narrowed especially at the end of the 1960s and in the 1980s. In the 1960s there was a considerable exodus from Finland to Sweden. Although these Finnish emigrants were mainly composed of youthful members of the active population, they were excess to the labour-force requirement in Finland at that time. Sweden's gross domestic product per capita was about 10 per cent higher than Finland's in 1985.

In the 1970s Finland overtook the United Kingdom in terms of gross domestic product per capita. The gap between Finland and the United States has also been narrowed.

3.4. Depressions and crises

Cyclical fluctuation have generally been examined using either the Neoclassical approach, in which attention is focused on monetary factors and supply shocks, or the Keynesian approach, in which fluctuations in demand represent the central issue. Fluctuations of the Finnish economy have long been associated with the country's agricultural harvest, international crises, wars, as well as economic upswings and downturns in major importers (incl. Russia) of Finnish goods and services. In other words, explanations associated with both supply and demand have been used.

Table 3. Analysis of Economic Cycles on the basis of Changes in the Volume of Gross Domestic Product at Market Prices

Period	Number of cycles	Average duration, years		Annual growth rate, %			Duration factor	Amplitude
		Downswing	Upswing	Downsw.	Upsw.	Differ.		
1863 — 1913	12	1.8	2.4	0.2	5.0	4.8	0.4	2.5
1928 — 1938	1	4.0	6.0	— 0.7	7.6	8.3	1.2	10.0
1951 — 1980	6	2.0	2.8	1.8	6.9	5.2	0.5	2.7
Individual cycles								
Cycle's peak	Cycle's trough	Duration of downswing, years	Duration of upswing, years	Annual growth rate, % Downsw.	Upsw.	Differ.	Duration factor	Amplitude
1863	1867	4	3	—1.4	7.3	8.7	0.86	7.5
1870	1871	1	2	0.8	4.8	4.0	0.33	1.3
1873	1874	1	2	2.2	4.0	1.8	0.33	0.6
1876	1881	5	2	—1.1	6.6	7.7	0.50	3.9
1883	1884	1	2	0.6	3.8	3.2	0.33	1.1
1886	1887	1	3	1.7	4.5	2.8	0.38	1.1
1890	1892	2	6	—2.0	6.0	8.0	0.75	6.0
1898	1899	1	1	—2.4	4.6	7.0	0.25	1.8
1900	1902	2	2	—1.6	5.2	6.8	0.50	3.4
1904	1905	1	2	1.5	3.9	2.4	0.33	0.8
1907	1908	1	1	1.1	4.5	3.4	0.25	0.9
1909	1910	1	3	2.2	4.9	2.7	0.38	1.0
1913								
1928	1932	4	6	— 0.7	7.6	8.3	1.20	10.0
1938								
1951	1953	2	4	2.0	6.1	4.5	0.67	3.0
1957	1958	1	3	0.5	8.2	7.7	0.38	2.9
1961	1962	1	3	3.0	5.0	2.0	0.38	0.8
1965	1968	3	2	2.3	9.5	7.2	0.60	4.3
1970	1971	1	3	2.1	6.2	4.1	0.38	1.6
1974	1978	4	2	1.1	6.5	5.4	0.67	3.6
1980								

N.B. The duration factor has been calculated using the formula $t_L t_N/2(t_L + t_N)$, where t_L and t_N are the durations of a cycles' upswing or downswing. The amplitude of any cycle is its duration factor multiplied by the difference between the growth rates of the upswing and downswing (The "Difference" column in the table). The growth rates have been calculated by dividing the change between turning points of a cycle (expressed as a percentage of the initial peak level) by the duration (in years) of the downswing or upswing. The average values describing the different periods have been calculated as arithmetic averages of the measures of each cycle within the period. A cycle starts at the peak of a upswing, the turning point is the trough of a downswing.

For the method of calculation, see MATTHEWS et al. 1982, pp. 294–295.

Variations in the level of agricultural yields were important causes of cyclical fluctuations during the period when Finland was an agrarian society. Foreign trade has played an important role in the development of Finland's economy over the whole period of observation; indeed, this has meant that the Finnish economy has been particularly susceptible to international economic cycles. In addition to these, some cyclical declines can be shown to have such "domestic" causes as tight monetary and fiscal policies and the slowdown that follows in the wake of an overheating of the building industry. These factors alone may not have been sufficient in themselves to cause depressions, but they have certainly deepened them.[14]

A systematic analysis of the durations of cyclical fluctuations as well as the depth and amplitude of individual cycles during peacetime is presented in Table 3 (also see Chart 6). Over the period of observation as a whole, 19 economic cycles were recorded on the basis of fluctuations in the volume of gross domestic product at market prices. Gross domestic product rose considerably during upswings and either grew at a significantly reduced rate or fell during downswings.

Twelve economic cycles were observed during the latter half of the Period of Autonomy. The average duration of the downswings was 1.8 years, and the upswings 2.4 years; the average cycle was, therefore, completed in just over 4 years.[15] During downswings the growth of GDP slowed down to an average of zero. Gross domestic product actually contracted in almost half of the downswings. Correspondingly, about every other downswing was discernible merely as a slowdown in the growth of gross domestic product. GDP rose extremely rapidly during upswings: the average annual growth rate during these periods was 5 per cent.

The general economic situation during the inter-war years was completely different to what it had been during the Period of Autonomy. In the 1920s, prior to the onset of the Great Depression, the growth of GDP slackened to between 2.7 and 3.9 per cent in 1921, 1924 and 1926. These reductions in the growth rate are not, however, treated as downswings here. The Great Depression of the 1930s was deep and protracted; it was followed by a rapid rise that lasted for several years.

There have been six cycles since the end of the Second World War (1951–1980).[16] The average duration of the downswings was 2 years, and the upswings 3 years – the average cycle was thus completed in about 5 years. In contrast to other observed periods, downswings have been characterized by a persistence of growth, albeit retarded: the average annual growth rate fell to below 2 per cent during these downswings, with the lowest growth rate of 0.2 per cent being observed in 1977. At 7 per cent per annum, the average rate of growth during upswings has also been higher than in the corresponding cyclical stages of the preceding period. Because

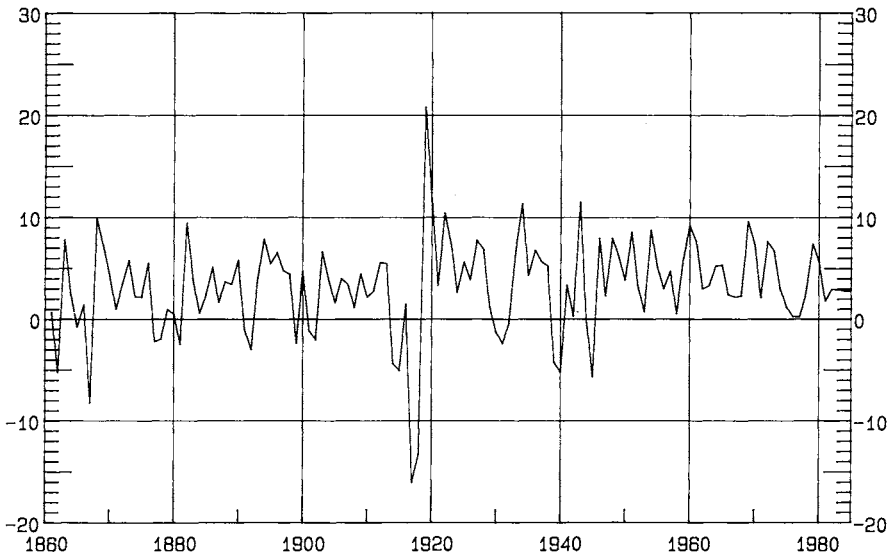


Chart 6. Annual Changes in Gross Domestic Product, 1861–1985, %

downswings have been smaller and rises steeper, the cyclical profile since the Second World War differs from that of the earlier periods.

The single most protracted period of economic decline was the so-called Long Depression that began in 1876. Its amplitude was not, however, any larger than that of either the years of famine in the 1860s or the Great Depression of the 1930s, which were the largest of other peacetime depressions.

Production losses of the depressions in the 1870s, 1930s and 1970s as well as those caused by the two world wars are compared with gross domestic product in two other ways. The first method is to compare the growth of GDP to a hypothetical development process in which GDP does not fall during recessions or because of wars. Instead, it remains at the level of the last normal year until such time as the actual volume of GDP once again achieves the pre-disturbance level. It is then possible to calculate the relative deviation of actual development to a hypothetical year-by-year development without recessions. The deviations are added together and compared with the GDP of a normal year.

The second method of comparison is to calculate potential growth from the peak of one cycle to the peak of the next (average annual growth) and then calculate the relative deviations of actual annual growth from potential growth. The deviations are added together and the proportion of this total to the potential average annual GDP over the time period is calculated.

These imputed losses are as follows (the percentages express the loss of production during a certain period of time as a proportion of the peak level of GDP prior to the downswing in question):

Method I	Percentage loss	*Method II*	Percentage loss
1876–1882	–17	1876–1883	–34
1913–1922	–112	1913–1924	–156
1929–1933	–9	1929–1934	–31
1938–1946	–17	1939–1946	–40
1975–1977	–	1974–1980	–19

It is apparent from both sets of figures that the First World War was responsible for the worst period of economic stagnation. According to the most optimistic estimate, production equivalent to over a year's gross domestic product was lost. The effects of the Second World War in terms of total production losses were much less serious. The effects of the Long Depression of the 1870s and the Great Depression of the 1930s were also significant, while the recession of the 1970s appears to have been a fairly innocuous affair by comparison.[17]

The observations made using both methods indicate that the effects of the depressions of the 1870s and the 1930s were of roughly the same magnitude. This differs from the experiences of other industrialized countries: in Maddison's examination of the 16 OECD countries, the Great Depression of the 1930s was, on average, twice as severe as the depression of the 1870s. To some extent, this was affected by the simultaneous occurrence of the Great Depression in different countries, while the depression of the 1870s started and finished at different times in different countries.[18]

1. PAUL BAIROCH *Europe's Gross National Product: 1800–1975. The Journal of European Economic History, Volume 5, Number 2, Fall 1976, pp. 276–277;* ANGUS MADDISON *Phases of Capitalist Development, Oxford 1982, p. 6.*

2. *See* HEIKKINEN *et al. Förändringar i levnadsstandarden i Finland 1750–1913 (Changes in the Standard of Living in Finland 1750–1913). Levestandarden i Norden 1750–1914 (The Standard of Living in the Nordic Countries 1750–1914), Rapporter til den XX nordiske historikerkongress, Bind III, Reykjavik 1987, p. 74; Suomen taloushistoria 3, Historiallinen tilasto (The Economic History of Finland 3. Historical Statistics), ed. Kaarina Vattula, Helsinki 1983;* PER SCHYBERGSON *Hantverk och fabriker III, Finlands konsumtionsvaruindustri 1815–1870; Tabellbilagor (Industrial Handicrafts and Factories III, The Manufacture of Consumer Goods in Finland 1815–1870; Appendix of Tables). Bidrag till kännedom av Finlands natur och folk H. 117, Helsingfors 1974.*

3. PER SCHYBERGSON *Hantverk och fabriker I, Finlands konsumtionsvaruindustri 1815–1870; Helhetsutveckling (Industrial Handicrafts and Factories I, The Manu-*

facture of Consumer Goods in Finland 1815–1870; Overall Development). Bidrag till kännedom av Finlands natur och folk H. 114, Helsingfors 1973, pp. 37–38.

The results of Crafts's calculations of growth in the United Kingdom were as follows:

	Annual growth rate of GDP	Annual growth rate of GDP per capita
1700–1760	0.69 %	0.31 %
1760–1780	0.70 %	0.01 %
1780–1801	1.32 %	0.35 %
1801–1831	1.97 %	0.52 %

The development of the United Kingdom's domestic product during the initial stages of the Industrial Revolution was relatively modest. Development during the period 1780–1831 would appear to be fairly similar to the growth experienced in Finland between 1820 and 1860; even at that time, there was a very clear difference between the economic structures of the two countries, because agriculture only accounted for 26 per cent of production in the UK. See CRAFTS *1985, p. 45.*

4. The gross domestic product per capita of Finland in the 1860s is approximately equal to that of India in the 1980s. The present-day incomes of the poorer countries of Africa remain below that level. The level of income in Africa as a whole (excl. South Africa) in the 1980s corresponds with the level in Finland during the 1890s; the present-day income level of Pakistan, Sri Lanka, the Philippines and Cameroon corresponds to the level in Finland at the beginning of the century. Finland achieved the present-day income level of Peru in the mid-1920s, and Columbia in the mid-1930s. Obviously, direct comparisons such as these merely serve as signposts of development. The figures on the developing countries have been calculated on the basis of the following studies: IRVING B. KRAVIS *et al. Real GDP Per Capita for More than One Hundred Countries. The Economic Journal 1978, pp. 232–237; National Accounts Statistics: Analysis of Main Aggregates, United Nations N.Y. 1982. Also see* CRAFTS *1985, pp. 49–64.*

5. The equation for the accelerating growth trend is:

$$\log Q = \underset{(22.1062)}{353.04619} - \underset{(0.0230)}{0.39198}*t + \underset{(0.0000)}{0.00011}*t^2$$

$$SE = 0.08506$$
$$R^2 = 0.995$$

where Q represents gross domestic product at factor cost, and t is time. The numbers in parentheses are the standard deviations of the parametric estimates, SE is the standard error, and R^2 is the coefficient of determination. The acceleration is 2 times the coefficient of the squared term. See E. F. BEACH *Economic Models, An Exposition. New York 1957, p. 67.*

The estimated equation for the steady growth trend is:

$$\log Q = \underset{(0.7196)}{-51.85854} + \underset{(0.0004)}{0.02940}*t$$

$$SE = 0.15279$$
$$R^2 = 0.980$$

According to this trend, the steady growth of the economy has averaged 2.9 per cent per annum, although the relatively high value of SE indicates that the trend does not describe development as well as the quadratic formula.

6. Finland is not the only country to have experienced a slight acceleration in its economic growth over a long period of time. In fact, Graham Hacche states that the only common trend he could observe in the economic development of the industrialized countries over a one hundred year period was a trend of accelerating growth. Studies have not, however, uncovered a "normal", predictable growth rate for different countries. GRAHAM HACCHE *The Theory of Economic Growth, An Introduction. London 1979, pp. 255–259. Crafts and Krantz have also recently made similar observations of accelerating economic growth in the United Kingdom and Sweden. See* CRAFTS *1985, pp. 85–86, and* KRANTZ *1987, pp. 11–13.*

7. The Long Depression is central to N. D. Kondratiev's Theory of Long Cycles. According to Kondratiev, the depression was a consequence of a fall in prices. Wholesale prices in the United Kingdom began to fall in 1873 and to rise in 1896–1897. Joseph Schumpeter, however, argues that it was fluctuations in the growth of production that caused the changes in prices at that time. The variations in the level of production stemmed from changes in investment opportunities caused by technological development. In the heartland of industrialization – the United Kingdom, Germany, France and the United States – almost all the opportunities provided by the new technologies of coal, iron, railways, steamships and textiles had been exploited. The next new fields – steel, electricity, organic chemicals, the combustion engine, automobiles – did not really arrive until the 1890s. There is, however, good reason to note that although we speak of the Long Depression, the development of some sub-areas of the economy was not impaired. Neither did the depression affect all countries in anything approaching the same manner. W. ARTHUR LEWIS *Growth and Fluctuations 1870–1913. Cambridge 1978, pp. 24–26. Also see* PEKKA KORPINEN *Kriisit ja pitkät syklit (Crises and Long Cycles). Helsinki 1981.*

8. ERKKI PIHKALA *Suomen ulkomaankauppa 1860–1917 (Finland's Foreign Trade, 1860–1917). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia II, Helsinki 1970, p. 42;* EINO KUUSI *Talvityöttömyys, sen esiintyminen, syyt ja ehkäisytoimenpiteet Suomen suurimmissa kaupungeissa (Winter Unemployment, Its Occurrence, Causes and Prevention in Finland's Major Cities). Tampere 1914, pp. 183–184;* HUGO PIPPING – RAGNI BÄRLUND *Suomen talouselämä (The Finnish Economy). Tampere 1968, p. 23;* PENTTI VIITA *Maataloustuotanto Suomessa 1860–1960 (Agricultural Production in Finland, 1860–1960). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia I, Helsinki 1965, p. 34.*

9. PIPPING – BÄRLUND *1968, p. 23.*

10. VEIKKO HALME *Vienti Suomen suhdannetekijänä vuosina 1870–1939 (Exports as a Factor in the Trade Cycles of Finland in 1870–1939). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja B:16, Helsinki 1955, pp. 216–225.*

11. MADDISON *1982, pp. 175, 183.*

12. See TAPIO MUTIKAINEN *Suhdannevaihtelut Suomessa vuosina 1949–1983 (Cyclical Fluctuations in Finland 1949–1983). Kansallis-Osake-Pankki, Taloudellinen katsaus 1984:3;* ERKKI PIHKALA *Ulkomaankauppa ja ulkomaiset maksusuhteet (Foreign Trade and Payments). Suomen taloushistoria 2 (The Economic History of Finland 2), Helsinki 1982, pp. 385–386.*

13. BAIROCH *1976, p. 299.*

*14. Cyclical fluctuations in Finland have previously been examined from, for example, the standpoint of exports and their effects (*HALME *1955).*

15. It would be better if it were possible to use monthly or quarterly indicators to pinpoint the turning points of cyclical fluctuations. The annual indicator is too crude for this purpose.

16. The cycles have been timed in accordance with established practices. Indeed, the slowdown in the growth of GDP to 3 per cent that took place in 1962 has been treated as a downswing. See, e.g. PIHKALA *1982, p. 386, and* MUTIKAINEN *1984.*

17. Because there was no reduction in gross domestic product during the period 1974 – 1980, the recession did not give rise to any losses on the basis of the first method of observation.

18. MADDISON *1982, pp. 67, 86.*

4. Structural Change: An Integral Part of Growth

4.1. Factors of structural change

The growth of output and population, changes in both the structure of production and the utilization of productive resources and the trend towards an increasingly specialized division of labour have all been essential elements of economic development over the past two hundred years. Changes in demand as well as different rates of productivity development and consequent changes in the relative prices in different industries represent the most important factors effecting structural change. Comparative advantages in the production of some products derived through foreign trade may promote structural change still further.[1]

A rise in the level of incomes is channelled into the demand for different products with various degrees of intensity; this leads to a change in the structure of production. As the population grows, its ratio to land and other natural resources changes. The effects of technological change, increased investment and improvements in the quality of inputs also differ greatly from one sector of the economy to another.

The demand for goods and services is influenced by their various income elasticities of demand. When incomes rise or fall, the demand for food increases or decreases more slowly than incomes (income elasticity less than one). Correspondingly, the demand for certain durable and semi-durable goods and services increases and decreases faster than incomes (income elasticity greater than one). As a result of technological innovations, different types of products are demanded to satisfy the same needs at different times – television sets instead of village parties. Urbanization accelerates structural change because town dwellers generally demand products embodying a higher degree of processing compared with those sought by their rural cousins. Correspondingly, large-scale industrial production and the regional concentration of production is related to the growing demand for public as well as transportation and distribution services. As the system of production becomes more complex, greater public supervision and control

is required. Technological development has, for example, led to a change in the demand for agricultural inputs: horses have been exchanged for cars and tractors, farmyard manure for chemical fertilizers, firewood for coal and fuel oil.[2]

In the latest international studies, structural change is regarded as being even more important than the speed of economic growth as a factor in the process of industrialization. N. F. R. Crafts emphasizes the fact that during the initial phase of industrialization rapid growth and increased productivity started in only a few of the so-called modern industries, while traditional slow growth continued in most areas of the economy. The simultaneous occurrence of structural change raised productivity throughout the economy as resources were transferred from industries of low productivity to those of higher productivity.[3]

4.1.1. The economic structure of the 1860s

In 1860 primary production dominated the structure of production in Finland (Charts 7 and 8).[4] The share of agriculture in gross domestic product was 37 per cent, forestry 19 per cent, and hunting and fishing

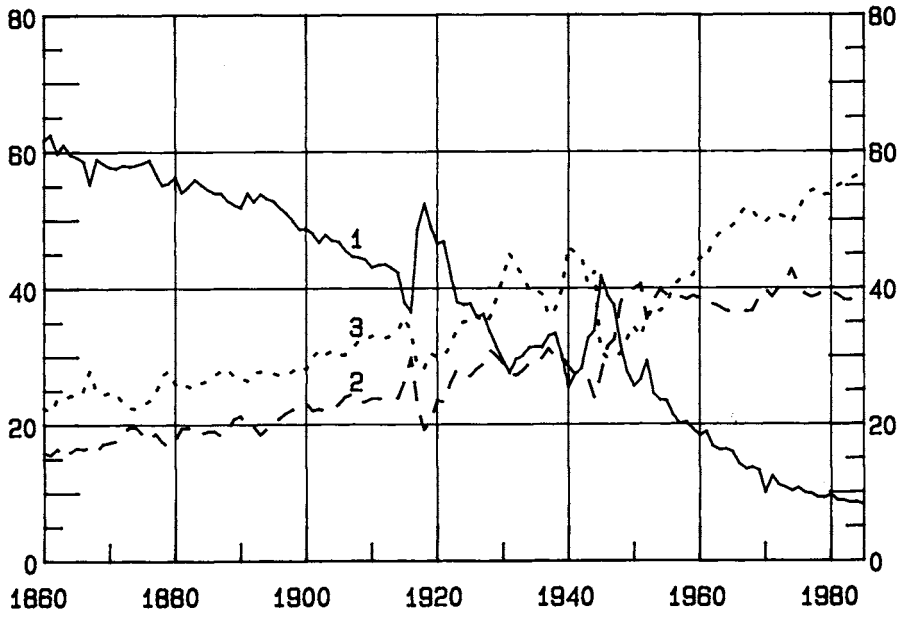


Chart 7. Distribution of Gross Domestic Product, 1860–1985, %

1 Primary production
2 Secondary production
3 Services

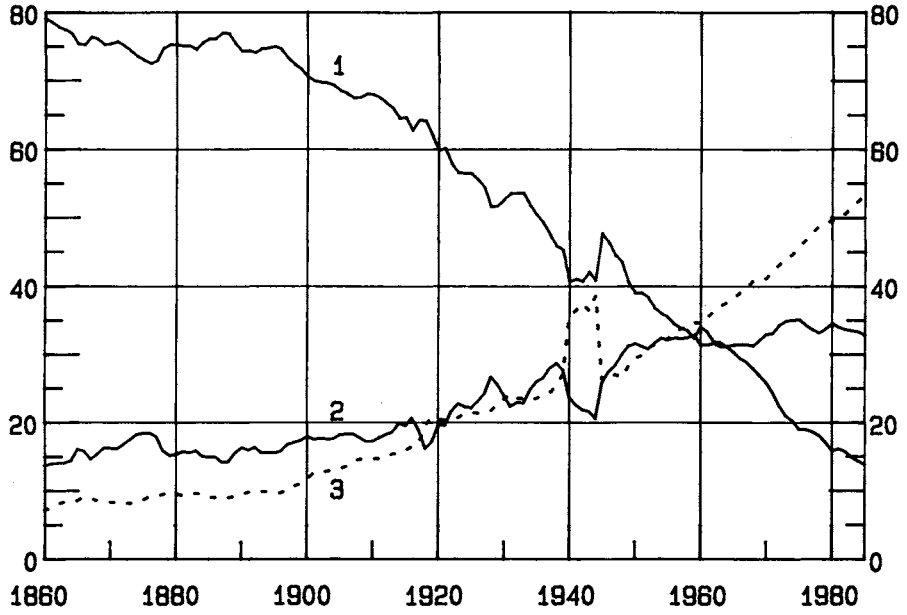


Chart 8. Distribution of Employment, 1860–1985, %

1 Primary production
2 Secondary production
3 Services

almost 6 per cent. Primary production therefore accounted for over 60 per cent of domestic product. The proportion of the labour force involved in primary production was considerably larger than this at about 80 per cent; 70 per cent of the labour force was employed in agriculture and just under 10 per cent in forestry.

Secondary production, manufacturing and construction altogether accounted for 16 per cent of gross domestic product in 1860 and their share in the labour force was almost as large. Services even then made up more than a fifth of total output but only accounted for less than a tenth of the labour force.[5]

If we follow Kuznets's example and include forestry in secondary production, the structure of production in Finland does not differ greatly from the average structure of the Western economies. On the other hand, of the industrialized countries examined by Kuznets, only Japan exceeded Finland in terms of the primary sector's share in the labour force.[6]

The value added per worker achieved in agriculture was only slightly more than a half of the average for the economy as a whole. It was also proportionally lower in Finland than in other industrializing nations, al-

though it is usually the case that the value added per worker in agriculture is smaller than in other economic activities.[7] The extremely low value added per worker suggests that there was underemployment in agriculture.[8]

It is perhaps surprising to note that the value added per worker in the services sector was more than double the average for the economy as a whole. This is also a relatively high value compared with Kuznets's results. It is, however, quite normal for the value added per worker in the services sector to be high in the so-called pre-industrial period and during the industrialization process itself.[9] With the exception of personal servants, the small services sector was composed of society's high-income earners. Merchants generally earned the most during this stage of development; shop assistants were still few in number. Independently practicing professionals, e.g. physicians, lawyers and artists, were generally high-income earners. The small number of officials in the public sector also enjoyed high wages as did the clergy.[10]

4.1.2. Slow change during the Period of Autonomy

Structural change was already underway in Finland in the 1860s, although data from population statistics indicate that it was still extremely slow during the period 1820–1860. Between the 1860s and the First World War, the share of primary production in gross domestic product fell from 60 per cent to about 40 per cent. The significance of primary production did in fact decline rather slowly up until the beginning of the 1890s but accelerated appreciably after that. On the other hand, there was no significant, sustained decline in the share of primary production in the labour force until the latter half of the 1880s.

Production and employment in the secondary and services sectors grew at about the same speed up until the First World War. During the first half of the 1870s the rapid growth of manufacturing industries won the battle for resources, and the share of services declined for a while. When the Long Depression began in the latter half of the 1870s, however, services began to recover some of their lost ground as manufacturing industries were particularly hard hit by the slump. Industrial production barely rose at all for ten years and structural change in the economy as a whole did not begin to gather speed until the 1880s.

By the outbreak of the First World War, secondary production had risen to account for almost a quarter of gross domestic product and services generated about a third of GDP. The share of secondary production in output had risen higher than its share in employment. As a consequence of higher value added per worker, manufacturing prospered at the expense of handicrafts: the value added of manufacturing had been three times as great

as that of handicrafts in the 1860s; in 1913 it was already more than 12 times as large.

The GDP share of primary production rose temporarily during the First World War. The importance of self-sufficiency on farms was still considerable and efforts also had to be made to satisfy the essential needs of the population during the wartime state of emergency. As far as domestic market products were concerned, the production of crops hardly fell at all, while the production of milk – the raw material for export butter – plummeted by almost a third.

4.1.3. Sharp fluctuations up to the Second World War

When a new period of rapid economic growth began in the 1920s, primary production still accounted for a half of gross domestic production, i.e. the same level as at the beginning of the century. However, secondary production and services continued to increase their shares in GDP quickly. At the end of the 1920s services rose to become the largest productive sector for the first time. Primary production was, however, to remain the largest source of employment until the 1950s.

At the beginning of the 1920s the public sector expanded to provide the administrative machinery required by Finland's recently acquired independence, and other service industries grew at almost the same speed. At the same time the emphasis within the growth of the services sector's labour force switched over to low-paid staff. Indeed, the gap between the values added per worker of manufacturing and the services sector was narrowed.

The Great Depression halted the process of structural change. The effects of the depression were first felt in primary (mainly forestry) and secondary production and the GDP shares of both sectors fell. The GDP share of services did not begin to fall until the depression bottomed out in 1932, by which time primary and secondary production had already weathered the worst of the storm. Nevertheless, services maintained their position as the largest productive sector, even though their GDP share declined sharply during the period 1932–1936 due to slow growth in banking and insurance as well as the public sector. In terms of their shares in output, primary and secondary production remained more or less equal in size throughout the 1930s.[11]

At that time a relatively large proportion of agricultural production was still used by the farmers themselves and to some extent it therefore remained beyond the reach of fluctuations in market production. People who lost their jobs in the cities returned to their rural home districts. The volume of agricultural production continued to grow and there was an appreciable rise in the GDP share of primary production. In fact, agriculture was also in

serious difficulties and the tight financial situation resulted in the enforced sale of many farms.

A boom once again altered structural development and resulted in the growth of secondary production and services, but it was not until just before the outbreak of the Second World War that the industrial structure had returned to what it was in the 1920s. The Long Depression had therefore brought structural development to a standstill for ten years. The Second World War soon interrupted structural change again, this time for an even longer period of time. The war swelled the share of the public sector in gross domestic product. Although the share of agriculture in output grew at the expense of secondary production, the proportion of the labour force employed in primary production declined as men were called up for military service. It was not, however, until the beginning of the 1950s that the share of primary production was again as low as it had been before the onset of the Great Depression in 1928.

4.1.4. From primary production to services

The period immediately after the Second World War up until the early 1950s was exceptional in so far as the share of secondary production in output was higher than that of the services sector. At that time reconstruction, war reparations and favourable circumstances for the forest industry sucked in the available resources. This resulted in the share of the services sector falling at the end of the war to the level it had attained at the beginning of the 1920s. Between 1944 and 1950 the volume of services did not grow at all, whereas the volume of secondary production tripled.[12]

At the end of the 1940s secondary production overtook primary production; the economy had made the transition to predominantly industrial production. Even so, the share of primary production in 1950 was still high compared to other European countries: it accounted for 26 per cent of GDP and 40 per cent of the labour force.

The significance of primary production has rapidly declined since the beginning of the 1950s. The decline of its share in output slowed down at the beginning of the 1970s, whereas its share in the labour force continued to contract fairly steadily right up until the 1980s. In 1985 primary production accounted for no more than 8 per cent of output – agriculture and forestry almost as large – and its share in the labour force was 14 per cent calculated on the basis of work hours and 11 per cent calculated on the basis of the number of workers.

During the years of reconstruction, the share of secondary production in output quickly rose to about 40 per cent. It then fell slightly in the early 1950s and has remained at almost this level ever since. It was again unusu-

ally high just before the years of recession in the 1970s due to the favourable development of manufacturing. Nevertheless, the significance of secondary production in Finland has not declined to the same extent as it has in many old industrialized countries. Since the Second World War, the share of secondary production in output has been higher than its share in the labour force; in other words, output per worker has been greater than in other industries. This is hardly surprising when one considers the rapid technological development that has taken place in manufacturing and construction since the end of the last war.

Since the end of the Second World War the shares of the services sector in output and the labour force have risen fairly quickly to their present level of more than a half. At first, the rise was clearly a reaction to the stoppage of growth caused by the war. In fact, the share in output held by services at the end of the 1920s and 1930s was not regained until the beginning of the 1960s. The building of the present-day service society can justifiably be regarded as having started at about that time.

From the 1950s onwards, the share of the services sector in output has been only slightly greater than its share in the labour force. Output per worker has been approaching the average for the economy, as the proportion of the labour force made up of comparatively low-paid employees in trade, transport and communication, restaurants, government offices and health services has risen.

4.2. Finland and other countries

Structural change has taken place quickly during periods of vigorous economic growth and slowed down or stopped when serious disturbances such as world wars and periods of deep depression have curtailed growth.

R. M. Hartwell has used the labour force composition of various countries to make the following classification of their stage of development: (i) In agricultural countries, the share of secondary production is low and the growth of the services sector slow. (ii) In industrializing countries, the share of agriculture in the labour force is in decline and secondary production and services are developing at about the same rate. (iii) In industrialized economies, the share of agriculture in employment has reached its minimum level and the industrial (secondary production) labour force its maximum level. (iv) In service economies, services grow at the expense of secondary production.

According to Hartwell, Western Europe was at the agricultural stage (i) up to the middle of the nineteenth century. We can estimate that Finland was at this stage at least until the end of the 1880s. Western Europe went

through the industrialization phase (ii) during the period 1840 – 1910. This stage appears to have lasted up until the 1950s in Finland. Western Europe was in the industrial stage (iii) between about 1920 and 1970, and the service stage (iv) since the 1970s.[13] In Finland the current share of the secondary sector in the labour force has been more or less stable since the 1950s, although it is difficult to fit Finland into Hartwell's scheme at that time. The share of agriculture in the labour force was still large and it subsequently declined in favour of services. There is no place in Hartwell's classification for such a situation. The decline in the labour force share of secondary production has been so slight in Finland since the end of the 1970s that at the time of writing there is good cause to question whether it is some form of cyclical development or the onset of a permanent structural change, i.e. the transition to stage (iv).

Structural development in Finland has consequently differed from that of other Western European countries above all because of its retardment but also in that the structural transition of recent decades has been directly from primary production to services (see Table 4). As in other recently industrialized countries the GDP share of secondary production in Finland has never achieved the same magnitude as it did at its height in the old industrialized countries. The recent slowdown of economic growth in the industrialized countries is thought to be a consequence of the fact that services – which are exhibiting slow productivity growth at least according to present-day methods of measurement – have risen to become the largest sector of the economy.[14]

Table 4. Distribution of Gross Domestic Product in Finland, Sweden, the United Kingdom, Germany and the United States for Selected Years, %

	Primary production				Secondary production				Services			
	1900	1930	1950	1985	1900	1930	1950	1985	1900	1930	1950	1985
Finland A:	49	29	26	8	23	29	40	36	28	42	34	56
B:	32	19	16	4	40	39	50	40	28	42	34	56
Sweden	28	14	11	4	30	41	48	36	42	45	41	60
United Kingdom	6*	4*	5*	2*	40	52	56	41	54	44	39	57
Germany**	20*	11*	7*	2	37	42	52	43	43	47	41	55
United States	16*	9*	6*	2	37	41	40	46	47	50	54	52

A: forestry included in primary production
B: forestry included in secondary production
* Forestry included in secondary production
** West Germany in 1950 and 1985

Sources: KRANTZ – NILSSON 1975; KUZNETS 1968; OECD Quarterly National Accounts 1986:2.

4.3. Growth contributions of different economic activities

Growth and structural change can be analyzed by calculating the proportional shares of different economic activities in overall growth, i.e. their growth contributions. The growth contribution of an economic activity depends not only on its rate of development but also on its relative economic weight – its share in total output. Consequently, the growth contribution of a rapidly developing small industry need not necessarily be as great as that of a large industry growing at a slower rate.

The growth contribution of an economic activity is calculated by multiplying its GDP share during a certain period of time by its average annual rate of growth over the same period (Tables 5 and 6). The combined total of the various economic activities' growth contributions is equal to the growth of total output. The results can also be expressed in the form of percentages of the economy's overall growth (Table 7).

During the period 1860–1890 agriculture was responsible for the largest part of economic growth because it not only accounted for a large slice of GDP but also exhibited relatively rapid growth itself. When the growth of agricultural production slackened between 1890 and 1913, its growth contribution declined.

Manufacturing as well as transport and communication, trade, banking and private services became the most important growth sectors at the end of the nineteenth century. In the 1920s and 1930s manufacturing was by far

Table 5. Growth in Volume of Gross Domestic Product by Kind of Economic Activity for Selected Periods, Average Annual Percentages

	Agriculture, hunting and fishing	Forestry	Manufacturing	Construction	Transport and communication, trade, banking and insurance, ownership of dwellings, private services	Public services	Total GDP at factor cost
1860 — 1890	1.7	0.9	5.0	2.2	2.7	1.5	2.2
1890 — 1913	1.0	3.2	5.3	2.0	3.8	2.8	2.9
1920 — 1938	1.8	2.3	7.9	6.2	4.8	3.0	4.4
1946 — 1960	1.7	0.6	6.7	7.7	6.7	3.6	4.9
1960 — 1974	—0.3	—0.3	6.5	3.5	5.3	4.9	4.5
1974 — 1985	1.8	1.0	3.3	0.5	3.1	4.2	2.9
1860 — 1985	1.1	1.2	5.0	2.7	3.5	3.0	3.0

Table 6. **Value Added of Economic Activities in Gross Domestic Product for Selected Periods, Average Annual Percentages**

	Agriculture, hunting and fishing	Forestry	Manufacturing	Construction	Transport and communication, trade, banking and insurance, ownership of dwellings, private services	Public services	Total GDP at factor cost
1860 — 1890	41	16	10	8	20	5	100
1890 — 1913	33	15	16	6	24	6	100
1920 — 1938	22	13	22	6	29	8	100
1946 — 1960	15	11	29	9	27	9	100
1960 — 1974	7	6	28	10	38	11	100
1974 — 1985	5	4	30	8	39	14	100
1860 — 1985	25	12	20	7	28	8	100

Table 7. **Growth Contributions of Economic Activities to the Growth of Gross Domestic Product for Selected Periods, Average Annual Percentages**

	Agriculture, hunting and fishing	Forestry	Manufacturing	Construction	Transport and communication, trade, banking and insurance, ownership of dwellings, private services	Public services	Total GDP at factor cost
1860 — 1890	33	6	24	8	25	4	100
1890 — 1913	11	17	31	4	32	5	100
1920 — 1938	9	7	39	8	32	5	100
1946 — 1960	5	1	39	13	36	6	100
1960 — 1974	—1	—0	39	7	43	12	100
1974 — 1985	3	2	33	2	40	20	100
1860 — 1985	9	5	36	7	34	9	100

the most important growth accelerator and it continued to make the largest contribution towards overall growth right up until the 1950s.

The contribution of forestry was at its height during the years 1890—1913, when the exports of both forestry and the forest industry developed strongly. Agriculture and forestry have only made a slight contribution towards overall growth since the end of the Second World War.

The influence of private and public services on overall growth was at its height between 1960 and 1985. During this period the private services sector accounted for as much as 40 per cent of overall growth, while the growth contribution of public services (20 per cent) was almost twice as large as it had been during the preceding periods.

4.3.1. Agriculture and forestry

"The years of the great famine during the 1860s signified a turning point in the development of agriculture in Finland: the following decades saw traditional farming practices dropped in favour of more up-to-date and efficient agriculture", states Arvo M. Soininen in his 1974 study. The technical preconditions for the changes that took place after the 1860s originated with developments that began as long before as in the 1830s: new farming methods, new tools and implements, the breeding and feeding of livestock had been tried out and brought into use. In the 1870s these developments had been adapted for Finnish conditions and their widespread use was possible.[15]

The volume of agricultural output increased at an average annual rate of 1.1 per cent over the whole period 1860–1985 (Chart 9).[16] This represents a quadrupling of output. As the average rate of population growth over the same period was 0.9 per cent, i.e. the population increased by a factor of 2.7, agricultural production rose appreciably faster than the population. Agriculture continued to grow – albeit at a very slow rate compared with the development of the manufacturing and service industries – right up until the beginning of the 1960s. From that point until the end of the 1970s, the volume of agricultural production remained at a standstill, although it again grew quickly during the first half of the 1980s.

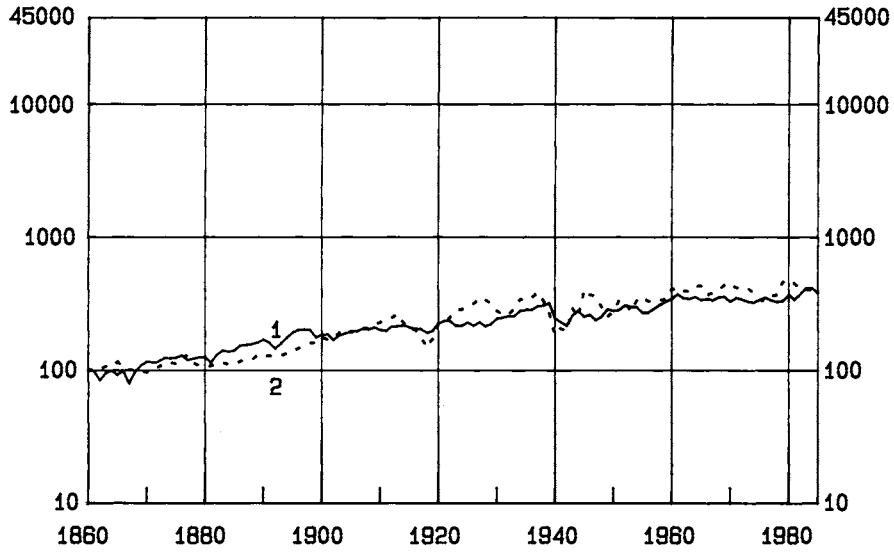
The size of the agricultural labour force in the 1860s is estimated to have varied between 350,000 and 400,000 work-years. It reached its peak of about 630,000 work-years during the 1890s and began to decline in the 1910s. In 1985 the size of the agricultural labour force was 210,000 or 9.2 per cent of all employed persons.[17]

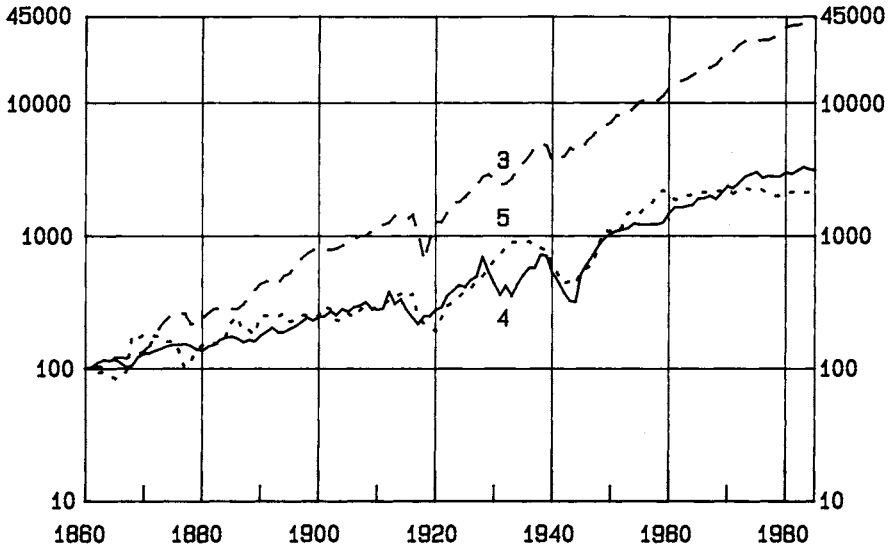
The volume of forestry production grew at an average annual rate of 1.2 per cent over the period 1860–1985, i.e. by a factor of 4.3 (Chart 9).[18] Forestry employment in the 1860s is estimated at about 50,000 work-years. It was at its peak of about 200,000 work-years in 1946, after which it declined to a level of about 50,000 work-years in 1985. Despite the rapid growth of the wood processing industry, the relatively slow growth of forestry production is explained by the more efficient use of wood, the reduction in the amount of wood used both as a fuel and for other domestic purposes, the discontinuation of raw wood exports, and the importation of raw wood in recent years.

About a half of gross agricultural output in the 1860s came from the production of crops (Table 8). The trend towards a predominance of dairy farming in agricultural production dates back to the final decades of the nineteenth century. This trend was primarily influenced by the favourable development of the price of butter compared with the price of grain. Grain

prices on the world market went into decline from the 1870s onwards. Furthermore, in the spirit of free trade, bread cereals were made duty-free goods in 1864. An attempt was made to pay for imports of cheap grain from Russia with exports of butter. The objective was not actually achieved, although at their height in the 1890s butter exports did account for 18 per cent of total exports.

At the end of the nineteenth century the large area of land cleared for





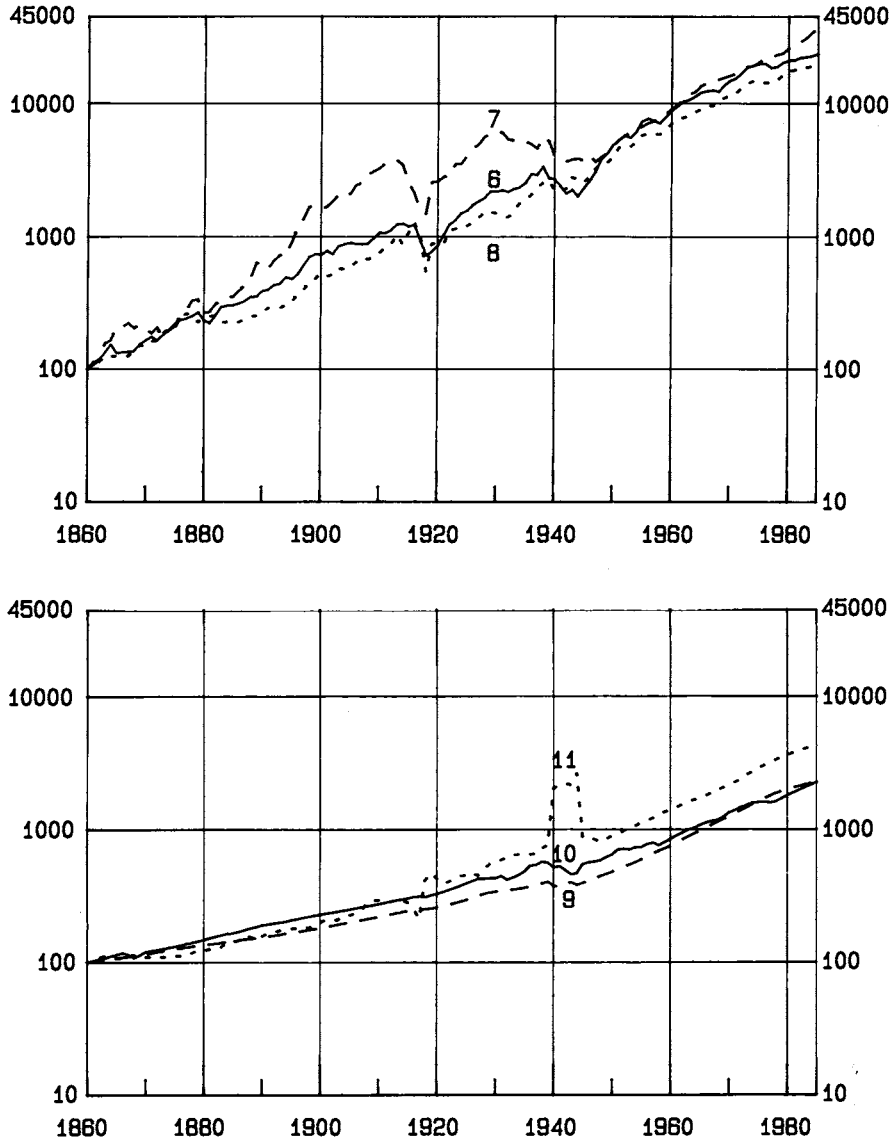


Chart 9. Volume Indices of Economic Activities, 1860–1985, 1860 = 100

1 Agriculture
2 Forestry
3 Manufacturing (incl. mining and quarrying, and electricity, gas, water and sanitary services)
4 House construction
5 Land and water construction
6 Trade
7 Banking and insurance
8 Transport and communication
9 Ownership of dwellings
10 Private services
11 Public services

Table 8. Distribution of Gross Agricultural Production for Selected Years, %

	1860/62	1880/82	1912/14	1936/38	1958/60	1982
Production of livestock	45	50	71	65	75	70
Production of crops	50	46	23	26	18	21
Other production	5	4	6	9	7	9
Total	100	100	100	100	100	100

Sources: VIITA 1965, p. 30; Statistical Yearbook of Finland 1985/86.

cultivation was mainly under forage crops. About a fifth of all arable land was under bread cereals at the beginning of this century, and the country was only about 40 per cent self-sufficient in bread cereals at the outbreak of the First World War.[19]

The food shortage during the First World War led to the emphasis being placed on self-sufficiency in food production when the agricultural policy of the newly independent republic was formulated. The growing of grain was promoted by means of import tariffs. Despite this, the dominant role of animal husbandry in agricultural production continued to grow during the 1920s, and in 1930 only about 10 per cent of the available arable land was being utilized for the production of bread cereals. During the 1930s, however, the proportion of arable land under bread cereals increased and the 20 per cent share held at the beginning of the century was re-attained in 1938. At the same time the growth of output had also resulted in a decided improvement in Finland's position with regard to self-sufficiency in food. Taking imported inputs into consideration, Finland was about 80 per cent self-sufficient in food on the eve of the Second World War. During the depression on the 1930s some animal husbandry products were produced over and above the level of domestic demand and export bounties were introduced for these products.

New predominantly horse-drawn machines and equipment were brought into use in agriculture during the 1920s and 1930s. Agricultural output grew quickly, but the trend towards a specialization of farms came to an abrupt halt as farmers attempted to return to the old regime of more diverse production.[20]

The country once again suffered a food shortage during the Second World War. The total number of livestock as well as the production from animal husbandry declined, territorial losses deprived the country of about

15 per cent of its potential harvest, and the shortage of concentrates reduced per-hectare yields. After the war the livelihood of the rural population and the achievement of self-sufficiency in food production were the declared aims of the country's agricultural policy.

Agricultural output grew by almost 3 per cent per annum during the 1950s. The share of livestock production continued to grow until at the end of the 1950s, when it accounted for three quarters of total agricultural output. Because the production of certain agricultural products exceeded domestic demand during the 1960s, the end of that decade saw the introduction of a number of additional legislative controls (the fallow-field compensation system, over-production charges, marketing charges). The export bounties introduced in the 1930s have gradually led to agricultural subsidies, which in the 1980s represent about three quarters of agricultural value added. Production has become more mechanized and more commercialized in recent decades. Machinery and equipment investments in agriculture are nowadays extremely large compared with those of many other areas of the economy.

Commercialization. The introduction of legislation in the 1890s permitting the division of farms resulted in a reduction in their average size. The resettlement laws of the 1920s and 1940s provided an added impetus to this development.[21] The trend in the distribution of agricultural holdings did not begin to turn in favour of large farms until the 1950s and 1960s (Table 9). Finnish agriculture is still largely composed of very small farms which

Table 9. Number and Distribution of Farms by Size of Arable Land Area for Selected Years, %

Hectares	1901	1929	1959	1983
1 — 4.99	36	48	45	30
5 — 9.99	23	25	31	29
10 — 24.99	27	21	21	35*
25 — 99.99	13	6	3	6**
100 —	(0.9)	(0.3)	(0.1)	(0.2)
Total	100	100	100	100
Number of farms	212 000	249 000	331 000	208 000

* 10—29.99 hectare farms
** 30—99.99 hectare farms

Sources: Suomen taloushistoria 3, Historiallinen tilasto (The Economic History of Finland 3, Historical statistics), Helsinki 1983, p. 69; Statistical Yearbook of Finland 1985/86, p. 82.

cannot by themselves produce enough to support the families who work them.

The movement towards dairy farming that occurred during the final decades of the nineteenth century quickly transformed agriculture from subsistence to commercial production. At the beginning of the 1910s about a third of total agricultural production went to market. Incomes received primarily from the sale of dairy produce and forest lumber provided agriculture with cash and thus opened up a market for industrial goods.

The sale of dairy produce as well as forest incomes were particularly important during the modernization of agriculture as sources of cash income. Dairy produce provided a continuous source of income, whereas forest lumber was sold periodically by large farms for the most part – and not even they could do so every year. A large proportion of Finnish farms were worked by tenant farmers and they too were involved in selling dairy produce. According to a study made by Matti Peltonen, dairy produce accounted for two thirds of the cash income of independent farms at the beginning of the present century, while the share of forest incomes (including forestry wages) was about a fifth. Peltonen also reports that the sale of dairy produce brought in 90 per cent of the cash incomes of tenant farmers.[22]

The reduction in the average size of farms and the emphasis of agricultural policy on national self-sufficiency led to the diversification of family farming during the 1920s and 1930s. This retarded the development towards specialization in market produce and put a brake on the commercialization of agriculture. Only just over a half of agricultural production was being sold at the end of the 1930s. Despite this, the income formation of the agricultural population was higher than that of any other population group. According to Eino Jutikkala, this was largely attributable to forest incomes.[23]

The institution of a resettlement policy favouring small holdings delayed the internal restructuring of the country's industry and agriculture after the Second World War. The changes that did take place during the 1960s and 1970s were therefore all the more violent. At the beginning of the 1980s only 3 per cent of the production of book-keeping farms was consumed by the producers.[24] Since the end of the Second World War, the income formation of individual farms has followed the development of the income level of wage and salary earners, although the average level of income in agriculture has been lower.

Forestry has also become commercialized. Three quarters of forestry's value added was being used for domestic purposes in the 1860s. This share had fallen to about a third by the beginning of the First World War and barely a tenth by the 1960s.[25]

4.3.2. *Industry*

The growth of Finnish industry over the past 125 years has been one of the world's fastest. The volume of production has risen at an average annual rate of 5 per cent (Chart 9).[26] About 34,000 people were employed in manufacturing and industrial handicrafts in 1860; half of this number worked in units comprising fewer than five employees (so-called industrial handicrafts). This labour force numbered in excess of 100,000 in 1899 and reached the 300,000 mark on the eve of the Second World War. The size of the industrial labour force appeared to have peaked at 596,000 in 1974, as it declined by 25,000 in the years that followed. Although the peak figure of the 1970s was narrowly exceeded at the beginning of the 1980s, the number of work-hours in 1974 has not been re-achieved in any year since. The number of work-hours in 1985 was 10 per cent lower than the figure for 1974, and even the number of persons employed fell by 7 per cent during the first half of the 1980s. The number of persons employed in industrial handicrafts has shrunk to 3 per cent of the industrial labour force, even though over a half of all production units employed fewer than five workers at the beginning of the 1980s.[27]

Industry was a mixture of the old and the new in the final decades of the nineteenth century. Production based on new technology and steam power started to spring up during the middle decades of the century, coexisting side by side with early iron works, water-powered sawmills, tobacco factories and handicraft workshops. There were a few new large cotton mills and engineering works. The largest cotton mill in Scandinavia during the mid-nineteenth century was owned by Finlayson & Co (est. 1820). Littoinen cloth factory was the first to employ a steam engine (1842). In the late 1850s Fiskars became the country's first manufacturer of steam engines; indeed, some of the earliest steam engines used in Finland were partly manufactured domestically. The first large steam-driven sawmills were built in the early 1870s during a period when the demand for sawn goods was climbing steeply and there was considerable expansion throughout the entire sawmill industry. The mechanical pulpwood mills established in the 1860s were the first of many to be built in Finland during the latter part of the nineteenth century. This period also saw the establishment of the first chemical pulp plants in the 1880s. The textile, wood, and metal and engineering industries were the largest manufacturing industries during the latter half of the Period of Autonomy (Table 10).

In contrast to many other European countries, there has been relatively little direct foreign investment in Finnish industry. Obviously, this is at least partly due to the fact that the participation of foreigners in Finland's economic affairs has, since the mid-nineteenth century, been generally

Table 10. Distribution of Value Added for Manufacturing and Industrial Handicrafts for Selected Periods, Annual Average Percentages

	1860 — 1864	1880— 1884	1900— 1904	1920— 1924	1935— 1939	1955— 1959	1970— 1973	1982— 1985
Manufacture of food, beverages and tobacco	14	14	17	15	14	12	9	10
Textile, footwear and wearing apparel industries	27	20	18	15	14	13	9	6
Manufacture of wood, wooden products and furniture	12	23	20	20	13	9	9	6
Paper industry	2	6	9	15	15	10	13	12
Mining and quarrying, metal and engineering ind. and transport equipment industry	33	25	22	15	21	30	31	33
Other manufacturing industries	12	12	14	20	23	26	29	33
Total	100	100	100	100	100	100	100	100
Volume index of production, 1926 = 100	5	12	37	70	201	490	1227	1906

Sources: HJERPPE 1979, p. 162; Kansantalouden tilinpito (National Accounts) 1975 – 1981, Tilastotiedotus KT 1982:7; Kansantalouden tilinpito (National Accounts) 1980 – 1985, Tilastotiedotus KT 1986:6.

subject to approval at the very highest levels of government.[28] Although investment capital was not imported from other countries, it was quite common for skilled workers, professionals and experts to be brought in from abroad to operate and manage modern production plants. Similarly, the necessary technology was borrowed from abroad. It has been noted that although new inventions were first used in Finland quite soon after their development, they were relatively slow to become established as the dominant form of production technology.[29]

The overall performance of Finnish industry was excellent during the 1920s and 1930s. The Great Depression of the 1930s, the worst effects of which were experienced by manufacturing and agriculture, was relatively short-lived in Finland compared with other Western countries and less severe than average. The large industries of the old industrialized countries – coal, iron and steel, shipbuilding and textiles – were in difficulties throughout the inter-war period due to over-production and low prices. On the other hand, the old industrialized countries did have some successful, up-and-coming industries. They produced new products: chemicals, automobiles, electrical machinery and equipment, etc.[30]

The textile, metal and engineering industries, which had sizable export markets in Russia during the nineteenth century, completely reoriented

their production to the domestic market in the 1920s. They also had to face stiff competition from imports. Nevertheless, mining and quarrying together with metals and engineering, chemicals and the production of electrical power were the fastest growing industries of the 1930s. Increased protectionism during the 1930s provided the metal and engineering industry with the shelter it needed to develop. Orders were forthcoming from agriculture, the defence forces and the rapidly developing pulp and paper industries.[31] The start-up of production at Outokumpu mine and the establishment of processing plants for mined materials in the 1930s were particularly important.

The forest industry's share of production was at its height during the inter-war period, when it also increased its lead as the most important export industry. The sawmill industry increased its output in the 1920s during the post-war period of reconstruction, but it suffered badly when Russian sawn goods reappeared on the Western market during the late 1920s and the depression of the 1930s. Nevertheless, the Finnish sawmill industry remained the country's most important wood-processor up until the 1950s, when the pulp industry overtook it in terms of the value of production. During the depression of the 1930s the products of the pulp and paper industries rose to become bigger than processed wood in terms of exports. Rationalization of the paper industry and its production facilitated a reduction in prices, which enabled the industry to maintain its volume of exports at an almost unchanged level even during the depression. Paper made from wood was a relatively new product and the market for it was expanding.[32]

Post-war industrial growth in Finland was the same as the European average up until the oil crisis of the 1970s. Since the end of the 1970s, the growth of Finnish industry has been considerably better than the European average. The fact that exports of manufactured products to the Soviet Union remained relatively stable helped in this respect. Within the framework of the bilateral trade agreement, exports of manufactured goods to the Soviet Union have increased to compensate for the higher price of imported Soviet oil. This has tended to offset problems in Western exports caused by slow growth in Western Europe. On the other hand, the lower oil prices of recent years have weakened industry's position with regard to exports to the Soviet Union.

The metal and engineering industry and the chemical industry have been the most rapidly developing industries in the industrialized countries since the end of the Second World War, and they have also increased their shares in industrial output. In Finland, mining and quarrying together with the metal and engineering industry accounted for a third and the chemical industry for about a tenth of industrial value added in the 1980s. As a

consequence of changes in the structure of consumption, the share of the food industry in industrial value added has contracted. The decline in the share of the Finnish textile industry follows the general trend in Western Europe, as indeed does that of the food industry.

The significance of the forest industry to the economy of Finland is not as great as it was during the inter-war period, although it remains a large and important industry. The adequacy of forest resources and the close proximity of the world's largest importing region for forest products, i.e. Western and Central Europe, have been and are still the most important factors working in favour of the forest industry.[33] Safeguarding the forest industry's ability to export has also been one of the main objectives of economic policy ever since the country gained independence in 1917.

Industry has been going through a period of structural change during the 1980s, the outcome of which is not yet observable. The recent wave of mergers involving large companies is without precedent in the economic history of Finland, although there have also been earlier periods of widespread corporate restructuring. Takeovers and the establishment of subsidiaries were commonplace at the turn of the century; the 1930s was a period during which previously acquired subsidiaries were merged, and the 1960s saw another period of industry-wide rationalizations.[34]

4.3.3. Services

Industrialization signaled the dawn of a period of rapid growth and increased specialization for the service sector. In the pre-industrial era services were composed of a small urban business sector, a small body of civil servants mostly in the service of the church, some independently practicing professionals such as physicians and lawyers, and a relatively large number of domestic servants. Industrialization resulted in the growth of transport and communication, distribution, banking and insurance as well as public services (Chart 9). The expansion of services has increased not only the diversity of economic life but also mobility, adaptability and speed of reaction.[35]

The share of services in Finland's gross domestic product has doubled from just under a quarter in 1860 to over a half in the 1980s. With the exception of housing services, all the service industries have increased their GDP shares. However, the internal distribution of services has been more stable (Table 11). The share of housing has fallen. The share of banking and insurance has risen enormously, although its value added does not adequately describe its true significance. The share of private and public services has also risen in recent times. Having grown at almost same rate as the service sector as a whole, trade and transport and communication have

Table 11. **The Structure of Services in terms of their GDP Shares for Selected Years, %**

	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Public services	Total services
1860	3.8	2.9	0.4	7.0	3.3	5.1	22.5
1890	3.2	5.4	1.0	6.4	4.9	5.9	26.9
1913	5.8	8.1	3.2	5.2	5.4	5.4	33.1
1923	5.2	7.6	2.9	5.2	6.1	7.0	33.9
1938	6.2	9.2	2.3	5.6	6.1	7.4	36.8
1946	5.1	7.4	1.9	1.8	5.4	8.1	29.7
1960	8.0	9.7	2.1	7.4	8.1	9.1	44.4*
1974	7.5	9.7	3.5	7.3	9.6	11.8	49.3
1985	8.3	9.3	4.6	6.4	12.9	16.3	57.8

* The revised SNA magnifies this figure by about 3 percentage points.

more or less maintained their position.

It is worth noting that public services already accounted for a fifth of all services in the 1860s. At that time they were principally central government services. Contrary to common belief, the share of public services in gross domestic product grew at about the same rate as that of private services right up until the 1960s. Only after that have public services increased at an appreciably faster rate than private services.

Transport and trade. The legalization of rural trade in 1859 together with the advent of steamships and the railways revolutionized distribution industries from the latter half of the nineteenth century onwards. The development of transport and trading conditions knitted the country together into a more integrated economic unit.

The development of the transport and trade network facilitated contacts with foreign countries and the Russian Empire, thus improving the preconditions for foreign trade. At the same time, internal communications between the interior and coastal areas were also improved. The possibilities of exploiting natural resources increased many fold, the zero limit of forestry was pushed back, and the practice of animal husbandry became feasible farther away in northern and northeastern Finland. Correspondingly, new consumer goods and consumption habits spread over an even wider area, increasing the demand for consumer goods and extending the markets for domestic industry and imported products.

Waterborne traffic was almost the only form of commercial transport in the 1860s. It has been estimated that horse-drawn traffic accounted for about 13 per cent of transport and communication's value added, and postal services for about 2 per cent. Most cargoes were transported by sea

rather than internal waterways, as foreign trade had already become an important part of the economy by the 1860s. The opening of the Saimaa Canal in 1856 and the construction of other canals improved inland transport and connections between inland areas and the coast. Canals were built partly before and partly at the same time as the railways. The latter quickly came to dominate domestic transportation at the expense of other forms of traffic. From the time the first railway was opened in 1862 up to the outbreak of the First World War, land traffic increased its share of the sector's value added to almost a half. The completion of the track to St Petersburg in 1870 improved communications with the ruling power of that era.

Motor vehicle transport developed side by side with the railways from the 1920s and 1930s onwards, while the use of horses in transportation simultaneously lost its significance. Along with the expansion of the road network since the 1950s, inland waterway traffic – which still flourished during the inter-war years – has, to all extents and purposes, contracted into a specialty transporting tourists. Not much timber is transported by water these days, although the reopening of the Saimaa Canal has once again increased the transportation of goods by inland waterway. In the 1970s road transport accounted for almost 30 per cent of commercial transportation. The shares of the railways and waterborne traffic have both contracted to about a sixth. Communication's share of sectoral value added is nowadays about a quarter and it has been the fastest growth branch of the industry in recent decades.[36]

The legalization of rural trade in 1859 put an end to the flourishing black market in the countryside and a large number of shops were established in the latter part of the nineteenth century. At the end of the 1870s there were already more shops in rural areas than there were in towns. Typically, rural shops stocked a wide range of products, whereas specialization was already underway in urban shops at that stage. The wholesale and retail trade started to become differentiated.

From the beginning of the century onwards, a large number of cooperative retail societies sprang up side by side with the private shops. The present-day E, SOK, Kesko and Tuko retail groups started off as central cooperative societies, regional wholesalers catering to the country shops, and purchasing cooperatives. In the 1960s these various groups changed into their present form of central organizations promoting marketing. In the following decade they accounted for 90 per cent of the sales of perishable goods.

There has been a decisive change in the structure of the retail trade since the 1960s. The widespread ownership of private automobiles and the fact that these days fewer people live in isolated rural communities has resulted

in the disappearance of small country shops. And in towns the number of small shops has been reduced by regulations concerning, for example, their minimum size and product range. The era of the "corner store" was thus relatively short-lived in most parts of the country. The centralization of trade in recent decades has led to the birth of department stores and large supermarkets. The growth of motor vehicle transportation has naturally been accompanied by an increase in the share of the shops and service stations catering to motor vehicles.[37]

Banking and insurance. The Bank of Finland, which was founded in 1811, together with a handful of savings banks were in fact the only financial institutions existing at the beginning of the 1860s. The country's first mortgage credit institution, the Mortgage Society of Finland, began operating in 1860, and the first commercial bank, the Union Bank of Finland, was founded in 1862. In addition to these lenders, domestic credit was also available from insurance institutions, various pension, sickness and other charitable funds, trading houses, the state, ecclesiastical funds and private individuals. It is apparent that most of credit circulating in the economy at that time was in the "grey sector", the extent of which we are unable to determine. The undeveloped state of the financial system is also apparent in the balance sheets of the largest industrial companies of the day. These show that in the 1870s equity capital on average accounted for almost three quarters of corporate balances.[38] The establishment and operation of companies was, however, facilitated by the enactment of the 1864 Companies Act, which, at least in principle, made it possible for a company to raise capital.

The GDP share of the organized financial sector, i.e. the banks and insurance institutions, was less than a half of one per cent in 1860.[39] Its GDP share rose ten-fold to five per cent in the 125 years to 1985. As was stated earlier, this still does not adequately describe the significance of the role played by the banks and insurance institutions in the creation of money and the mobilization of savings. For this we need to examine the distribution of the credit stock, the volume of credit and its ratio to gross domestic product (Table 12).

The Bank of Finland and the central government were easily the largest creditors during the 1860s, although the insurance institutions and funds also had a significant share of the credit stock. However, the combined total of these institutional credits represented only 15 per cent of gross domestic product, whereas in the mid-1980s the total value of outstanding credits was about 130 per cent.[40]

The establishment of a number of commercial banks and mortgage credit institutions during the decades that followed brought about a fundamental change in the structure of organized lending: lending shifted away from

Table 12. Distribution of the Credit Stock by Lender, %; the Credit Stock and its Volume for Selected Years

	Bank of Finland	Commercial banks	Other financial institutions	Mortgage credit institutions	Insurance companies, pension institutions and funds	Other private lenders	Central government*	Total	Credit stock,** Mill.FIM	Credit stock volume, 1926 = 100	Ratio of credit stock to GDP, %
1860	52	—	7	—	13	—	28	100	0.5	5.8	15
1890	15	37	15	8	17	0	8	100	2.7	39.0	48
1913	6	42	17	15	16	0	4	100	17.6	195.7	117
1928	6	48	22	9	8	1	6	100	201.8	198.2	80
1937	6	35	28	7	15	2	7	100	277.6	252.6	85
1960	2	26	31	4	8	0	29	100	10 192.3	519	70
1984	6	28	25	3	18	2	18	100	345 200	2 770	126

* Between 1860 and 1937 the figures for central government include loans made by Postipankki; the figure for 1960 includes the Social Insurance Institution, the figure for 1984 includes public corporations: central government, credits issued by the local authorities from central government funds, social security funds, public mortgage credit banks and other public financial institutions.
** The concept of the credit stock is wider after 1960, as it is influenced by foreign credits and the special credit institutions.

Sources: Suomen taloushistoria 3 (The Economic History of Finland 3), pp. 340–342; ULLA BREDENBERG Luottokantatilasto vuosina 1958–1967, Taloudellisia Selvityksiä 1968, (Credit volume statistics 1958–1967, Economic Studies 1968), Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja A:31, Helsinki 1969, pp. 98–99; Statistical Yearbook of Finland, pp. 180–181.

private individuals and companies to specialized financial institutions. The banks primarily financed their lending with funds deposited with them by the general public. On the eve of the First World War, private financial institutions accounted for 90 per cent of all outstanding credits, while the combined share of central government and the Bank of Finland had shrunk to less than a tenth. The volume of lending had simultaneously risen, and the institutional credit stock was then larger than gross domestic product.

Inflation and the abundance of money during the First World War led to the speculative establishment of commercial banks in Finland. At the beginning of the 1920s there were as many as 23 such banks. Some of these banks were founded on weak financial bases and merged during the Great Depression. As a result only nine commercial banks remained at the outbreak of the Second World War. The capital market of the 1920s also declined in another way: there was a reduction in the number of mortgage credit institutions. In the latter half of the 1920s the value of the credit stock was the same in real terms as it had been in 1913; it had developed at a much slower rate than gross domestic product. During the following ten-year period the credit volume grew at the same rate as domestic product.

The depressed level and slow growth of the credit volume during the 1920s is difficult to understand, because gross domestic product was growing quite quickly. The amount of foreign debt was large throughout the 1920s; the state in particular was in debt to foreign creditors. During the 1930s foreign loans were repaid or converted into domestic credit.

The years of rampant inflation during and after the Second World War reduced the volume of credit. In 1950 it was the same in real terms as it had been on the eve of the First World War, and the credit stock was equivalent to only just over a third of gross domestic product. It is hardly surprising that financing was described as being inadequate for quite a long time after the end of the war.

Since the 1950s the credit stock has grown rapidly and there has been a considerable concentration of the banking sector. Two commercial banks, Kansallis-Osake-Pankki and the Union Bank of Finland are each responsible for about a fifth of deposit-bank lending to the public. There are four commercial banks (excluding the central banking institutions of the savings and cooperative banks), which account for a half of lending by the deposit banks. The savings banks and the cooperative banks each account for about a fifth and Postipankki for about a tenth. Public sector finance has risen significantly due to the lending of the Social Insurance Institution and the special credit institutions. The growth of pension funds managed by the private sector has again increased the significance of the insurance institutions as providers of credit.

The increased opportunities for securing external finance are reflected in

the balance sheets of industrial companies. In the 1970s, for example, equity capital accounted for only about a quarter of corporate balances. This development was influenced by the availability of credit and the fact that the low real rate of interest which prevailed up until the early 1980s made credit financing an economical proposition.[41]

Private services. The need for greater specialization and division of labour in society has spawned new groups of service professions and resulted in the rise to prominence of many previously small and insignificant groups. Education and health care principally took place within the home, and professional groups specialized in these fields were small. The establishment of law and accountancy firms, ADP services, technical consulting companies, real estate agencies and other services has accompanied the development of technology and business life. Associations promoting the interests of the professions, business and commerce, and sports and recreational activities have been established to cope with the increasingly complex and specialized service needs of society.[42]

In the private services sector of the mid-nineteenth century, paid household staff represented a very large group and accounted for as much as four fifths of employment within the entire sector. In addition to this group, small service businesses such as laundries, hairdressers and saunas also catered to households. Domestic staff and the other services demanded by households increased along with the growth of the middle classes. The number of domestic servants continued to grow in absolute terms up until the 1930s, although the group's share has contracted continuously.[43]

Nowadays there are few domestic servants. The group composed of private child-minders has grown, as has the number of municipal nurseries. The reduction in the numbers of paid household servants is said to have directly resulted in the increased production of durable consumer goods.[44]

In Finland, private medical services have always been less extensive than those offered by the public sector. In the late nineteenth century the state provided most of the medical services; this task has been transferred to the local and inter-municipal authorities during the course of the present century. At their peak during the early years of this century, private medical services accounted for a fifth of all the services provided by medical institutions. There has been a considerable reduction in the size of their share since then.

There were approximately equal numbers of private and state schools at the end of the nineteenth century. Reading was mainly taught in church schools up until the 1860s, when the establishment of municipal primary schools marked the beginning of steady decline in their numbers. The municipal primary schools and church schools operated side by side until the latter finally disappeared altogether in the 1930s. The significance of

private education has declined since the end of the Second World War and its share is now very small.

There has been an increase in the supply of services provided in such fields as catering, accommodation, recreation, entertainment and the membership of many different kinds of organizations. The number of independent professionals has also increased. This is all associated with higher living standards, increased mobility and the expansion of society's market sector.

1. *Cf.* KUZNETS *1966, p. 86.*
2. KUZNETS *1966, pp. 98–104.*
3. CRAFTS *1985, p. 61.*
4. *Agriculture, forestry, hunting and fishing have been included here in primary production. Secondary production consists of manufacturing, including mining and quarrying, as well as electricity, gas and water utilities and construction. Services comprise transport and communication, trade, banking and insurance, housing services, private services and public services. The placement of industries in the tripartition of primary production, secondary production and services varies to some extent from one study to another.*

The tripartite division of production into primary production, secondary production and services or primary, secondary and tertiary sectors is regarded as having been brought into use by Colin Clark in 1940, even though earlier researchers had also made reference to a division of production. See COLIN CLARK *Conditions of Economic Progress, London 1940. In the 1950s Kuznets made it a standard tool of growth studies.*

Zoltan Kenessey extended Clark's tripartition by further dividing the tertiary sector into tertiary and quaternary sectors. Kenessey's tertiary sector includes transport, the production of electricity and gas, public sanitation and trade; his quaternary sector comprises telecommunication, banking, insurance, real estate services, services and public administration and defence. ZOLTAN KENESSEY *The Primary, Secondary, Tertiary and Quaternary Sectors of the Economy. Conference Paper, IARIW, Noordvijkerhout, The Netherlands 1985, p. 8.*

5. *In the distribution of the economically active population, the labour force shares of the secondary and services sectors in 1860 have both been previously estimated at only 5 per cent on the basis of demographic statistics. The results of this study will change this conception. See* PAULI MANNINEN *Selvitys Suomen elinkeinorakenteesta ja sen tutkimuksesta 1820–1970 (Essay on the Structure of Finnish Industry and Its Study 1820–1970). Suomen työväenliikkeen historia-projektin selvityksiä N:o 1, Helsinki 1976, p. 82.*
6. KUZNETS *1966, pp. 88–93, 106–107. In Kuznets's examination of the distribution of gross domestic product in various countries, forestry has been included in secondary production. In Kuznets's table concerning the distribution of the labour force, forestry employment is obviously in primary production. This does not have any significance in countries with small forest industries.*
7. KUZNETS *1966, pp. 88–93, 106–107.*
8. *See* YRJÖ KAUKIAINEN *Taloudellinen kasvu ja yhteiskunnan muuttuminen teollistuvassa Suomessa. När samhället förändras, Kun yhteiskunta muuttuu, Historiallinen Arkisto 76 (Economic Growth and the Social Change in Finland in the Period of Industrialization. When Society Changes, Historical Archive 76), Helsinki 1981, pp. 52–56. The large difference between the shares of agricultural production and employ-*

ment may be indicative of errors in the calculations concerning agriculture; it is possible that agricultural production for the use of the producer has been overestimated.

9. See R. M. HARTWELL The Service Revolution: The Growth of Services in Modern Economy. The Fontana Economic History of Europe 3, Glasgow 1973, p. 388.

10. It should be noted that particularly scanty basic data may have resulted in inaccuracies in this industry. The value placed on production in such sub-sectors as public services and banking and insurance services is nothing more than an imputation – as indeed is the very concept itself. Similarly, there is a difference between the production and labour force shares of the housing services sector, another largely imputed component, which has a minor influence on employment. According to Kuznets's comparisons, the ratio of the GDP share of the services sector to its share in employment has been more or less the same in Finland, Norway, the United States, Japan and Italy. Kuznets 1966, pp. 88–93, 106–107.

11. The share of services therefore behaved indeterminately with regard to the development of GDP, just as Hartwell (see footnote 14) also observes. HARTWELL 1973, p. 388.

12. The low share of services at the end of the 1940s was largely a consequence of the diminutive size of the housing services sector, which in turn stemmed from tight rent controls. For structural change in the post-Second World War period, see MATTI ALESTALO Structural Change, Classes and the State, Finland in an Historical and Comparative Perspective. Research Reports 33, Research Group for Comparative Sociology, University of Helsinki, Helsinki 1986.

13. HARTWELL 1973, pp. 393–394.

14. Hartwell identifies the following general features as being characteristic of the changes that occur in the structure of production as the volume of GDP rises: the share of agriculture declines, the share of secondary production increases, and the share of services behaves indeterminately (with the exception of transport and communication, which increases). The changes in the structure of employment are a decline in the share of agriculture, an increase in the share of secondary production, and an even larger increase in the share of services. As far as the structure of productivity is concerned, the value added per worker has been lower in agriculture and higher in secondary production and services compared to the level in the economy as a whole. Moreover, during this century the development of productivity in the services sector has been slower than that of secondary production. It is also possible that the GDP component of services has been generally underestimated. HARTWELL 1973, p. 388.

15. ARVO M. SOININEN Vanha maataloutemme, Maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle (Old Traditional Agriculture of Finland in the 18th and 19th Centuries). Historiallisia tutkimuksia 96, Forssa 1974, pp. 3–5.

16. Pentti Viita has published a growth study entitled "Maataloustuotanto Suomessa 1860–1960" (Agricultural Production in Finland, 1860–1960) (1966), and figures from his study have been used here. Data on harvests, livestock, and prices extracted from the reports of nineteenth-century provincial governors has been the principal sources of information for Viita's study. A large amount of material was amassed by a subcommittee set up in 1901 to look into the problem of the landless population. A survey of agriculture (Official Statistics of Finland, SVT III) has appeared once every ten years since 1910. Annual agricultural statistics based on samples have been compiled since the same era, and statistics on accounting farms have been kept since 1912 (VIITA 1965, pp. 20–23).

Arvo Soininen regards the data on harvests as being relatively good, at least after the

revision of agricultural statistics in 1877. The data on milk production has been based on the number of milking cows and the average milk yield per cow. Neither estimate can be regarded as being completely reliable, but the margin of error is probably not very great. Meat production has been similarly based on livestock numbers, although in this case the added complication of carcass weights has been a problem. As far as prices are concerned, Viita should have been able to access reliable data. According to Soininen, however, the source material for the development of costs during the first half of the observation period is weak. Naturally, this may have a bearing on the development of agricultural value added. ARVO M. SOININEN*'s critique of Pentti Viita's "Maataloustuotanto Suomessa 1860–1960" (Agricultural Production in Finland 1860–1960), Kansantaloudellinen aikakauskirja 1964:4, pp. 310–312;* ARVO M. SOININEN *Kasvututkimus ja dokumentaatio, keskustelua (Growth Study and Documentation, A Discussion), Kansantaloudellinen aikakauskirja 1967:1, pp. 43–44.*

Matti Peltonen has made an estimate for agricultural labour input for the period 1860–1948. MATTI PELTONEN *Maatalous ennen traktorin aikaa, Arvio maatalouden työllisyydestä 1860–1948 (Agriculture before the Tractor, An Estimate of Agricultural Employment 1860–1948). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja, N:o 20, Helsinki 1987. The estimate for the years 1860–1910 is based on productivity assumptions: the labour needed for crop husbandry and livestock production during different periods have been estimated on the basis of contemporary studies concerning the level and development of labour input required to achieve a certain amount of production. Labour productivity in stock rearing as well as land cultivation and sowing work is assumed as having remained constant, so that changes which increased the use of labour have cancelled out those which reduced the use of labour. As a consequence of the introduction of new methods and mechanization in the harvesting of hay and the harvesting and threshing of other crops, productivity is estimated to have improved by about 45 per cent over the period 1860–1910. Productivity data for the years 1912–1948 has also been available in the form of statistics on accounting farms. This data has been modified to reflect the actual structure of agriculture in terms of farm size. Peltonen's labour input data is based on annual figures for harvests and consequently varies quite a lot from year to year. The fluctuations in this data have been smoothed out here by means of a five-year moving average.*

*17. According to the estimate made by Matti Peltonen for this study, agriculture developed up until the 1880s by means of an increase in labour input. As a result of the introduction of labour-saving machinery and increasing labour costs, the ratio of the agricultural labour force to the economically active agricultural population declined (*PELTONEN *1987).*

18. Heikki J. Kunnas has made a growth study entitled "Metsätaloustuotanto Suomessa 1860–1965" (Forestry in Finland, 1860–1965) (1973), and figures from his study have been used here. Forestry is divided into 1) tree harvesting and log floating, 2) afforestation, 3) forestry promotion, and 4) the harvesting of other forest products besides wood. The definition used in the growth study on forestry differs from that of the old official system of national accounting in that afforestation has been treated as a cost of tree harvesting in the growth study, whereas it was considered as being forestry investment in the official calculations.

Data on the felling of lumber for market has been constructed for the period 1860–1942 by estimating the consumption of wood by principal user groups: exports, industry, transport and others. Studies of wood consumption have been used to verify the data for the years 1922–1941. Statistics on the actual amount of felling has been available for the period since 1942. Some estimates have been made for the use of wood for domestic

consumption since the year 1850. Data has been compiled by the Forest Research Institute on stumpage prices starting from the felling season of 1934 – 1935. The portion of the stumpage prices series which pre-dates that point has been constructed using information on export prices, the prices of raw wood used by industry (1910 – 1934) and the prices of wood sold by the National Board of Forestry (1900 – 1934). Information on the labour input of market fellings has only been available since 1942. For the period before that date, labour input has been estimated using the volume of production and relying mainly on assumptions of constant productivity. The productivity estimates are from the study by Helander and Pöntynen covering the 1920s and 1930s (KUNNAS 1973, pp. 13 – 20, 47 – 57).

19. The institution of a similar policy in Denmark at this time led to one of the world's most efficient arrangements for producing livestock product. Denmark ensured a good competitive position for itself in foreign markets thanks to cheap imports of grain – which were used for bread and animal feed – technical innovations and high quality.

20. ARVO M. SOININEN Uuden maatalouden kehityksen suuntaviivoja. Uutta maataloushistoriaa (Development Trends in Modern Agriculture. The Modern History of Agriculture), Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja, N:o 17, Helsinki 1987, p. 3.

21. ARVO M. SOININEN Maa- ja metsätalous. Suomen taloushistoria 2 (Agriculture and Forestry. The Economic History of Finland 2), Helsinki 1982, p. 29.

22. PELTONEN 1986, pp. 204, 206, 175. Only a third of the independent farms in Humppila and Urjala studied by Peltonen had sold lumber during the period 1902 – 1912.

23. EINO JUTIKKALA Omavaraiseen maatalouteen. Suomen taloushistoria 2 (Towards Agricultural Self-Sufficiency. The Economic History of Finland 2), Helsinki 1982, p. 221.

24. Statistical Yearbook of Finland 1984, p. 90.

25. KUNNAS 1973, pp. 168 – 171. Kunnas has estimated the value of forestry production for domestic purposes using the price of wood sold on the market. This has been criticised because the absence of a market for domestically consumed wood means that it does not actually have a price at all. On the other hand, it is difficult to find another price of wood that would be more correct. The value added of forestry production for domestic purposes was quite high in the 1860s: 10 – 15 per cent of gross domestic product at factor cost. According to Arvo Soininen, the share of marketed forest products in total wood utilization was only 17 per cent in 1872 (estimated on the basis of cubic metres of solid timber), SOININEN 1975, p. 300.

26. The concept of industry used in this study encompasses three categories of the old SNA, namely mining and quarrying, manufacturing, and electricity, gas, water and other utilities. Industrial handicrafts (places of work where 1 – 4 persons were employed), hand-sawing and tar burning are also included in industry.

There have been two growth studies made on industry: REINO HJERPPE et al. "Suomen teollisuus ja teollinen käsityö 1900 – 1965" (Industry and Industrial Handicraft in Finland, 1900 – 1965) (1976), and SAKARI HEIKKINEN – RIITTA HJERPPE "Suomen teollisuus ja teollinen käsityö 1860 – 1913" (Industry and Industrial Handicraft in Finland, 1860 – 1913) (1986). These have been supplemented here with estimates of hand-sawing and tar burning during the years 1860 – 1900. The basic sources of data for the growth study on industry have been industrial statistics dating back to 1884 (SVT XVIII and XVIII A), statistics on handicrafts for the years 1913, 1923 and 1934 (SVT XVIII B) and a corporate census taken in 1953 (SVT XXXV). Statistics compiled by the Board of Industry were published from 1842 – 1844 until 1876, and statistics on mining and quarrying as

well as the metal and engineering industry were published by the Board of Mines between 1872 and 1883. These have been supplemented by data from other publications of official statistics as well as archive material and separate studies. (SCHYBERGSON 1974, 1973; HOFFMAN 1980; MYLLYNTAUS 1981; unpublished series by BIRGER RABB).

The available data on industry has been relatively good. Gross values of production have been reported by economic activity since 1884, and they are also available for some earlier years in statistics of the Board of Industry and the Board of Mines. Similarly, data on the value of raw materials is available for the period since 1884, although only on a systematic basis from 1909 onwards. Data on employee numbers covering the whole period is available in published statistics, although it is deficient during the years before 1909 and represents a record of total numbers employed (irrespective of employment duration) rather than man-years of labour.

27. Yritysrekisteri, Liikevaihtoverovelvollisten yritysten toimipaikat (Company Register, Registered Premises of Companies Liable to Turnover Tax). Tilastotiedotus YR 1985:5.

28. RIITTA HJERPPE — JORMA AHVENAINEN Foreign enterprises and nationalistic control: the case of Finland since the end of the nineteenth century. Multinational enterprise in historical perspective, ed. by Alice Teichova et al, Cambridge — Paris 1986.

29. PER SCHYBERGSON Entreprenörer inom Finlands fabriksindustri i början av ryska tiden, Från medeltid till 1900-tal, Till Oscar Nikula 31 maj 1977 (Entrepreneurs in Finnish Manufacturing Industry at the Beginning of the Period of Russian Administration, From the Middle Ages to the Twentieth Century. For Oscar Nikula 31 May 1977), Skrifter av Historiska Samfundet i Åbo IX, Åbo 1977; ERKKI PIHKALA Vierasmaalainen pääoma ja ammattitaito Suomessa autonomian ajan loppupuoliskolla (Foreign and Russian Capital and Know-how in Finland during the Last Decades of the 1800s). Kansantaloudellinen aikakauskirja 1971; TIMO MYLLYNTAUS — KARL-ERIK MICHELSEN — TIMO HERRANEN Teknologinen muutos Suomen teollisuudessa 1885—1920, Metalli-, saha- ja paperiteollisuuden vertailu energiatalouden näkökulmasta (Technological Change in Finnish Industry 1885—1920, A Comparative Study of the Metal and Engineering Industry, the Sawmill Industry and the Paper Industry from the Energy Standpoint). Bidrag till kännedom av Finlands natur och folk H. 134, Helsinki 1986. p. 214.

30. See KRANTZ 1987, p. 50.

31. Purchases by the defence forces accounted for an average of 10 per cent of the gross production of the metal and engineering industry, and this share rose after the mid-1930s.

32. JORMA AHVENAINEN Suomen sahateollisuuden historia (The History of the Finnish Sawmill Industry). Porvoo—Helsinki—Juva 1984; JORMA AHVENAINEN Suomen Paperiteollisuuden kilpailukyky 1920- ja 1930-luvulla (The Competitive Position of the Finnish Paper Industry in the Inter-War Years). Acta Forestalia Fennica, Vol. 151, Helsinki 1976.

33. ALFRED MAIZELS Industrial Growth and World Trade. London 1971.

34. RIITTA HJERPPE Suurimmat yritykset Suomen teollisuudessa 1844—1975 (Major Companies in Finnish Industry 1844—1975). Bidrag till kännedom av Finlands natur och folk H. 123, Helsinki 1979.

35. HARTWELL 1973, pp. 362—365.

36. Transport and communication means the commercial selling of passenger, cargo and telecommunication services to others. Storage is not — as distinct from the ISIC recommendation — included in the old SNA as an independent economic activity. Storage is regarded as belonging to that industry in which it occurs, and it is allocated

accordingly. Log-floating has been included in forestry, and horse-drawn haulage work carried out by farmers as a side-line occupation has been included in agriculture. Use has been made in this study of figures from MATTI TAPANI PELTONEN *Liikenne Suomessa 1860–1913 (Transport and Communication in Finland, 1860–1913). Suomen Pankin julkaisuja, Kasvututkimuksia XI, Helsinki 1983, and* SEPPO LEPPÄNEN *Liikenne Suomessa 1900–1965 (Transport and Communication in Finland, 1900–1965). Suomen Pankin julkaisuja, Kasvututkimuksia V, Helsinki 1973. These two studies were made on slightly different bases, and Leppänen's work has been supplemented and amended for use in this study. Basic statistics dealing with transport and communication as a whole have not been available; data from numerous sources has been combined for each of the economic activities involved. There has been a relatively large amount of good data available on transport and communication, as this area has traditionally been either owned (railways, postal and telegraph services) or controlled by the public sector.*

37. OSMO FORSSELL *has made a growth study entitled "Kauppa Suomessa 1860–1960" (Finland's Domestic Trade, 1860–1960) (1979). Forssell's figures have been used here for the years 1940–1948.* TAPANI MAURANEN *has examined domestic trade in his licentiate thesis Kotimaankaupan rakennemuutos 1860–1913 (Restructuring of Domestic Trade 1860–1913). Talous- ja sosiaalihistorian lisensiaattityö, Helsingin yliopisto 1985, and in his study "Kotimaankaupan kasvu ja rakenne 1860–1960" (The Growth and Structure of Domestic Trade, 1860–1960) (Manuscript). Mauranen's figures have been used for the years 1860–1940. The availability of good statistical data on trade has been particularly poor prior to the corporate census of 1953 (SVT XXXV). However, the cooperative retail societies have published statistics on their business activities since almost the beginning of this century, and the wholesale trade has compiled statistics of its own since the 1920s. Tapani Mauranen has carried out most of his work as an archive study. He has determined the number of shopkeepers in rural areas on the basis of tax collection registers (for the years up until 1923). The numbers of urban shopkeepers during the years 1860–1885 have been estimated from retail trade registers compiled by city magistrates and appropriation tax collection registers. The level for the year 1900 was obtained from a study on municipal taxation, and estimates for the period 1890–1913 were also based on this level. The 1931 Statistical Yearbook of Finland contains a fairly reliable series on rural shopkeepers. Also see* JUHANI HIRVONEN – RIITTA HJERPPE *Taloudellinen kasvu Suomessa 1880–1980. Sata vuotta suomalaista kansantaloustiedettä, Kansantaloudellinen yhdistys 1884–1984 (Economic Growth in Finland 1880–1980. A Hundred Years of Finnish Economics, The Finnish Economic Association 1884–1984), Vammala 1984.*

38. RIITTA HJERPPE *1979, p. 121.*

39. Banking has always been tightly controlled by the state; for this reason the availability of data in this area has been relatively good. Suomen taloushistoria 3, Historiallinen tilasto (The Economic History of Finland 3, Historical Statistics) provides a good explanation of the history of banking statistics and studies: Statistics on the savings banks (SVT VII A) date back to the 1870s and also contain data on banking in the 1860s. The study made by EERO AAKU *entitled "Suomen liikepankit 1862–1955" (The Commercial Banks of Finland 1862–1955) provides data on commercial banking since it began in 1862. Bank deposits and lending have also been calculated in "Historical Statistics", and these have been useful in estimating the value added of the banking sector for the period 1860–1900. The calculations made by* ANTTI SUVANTO *on the activities of the banks and insurance institutions since the year 1900 have been used in this study. Suvanto has not published his findings, but he most generously placed his work tables at my disposal. Statistics on the insurance industry have been published since the year 1892*

(SVT XXII A), and data on the period before this has been assembled in "Historical Statistics".

40. ERKKI PIHKALA Institutional changes in the structure of credits granted to the public in Finland in 1840 – 1913. Transformation of Bank Structures in the Industrial Period, B 10, Eighth International Economic History Congress, Budapest 1982.

41. RIITTA HJERPPE 1979, p. 121. See section 10.3 for further information about foreign finance.

42. It has been necessary to gather data on the amount and value of private services from numerous different sources. With the exception of private teaching, data on the labour force and wages of this sector have been organized for this study by KARI PITKÄNEN. Annual data has not been available for many of the economic activities making up this sector. It was first necessary to determine the labour input of the various subsectors, and then use those estimates to arrive at totals for wages and salaries, value added and the volume of production.

The number of teachers involved in private education each year since the 1880s has been obtained from the Statistical Yearbook of Finland. For the period 1860 – 1880, this figure is based on an estimate of the number of private schools. The number of private physicians each year since 1918 as well as the total number of physicians in the private and public sectors in earlier years have been obtained from reports made by the National Board of Health. The number of persons involved in private hospital nursing is based on an estimate of the number of private hospitals during the period 1860 – 1900 and data on the number of patient-days spent each year in private hospitals from the year 1900 onwards (The Statistical Yearbook of Finland).

The number of domestic servants is available from accident statistics for the years 1927 – 1944 as well as the population census of 1950; employee numbers have been converted into work-years by making a reduction of 10 per cent. The data for the period 1860 – 1920 is based on demographic statistics. The data for intermediate years has been interpolated. A substantial correction was made in the year 1900, because groups such as shop assistants were included in the personal servants category. Population censuses have been used to clarify the situation with regard to the other groups involved in private services. The groups in question were studied on the basis of individual economic activities in cross-sectional years. Development has been examined on the basis of annual reports made by associations, theatres etc, supplemented by data obtained from address lists and literature.

When calculating the wage and salary total of the private services, sector as a whole, 1948 wage/employee levels within individual sub-divisions of the sector were used as the starting point. Wage and salary totals were then extrapolated back using wage indices and average pay. The wage indices used were the wage index of government employees (Luoma 1860 – 1915 and 1938 – 1948, and Lindgren 1915 – 1938), the wage index of female servants in agricultural households, and an index of these two combined. The wage index of female servants for the period 1926 – 1948 has been calculated on the basis of data obtained from accident statistics on the wage development of persons employed as domestic help (data on wage totals in each of the years 1927 – 1949 is regarded as being indicative of the wage level in each preceding year). The tax price of a female day's work has been used for the years 1860 – 1877, and the board-inclusive wages of annually retained female servants (in agricultural households) has been used for the period 1878 – 1925. ARVO M. SOININEN Maataloustyöväen palkkakehitys 1800-luvun lopussa ja 1900-luvun alussa, Ajanjakso 1878 – 1913 (The Development of Agricultural Wages at the End of the Nineteenth Century and the Beginning of the Twentieth Century, Time Period 1878 – 1913). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedon-

antoja, N:o 11, Helsinki 1981; SAKARI HEIKKINEN *et al. Palkat, toimeentulo ja sosiaalinen rakenne Suomessa 1850–1913 (Wages, Livelihood and Social Structure in Finland 1850–1913). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja N:o 13, Helsinki 1983.*

43. In the latter half of the nineteenth century the size and rate of decline of domestic service's share of total employment in the service sector are almost the same as the corresponding figures for England. HARTWELL *1973, p. 383. Only in the revised SNA are maintenance and repair services included in private services.*

44. HARTWELL *1973, pp. 383–384.*

5. Population Growth: Labour Supply and Consumer Demand

Population growth is the difference between the number of births and the number of deaths plus net migration. High birth and mortality rates were typical of traditional societies. Both are very low in the developed countries of the present day. Rapid population growth came about because the declining trend in the mortality rate preceded the onset of a similar development in the birth rate.

The most fundamental economic effects of population growth are the supply of additional labour and increasing consumer demand. In principle, rapid population growth means expanding markets, which enable production to benefit from economies of scale.

Before the mid-eighteenth century, population growth was minimal in Western Europe and the world population was fairly stable. The turning point occurred in the latter half of the eighteenth century, when the population began to increase continuously. In Western Europe, population growth was at its height in the latter half of the nineteenth century, after which it slackened off appreciably. Amongst others, Kuznets links population increase with economic growth, even though he also states that population increase in the twentieth century has slowed down during the period of rapid economic growth in the industrialized countries and accelerated in the poor developing countries. An exact starting point for rapid economic growth in eighteenth-century Europe is not observable, although growth did accelerate in England and certain other Western European countries – at least to the extent that there was no decline in production per capita.[1]

The population of Finland has risen from about 1.7 million in 1860 to about 4.9 million in the 1980s. The rate of population increase between the early part of the eighteenth century and the middle of the nineteenth century was relatively high at about 1 per cent per annum. The annual growth rate increased to about 1.5 per cent in the 1870s and 1880s. Since then it has gradually declined – excluding the post-war rise of the 1940s – to its present level of about 0.4 per cent.

The rapid population growth in Finland between the 1720s and the early decades of the nineteenth century coincided with a period of minimal economic growth. Gross domestic product apparently rose at more or less the same rate as the population during this period[2] and somewhat faster in the years 1820–1860. On the other hand, crop failures, epidemics and wars caused large fluctuations in annual birth and mortality rates during the years before 1860.

In the 1870s and 1880s economic and population growth in Finland accelerated simultaneously. While GDP rose by 2.5 per cent annually, the population increased by 1.5 per cent and the product per capita grew by about 1 per cent. This was a significant improvement on the preceding century but still modest by comparison with later years.

The rapid increase in the landless population represented a serious problem in the latter half of the nineteenth century. In 1910 only 40 per cent of the economically active agricultural population were landowners. About 20 per cent were tenant farmers and 40 per cent agricultural workers.[3] The relative size of the landless population had doubled since the mid-nineteenth century.[4] The rapid growth of the landless agricultural population represented a reserve labour force for forestry as well as manufacturing and service industries. However, these industries were unable to provide enough employment to satisfy the needs of this rapidly growing section of the population, some of whom sought refuge from their misery by emigrating to North America, St Petersburg and other destinations.[5]

Birth and mortality rates fell by about two thirds between the mid-nineteenth century and the 1980s (Chart 10). The mortality rates of young children and especially early infants have fallen more or less continuously since the eighteenth century. The almost continuous decline of the mortality rate began in the 1870s and 1880s and continued until the 1950s, when the trend levelled off. The birth rate began to fall appreciably after the turn of the century; there was a very distinct turning point in this development around the year 1910.[6] Population growth slackened off during wartime – in some years the population actually fell due to the large number of casualties (1918, 1940). The birth rate also fell during the years of war, but – as is usually the case after some form of severe crisis – it rose to even higher levels once peace had returned.

The effect of migration on population growth can be seen in Chart 10 as the difference between the natural rate of population growth (3) and the actual rate of population increase (4). There was considerable emigration between the 1880s and the beginning of the First World War. An estimated 300,000 people emigrated from Finland primarily to North America. In relation to the total population, migration was not as great in Finland as it was, for example, in Norway and Sweden during roughly the same period.

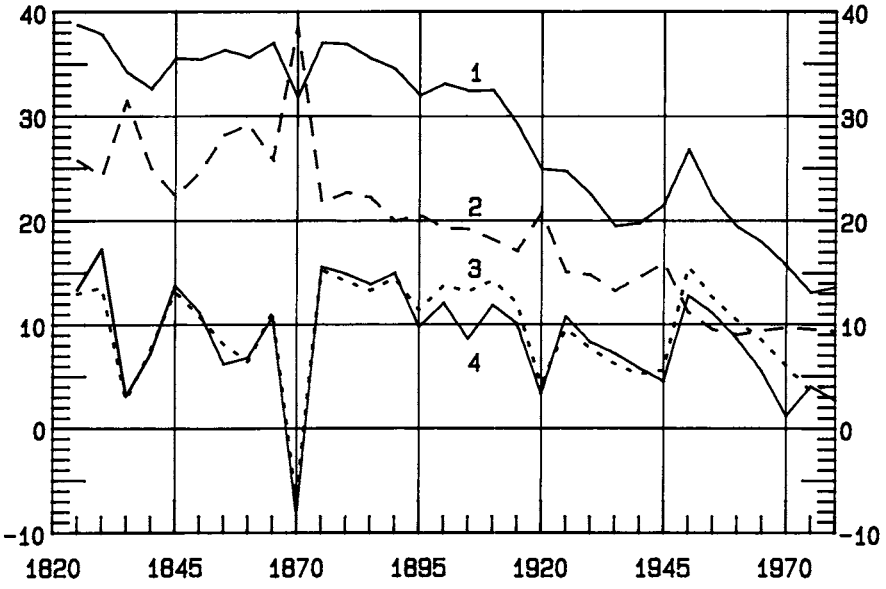


Chart 10. Demographic Changes, 1821–1980, Per Mil (Five-Year Averages 1821–1825, 1826–1830, etc)

1 Birth rate
2 Mortality rate
3 Excess of births over deaths
4 Population increase

Source: Suomen taloushistoria 3 (The Economic History of Finland 3), 1983, pp. 36–41; Statistical Yearbook of Finland, various years.

Emigration, especially to Sweden, has again been significant since the end of the Second World War. Especially in the late 1960s and early 1970s, many young people belonging to the large generation born in the years that followed the end of the Second World War found employment in the Swedish labour market.

The fall in the rate of infant mortality has been particularly important in reducing the overall mortality rate. Viewed purely from the economic standpoint, a high rate of infant mortality is wasteful, as it ties up resources and keeps women away from the labour market and domestic work. Peaks in the mortality rate caused by epidemics and crop failures have decreased, and the diminished frequency of large epidemics has increased the working capacity of the population. The question of what extent the fall in the mortality rate is attributable to the rise in the standard of living and what extent to the progress made in medical science remains unanswered. In the

background there is obviously a complex web of factors, where the strands of medical science and the development of living standards are connected.[7]

The birth rate did not begin to fall until after the declining trend in mortality rates had become established; this may have been partly due to the fact that the lower rate of infant mortality reduced the number of births necessary for the creation of families. The average lifespan gradually increased. Life expectancy in Finland during the latter part of the nineteenth century averaged just over 40 years; nowadays a Finnish man may reasonably expect to live for over 70 years and a Finnish woman for almost 80 years. These facts have significant direct and indirect economic effects.

Changes in the age structure have had a favourable influence on economic growth in the sense that they have led to an increase in the working-aged population. On the other hand, increased schooling and modern pension systems keep young and old people away from the labour market.

5.1. Employment

This study contains the first annually based estimate of labour input covering the entire 125 year period. The labour input quadrupled from 575,000 work-years in 1860 to 2.3 million employed persons in 1985. The labour input index (determined on the basis of work-years for the period 1860–1960 and work-hours for the period 1960–1985) developed as follows:

	Average annual percentage increase
1860–1890	1.2
1890–1913	1.2
1913–1946	1.1
1946–1960	1.3
1960–1985	−0.4
1860–1985	1.0

The rapid and relatively steady growth of labour input ended in the 1960s, when labour input determined in work-time units actually contracted. Measured in terms of the number of people employed, labour input has in fact continued to grow at an average annual rate of 0.3 per cent over the period 1960–1985. Labour input in work-hours has gone into decline during this period due to the shortening of the normal working year and increased part-time employment (Chart 11).

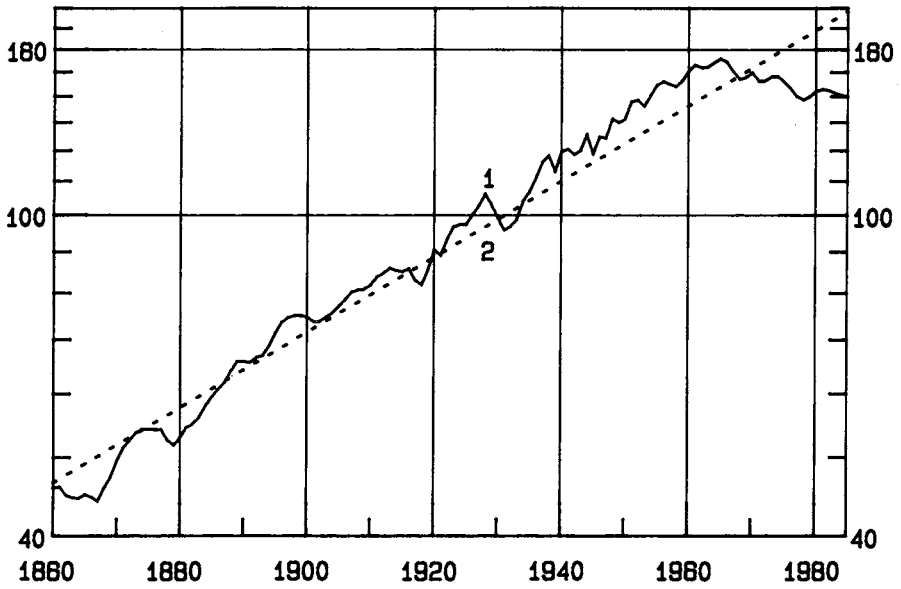


Chart 11. Employment Index, 1860–1985, 1926 = 100

1 Employment
2 Trend, equation of the trend: $\ln Y = -16.13842 + 0.01074t$
(0.3721) (0.0002)
SE = 0.079
R^2 = 0.961

Earlier studies have focused on either the size of the working-aged population, persons aged between 15 and 64, or the size of the economically active population. The labour input results of this study and those of these earlier studies are compared in Table 13.[8]

The economically active population has generally comprised well below a half of the total population. Although it did reach a peak of 55 per cent in 1940, its height can probably be explained by the low birth rate of the 1930s and the unusually high level of female participation in the labour force during wartime. From the 1860s right up until the 1920s, about 60 per cent of the population was of working age. The relative size of the working-aged population began to increase in the 1920s and reached an historical record of more than two thirds of the total population during the 1980s. By international standards, the proportion of working-aged persons in the total population remains relatively high in Finland.

The proportion of employed persons (= work-years) in the total population grew fairly steadily during the one-hundred-year period up to

Table 13. Population, Economically Active Population, Working-Age Population, and Labour Input at Ten-Yearly Intervals

	Total population, 1000	Economically active population, 1000	Economically active population, % total pop.	Population aged 15–64, 1000	Population aged 15–64, % total pop.	Labour input, 1000 work yrs.	Labour input, % total pop.	Labour input, % economically active pop.	Labour input, % persons aged 15–64
1860	1 747.0	746.0	42.7	1 061.0	60.7	574.9	32.9	77.1	54.2
1870	1 768.8	783.0	44.3	1 074.3	60.7	623.4	35.2	79.6	58.0
1880	2 061.0	918.0	44.5	1 263.0	61.3	668.1	32.4	72.8	52.9
1890	2 380.1	1 047.0	44.0	1 410.8	59.3	837.5	35.2	80.0	59.2
1900	2 656.0	1 193.0	44.9	1 583.0	59.6	949.1	35.7	79.6	60.0
1910	2 943.4	1 296.0	44.0	1 724.5	58.6	1 040.6	35.4	80.3	60.3
1920	3 148.0	1 499.0	47.6	1 908.0	60.6	1 139.4	36.2	76.0	59.7
1930	3 462.7	1 714.0	49.5	2 227.2	64.3	1 251.2	36.1	73.0	56.2
1940	3 696.0	2 017.0	54.6	2 464.0	66.7	1 517.9	41.1	75.3	61.6
1950	4 029.8	1 984.0	49.2	2 554.0	63.4	1 649.6	40.9	83.1	64.6
1960*	4 446.0	2 038.0	45.7	2 776.0	62.4	1 890.5	42.5	92.8	68.1
1970	4 598.3	2 118.0	46.0	3 052.2	66.4	2 201.7	47.9	104.0	72.1
1980	4 788.0	2 222.0	46.4	3 245.0	67.8	2 264.1	47.3	101.9	70.0
1985	4 911.0	..	..	..	..	2 279.9	46.8	..	..

* Employed persons (revised SNA) 2123.9, 47.8 % of the total population, 104.2 % of the economically active population, 76.5 % of persons aged 15–64.

Sources: Suomen taloushistoria 3 (The Economic History of Finland); Statistical Yearbook of Finland; MANNINEN *1976, p. 82.*

1960.[9] The figures for the period since 1960 are not directly comparable with those of earlier years. Whereas the relative size of the employed population has been fairly stable since 1960, labour input calculated on the basis of work-hours has declined appreciably. A comparison of the number of work-years and the size of the economically active population reveals that their relationship varied very little between 1860 and 1940.

As the labour input series has been estimated fairly independently of the series for the economically active population and the working-aged population, comparisons between them also serve as a check on the reliability of the labour input estimates. A fairly regular relationship between the trends of the series probably indicates that the labour input series is quite reliable. The ratio of labour input to the working-aged population grew fairly steadily up until 1960 and then began to decline. Presumably, one of the most important reasons for this development is the increase in the numbers of students and people who have retired prematurely on disability pensions.

5.2. Unemployment?

This study has focused on the labour input in work-years for the period 1860–1960, not on employment. Can any conclusions about the appearance of unemployment be drawn from the results of this study?

Information on the economically active population, i.e. the size of the labour force, is only available for every tenth year. In principle, the concept of the "total labour force" includes not only the fully employed and unemployed but also those in part-time employment. Thus unemployment cannot be estimated by subtracting the labour input (in work-years) from the potential labour supply of the economically active population.

Neither is a comparison of the working-aged population and labour input in work-years adequate for the purpose of describing unemployment. The growth of labour input relative to the size of the working-aged population is probably more indicative of structural change – more widespread participation in the labour force – in society than it is of a decline in unemployment.

It must also be remembered that the present-day setup of all-year-round employment is a relatively new phenomenon and that in this respect the whole concept of unemployment has changed. In earlier times, seasonal or part-yearly working was the norm in a number of industries; for example, construction workers were in the past laid off in midwinter. Manufacturing plants closed down for part of the year because of the need for repairs, the height of the water level and various other reasons. Agricultural and forest-related work has always been seasonal in nature. At the same time, the

movement of workers from one field of employment to another – e.g. farm work, forest work, log floating, construction work etc. – at different times of the year was probably more usual in those days than it is today.

The phenomenon of urban unemployment is described by Eino Kuusi in the following words: " It was not possible for unemployment to occur as a mass phenomenon ... in a society where membership of a trade guild was still compulsory ... The legislators of the day sought to perpetuate a social order in which each member of the indigent social class had his own defined place and quite narrowly restricted field of activity. Although he was seldom permitted to stray from his allotted function, it did guarantee him a livelihood consistent with his social standing. Certainly, even in those days, there were sometimes cases of local work shortages among craftsmen and other workers. As a mass phenomenon, however, unemployment did not become a possibility until after the introduction of freedoms of movement and occupation had created the conditions necessary for it by mobilizing the masses from place to place and from job to job ... In this respect the 1870s represent an epochal decade for Finland."[10]

According to Eljas Kahra, "mass unemployment first occurred in this country in the years 1917–1919, when a large work force was released from work on Russian fortifications and production was otherwise going through a period of transition. There were no worse instances of unemployment after this until the worldwide economic depression struck in 1929."[11]

Obviously, we can get some idea of the employment situation from the annual fluctuations of the labour input series, although they probably do not provide a completely reliable picture of changes in employment during periods of cyclical variation.[12]

In 1867, one of the nineteenth century's worst years of crisis, employment fell by 6 per cent, i.e. 23,000 work-years below the level of the best years of the early 1860s. The lowness of the labour input in 1880 compared with the economically active population and the working-aged population may be indicative of significant unemployment in the depressed economic conditions prevailing at that time. The labour input fell by 31,000 work-years (5 per cent) from the peak level of the 1870s; the biggest decline occurred during the period 1877–1879. The worst decline in labour input during the First World War was the 5 per cent fall between 1916 and 1918.

The severity of the Great Depression of the 1930s is also clearly visible in the labour input: it fell by about 10 per cent, i.e. over 130,000 work-years, between 1928 and 1931, but then embarked on a slow upward trend a year in advance of a similar development in GDP volume. According to official unemployment registers, the highest number of jobless persons was recorded in February 1932, when 91,778 persons were registered as unemployed. In 1931 the Unemployment Committee estimated that the actual

number of unemployed persons was between 110,000 and 120,000 persons.[13]

During the final stages of the Second World War, the labour input for 1944–1945 fell by more than 5 per cent. However, the significance of this decline is questionable, as it includes the demobilization of military personnel (the armed services are included in labour input). The labour input also fell at the end of the 1940s and in some years during the 1950s; the worst of these declines were a two per cent fall during the post-Korean War depression of 1952–1953, and a one and a half per cent fall in 1956–1958.

Because the labour input index has been calculated on the basis of work-hours since 1960, it is not possible to distinguish between unemployment and the general shortening of working time. Consequently, there is probably little to be gained from an examination of the labour input after 1960. Nevertheless, it is possible to observe a four per cent decline between 1965 and 1968, which coincided with the poor employment situation of the period, and a 6.5 per cent decline between 1974 and 1978.

5.3. The standard of education

The significance of the standard of education in the initial generation of economic growth is a much debated question, which has not yet been satisfactorily resolved. In England and certain other Western European countries, rapid economic growth began during a period when the population's standard of education was extremely low. Controlling and operating the epoch-making technology of the Industrial Revolution – the machinery of the cotton industry, innovations in the manufacture of iron, steam engines – did not require much of workers by way of education and training. Obviously, it sufficed that management was literate and capable of mastering certain technical skills.[14]

Nowadays, investments in education and training are regarded as an indispensible pre-requirement for rapid economic growth, and considerable resources are expended on both the basic education of the population and the high level of education required by specialists and researchers.

The high rate of literacy in the population has long been emphasized in Finland. However, the educational standard of the Finnish population – the often modest reading skills apart – was by no means good in 1880 as the following schedule shows:[15]

	1880[1] %	1920[2] %
More than primary education	2	5
Fully literate (reading and writing)	11	65
Partially literate (reading only)	85	29
Illiterate	2	1
Total	100	100

[1]) 10 year-olds
[2]) 15 year-olds

During the forty-year period between 1880 and 1920, the situation improved appreciably and the fully literate proportion of the population increased six fold.[16]

In 1950, 3 per cent of the population over 15 years of age had matriculated, 6 per cent had attended junior secondary school and 64 per cent had attended primary school. Only 27 per cent of the population had received less schooling than this.

In 1983, 43 per cent of the population over 15 years of age had completed secondary level education (study programmes of at least 400 hours at senior secondary school, institutions for vocational education or university). One in five of these held some form of tertiary-level diploma and four out of five had completed the second stage of secondary education.[18]

Fairly rapid economic growth therefore began in Finland at a time when the general standard of education was low. Industry was indeed in need of foreign know-how and it was perfectly normal for companies to acquire new technology by bringing in managers from abroad.[19]

1. KUZNETS 1966, pp. 57–58.

2. HEIKKINEN et al. 1987.

3. VILJO RASILA Agraarikysymys Suomessa 1800-luvun lopulla ja 1900-luvun alussa. Suomalais-neuvostoliittolainen historiantutkijoiden symposium (The Agrarian Question in Finland at the End of the Nineteenth Century and the Beginning of the Twentieth Century. Symposium of Finnish-Soviet History Researchers), Riga 1.–7.12.1985, Historiallinen Arkisto 88, Helsinki 1986.

4. YRJÖ KAUKIAINEN Finnland 1860–1913 (Finland 1860–1913). Handbuch der europäischen Wirtschafts- und Sozialgeschichte, Band 5, Stuttgart 1985.

5. The growth of the indigent landless can be observed in the very uneven distribution of income at the end of nineteenth century and the beginning of the twentieth century. RIITTA HJERPPE – JOHN LEFGREN Suomen tulonjakautuman kehityksestä 1881–1967 (Long-Run Trends in Finland's Income Distribution, 1881–1967). Kansantaloudellinen aikakauskirja 1974. According to Rasila, tenantships and small farms were regarded

as the solution to the problem posed by the landless population; in any event the situation was remedied by the additional employment created when manufacturing and service industries developed. This group of rural itinerants once again became a social problem during the years of unemployment in the 1930s. RASILA *1986, p. 77.*

6. AARNO STRÖMMER *Väestöllinen muuntuminen Suomessa (The Demographic Transition in Finland). Väestöpoliittisen tutkimuslaitoksen julkaisuja A:13, Tornio 1969, p. 96.*

The infant mortality rate based on the mean population between 1860 and 1865 was 180 per mil; it was still 52 per mil for the period 1946 – 1950, but less than 7 per mil over the years 1980 – 1984. The last-mentioned figure is the lowest in world. Statistical Yearbook of Finland 1985/86.

7. R. C. O. MATTHEWS *et al. 1982;* MADDISON *1982.*

8. The size of the working-aged population is included in the demographic statistics for every year. The size of the economically active population has been obtained from demographic statistics compiled by the clergy every 10 years up until 1940 and from population censuses since 1950. The problems of this data are the lack of annual data, the fact that the information gathered by the clergy lags somewhat behind actual development, and changes in the bases on which the statistics have been classified. The manner in which unpaid family workers have been treated has been especially variable.

Pauli Manninen and the Central Statistical Office have independently summarized the development of the economically active population. These summaries were prepared in an attempt to eliminate the effects of classification changes on the occupational distribution of the population. The figures published by Manninen cover the period 1820 – 1970, while those of the Central Statistical Office relate to the years 1880 – 1975. MANNINEN *1976; Väestön elinkeino, Väestö elinkeinon mukaan kunnittain vuosina 1880 – 1975 (Population by Industry: Population by Industry and Commune, 1880 – 1975). Tilastollisia tiedonantoja 63, Helsinki 1979. The figures used in the table are Manninen's; they differ markedly from those of the Central Statistical Office for the period 1880 – 1900. The difference mainly concerns the way in which unpaid family workers have been treated. Manninen includes more of these workers in the economically active population than does the Central Statistical Office. The definition of the economically active population used in population censuses since 1950 again differs somewhat from those discussed above. See* MANNINEN *1976, pp. 60 – 64;* STRÖMMER *1969, p. 58.*

9. The same upward trend has been observed in the developed countries at least between the end of the nineteenth century and the middle of this century. KUZNETS *1966, p. 73. The increase in Finland has been of the same magnitude as in other countries.*

10. KUUSI *1914, p. 1.*

11. See ELJAS KAHRA *Työttömyys vuosina 1928 – 36 (Unemployment in 1928 – 1936). Työttömyysneuvoston julkaisuja, Helsinki 1938, pp. 5 and 8. The keeping of official records of unemployment was started in 1929, when a law was passed obliging every local authority to maintain a register of all unemployed persons in need of social assistance. The law also defined conditions which the unemployed had to meet in order to be placed on the register. A registered unemployed person had to be: a) unemployed through no fault of his own, and willing and able to work; b) in such a weak financial position that, because of unemployment, he would have to be provided with social assistance; and c) in need of this aid because of unemployment which had lasted for at least six days after the person concerned had applied for work at the local labour exchange or notified the local committee for unemployment. Unemployment statistics included not only persons who were out of work but also those temporarily placed in employment.*

12. Where employment data from population censuses has been used (private services),

they are statistics compiled only once every ten years on the economically active population; the data on the intervening years has been interpolated. Variations in employment due to cyclical fluctuations are therefore not observable in some of the series. In some industries, labour input data has been derived from production data; in such cases, fluctuations in production are therefore mirrored in the labour input series.

13. KAHRA *1938, p. 9.*

14. The recording of statistical data on the educational level of the population was begun in 1880, but such data is not comparable over a long period of time. No attempt has been made here to achieve consistency in this data; the intention has been to provide no more than a general description of educational standards based on certain available sources.

15. Official Statistics of Finland VI 29, Pääpiirteet Suomen väestötilastosta vuosina 1750–1890, I (Main Features of Demographic Statistics in Finland 1750–1890, I), pp. 250–251. Statistical Yearbook of Finland 1925, pp. 42–43.

16. In 1880 there were more than six times as many pupils in Norwegian primary school as there were attending primary school in Finland. The disparity was reduced to a multiple of two by 1913. At the beginning of this century the majority of Finnish children only attended church circuit schools, which no longer existed in Norway at that time. On the other hand, secondary schooling and the attendance of university were considerably more extensive in Finland than in Norway. ANTTI KUUSTERÄ *Valtio ja vapaan kilpailun harhat – valtion panos autonomian ajan jälkipuoliskon taloudellis-sosiaalisessa muutoksessa. Historian päivät 1985, Historiallinen Arkisto 88 (The State and the Illusions of Unrestricted Competition – the role played by the state in the socio-economic changes that took place during the latter half of the period of autonomy. The Days of History, Historical Archive 88), Helsinki 1986, p. 134.*

17. Statistical Yearbook of Finland 1960, p. 31.

18. Statistical Yearbook of Finland 1985/86, p. 344.

19. SCHYBERGSON *1977;* PIHKALA *1971.*

6. The Increasing Importance of Productivity

Labour productivity in Finland increased at an average rate of 2 per cent per annum over the period 1860–1985 (Table 15, also see Table 16). A rise in labour productivity may be due to not only the capital per worker being

Table 14. Growth of Labour Input by Kind of Economic Activity for Selected Periods, Average Annual Percentages

	Primary production	Manufacturing	Construction	Transport and communication, trade, banking and insurance, ownership of dwellings, private services	Public services	Total labour input
1860 — 1890	1.0	2.4	1.2	2.2	1.9	1.2
1890 — 1913	0.6	3.3	—0.8	3.4	3.1	1.2
1920 — 1938	0.0	3.4	4.3	2.9	2.2	1.5
1946 — 1960	—1.6	1.9	5.8	3.9	2.7	1.3
1960 — 1974	—3.7	1.2	—0.4	1.1	4.4	—0.1
1974 — 1985	—3.9	—1.0	—1.5	0.1	3.5	—0.5
1860 — 1985	—0.6	2.1	1.0	2.3	3.3	0.9

Man years 1860–1960, work hours 1960–1985.

Table 15. Growth of Productivity by Kind of Economic Activity for Selected Periods, Average Annual Percentages

	Primary production	Manufacturing	Construction	Transport and communication, trade, banking and insurance, private services	Public services	Total GDP (excl. ownership of dwellings)
1860 — 1890	0.5	2.5	1.1	1.5	—0.3	1.0
1890 — 1913	1.1	1.9	2.9	1.3	—0.3	1.8
1920 — 1938	1.9	4.3	1.8	2.6	0.7	3.0
1946 — 1960	2.8	4.7	1.8	3.0	0.9	4.0
1960 — 1974	3.5	4.5	3.9	4.2	0.5	4.6
1974 — 1985	5.6	5.2	2.0	2.9	0.6	3.4
1860 — 1985	1.7	2.8	1.7	1.6	—0.2	2.1

increased but also improvements in technology, organization or the training of employees, and even, for example, the achievement of economies of scale in production.[1] GDP has risen at an average annual rate of 3 per cent over the past 125 years; increased productivity has been responsible for two thirds of this economic development, while the growth of labour input has accounted for the remainder. Increased productivity has therefore had a profound effect on the economic development of Finland over the past 125 years. That was not the case in earlier times, when economic growth was still slow and erratic.

In the years between 1860 and 1890 increased production was based more on higher labour input than on greater productivity (Table 16). With the exception of the two world wars, the period since 1890 has seen labour productivity rise at a consistently faster rate than labour input. Productivity declined during the two world wars chiefly because it was not possible to replace worn-out machinery; labour input had to be increased just to maintain production at its reduced level.

Like the growth of domestic product, the rate of productivity increase has accelerated over the years so that the fastest rates of development have occurred since the end of the Second World War. After 1974 the growth of both productivity and GDP slackened off in comparison with the preceding decades. Nevertheless, the annual growth rate of productivity was still

Table 16. Growth of Gross Domestic Product, Labour Input and Labour Productivity for Selected Periods, Average Annual Percentages

	GDP at factor cost	Labour input	Productivity*	Share of labour input in GDP growth, %	Share of productivity in GDP growth, %
1860 — 1890	2.2	1.2	0.9	55	45
1890 — 1913	2.9	1.2	1.7	41	59
1920 — 1938	4.4	1.5	2.8	34	66
1946 — 1960	4.9	1.3	3.5	29	71
1960 — 1974	4.5	—0.1	4.6	—2	102
1974 — 1985	2.9	—0.5	3.4	—17	117
1860 — 1985	3.0	0.9	2.0	33	67

* Productivity is calculated here on the basis of the volume of the entire gross domestic product and the labour input index; it therefore includes the ownership of dwellings.

It can be shown that the change of gross domestic product is approximately as large as the change of employment plus productivity.

about 2.5 times higher than the average rate of increase over the period 1860–1950.[2]

It is difficult to identify a point at which productivity started to accelerate. Only in a very few industries did productivity rise quickly during the early phase of industrialization. The accumulation of capital per worker was also slow. In the context of the development of the economy as a whole, this meant that productivity would improve gradually, accelerating along with the spread of modern production.[3]

The importance of productivity as factor in the development of GDP has been increasing continuously. The rise in productivity since 1960 has even exceeded the average rate of increase in GDP, while there has been a slight decline in labour input (measured in work-hours).

The rate of productivity increase has been fastest in manufacturing, averaging 2.8 per cent per annum over the whole period from 1860 to 1985, and as much as 4.3–5.2 per cent per annum during the years of peace since the end of the First World War. This pace of development is significantly faster than in any other sector of the economy.

Industrialization has long been associated with both technological development and the rise in productivity. The steam engine, spinning jenny and the reverberatory furnace have often been accredited as having played a crucial role in the Industrial Revolution. However, the clearing of production bottlenecks through the gradual adaptation of production technology and the utilization of production inputs has been of even greater importance.

Primary production had to be content with a rate of productivity increase of only a half of one per cent between 1860 and 1890. The growth of productivity also accelerated in this sector, however, so that by the period 1974–1985 it had achieved an annual growth rate of 5.6 per cent – higher than in any other area of economic activity. The productivity of primary production increased at an average annual rate of 1.7 per cent over the period 1860–1985; primary production itself rose at a average annual rate of 1.1 per cent over the same period. It has therefore been possible to release labour from agriculture to work in other areas of the economy without reducing production.

The productivity of construction, private services, transport and communication, trade, banking and insurance has grown at a slower rate (1.6–1.7 per cent per annum), although it must be remembered that the measurement of productivity in these areas is problematic. The productivity of public services is influenced by the development of real wages; calculations made on this basis indicate that the productivity of public services has actually declined. The real wages of top government officials fell at the end of the nineteenth century and the structure of the labour force was simulta-

neously changed by the inclusion of more low-paid workers. The same kind of development has also occurred in transport and communication, trade and the private services sector.

The productivity contributions of the various areas of economic activity, i.e. their shares in the growth of economy-wide productivity, are calculated by weighting their productivity growth rates according to their shares in employment (Table 17).[4] The ownership of dwellings has been excluded from the calculation of productivity contributions – a practice which is quite normal when making a study of productivity.

When examined over the whole period from 1860 to 1985, the share of primary production in the overall growth of productivity has been more than a half. The main reason for this is that primary production had a large share in employment for quite a long time, but it is also a consequence of the fairly rapid development of its productivity since the 1920s. The contribution of primary production was at its height during the two decades preceding the First World War. The particularly rapid growth of forestry that occurred at that time added to the productivity contribution of primary production. Since then the share of primary production in the growth of productivity has declined, although it still remains significant.

Manufacturing has accounted for a quarter of the overall growth of productivity over the entire period of study. It was somewhat lower than this at the beginning of the century, when the rapid growth of manufacturing was based more on an increase in the labour force than a rise in productivity.[5] Since the 1920s the productivity contribution of manufacturing has been high; with the exception of the period 1960–1974, it has accounted for about a third of overall productivity growth.

The share of private services, transport and communication, trade, and banking and insurance in the growth of productivity has increased, as has

Table 17. Productivity Contributions of Economic Activities to the Average Growth of Overall Productivity for Selected Periods, Annual Average Percentages

	Primary production	Manufacturing	Construction	Transport and communication, trade banking and insurance, private services	Public services	Total
1860 — 1890	34	34	11	23	—2	100
1890 — 1913	43	25	17	17	—2	100
1920 — 1938	30	38	4	25	3	100
1946 — 1960	23	45	6	23	3	100
1960 — 1974	14	36	11	37	2	100
1974 — 1985	15	47	6	29	3	100
1860 — 1985	37	37	6	19	1	100

their share in gross domestic product. Conversely, the share of public services has been fairly modest.[6]

The productivity of the economy as a whole has risen not only because of the development that has occurred within various industries but also as a result of structural change brought about by the transference of resources from areas of below-average productivity to areas of higher productivity.[7]

The effect of structural change on the growth of productivity can be studied hypothetically by calculating the productivity of the whole economy on the assumption of an immutable economic structure and comparing the result thus obtained with the actual development of productivity. The magnitude of the benefit derived from structural change depends on the speed of restructuring, the disparity of productivity levels in different industries (relative productivity) and productivity changes.[8]

The growth of productivity attributable to structural change over selected periods between 1860 and 1985 was as follows:

1860–1890	29 %
1890–1913	42 %
1920–1938	27 %
1946–1960	17 %
1960–1974	24 %
1974–1985	–8 %
1860–1985	25 %

Structural change has been responsible for about a quarter of the growth of productivity over the whole period of observation. The disparity of actual and hypothetical productivity was at its greatest during the period 1890–1913, when structural change accelerated for the first time as a result of intense and fairly steady economic growth.[9] The rapid structural changes of the 1920s also led to significant productivity gains, which were subsequently reduced by the interruption of restructuring in the 1930s. The extent of agricultural resettlement after the Second World War kept the difference between hypothetical and actual productivity relatively small. The accelerated restructuring of the 1960s and 1970s once again widened the theoretical gap significantly. The hypothetical nature of the calculation is apparent from the negative figure for the years 1974–1985. This result means that structural change led to a lower level of productivity development than would have been the case had the growth of individual industries been isolated from one another. This stems from the fact that the development of productivity was most rapid in primary production, because the underemployed labour force was still able to transfer to other fields of work.

1. When output has grown at a faster rate than labour input over the same period of time, we say that labour productivity has improved. When we speak of productivity we most often mean the marginal productivity of labour, which is a measure of the change in output resulting from a change in labour input. When calculating the marginal productivity of labour, it is assumed that the quantities of other factors of production remain constant. In practice, productivity is often calculated on the basis of observations which are influenced by changes in all factors of production. Average productivity of labour means output per worker.

It is also possible to examine the productivity of capital, which is similarly measured in terms of the change in output resulting from a change in the input of capital, or the average productivity of capital (output per unit of capital). Furthermore, growth accounting enables us to combine the effects of increased inputs of labour, capital and land (see Footnote 8, p. 147). Because independent data on the development of production and labour input has only been available in the case of industry, the data on productivity must be treated with some caution. Estimates of labour requirements have been employed in agriculture and forestry. Productivity data for most economic activities mainly reflects the development of real wages and salaries.

2. This positive correlation between the rate of productivity increase and the growth of output is known as Verdoorn's law. HACCHE *1979, p. 259.*

3. Recent studies have emphasized the continuity of development rather than the importance of rapid changes and new industries. See CRAFTS *1985, pp. 83–85;* JOEL MOKYR *Demand vs. Supply in the Industrial Revolution. The Economics of the Industrial Revolution, ed. Joel Mokyr, London 1985, pp. 109–110.*

4. Growth rates over the various periods of observation have been calculated on the basis of the final years; employment weights are arithmetic averages of the shares in employment for each year of the observation period.

Crafts makes reference to a similar calculation concerning the United Kingdom, in which the industries' gross outputs have been used as weights in the absence of other sufficiently detailed material. See CRAFTS *1985, pp. 85–86.*

5. See SAKARI HEIKKINEN *–* RIITTA HJERPPE *Suomen teollisuus ja teollinen käsityö 1860–1913 (Industry and Industrial Handicraft in Finland, 1860–1913). Suomen Pankin julkaisuja, Kasvututkimuksia XII, Helsinki 1986, p. 32.*

6. The productivity contribution of public services might have been otherwise had its productivity been more precisely definable; the public service sector has increased its share significantly.

7. Maddison emphasizes the importance of a similar type of development – the transference of resources to industries with higher levels of productivity – in other developed countries. Of the industrialized countries at least Austria, Italy and Japan show a similarity to Finland in as much as the share of agriculture in the labour force was still significant after the Second World War. The transference of underemployed labour from agriculture to industries with higher levels of productivity has not only resulted in agriculture exhibiting the fastest rate of productivity increase but also increased the productivity of the whole economy. MADDISON *1982, pp. 115–116. Colin Clark drew attention to this as long ago as in the 1940s. See* HARTWELL *1973, p. 386.*

8. Hypothetical productivity is the productivity of individual industries weighted according to their share in the labour force in the first year of the period of observation.

9. According to a calculation concerning Sweden, the growth of productivity resulting from structural change – as a matter of fact the study was only concerned with the movement of labour from primary to secondary production – was also at its height during the 1890s; it was then a half of overall productivity growth. In Sweden, productivity growth due to structural change has been minimal since 1960. KRANTZ *1987, pp. 27–28.*

7. Private Consumption Rises – But Not without Setbacks

Private consumption is one of the most important indicators of the standard of living. Having said that, it should be pointed out that the standard of living is by no means the same as the value of goods and services consumed. The money value of consumption measures the expenses necessary to achieve a certain standard of living, not the level at which needs are satisfied.[1] In addition to private consumption, factors such as the level and composition of public services also have an essential bearing on the standard of living.

The volume of private consumption rose at an average annual rate of 3.0 per cent over the whole 125-year period.[2] Consumption per capita grew at an average annual rate of 2.1 per cent, and the level of consumption per capita rose 14 fold (Chart 12). The development of the volume of private consumption has followed the development of gross domestic product quite closely, although it has grown at a slightly slower rate (GDP per capita increased at an average annual rate of 2.2 per cent).

Fluctuations in the volume of private consumption have been more abrupt than those in the volume of gross domestic product; public consumption and long-term building investments have generally tended to even out cyclical fluctuations in GDP, as has agricultural production in cases where the downturn was not caused by a crop failure.[3]

Private consumption accounted for more than four fifths of gross domestic product in the final decades of the nineteenth century, whereas it nowadays constitutes little more than a half (Chart 13). The decline of its share has not been steady: it did not begin to fall until the 1920s; it climbed back to a high level after the Second World War and did not go into decline again until the latter half of the 1960s.[4]

Between 1860 and the First World War, private consumption grew more rapidly than gross domestic product; in other words, its share in gross domestic product increased. There were, however, two periods during the latter half of the nineteenth century when consumption per capita did not rise. These periods were 1860–1868 and 1875–1885.

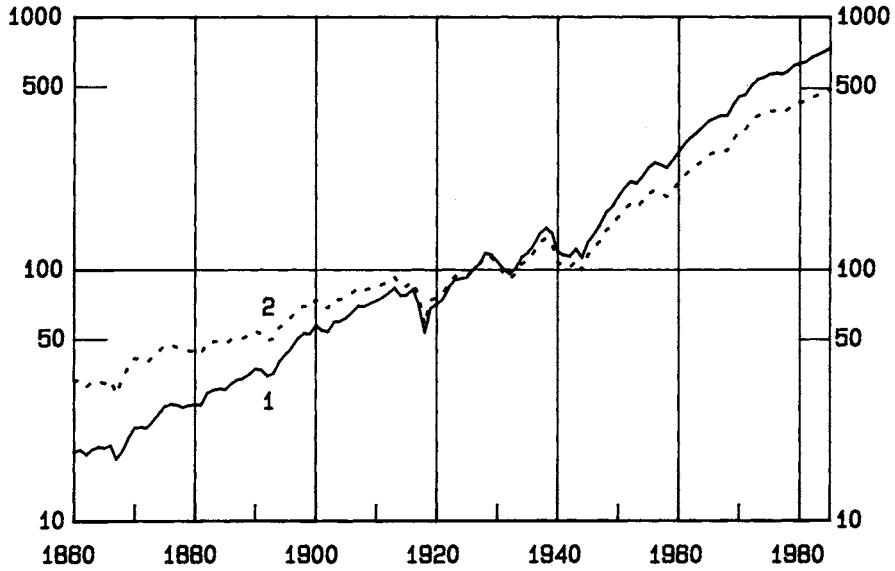


Chart 12. Private Consumption and Private Consumption per Capita, 1860–1985, Volume Indices 1926 = 100

1 Private consumption
2 Private consumption per capita

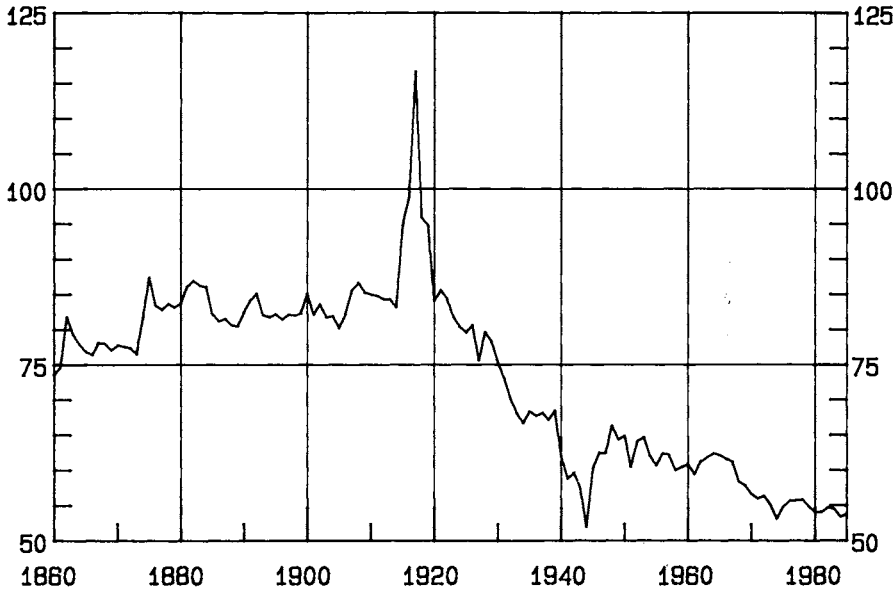


Chart 13. Ratio of Private Consumption to Gross Domestic Product at Market Prices, 1860–1985, %

In 1867, the worst famine year of the 1860s, private consumption per capita declined by as much as 11 per cent.[5] The economic situation improved at the beginning of the 1870s and by mid-decade the volume of private consumption per capita was 50 per cent larger than the volume in 1867.

The Long Depression which struck in the mid-1870s primarily affected foreign trade and investment. Private consumption per capita suffered less severely, but still declined by 8 per cent between 1876 and 1881. In the mid-1880s private consumption per capita was still only at the level of the mid-1870s.

At the beginning of the 1890s and again at the turn of the century, depressions resulted in private consumption suffering short-lived but fairly large declines of 7–8 per cent. Apart from these setbacks, development between the mid-1880s and the First World War was favourable and consumption per capita almost doubled.

The First World War had a disastrous effect on private consumption. At its lowest in 1918, consumption was only 65 per cent of the 1913 level, and the pre-war per capita level was not re-achieved until 1923. After supplies of imported grain from Russia had been cut off during the First World War, the food situation became serious and it was necessary to resort to food rationing. The volume of food consumption declined by as much as 40 per cent between 1913 and 1918, even though its share in consumption rose due to the fact that its relative cost had increased.[6]

In the favourable economic climate of the post-war years private consumption per capita rose by half as much again between 1920 and 1928, but then declined by 20 per cent in the Great Depression of the 1930s. The gap between the development of private consumption and gross domestic product was at that time wider than during any other period. Even though consumption began to rise in 1933, it was to take three years before the pre-depression level was narrowly exceeded. The depression retarded the development of consumption by eight years, which was significantly longer than either production or exports were burdened by its effects.

During the first two decades of Finland's independence, the development of gross domestic product and manufacturing was extremely rapid by European standards. GDP per capita rose by 3.8 per cent per annum. The growth of aggregate demand was, however, more a consequence of increased investment than higher private consumption. The average annual growth rate of aggregate demand during this period was 3 per cent.

The Second World War depressed private consumption more than any peacetime slump, although its decline was less serious than during the First World War. At its lowest in 1944, consumption per capita was 25 per cent below its pre-war level. With production and imports reduced and re-

sources redirected to wartime purposes, there were shortages of many important consumer goods, e.g. food, clothing, fuels and electricity. Once again consumption had to be rationed. It took until 1948 before the pre-war level was achieved and exceeded; the rationing of consumer goods was finally done away with in 1952.

The post-war development of private consumption has been faster and steadier than in earlier times. Measured on the basis of private consumption, the average annual rise in the standard of living during the period up until the beginning of the 1970s was 2–3 times greater than in the period before the First World War. Up until the 1970s, the volume of private consumption also grew at a faster rate than gross domestic product, although in terms of value the share of consumption declined. This was possible thanks to the fall in the relative prices of consumer goods. The period 1974–1985 has been more or less in keeping with average long-term development.

Private consumption has suffered occasional reversals in recent times, although the falls have been smaller and shorter-lived than in earlier years. Private consumption declined by 3 per cent during the Korean Depression of 1953, and by as much as 6 per cent in the years 1957–1958. In 1968 it dipped 0.2 per cent below the level of the previous year, and again in 1977 by one and a half per cent. Furthermore, the rise over the years 1975–1978 was only 1.7 per cent. There was also considerable unemployment during these periods.

The development of private consumption between 1860 and 1985 has frequently been interrupted by long periods – the famine years of the 1860s, the Long Depression that began in the mid-1870s, the Great Depression of the 1930s, and the two world wars – during which consumption per capita declined. Furthermore, the period up until the 1950s was punctuated by short but sharp declines in consumption per capita brought about by crop failures and the repercussions of international recessions. The good years have, however, more than compensated for these setbacks, and the population has been able to enjoy a rapid rise in the standard of living. On the other hand, the fluctuations in private consumption have, on average, been large, and the standard of living was rather vulnerable in this sense at least until the end of the 1950s.

7.1. The road to welfare consumption

Food accounted for somewhat more than a half of private consumption during the 1860s (Chart 14). Another important item of consumption was housing, which accounted for 15 per cent. These indispensible necessities

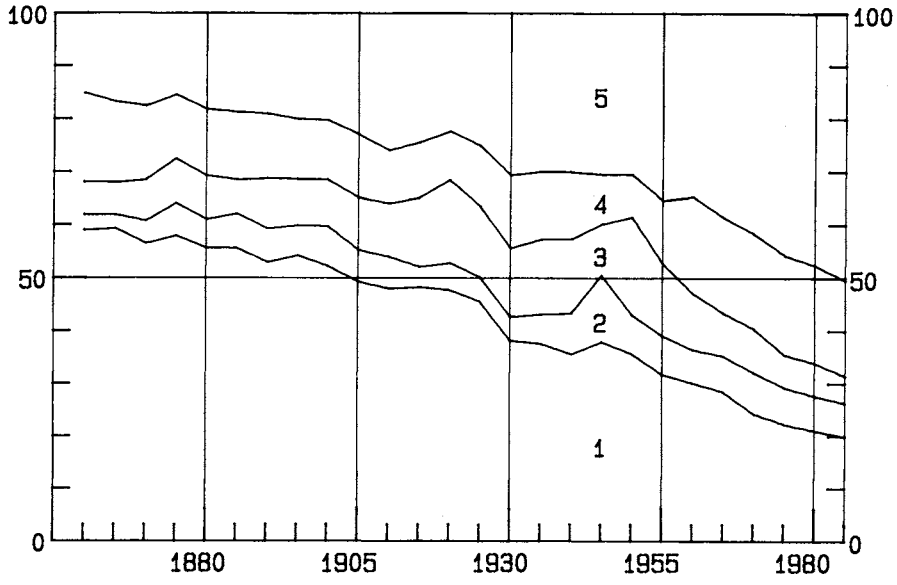


Chart 14. Distribution of Private Consumption at Five-Yearly Intervals, 1860–1985, %

1 Foodstuffs
2 Beverages and tobacco
3 Wearing apparel and footwear
4 Housing, light and heat
5 Other private consumption

together took three quarters of the consumption budget. The remainder was left over for beverages, tobacco, purchases of clothing and other items of consumption.

At the end of the nineteenth century manufacturing industries had already become well established and were bringing new and relatively cheap products onto the market; the distribution of these products was facilitated by the establishment of shops in rural areas. As incomes rose and holdings of cash became more widespread, the products of craftsmen also came within the reach of an increasingly large number of people. Eating habits changed as the variety of food became more diverse, and coffee and sugar became everyday items of consumption in many households.

Generally, as incomes increase, the proportion of food in consumption diminishes. Nevertheless, even though the standard of living rose quickly at the end of the nineteenth century, there was no sign of any significant change in the composition of consumption until the beginning of this century. The share of food in consumption declined very slowly (Chart 14)

and was still over 50 per cent in the year 1900. Its decline did speed up at the turn of the century, but this trend was halted by the First World War. The volume of food consumption per capita almost doubled between 1860 and 1913.

The share of food in total consumption diminished appreciably and rapidly during the 1920s. This decline was halted by the Great Depression of the 1930s, and the share of food actually rose during the Second World War. Since then the share of food in consumption has steadily declined to its present level of 20 per cent, even though commercialization and urbanization has meant the inclusion in food prices of processing, transportation and distribution costs which hardly existed in the days of Finland's old autarchy.[7]

The normal consumption of food per person per day during the 1860s was very low at about 1,900 calories. By the beginning of this century it had risen by about half as much again to 3,000 calories. In the 1970s the average calorific consumption was about the same. At the end of the nineteenth century grain and other vegetable products (mainly root and leguminous vegetables) formed the staple diet of the Finnish people; the population derived roughly two thirds of its energy requirements from these vegetable foods and one third from animal products. In the 1970s food consumption was divided equally between vegetable and animal products (grain products have been replaced not only by dairy products and meat but also by vegetables).[8]

Between 1860 and the 1920s the share of housing expenditures in private consumption decreased fairly steadily, and by the end of this period it was only 10 per cent. The indispensible nature of housing expenditures manifested itself once more during the 1930s and the early part of the Second World War, when the share of housing grew with the decline of private consumption as a whole. The introduction of rent controls in 1940 kept the share of housing expenditures low throughout the 1940s and even the 1950s. Since then the share of housing in consumption has risen substantially to reach 18 per cent, even though the state has kept a tight rein on rents during this period. The rise in the share from the beginning of the 1960s may be partly due to the change in the method of its calculation.[9]

Significant improvements have been made in the standard of housing and this is also reflected in the structure of consumption. Unfortunately, there is very little systematic data on the standard of housing and its development in nineteenth-century Finland. Special studies have shown that the density of housing was considerable and that cramped living conditions were normal. The present-day density of housing is much improved at less than 1 person per room. There were immense regional differences in housing standards at the beginning of this century. Even as lifts were being installed in Helsinki

apartment buildings, it was still possible to find turf shacks and dugouts being used in rural areas for human habitation.[10]

Modern dwellings naturally include such conveniences as hot water and lavatories; in 1950 these facilities were present in 7 and 17 per cent of dwellings respectively. In 1980 hot water was available in four fifths of dwellings and a slightly higher proportion were fitted with lavatories. In 1950 three quarters of all dwellings were equipped with electric lighting; by 1980 statistics were no longer kept on this aspect of housing standards, because electric lighting was assumed to be present in practically all permanent dwellings. In 1960 the typical Finnish family still lived in the countryside in a wooden house; by the end of the 1970s the typical dwelling was an urban apartment building.[11]

The share of clothing in consumption expenditures was just under a tenth during the nineteenth century and rose to become as large as 15 per cent during the 1920s and 1930s. After the Second World War, however, the share of clothing declined to the same level as at the end of the nineteenth century. This decline was associated with the fall in the relative prices of clothing. Its volume of consumption has grown faster than that of any other category of consumer goods.

It must, however, be remembered that the household production of textiles or garments is not included in the figures. There has been a sequence of shifts away from completely home-made garments, firstly to purchased thread, then to garments made from purchased fabric either at home or by some third party, and finally to commercial ready-made garments. The first ready-made clothing factories manufactured shirts and these were established about a hundred years ago; even before that, however, craftsmen had produced in excess of demand and built up some stocks of goods. The mass production of men's suits and the industrial manufacture of footwear began in Finland around the turn of the century. A report made by the Home Industry Committee in the 1880s mentions that men had their Sunday-best clothes tailored out of manufactured cloth. It was customary in those days for younger women in particular to have, in addition to their home-made everyday clothes, one black dress made out of purchased woolen material. Factory-made cotton fabrics also started to come within the reach of everyone at this time.[12]

Although the shares of beverages and tobacco have both increased, neither has attained much significance during the entire period of observation. The share of beverages in private consumption was abnormally large in the 1940s, especially right after the end of the war.[13]

As incomes have increased, the share of expenditures on essential items has declined and it has been possible to spend more on durable consumer goods, e.g. furniture, household appliances, travel, schooling, health and

medical care, recreation and entertainment. Almost a half of consumption expenditures are nowadays used on these less essential goods and services, whereas in the 1860s they accounted for no more than about a sixth. The rise of this share has been interrupted by depressions and periods of war, when all kinds of extravagance have been swept aside to make way for indispensible items. The decline in the consumption shares of housing at the end of the nineteenth century and food during this century has been an important factor in opening up the road to other forms of consumption.[14]

The growth in the share of other consumption is indicative of the significant improvement in the standard of living. During the period between the two world wars there was an increase in the number of small companies producing consumer goods and services. At the same time there was an increase in the number of factories manufacturing such products as non-alcoholic beverages and sausages. The share of durable consumer goods and services in total private consumption has increased appreciably since the 1950s.

Despite the difficulties involved in achieving precision in international comparisons, it does appear that the structure and development of consumption in Finland has followed much the same path as in other industrialized countries. The share of housing expenditures in Finland appears to be high by international standards, and, for example, the development of the share of durable consumer goods in Finland has followed the same path as in other Nordic countries, although it has lagged behind slightly.[15]

The fact that the income elasticity of the demand for food is low is clearly demonstrated in the structural development of private consumption, as the share of food expenditures in consumption has diminished with rising incomes. Correspondingly, the share of goods and services with high income elasticities of demand (e.g. household items, transportation, recreation) has increased. Kuznets ponders over the reasons behind the structural development of consumption and suspects that it is influenced by urbanization and commercialization, technical innovation (new products) and changes in the structure of industry and occupations. Changes in living conditions have created new needs and the rise in incomes has provided the means by which they may be satisfied.[16]

1. For more information on the concept of the standard of living, see KIRSTI VEPSÄ *Elintason muutos Suomessa vuosina 1910–1965. Tutkimus elintason perusulottuvuuksista sekä elintason ja taloudellisen kasvun välisestä yhteydestä (The Change in the Level of Living in Finland 1910–1965). Sosiaalipoliittisen yhdistyksen tutkimuksia 21, Helsinki 1973, pp. 37, 41.*

2. Private consumption expenditures in respect of goods and housing for the period 1860–1913 have been obtained from a study made by SAKARI HEIKKINEN. *Purchases of*

private services have been determined on the basis of the estimate of private services that was made for this study, and financial services have been estimated from figures produced by the banks and insurance institutions for the years 1860–1900. The figures for the period 1913/14–1960 are from a study made by EINO H. LAURILA *entitled "Kulutus Suomen kansantaloudessa vuosina 1900–1975" (Consumption in the Finnish Economy 1900–1975) (1985). A series conforming to the revised SNA has been used for the years 1960–1985. The housing services series compiled by* EERO HEIKKONEN *(Asuntopalvelukset Suomessa 1860–1965 (Housing in Finland, 1860–1965) (1971)) for the period 1860–1948 has been amended for use in this study: his figures for the number of rooms were used, but an adjustment was made for the excessively high level of rents. The studies made by Heikkinen and Laurila were both based on data related to the supply of goods as well as services, but available data on consumption expenditures and their distribution has been used to full advantage.*

3. The average annual percentage change in the volume of private consumption per capita has been 2.1 and the standard deviation 6.1, whereas the average annual percentage change in the volume of gross domestic product per capita has been 2.2 with a standard deviation of only 4.8.

4. During the First World War private consumption was almost as large as gross domestic product and did in fact exceed it by a substantial margin in 1917. There was at that time a dramatic decline in exports, investment and public consumption. The share of investment remained at its pre-war level, while the share of exports collapsed. Excess demand of such a magnitude must also cast some doubt on the reliability of the series. The individual components of aggregate demand fell sharply in real terms between 1913 and 1918: private consumption by 34 per cent, public consumption by 3 per cent, investment by 44 per cent, exports by 89 per cent, imports by 87 per cent and gross domestic product by 33 per cent. According to Laurila, the combined total of private and public consumption was larger than gross domestic product not only during the first four years of the First World War but also in 1902 and between 1907 and 1911. EINO H. LAURILA *1985, p. 457.*

5. JOHN LEFGREN *Nälänhätä Suomessa 1867–1868 (Famine in Finland, 1867–1868), Historiallinen aikakauskirja 1974, pp. 196–197, 202–203.*

6. LAURILA *1985, pp. 464–467.*

7. On the basis of data on the United States and Sweden, Kuznets estimates that the processing, transportation and distribution component that commercialization and urbanization have added to the primary cost of food accounted for about a third of the full cost to the ultimate consumer at the end of the nineteenth century and over a half in the United States after the Second World War. KUZNETS *1966, p. 275.*

8. SAKARI HEIKKINEN *Kulutus Suomessa autonomian ajan jälkipuoliskolla. När samhället förändras, Kun yhteiskunta muuttuu (Consumption in Finland, 1860–1912. When Society Changes). Historiallinen Arkisto 76, Helsinki 1981, p. 120;* LAURILA *1985, p. 612. Heikkinen thinks that his estimate of 3,000 calories for the year 1900 could be too high. Laurila's figure for the same year is 3,400. The calorific consumption had fallen to just under 3,000 calories in the 1970s. Laurila's figures for grain consumption at the beginning of this century have been criticized as being too high. See* ERKKI PIHKALA's *critique on Laurila's (1985) study, Kansantaloudellinen aikakauskirja 1986, p. 79. It may be the case that Laurila's estimates of the shares of wastage and animal feed are too low. Moreover, Laurila estimates the share of vegetable products in total calorific consumption for the year 1900 at 73 per cent, whereas Sakari Heikkinen estimates it at two thirds.*

9. See LAURILA *1985, p. 428. In 1975, according to Laurila's comparison, the share of*

housing, without heating and lighting (old SNA), was 8 per cent, 16 per cent according to the revised SNA, and 12 per cent according to Laurila's own calculation. This study has been based on Laurila's figures for private consumption between 1948 and 1960, and figures in accordance with the revised SNA for the period since 1960. In the 1950s the index of housing costs rose more than five times faster than the price index of total private consumption. LAURILA *1985, pp. 465, 531.*

10. MATTI TAPANI PELTONEN *Rakennustoiminnan kehityksestä Suomessa 1860–1913 (The Development of Construction in Finland 1860–1913). Manuscript 1981, p. 3.*

11. ERKKI PIHKALA *Rakennustoiminta ja asuminen. Suomen taloushistoria 2 (Construction and Housing. The Economic History of Finland 2), Helsinki 1982, p. 437; Statistical Yearbook of Finland 1985/86.*

12. RIITTA HJERPPE *Kulutuksen muutos – kotityöstä markkinatuotantoon (The Change in Consumption – from Household to Market Production). Kotityöseminaari v. 1983, Seminaariraportti, Kotitalous- ja kuluttaja-asiain tutkimuskeskus, Helsinki 1984.*

13. Laurila's figures indicate a very large increase in the consumption of alcohol and other beverages during and after the Second World War.

14. Besides food and housing, health care has been defined as a basic requirement. VEPSÄ *1973, p. 42. The share of health care in private consumption in the year 1900 was 0.75 per cent, and in 1975 2.7 per cent.* LAURILA *1985, pp. 564–565.*

15. A. S. DEATON *The Structure of Demand 1920–1970. The Fontana Economic History of Europe 5:1, Glasgow 1976, pp. 102–104;* LAURILA *1985, p. 355.*

The development of health care can also be described by the number of medical doctors per head of the population, which has increased 13 fold so far this century. The number of hospital beds per head of the population has doubled since the Second World War. During the 1970s Finland was placed about 10–12th in European GDP per capita "league table". It also held a similar position in terms of the number of automobiles, televisions and dwelling rooms per 1000 head of the population. Näin on käynyt (The Way It Was) 1982, pp. 74–75; DEATON *1976, pp. 124–125.*

16. Development in accordance with these expectations – the share of food declines, the share of other consumption rises, the share of housing fluctuates indeterminately – is not patently discernible during the one-hundred-year period 1860–1960 in all the developed countries studied by Kuznets. KUZNETS *1966, pp. 262–268.*

8. The Public Sector and Growth

8.1. Schools and railways

The most important areas of responsibility for the present-day public sector – public administration and defence, the provision and upkeep of infrastructure such as roads, harbours and waterways; education, health care, various other social services and the support of the nation's industries – existed in some form or another as long ago as the mid-nineteenth century. At that time, these tasks were shared between the central government, i.e. the state, and the existing institutions of local self-government. Local government authority was vested in magistrates and town elders in urban districts and parishes and parish meetings in rural districts. Important institutional and organizational changes were made in the educational, health and social services of the public sector during the latter half of the nineteenth century.

Local self-government in rural districts was reorganized in 1865, when ecclesiastical affairs were left in the hands of the parishes, and boroughs were formed to take responsibility for all the other tasks of local government. The affairs of these boroughs were handled by borough meetings – borough councils from 1917 onwards, their elected representatives and, later, paid officials. Voting rights were determined on the basis of taxable incomes.[1]

The administration of the cities was reformed in 1875. Up until then, decision-making authority had been vested in the bourgeoisie engaged in trade and handicrafts. The reform transferred power to members of the urban municipality resident in the city, whose individual authority depended on the magnitude of their assessed taxable income.[2] The principle of equal voting rights for all citizens of urban municipalities and boroughs was passed into law in 1917.

The general framework of capitalist development was also created in the decades that followed the middle of the nineteenth century. A period of legislative reform was initiated at that time with the objective of abolishing the mercantile restrictions that were acting as a brake on development. The achievement of unrestricted mobility for factors of production and the

introduction of ownership and contractual concepts compatible with the capitalist modus operandi were a common feature of these reforms. According to Antti Kuusterä, the economic policy of Finland – like those of most other countries – could not be described as being "liberal" in the true sense of the word. "Processes of social change and development were by no means kindled nor brought to fruition solely by the action of free market forces; almost without exception, change was related to the implementation of government policy."[3]

Before the First World War the construction of railways and the creation of an educational system were, in addition to public administration, the most important tasks requiring state finance.[4] Aid was given to industry in the mid-nineteenth century, and farming and transport were supported by means of loans and grants at the end of the nineteenth century.

Between the 1860s and the turn of the century, primary responsibility for elementary education was gradually transferred from the parishes to the boroughs and urban municipalities. During this phase the contribution made by the state was crucial especially in the creation of a network of schools in rural areas. The state financed school buildings and paid a portion of the teachers' salaries, although the running of these schools was officially the responsibility of local government. From the 1880s onwards, the state set up secondary schools, supported private secondary schools and reformed vocational training. The state was thus more directly involved at secondary and higher levels of education.

Between the 1860s and the First World War, total expenditures of the central government accounted for less than 10 per cent of gross domestic product; these expenditures therefore increased at about the same rate as gross domestic product.[5] The value added of the central government on average accounted for 5 per cent of domestic product (Chart 15). It even declined slightly between the 1860s and the First World War, when the salaries of senior civil servants fell behind the development of salaries in other sectors of the economy, and the expansion of central government services led to an increase in the numbers of low-paid public employees. The volume of central government value added began to grow at the end of the 1870s. The ratio of central government consumption expenditures to gross domestic product remained at a little over 5 per cent between the 1860s and the mid-1890s and then declined somewhat during the period leading up to the First World War. Investment and transfer expenditures of the central government grew rapidly.

Between the 1860s and the First World War, the main emphasis of local government expenditure was in the cities, where administration was the most costly item of expenditure. Other significant items of municipal expenditure were poor relief and the increasingly expensive schools. The

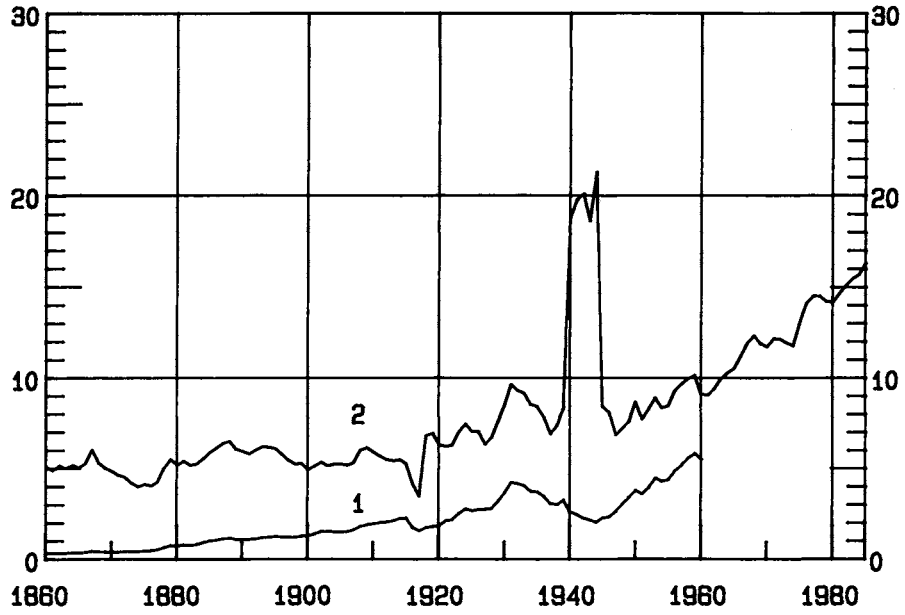


Chart 15. Percentage Share of Public Production in Gross Domestic Product at Factor Cost, 1860–1985

1 Local government (1860–1960)
2 Local and central government (1860–1985)

first municipal primary schools were not set up in the cities until the 1870s; one of the reasons for this was that some private and state schools had long been present there. During the Period of Autonomy the cities were burdened with the expense of billeting troops, although they were reimbursed by the state. It was also the responsibility of the cities to maintain a fire brigade and provide other similar services.

The administration of rural areas was primarily handled by representatives of the local population. The largest item of expenditure in the 1860s was social welfare or, to put it in the language of those times, "the care of the poor or infirm". The modest welfare services mainly consisted of finding homes for the needy and providing financial assistance. The boroughs started to establish poorhouses from the 1880s onwards.

In 1865 the rural boroughs began – with much reluctance in many places – to establish primary schools. By the turn of the century, education had replaced social welfare as the largest item of expenditure for the boroughs.

There had long been a government-financed district medical system and a small number of hospitals in Finland. The health care services of the cities

concentrated on controlling epidemics of infectious diseases, while in rural areas there were hardly any public medical services at this time.[6] Although a statutory order was issued in 1827 to the effect that every municipal authority was to provide at least one midwife, it was not until the beginning of this century that most of the municipal authorities had complied with the order. From the 1880s onwards, the municipal authorities were able to get assistance from the state for the establishment of hospitals and the payment of the doctors' salaries. At the beginning of this century there were just under 200 hospitals in Finland; half of these belonged to the state, a third to the municipal authorities, and an eighth were maintained privately.[7]

The share of local government expenditure in gross domestic product during the early years of this century was between 4 and 6 per cent. The combined expenditure of local and central government accounted for only 12–13 per cent of gross domestic product. The volumes of local government value added and local government consumption expenditures grew quite steadily between 1860 and 1913 – value added by 5.3 per cent per annum, and consumption expenditures by 4.6 per cent per annum – and appreciably faster than gross domestic product as a whole. This development was due to the steady and rapid growth of expenditure on education and, to a lesser extent, the rising standard of health and welfare services from the 1880s onwards. Despite this growth, the GDP share of local government in terms of both consumption and value added still remained small (Charts 15 and 16).

8.2. Independence brings the machinery of government

The volume of both central and local government value added contracted during the First World War, that of the central government by about a third and that of local government by just under a fifth (1913–1917). No corresponding decline is visible in the estimated labour input; central government employment fell only slightly, and local government employment continued its upward trend, albeit at a somewhat slower rate than either before or after the war. The reason for such a large decline in volume was the lowering of real wages and salaries in the public sector brought about by years of rampant inflation.

Independence brought new administrative responsibilities for the state, and the expenses of the White Army increased its expenditure in 1918.[8] The number of state employees and the volume of central government value added rose sharply during the three years that followed. The relative

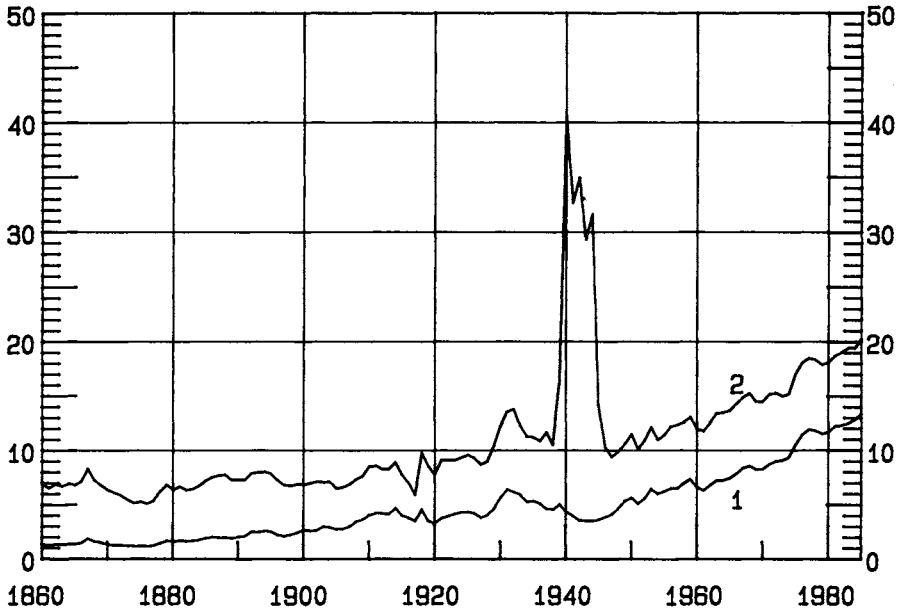


Chart 16. Ratio of Public Consumption to Gross Domestic Product at Market Prices, 1860–1985, %

1 Local government
2 Local and central government

magnitude of central and local government expenditures at the beginning of the 1920s was twice as large as it had been during the early years of the century. The share of these expenditures remained more or less unchanged at this level until the mid-1930s. The ratio of central and local government expenditures to gross domestic product was just over a fifth during the inter-war period. The share of public sector value added in gross domestic product fluctuated between 6 and 10 per cent, and the ratio of public consumption to GDP between 8 and 14 per cent (Chart 15).

The volume of central government value added fell somewhat from its peak level at the beginning of independence and thereafter remained fairly stable until the end of the 1920s. Its share of gross domestic product therefore declined. Thus were realized the economic policy goals of the ruling administration of the day, which sought to cast the state in a chiefly legislative role as the creator of favourable conditions for private enterprise. All other forms of economic intervention on the part of the state were frowned upon. Increasing the economic input of central government would have meant higher taxation; this would have gone completely against the grain at that time, as efforts were being made to hold the level of taxation in

check and even to reduce it. The emphasis of government support for industry during this period continued to be placed on agriculture and construction of the transportation network.

During the Great Depression of the 1930s central and local government alleviated the slump by stepping up their activities. However, state aid in the areas of housing, the management of state-owned forests and the municipalities did indeed decline at first. Between 1932 and 1934 the wages and salaries of state employees (including primary school teachers, who were municipal employees) were reduced by 4–10 per cent. However, as prices also fell at the same time, there was actually no decline in the level of their real earnings. As early as 1929, the state appropriated additional funds for the purpose of propping up employment, following the crop failure of 1928. In 1932 the state endeavoured to organize public works as a means of alleviating unemployment. Additional funds were appropriated for the investments of state-owned business enterprises, construction work on roads and inland waterways, and support loans for the municipal authorities.[9] The ratio of gross central government debt to gross domestic product was about 15 per cent before the depression, 30 per cent during its worst years and only about 11 per cent in 1938. Most of the additional credit secured by the government during this time came from abroad.

The cities tried to make savings in their regular expenditures during the depression, but at the same time they increased appropriations for the upkeep of roads and harbours as well as sanitary and similar services. They had gained some experience of grappling with the problem of rising unemployment at the end of the Period of Autonomy, and their activities certainly had a mollifying influence on cyclical fluctuations.

The rural boroughs attempted to maintain incomes by borrowing and raising taxes. Expansive borrowing and contractive increases in taxes tended to pull the economy in opposite directions. The economic effect of rural borough activities in the worst years of the depression were expansive, according to Pihkala's estimate.[10] The tax receipts of the rural boroughs declined as a result of the slump in the private sector, although this decline occurred later than elsewhere in the economy. Expenditures on poor relief rose the most; more money was appropriated for unemployment relief, but the level of this expenditure remained modest.[11]

After the depression the municipal authorities hardly expanded their activities at all during the remaining years of the 1930s, but the volume of central government value added rose at approximately the same rate as gross domestic product.

The policies of central and local government with regard to their responsibilities in the areas of medical care, education and social welfare remained basically the same as those adopted before the First World War. The

distribution of real central government expenditures remained more or less stable: the share of administration was about a quarter; defence, education, and support for industry each accounted for a fifth, and social welfare made up just under a tenth.[12] The popular notion that defence expenditures rose quickly during the 1930s fails to take note of the fact these did not rise in proportion to total central government expenditure before 1938.[13]

In the municipalities, education was the largest item of expenditure, followed by health, medical and welfare services. The share of administration costs had been depressed to quite a low level by the much faster growth of expenditure in other areas.

During the first two decades of independence the strong growth of medical services was accompanied by a shift of emphasis from the state to the municipalities. For example, whereas there had been just under 7,000 hospital beds before the First World War, there were more than 23,000 in 1938, and almost 15,000 of these were in municipal hospitals. With support from the state, the municipalities worked together during the 1920s and 1930s to build a fairly comprehensive hospital network. The municipalities were particularly active during the 1920s in the construction of tuberculosis sanatoria and regional mental hospitals. The general hospital network still had not been extended to cover the whole country at that time.[14]

Municipal primary schools as well as the number of pupils enrolled in them rose steadily and quickly up until 1910. The enactment of the Compulsory Education Act in 1922 did not result in any sudden leap in the number of enrolled pupils, as compulsory school attendance did not have to be achieved until 1937. The number of pupils grew fairly steadily up until the end of the 1930s, although at a slower rate than during the preceding decade. There were about half a million pupils enrolled in municipal primary schools on the eve of the Second World War.[15]

The number of pupils attending secondary school during the inter-war years was about a tenth of the number in primary schools; the ratio was somewhat smaller than it had been in 1910. Half of the secondary schools were state-owned and only a few were run by the municipal authorities. The municipal and private secondary schools enjoyed considerable assistance from the state.

The Poor Relief Act of 1922 brought more people within the scope of social assistance, with attention being focused on child welfare in particular. Nevertheless, the proportion of the population receiving some form of permanent assistance remained constant at 2–3 per cent – the same level as it had been at the end of the nineteenth century and the early years of this century; it was between 3.5 and 3.7 per cent during the period 1933–1936. The number of social welfare institutions, old people's homes and especially orphanages increased, as did the number of persons receiving

these services, which rose from 16,000 in 1913 to about 70,000 at the end of the 1930s.[16]

8.3. Building a welfare state

The production of local government services during the war years remained at about the pre-war level. However, as the costs of the war had to be met by the state, there was a sharp increase in the production of central government services. Between 1940 and 1944 the volume of central government value added was 4 – 5 times higher than the pre-war level, accounting for almost a fifth of GDP; the ratio of central government consumption to gross domestic product was almost 30 per cent.

The value added of the public sector fell to 7 per cent of GDP during the closing years of the 1940s. Post-war undertakings – war reparations, the resettlement of refugees and servicemen – manifested themselves in transfer payments (war reparations) and higher investment expenditures (loans). In 1947 – 1948 almost a half of all central government expenditures took the form of transfer payments, whereas these had averaged 15 – 20 per cent during the inter-war period.[17]

Since the end of the Second World War, efforts have been made in Finland and other industrialized countries to improve social security and raise the general standard of education. This has resulted in the public sector – i.e. central government, social security funds, the municipal and intermunicipal authorities – rising to become a major force within the economy as a whole. Society has also been increasingly aware of the need to take charge of services which are either concerned with basic safety or collective in terms of their externalities. Education and health care expenditures have risen, but not to the same extent as the share of current transfers and subsidies. The present social security system (child allowances, national pensions, employment pensions, sickness insurance, unemployment benefits, housing and student support) has been developed since the Second World War. The state has continued and increased its support for agriculture, and numerous other forms of support for industry have also been introduced – especially during the 1970s.[18]

In the 1950s the ratio of total central government expenditure to gross domestic product stabilized at about a quarter; only in recent years has it risen slightly above that level. On the other hand, the ratio of total local government expenditure to GDP has doubled from 10 to 20 per cent since the beginning of the 1950s. The combined expenditure of central and local government – reduced to take account of government support for the municipalities – was equivalent to over a third of gross domestic product

between the 1950s and the 1970s, and more than 40 per cent in the 1980s.

Public sector value added grew more quickly than the rest of the economy from the end of the 1940s onwards, with the result that its share had more than doubled by 1985. The GDP share of local government has been developing fairly steadily over the whole period, while the growth of central government value added has been accelerating especially since the 1960s. The ratio of local government consumption expenditures to gross domestic product has also been rising since the end of the Second World War, whereas there has been only a slight increase in the GDP ratio of central government consumption expenditures. The ratio of total public consumption expenditures to gross domestic product has risen from just over 10 per cent in the 1950s to 20 per cent in 1985.

Since the end of the Second World War the public sector has been so large that it has been able to exercise considerable influence over cyclical fluctuations. However, Jukka Pekkarinen, among others, has concluded that the most important elements of the "Finnish model" of fiscal policy – control of government cash reserves and efforts to limit the size of the public sector – have led to a timing of economic policy measures that has exacerbated rather than smoothed out cyclical fluctuations. At the same time, the automatic budgetary response of reducing taxes when incomes are falling and increasing taxes when incomes are rising has functioned as a stabilizer.[19]

Despite a shortage of teachers, the secondary schools continued to flourish during the 1950s and outgrew the municipal primary schools. This indirectly led to the establishment of a comprehensive system of education, which was introduced in stages from 1972 onwards. University education was also expanded.

During the 1950s and 1960s the state and the municipalities collaborated in the construction of a network of central hospitals covering the whole country. The country was divided up into 20 central hospital districts, each with its own large general hospital; in university cities these also functioned as teaching hospitals. Some existing general hospitals belonging to the state and the municipalities were improved and upgraded into central hospitals, others were completely new developments. In 1965 the central hospitals were transferred to inter-municipal ownership. The number of beds rose by about 60 per cent between 1950 and 1965. The official number of hospital beds is currently in the region of 60,000, with another 15,000 in various kinds of care institutions; all told there are 15.4 places per 1,000 head of the population.[20] The Sickness Insurance Act has spread expenses and losses of earnings since 1963. The National Health Act 1972 strives to guarantee the same standard of treatment for everyone in municipal health centres. The maternity and child care network, which was mainly developed after the Second World War, was transferred to the authority of these health centres.

About a half of municipal social welfare expenditures went on the welfare of children and the elderly, municipal kindergartens, old people's homes, home-help and other similar services.

8.4. Taxes and other receipts

Indirect taxes have made up 60–70 per cent of central government tax receipts with the exception of the early years of this century when the proportion was even higher (Table 18). Import tariffs were the most important indirect taxes up until the end of the 1930s, when they accounted for a half or more of tax and other similar receipts. Most of these were revenue duties levied on coffee, sugar, tobacco, alcohol and luxury goods. The significance of revenues from import tariffs has declined continuously since the end of the Second World War; they accounted for only 3 per cent of indirect taxes in the 1980s. They have been replaced by turnover tax and various excise duties.

Over 40 per cent of all taxes were direct in 1860. This share of direct taxes in total central government tax receipts fell to below 10 per cent during the closing years of the nineteenth century and at the beginning of this century. This was due to land tax – the most important direct tax – being alleviated and appropriation tax being abolished. Poll-tax was the only other direct tax of any importance.

The old tax system of land and poll taxes and in-kind payments (the

Table 18. Distribution of Taxes and Other Comparable Revenues of the Central Government (excl. Payments in Kind) for Selected Years, %

	1860	1890	1913	1938	1959	1975	1984
Direct taxes	44	14	6	30	31	40	35
Import tariffs	44	53	57	50	17	3	3
Other indirect taxes	12	33	37	20	52	57	62
Total	100	100	100	100	100	100	100
Taxes as a percentage of all incomes	48	74	66	66	79	86	74

Sources: PIHKALA 1977, p. 23; VILJO RASILA Kauppa ja rahaliike, Suomen taloushistoria 2 (Trade and Finance, The Economic History of Finland 2), Helsinki 1982, p. 110; JORMA AHVENAINEN – HENRI J. VARTIAINEN Itsenäisen Suomen talouspolitiikka. Suomen taloushistoria 2 (Economic Policy of Finland after Independence. The Economic History of Finland 2), Helsinki 1982, p. 180, 189; Statistical Yearbook of Finland 1960, 1978, 1985/86.

building and maintenance of bridges and roads, the provision of stagecoach and hostelry services, payments of the judiciary in grain, etc.) was abolished when state income and property taxes were introduced in 1920. These have been joined since the Second World War by social security payments.

Municipal taxation at the end of the nineteenth century primarily took the form of income tax and labour commitments on the part of municipal residents; the latter were subsequently abolished. At the beginning of this century, over a quarter of rural borough taxes were paid in kind, and even at the beginning of the 1910s the proportion was still over 15 per cent. At that time, tax receipts accounted for almost three quarters of all local government revenues in rural areas. Less than a fifth was covered by support from the state. Tax receipts and government support were not as important in the cities, where income taxes made up about a third and state aid less than a tenth of total revenues. The cities derived the remainder of their income from their own business activities, the levying of charges for various municipal services, and capital incomes.

In the 1930s taxes accounted for about 40 per cent of all municipal incomes, and government support for less than 20 per cent. The share of taxes in the incomes of rural boroughs declined in favour of charges for municipal services, capital incomes and borrowing. The distribution of incomes also remained much the same after the Second World War. At times, the share of tax receipts has been higher, but the 1930s' distribution of about 40 per cent for taxes and 20 per cent for government support has also prevailed in the 1980s.

The proportional growth of the public sector has resulted in higher levels of taxation. By way of example, it is worth mentioning that the municipal tax rate in the cities was just over 3 per cent at the beginning of this century. In the 1930s the nationwide average was 7–8 per cent, but the regional differences were fairly large. In the 1980s the municipal tax rate has risen to more than 16 per cent and the regional differences are smaller than they were in the 1930s.

The overall burden of taxation is measured by the gross tax rate, which is the ratio of total taxes to gross domestic product. It was 0.35 in Finland during the early 1980s. That was slightly below the average level for the OECD countries, but it should be noted that a part of compulsory pension cover is handled through private funds in Finland and therefore does not show up in the gross tax rate.[21] The gross tax rate in Finland was about 0.08 in the 1910s, about 0.13 in the 1930s and just under 0.30 in the 1950s.

Other sources of government income have been charges levied for institutional services and capital incomes. The public sector in Finland has been an important investor and lender. The government has generally taken advantage of borrowing in order to achieve a balanced budget.

8.5. Other public production

The public sector in Finland has also been involved in production through the activities of both incorporated and unincorporated public enterprises. The railways have been state-run since work started on their construction in the 1860s. The Postal and Telecommunications Service – an old public service in Finland – and the State Railways are the most significant unincorporated central government enterprises of the present day, and they are funded out of the state budget. An examination of the distribution of gross domestic product reveals that the value added of unincorporated central and local government enterprises at the end of the 1970s was about 7 per cent of GDP.

The public sector is engaged in manufacturing, transportation and other activities through public companies, i.e. incorporated enterprises in which the state or the municipalities are the sole or majority shareholder. The state's manufacturing activities date back to sawmills belonging to the National Board of Forestry – which mostly produced firewood to satisfy the needs of government establishments – and certain mining experiments in the nineteenth century. In fact, the establishment and acquisition of state-owned industrial companies began at the end of the 1910s and during the 1920s (Sulphuric acid and super-phosphates plants, i.e. the present-day Kemira Oy, Enso-Gutzeit Oy, Outokumpu Oy). State-owned companies have often been established to supplement the production structure of the country in energy, oil refining, fertilizers, mining and quarrying, and the basic metals industry. They have also been created in industries where the basic investments required are large, as well as in industries where the state wishes to control production and consumption, i.e. radio and television, and the production and distribution of alcohol.

The present share of state-owned companies in the value added of manufacturing industry is over 15 per cent, which corresponds to about 5 per cent of GDP. Production activities of the municipalities have chiefly been electrical power generation and the running of gas and waterworks. Formerly, they were also involved in the production of firewood, milling and animal slaughtering. In this study, the construction activities of the state and the municipalities are included in house building or land and water construction.

1. HANNU SOIKKANEN *Kunnallinen itsehallinto kansanvallan perusta, Maalaiskuntien itsehallinnon historia (Local Self-government as a Basis for Democracy, The History of Local Self-government in the Rural Boroughs of Finland). Helsinki 1966.*

2. JUSSI KUUSANMÄKI *Kunnallisen kansanvallan kehitys ja kunnallishallinnon orga-*

nisaatio 1875–1917. Suomen kaupunkilaitoksen historia 2 (The Development of Municipal Democracy and the Organization of Municipal Government 1875–1917. The History of Finland's Urban Municipalities 2), Vantaa 1983, p. 56.

3. KUUSTERÄ 1986, pp. 130–131; also see BARRY SUPPLE The State and the Industrial Revolution 1700–1914. The Fontana Economic History of Europe 3, Glasgow 1973.

4. PIHKALA 1977, p. 91. The building of the railways is dealt with in connection with investments.

From the standpoint of government spending, the Period of Autonomy was significant in that defence expenditures were minimal, because Finland had its own relatively small army only in the 1880s and 1890s. In fact, Finland derived important current account incomes from Russian military spending. In 1902 compensation was paid to Russia – the so-called "Military Millions" – for relieving Finland of responsibility of maintaining the army. The Military Millions were not, however, as large as the amount which the maintenance of the army would actually have cost the state. Thus the state was in a better position to invest funds in the construction of infrastructure. See ERKKI PIHKALA Suomen vaihtotase vuosina 1860–1917, Eräitä näkökohtia (Finland's Balance of Payments, 1860–1917). Historiallinen aikakauskirja 1970; PIHKALA 1977; PERTTI LUNTINEN Sotilasmiljoonat (Balancing the Military Burden between the Grand Duchy of Finland and the Russian Empire). Historiallisia tutkimuksia 125, Helsinki 1984.

5. This chapter examines the production (value added) of the public sector, the central government, the municipalities and the inter-municipal authorities, public consumption (= value added plus consumption expenditures) and total public expenditure (consumption, investment, current transfers, other expenditures).

ERKKI PIHKALA's "Valtion tulojen ja menojen rakenne 1800-luvun jälkipuoliskolla" (The Structure of Government Revenues and Expenditure in the Second Half of the Nineteenth Century. Helsinki 1977) is an examination at ten-yearly intervals of the central government sector that has been made according to the principles of growth studies. In connection with this research work, HILKKA TAIMIO has written a thesis entitled "Valtion menojen ja valtion julkisten palvelujen kasvu Suomessa 1900-luvun alkupuoliskolla" (The Growth of Central Government Expenditure and Public Services in Finland in the First Half of the Twentieth Century. Kansantaloustieteen pro gradu -työ, Helsingin yliopisto 1986; also appears in the series published by the Bank of Finland's Research Department, TU 17/86) and made estimates for the central government sector in intermediate years between 1860 and 1900. The following sources have been used in the study on the central government sector: published annual government accounts dating back to 1901, unpublished nineteenth-century provincial accounts, accounts of the State Treasury and accounts of the Central Administrative Board.

Taimio has determined the annual total central government expenditures for the period 1900–1948 and made a detailed five-yearly classification of central government accounting expenditures by type of activity and economic quality. The classification years are 1902, 1907, 1912, 1917, 1922, 1927, 1932, 1937, 1942 and 1947. Central government employment has been calculated by dividing the actual wage and salary total by an average wage largely derived from the data of Timo Kortteinen, Väinö Luoma and Verner Lindgren. It is a highly imputative estimate.

The volume index of production was calculated by deflating the wage and salary total by the nominal-wage index of central government employees. Correspondingly, the index of building costs was used to deflate imputed interest and depreciation. These indices were weighted by 1890 values in the years 1860–1900 and 1938 values in the years 1900–1948 and then combined.

Data on municipal activities has been obtained from Kuntien finanssitilasto (Munici-

pal Finances, Official Statistics of Finland SVT XXXI). This source has provided data on the urban municipalities during the years 1910–1919 and from 1925 onwards, and the rural municipalities in 1910–1912 and from 1930 onwards with the sole exception of the year 1944. The special studies including municipal statistics are KYÖSTI JÄRVINEN'S *"Suomen maalaiskuntain finanssitilasto I–II" (Financial Statistics of Rural Municipalities in Finland I–II. Helsinki 1910) and "Suomen maalaiskuntain talous vuonna 1904" (The Economy of Finland's Rural Municipalities in 1904). In addition, the reports of provincial governors also contain some data on the municipal activities, but there is very little annual data or general statistical information before the year 1875. The Statistical Yearbook of Finland contains some data on the activities of the urban municipalities since the end of the 1870s and on the activities of the rural municipalities since the year 1888. The main items of data extracted from these sources concerned the value of municipal buildings – which was used to estimate imputed interest and depreciation – as well as the consumption expenditures and total expenditures of the municipalities. The above-mentioned statistics and literature were also used to make separate estimates of the numbers of municipal employees in each area of activity (education, social welfare, health and medical services, administration). Wage and salary totals were then estimated on the basis of the employee numbers thus derived.*

6. In 1876 there were 450 beds in general state hospitals, 27 in fever hospitals run by the cities, 180 in mental hospitals, 625 in venereal disease hospitals and less than 90 in other hospitals (prison, military and private hospitals). In 1860 there were less than 100 doctors, representing approximately 1 doctor per 20,000 head of the population. VILJO RASILA *Kaupunkien sosiaalipolitiikka ja terveydenhoito 1875–1917. Suomen kaupunkilaitoksen historia 2 (Social Policy and Health Care in Finnish Cities 1875–1917. The History of the Finland's Urban Municipalities 2), Vantaa 1973, p. 360.*

7. SOIKKANEN *1966, pp. 341–351.*

8. The side that won the Finnish Civil War in 1918 was called the White Army.

9. ERKKI PIHKALA *Statens och kommunernas finanser i Finland under depressionsåren på 1930-talet (State and Municipal Finances in Finland during the Depression of the 1930s). Historisk Tidskrift 1974, pp. 8–9.*

10. PIHKALA *1974, pp. 11–13.*

11. Pihkala estimates that the public sector of the 1930s was so small that even a large expansion of its activities would not have alleviated the depression to any meaningful extent. PIHKALA *1974, pp. 10–13.*

12. PIHKALA *1974, p. 16; Statistical Yearbook of Finland 1940.*

13. Also see ERKKI PIHKALA *Sotatalous 1939–1944, Suomen taloushistoria 2 (The War Economy 1939–1944, The Economic History of Finland 2), Helsinki 1982, pp. 317–318.*

14. SOIKKANEN *1966, pp. 538–539.*

15. In 1920, 36 per cent of children aged between 5 and 15 were enrolled in municipal primary school, and a further 23 per cent in church schools for small children; in 1940, 75 per cent of children aged between 5 and 15 were enrolled in municipal primary school. In 1938, 90 per cent of children aged between 7 and 15 were receiving some form of school education. Statistical Yearbook of Finland, various years.

16. SOIKKANEN *1966; Statistical Yearbook of Finland, various years.*

17. HILKKA TAIMIO *1986, p. 50.*

18. The public sector also carries out other functions besides taking responsibility for production which, for some reason or other, falls within its scope. The most important of these functions include the use of subsidies and transfers to influence the distribution of incomes and property. The public sector is also involved in the capital market and acts as

a legislator and even as a regulator of economic activities. Like public sector consumption and investment, these activities are primarily financed by means of taxes and payments. REINO HJERPPE — ERKKI PIHKALA *Julkinen talous nousee suurimmaksi, Suomen taloushistoria 2 (The Rise of the Public Sector, The Economic History of Finland 2), Helsinki 1982, pp. 481, 484—485. The principal models explaining the growth of the public sector have been based on a shift in the demand for final products towards services as incomes have risen, or, alternatively, a rise in the prices of labour-intensive services relative to goods.*

19. JUKKA PEKKARINEN — JUHANA VARTIAINEN — JARMO VÄISÄNEN — JOHNNY ÅKERHOLM *Suomalainen finanssipolitiikka ja kysynnän säätely. Sata vuotta suomalaista kansantaloustiedettä. Kansantaloudellinen yhdistys 1884—1984 (Finnish Fiscal Policy and Demand Management. A Hundred Years of Finnish Economics. The Finnish Economic Association 1884—1984), Vammala 1984, pp. 231, 239—243.*

20. NIILO PESONEN *Terveyden puolesta sairautta vastaan, Terveyden- ja sairaanhoito Suomessa 1800- ja 1900-luvulla (Health versus Sickness, Health and Medical Care in Finland during the Nineteenth and Twentieth Centuries), Porvoo 1980, pp. 597—607; Statistical Yearbook of Finland 1985/86.*

21. Statistical Yearbook of Finland 1985/86, p. 471.

9. The Rate of Investment Rises

9.1. The Period of Autonomy creates a base

The rate of investment (the ratio of gross fixed capital formation to gross domestic product) was about 11 per cent during the period 1860–1890 and averaged 12 per cent over the years 1890–1913 (Table 19, Chart 17).[1] The volume of investment increased more than five fold between 1860 and the First World War. The rate of investment in Finland during the 1860s was quite high compared, for example, with the 6 per cent achieved in Sweden, although the rates of these two countries were of the same order of magnitude in the early years of this century.[2] According to the much-criticized theory of the stages of economic growth, which was put forward by W. W. Rostow in 1960, the most important indicator of the beginning of economic growth is a rise of the rate of investment from about 5 per cent to about 10 per cent. According to this indicator, the "take off" point of economic growth would already have occurred in Finland before the 1860s, or else Finland's development does not support Rostow's theory.[3]

The emphasis of fixed capital formation in the mid-nineteenth century was still in non-industrial investments such as residential buildings and land

Table 19. **Rate of Investment, Growth of Gross Domestic Product and Incremental Capital-Output Ratio (Rate of Investment divided by the Annual Change in the Volume of Gross Domestic Product) for Selected Periods**

	Rate of Investment	Average annual percentage growth of GDP	Incremental capital-output ratio
1860 — 1890	11.0	2.2	5.0
1890 — 1913	12.0	2.9	4.1
1920 — 1938	14.0	4.4	3.2
1946 — 1960	23.7	4.9	4.8
1960 — 1974	26.6	4.5	5.9
1974 — 1985	25.9	2.9	8.9
1860 — 1985	16.3	3.0	5.4

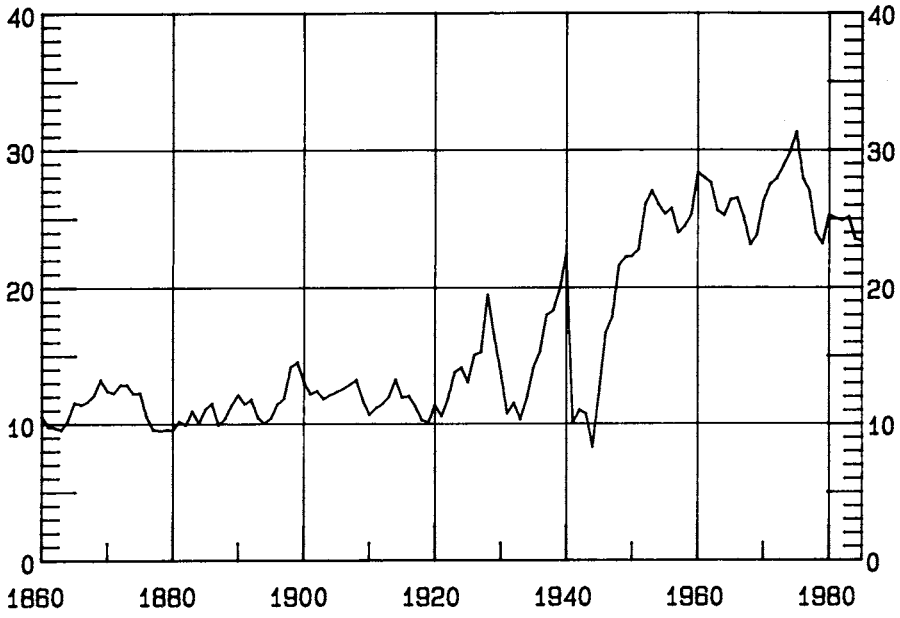


Chart 17. Rate of Investment (Investment as a Percentage of Gross Domestic Product at Market Prices), 1860–1985

and water construction. Rapid population growth required the construction of dwellings, and the share of these was certainly quite large during the period 1860–1913. Purposeful development work on the transport and communications system began in the mid-nineteenth century with the construction of the Saimaa Canal, but the most important building project of the latter half of the century was the construction of the railways, which was in full swing during the 1880s. It was Finland's good fortune that the most intensive phase of building work on the railways happened to coincide with – and therefore reduced the impact of – a period of worldwide economic depression. The onset of urbanization required the creation of infrastructure and the rapid growth of agriculture demanded land clearance and other investments; both of these factors helped to keep the share of land and water construction high.[4]

The share of machinery and other equipment in capital formation was low in the 1860s, reflecting the structure of the so-called pre-industrial society: essential goods were still produced either by hand or using comparatively simple tools. By the 1870s, however, the share of machinery and other equipment in investment had already risen to account for a quarter of fixed investment.

The incremental capital-output ratio (the rate of investment divided by

the growth of gross domestic product) in the years between 1860 and 1890 was slightly higher than in the period 1890–1913 (Table 19). This may be due to the fact that the large infrastructure investments of earlier decades achieved a fuller measure of influence. Investments in machinery and other equipment – which had exhibited the highest relative growth rate – were presumably of some significance in this, because their accelerating effect on growth occurs with a shorter time lag. Imports accounted for over a half of investment in machinery and other equipment.

During the First World War the rate of investment remained at almost the pre-war level. The decline of fixed investment was more or less in line with the fall in total output. Investment is normally diverted away from the construction of residential buildings to other areas of production during wartime. The First World War was no exception; the share of residential construction fell somewhat, even though Finland was only directly affected by the conduct of the war for a short period. Fortification work carried out during the early phase of the war resulted in a large rise in the share of land and water construction. Orders for war materials from Russia bolstered non-residential construction and allowed Finnish industry to maintain a high level of investment in machinery and other equipment. The war was a period of considerable expansion for the metal and engineering industry. The discontinuation of orders for war materials in 1917 is clearly visible in the steep decline of investment in machinery and other equipments in 1918, when industrial output was also badly hit by the Finnish Civil War.

9.2. More machinery and equipment

The volume of investment almost tripled between the beginning of the 1920s and the end of the 1930s. The rate of investment rose from just over 10 per cent in the early 1920s to nearly 20 per cent at the end of the decade. The emphasis of investment was in residential construction throughout the 1920s, partly because few dwellings had been built during the First World War and efforts were being made to remedy the housing shortage. New buildings were larger and more up-to-date, and they were mostly constructed in rural areas. Wood was the most commonly used building material for residential construction in both urban and rural areas. The use of durable building materials started to become widespread in the construction of industrial buildings during the 1930s. The rapid growth of industry also kept the level of investment in machinery and other equipment high. The construction of the transportation network and the continuation of land clearance for agricultural use once again raised the share of land and water construction to a high level.

During the Great Depression of the 1930s the volume of investment collapsed to almost a half of its former level and the rate of investment declined to 10–11 per cent. Residential construction had overheated and it was the most severely affected area of investment. The gloomy outlook for industry kept investment in machinery and other equipment at quite a low level for some years. The measures implemented in the public sector in an attempt to alleviate the effects of the depression were centred around land and water construction. Construction work in agriculture and forestry – supported but not carried out by the public sector – was increased the most, although a considerable amount of construction work was also carried out on municipal infrastructure and the road network. During the period 1928–1934, land and water construction increased by as much as 90 per cent, while production in many other areas of the economy was either in decline or stagnant.

When the upswing arrived in the latter half of the 1930s, capital formation once again revived quickly. Both the volume and the rate of investment even rose to exceed the level of the late 1920s, and the share of machinery and other equipment in particular rose as a result of the demand for investment in industry and agriculture. The metal and engineering industry, the construction of power stations and the paper industry all exhibited strong growth. The proportion of orders going to domestic manufacturers for machinery and other equipment investments was larger than in earlier years. Finnish engineering shops developed into competitive producers of machinery and equipment for the forest industry. Qualitative as well as quantitative progress was made in the shipbuilding industry. The widespread use of electricity characterized both the development and the investments of industry.

During the years 1920–1938 the incremental capital-output ratio was lower than in any other preceding period. It is difficult to say whether this points to a favourable investment/output ratio during this period of considerable average growth, or whether the figures include a bias – in other words, is investment too low, perhaps as a result of an underestimation of investments, e.g. land improvement investments that did not manifest themselves in any larger acreages of agricultural land, or industrial investments in the form of equipment produced and used within individual production plants.

The rate of investment remained high during the initial phase of the Second World War, as projects started before the war came to fruition; gross domestic product declined as a result of dwindling exports and consumption. During the latter years of the war the volume and the rate of investment both declined in relative terms to below a half of their pre-war levels. Residential construction in particular was placed on hold during the

war years, but efforts were made to maintain a high level of investment in machinery and other equipment.[5]

9.3. Increasing importance of investment

The post-war era is justifiably referred to a period of reconstruction. Residential construction, the resettlement of refugees and servicemen, much-needed construction work on the transportation network and industrial plants all placed their demands on the nation's scarce resources. The rate of investment would undoubtedly have risen even higher had there not been a shortage of building supplies, raw materials, and foreign exchange for the purchase of machinery. The rate of investment rose quickly from just under 10 per cent during the war years to over 25 per cent in the early 1950s, since when it has on average remained at this high level. In the early 1970s it even rose as high as about 30 per cent. The volume of investment increased more than six fold between 1946–1985.

The incremental capital-output ratio rose from 5 during the period of reconstruction to as much as 9 during the period 1974–1985. The extremely high level of investment during a few years in the 1970s which raised the average I.C.O.R. over the latter period did not lead to accelerated growth as the economy fell into the worst depression since the Second World War. It was at that time that work was underway on large energy investments such as the Loviisa Nuclear Power Station and the expansion of the oil refinery at Sköldvik. It is apparent that the capacity utilization rate of new and existing capital were both low during the depression. The high I.C.O.R. may also be indicative of a deterioration in the efficiency of investments.

It was to be well into the 1950s before the economy was fully recovered from its war wounds. The replacement of worn-out machinery and equipment was not achieved until after the mid-1950s, when foreign trade was gradually deregulated. The proportion of investment in machinery and other equipment remained at a high level, 35–40 per cent, and this manifested itself in the exceptionally rapid growth of productivity – especially in manufacturing – between 1960 and 1985. In fact, investment in machinery and other equipment has grown even faster than an examination of its proportionate share would lead us to believe. This is due to the fact that the prices of these investments relative to the prices of other investment goods have declined. Rapid technological development has led to the "accelerated aging" of machinery and equipment and thus maintained the demand for equipment investments at a high level. Agriculture and forestry have also mechanized quickly during the last few decades.

The relatively low level of housing investment at the end of the 1950s served to counterbalance the intense activity in residential construction during the post-war decade. The share of housing investments again rose to a fairly high level at the beginning of the 1970s, when they accounted for over a quarter of gross fixed capital formation. Rapid population growth was no longer a factor in this development; rather, it stemmed from the improvement of housing conditions that accompanied the rising standard of living and the need for new buildings brought about by structural changes in the economy. A large number of houses were constructed especially in rural areas immediately after the war. Since the 1950s, however, urbanization and the rapid decline of primary production have led to the abandonment of relatively new buildings in scattered settlements and the construction of more new dwellings in population centres.

The clearance and basic improvement of land for agricultural use was an area of considerable activity during the period of reconstruction. The area of land cleared exceeded that which had to be given up under the terms of the peace treaty with the Soviet Union. During the 1950s the rapids of Northern Finland were harnessed for the production of electricity, and high-voltage power lines were built to carry the power down to the industrial southlands. The 1960s saw considerable improvements made in the road network. Increased demands for higher living standards and improvements in residential environments have ensured that work on municipal infrastructure has been maintained at a high level. The share of land and water construction has declined since the completion of large infrastructure investments in the national power grid and road network during the 1950s and 1960s. The government sought to smooth out the cyclical fluctuations of the 1950s by using public building projects as a source of work for the unemployed. There was less call for this kind of action in the more favourable economic climate of the 1960s and early 1970s. Other measures for dealing with unemployment – unemployment compensation, education and retraining – were introduced at this stage. Public building projects have once again been employed as an employment policy tool in recent years.[6]

9.4. Investment and economic growth

Investment can be viewed in the long run as a source of potential supply, the cultivator of conditions necessary for growth. In the short run, investment is a demand factor that is indispensible for economic growth. The small amount of savings during the initial phase of industrialization has been regarded as an obstacle to economic growth and the reason for low investment. In the opinion of W. Arthur Lewis, it is more likely that the low

rate of investment was due to a low demand for capital.[7]

A considerable amount of growth is attributable to new technology being brought into use. The utilization of new technology in production necessitates investments in machinery and equipment as well as the erection of essential buildings and infrastructure. Accelerated economic growth has thus been associated with an increasing share of investment. At the same time, the ratio of capital per worker has increased due to labour input having risen at an appreciably slower rate than output (Chart 18).

Increasing capital formation has been regarded as an indispensible requirement for economic growth. However, the significance of capital does not appear to be decisive according to growth models which have been estimated since the 1950s on the basis of the neoclassical production function. The results generally indicate that a significant amount of growth has been caused by some factor other than an increase in the quantity of labour or capital.[8]

Matts Lundahl thinks that the significance of capital has been undervalued in overall productivity calculations as a result of an over-reaction to it having been given too prominent a role in the past. He suggests that the role played by capital might be better observed if investment were examined

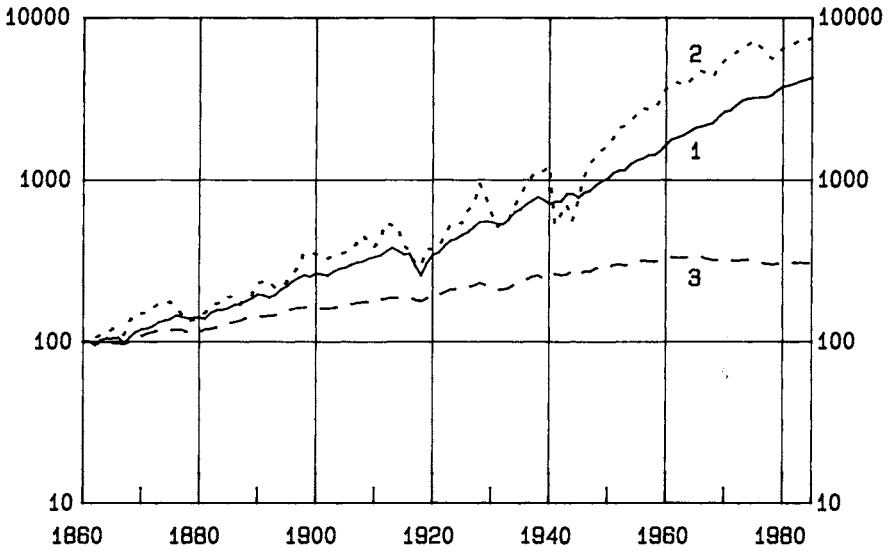


Chart 18. Gross Domestic Product, Investment and Employment, 1860–1985, Index Numbers 1860 = 100

1 Volume of gross domestic product at market prices
2 Volume of investment
3 Employment

within narrow fields, rather than the present-day practice of analyzing it chiefly at the macroeconomic level.[9]

Furthermore, the concept of gross fixed capital formation has been criticized for its inadequacy as a tool for examining investment. For this reason, investments in human capital have been elevated to the standing of fixed capital in some studies. Reino Hjerppe has included half the public sector's expenditures on health care and all expenditures on education in an alternative concept of capital formation. Public capital formation calculated on this basis would have been one and a half to two times greater than public fixed capital formation over the period 1975–1979, and the rate of investment would have risen by 7 percentage points to about 33 per cent.[10]

Annual variations in investment have been significantly more pronounced than fluctuations in gross domestic product (Chart 18).[11] Variations in the volume of investment have therefore been a key component of cyclical fluctuations. Recessions are deepened as a result of the shelving of new investment plans and the suspension of existing projects in the face of poor export prospects. Correspondingly, good export prospects have accelerated investment and increased economic growth during upswings. Fluctuations in investment were particularly large from the early years of independence up until the 1950s.

The relative prices of investment goods have risen somewhat faster than the price index of gross domestic product (6.7 and 6.4 per cent per annum). Over the whole period 1860–1985, the prices of investments have risen 1.4 times higher the GDP price index. The rapid price development of investment goods has presumably been influenced by the large share of construction in this group. The share of labour input in construction is considerable, and wages – especially those of unskilled building workers – have risen faster than the prices of building materials.[12] At the same time, the prices of machinery and other equipment have risen more slowly than building costs. The rise in the relative prices of investment has partly contributed to the rise of the rate of investment and, possibly, to the growth of the incremental capital-output ratio.

The composition of gross capital formation has changed: the share of machinery and other equipment has risen at the expense of land and water construction. The volume of house building has, in the long run, mainly followed the development of gross domestic product.[13]

The rate of investment in Finland, as in other Nordic countries, has been relatively high by international standards.[14] Economic development in the Nordic countries has also been rapid. This rapid ascent to the group of the world's wealthiest nations has demanded a higher level of investment than would have been necessary had that growth – and therefore capital accumulation – been achieved over a longer period of time. Another point of

discussion is whether the level of investment needed to achieve a certain amount of growth is less in countries which have developed over longer periods of time (the United Kingdom, France) than in countries which have developed more rapidly (Finland, Japan). The old industrialized countries have had hundreds of years in which to build up their transport and communications networks, public buildings etc. On the other hand, the infrastructure of this kind of society continuously requires replacement and modernization.[15]

Natural conditions have played a part in raising investment requirements in Finland, as they have in Sweden and Norway. The cold climate means that the construction of dwellings is more expensive; widely dispersed settlements and the fact that the country is fragmented by internal watercourses means a costly transport and communications network.

1. The main features of the method used to calculate gross fixed capital formation are described in RIITTA HJERPPE – MATTI PELTONEN – ERKKI PIHKALA *Investment in Finland, 1860–1979, The Scandinavian Economic History Review 1984, pp. 56–59. The article makes use of* PERTTI KOHI*'s growth study "Maa- ja vesirakennustoiminta Suomessa 1900–1960" (Land and Waterway Construction in Finland, 1900–1960) (1977) and two of* EERO HEIKKONEN*'s growth studies "Talorakennusinvestoinnit ja talorakennuskanta Suomessa 1900–1970" (Building Investment and the Building Stock in Finland, 1900–1970) (1977) and "Asuntopalvelukset Suomessa 1860–1965" (Housing in Finland, 1860–1965) (1971).*

As far as roads and inland and coastal waterways are concerned, land and water constructions have been either accomplished or supported by the public sector. As a result, there is a relative abundance of statistical data in this area. On the other hand, land clearance and forest improvement had to be estimated using data with considerable deficiencies.

Data on house building carried out within the realm of the public sector is in plentiful supply. The estimate of commercial buildings has been based on the production of the relevant economic activities. A survey was made of residential buildings in all urban and rural municipalities in 1919 (SVT XXXII:2 Asuntolaskenta (Census of Dwellings) 25.4.1919). The magnitude, quality and usage of the residential housing stock in certain cities and townships (SVT VI) has also been calculated for the years 1870, 1880, 1890, 1900, 1910, 1920 and 1930. An estimate of the numbers of dwellings and rooms in the rural boroughs has been made for the year 1901. There is data on the housing sector contained within committee minutes, consumption studies and the reports of nineteenth-century provincial governors, and there are statistics on the construction of dwellings in certain cities and townships since the year 1912.

Investments in machinery and equipment have been estimated by counting them as equivalent to the combined total of the production and net exports of such goods. Machinery and equipment exported in the form of war reparations as well as that procured by the defence establishment has been eliminated.

2. OLLE KRANTZ – CARL-AXEL NILSSON *Swedish National Product 1860–1970, New Aspects on Methods and Measurements, Kristianstad 1975, p. 163.*

3. W. W. ROSTOW *The Stages of Economic Growth, Cambridge, Mass. 1960.*

Generally, it has been observed that more capital per worker is required in latterly industrialized countries than in earlier industrialized countries, because the technology employed is of greater sophistication. See, for example, IVAN T. BEREND — GYÖRGY RANKI *The European Periphery and Industrialization 1780–1914. Budapest 1982.*

4. RIITTA HJERPPE *et al. 1984.*

5. Machinery and other equipment acquired by the defence establishment has not been included here in investment but in public consumption.

6. See HJERPPE *et al. 1981.*

7. LEWIS *1978, p. 151.*

8. This also led to growth accounting — the most precise analysis of the quality factors of labour and capital inputs. In determining the factors of growth by means of this analysis, an attempt is also made to divide the influence of the various factors into parts. The following may all be taken into consideration: the structure of the labour force, education and working hours, the composition of capital input, and, correspondingly, educational change, the effect of production scale factors, the effect of structural changes within the economy and even the effect of meteorological variations on crop yields, the effect of labour disputes etc.

O. E. Niitamo has pioneered the work on growth accounting in Finland. In his doctoral dissertation, he used the Cobb-Douglas production function to estimate the distribution of productivity in manufacturing industry among labour input, capital, cyclical and know-how components. According to his results, the growth of manufacturing industry over the period 1926–1955 was as follows: labour input 47 per cent, capital 13 per cent, cyclical factors 8 per cent, the level of know-how 33 per cent. OLAVI NIITAMO *Tuottavuuden kehitys Suomen teollisuudessa vuosina 1925–1952 (The Development of Productivity in Finnish Industry, 1925–1952). Kansantaloudellisia tutkimuksia XX, Helsinki 1958, p. 125.*

In an estimate of overall productivity concerning Finland over the period 1900–1980, the 3.3 per cent average annual growth of GDP was apportioned as follows: labour input 15 per cent, capital input 27 per cent, and overall productivity 58 per cent. The importance of these different factors was estimated as being almost equal during the early years of the century. During the post-Second World War period the significance of labour input has declined, the proportional share of capital input has almost doubled and overall productivity has increased by a factor of 2.5. HIRVONEN — HJERPPE *1984, p. 174. Determining the capital stock in particular is difficult in this kind of examination. The basic results of studies carried out to date are generally of the same type: a decline in the significance of labour input, an increase in capital input, and an increase in the significance of the residual which is even greater than the results for Finland.*

For growth accounting of the United Kingdom, see MATTHEWS *et al. pp. 498, 501; the United States, see* EDWARD F. DENISON *Accounting for United States Economic Growth 1929–1969. Washington, D.C. 1974, p. 138; Canada, see* RICHARD POMFRET *The Economic Development of Canada. Toronto 1981, p. 66; a comparison of the United States and certain European countries, see* J. D. GOULD *Economic Growth in History, Survey and Analysis. London 1972, p. 119.*

9. MATTS LUNDAHL *Sparande, kapitalbildning och ekonomisk utveckling. Ekonomisk historia (Savings, Capital Formation and Economic Development. Economic History), ed. Lennart Jörberg, Stockholm 1985.*

10. REINO HJERPPE *Measurement of the Role of the Public Sector in the Finnish Economy. Review of Income and Wealth 1980. Krantz has included public expenditure on education and health care as soft investment. The conventional rate of investment in Sweden during this century has been quite similar to that of Finland. The addition of soft*

investment raises the rate of investment by 5 per cent at the end of the nineteenth century, but by more than a quarter at the end of the 1960s. KRANTZ *1987, pp. 21–23; also see* KUZNETS *1966, pp. 224–234. Kuznets also examines the distribution of aggregate demand in such a manner that public consumption is divided into investments (human capital) and the intermediate products of private production (administration and other services which create the framework for productive activities).*

11. The average annual rise in the volume of investment has been 4.0 per cent and the standard deviation 10.8; the average annual growth of GDP has been 3.0 per cent and the standard deviation 4.7.

12. KUZNETS *1966, pp. 257, 259.*

13. Examining the structure of investment using constant prices gives a significantly larger result for the proportional share of machinery and other equipment than the corresponding observation at current prices.

14. The development of the rate of investment in Finland over the period 1860–1960 has been more or less the same as in Sweden, Japan and Italy. The rate of investment in the United Kingdom – one of the first countries to industrialize – was relatively low between 1860 and 1960; in Australia, Canada and latterly settled regions of the United States, the rate of investment was high during the initial phase of growth between 1860 and 1913, and lower in subsequent years. KUZNETS, *pp. 236–239.*

15. This time aspect of accumulation has been given relatively little attention in studies, even though it may be a very important factor. The problems involved in measuring the capital stock may be one explanation for this lack of research.

10. The Significance of Foreign Trade

10.1. The framework of trade policy

International trade was comparatively unconstrained towards the end of the nineteenth century and that era has long been referred to as the Period of Free Trade. Import tariffs and trade restrictions were reduced, and they were at their lowest in the 1860s and 1870s. World trade, migration and international movements of capital expanded quickly.

In contrast with the latter part of the nineteenth century, the period between the world wars was characterized by protectionism: tariffs were increased and trade agreements were often bilateral, with goods exchanged on a quota basis. The volume of trade grew slowly. There was relatively little movement of capital compared with the Period of Free Trade, and migration was restricted.

The post-Second World War period has seen a gradual return to more liberal trading within such frameworks as GATT, EEC, EFTA and CMEA. The growth of world trade has been extremely rapid. International movements of capital have increased and multinational companies have flourished. At times, however, protectionist pressures have been manifest. Especially after the oil crisis of the 1970s, governments stepped up their support for domestic production as international agreements and other factors ruled out the possibility of raising tariffs.

During the era of Russian administration, more specifically from the beginning of the 1840s onwards, Finland was an autonomous customs area with its own schedule of tariffs. At that time, exports of Finnish goods to Russia enjoyed duty-free quotas or lower tariffs than those levied by other countries. Western export opportunities did improve, however, especially when tariffs were lowered in Western Europe during the 1860s and 1870s.

Finnish import tariffs were essentially lowered by a secret tariffs agreement made in 1841. This was also to form the basis upon which the tariffs agreements of 1859 and 1868 were built. With only minor amendments, the latter agreement remained in force until the end of the Period of

Autonomy. Imports of essential supplies – raw materials, industrial machinery, semi-finished goods, as well as corn and milled products – were free of duty, whereas tariffs were levied on final manufactured products as well as food, beverages and tobacco. Imports from Russia were either duty-free or merely subject to fiscal duties.[1]

A decline in world prices of manufactured goods between the 1860s and mid-1890s almost halved average international prices. Because Finnish tariffs of that period were still determined on the basis of the quantity and not the value of imports, they rose in proportion to import prices and automatically provided the domestic consumer-goods industry with greater protection. In 1913 the tariffs on the most-protected consumer goods were 20–40 per cent of the products' prices, although the duty on tobacco was almost 100 per cent and the charge levied on sugar was 237 per cent. Taken as a whole, tariffs accounted for over 10 per cent of the value of imports.[2]

After the First World War foreign trade was deregulated in the spring of 1921. It was at this time that the so-called "star tariffs" were brought into force as milder forms of import bans and licenses.[3] Star tariffs were employed not only as a means of achieving balance-of-trade policy goals but also in an attempt to tax products regarded as luxury goods. They also embodied the features of a protective tariff when levied on manufactured imports that threatened domestic industries still in early infancy. According to Pihkala, it was intended that star tariffs should be temporary and that free trade should generally prevail, since trade with the United Kingdom – Finland's most important trading partner – remained unrestricted. Far from being abolished, they were in fact raised further as the Great Depression deepened at the beginning of the 1930s. They functioned not only as protective and financial tariffs but also as a negotiating weapon of trade policy. Tariffs also became an important issue of controversy among export and domestic-market industries. The conflict of interests was obvious: the export industry demanded the lowest possible import tariffs so that it would be able to demand low tariffs from countries importing its goods; the domestic market-industry sought to obtain the protection afforded by higher tariffs.[4] In 1938 revenues from tariffs represented more than 20 per cent of the total value of imports.

The foreign trade regulations in force during the exceptional conditions of the Second World War and the period that followed it were not withdrawn until the 1950s. Trade was regulated by means of import and export bans, foreign exchange controls, licenses and tariffs. Import tariffs and charges were at their highest levels in 1956, when they represented more than 20 per cent of the value of imports.

In 1948 Finland became a member of the World Bank and the International Monetary Fund and became a signatory to the GATT in 1950.

Western trade was liberalized during the 1950s and 1960s within the bounds permitted by the currency situation. Finland became an associate member of EFTA in 1960 and a full member in 1986. Trade with the Soviet Union was re-established on the basis of bilateral agreements after the payment of war reparations had been completed at the beginning of the 1950s. A free-trade agreement was concluded with the EEC in 1973, and trade agreements with CMEA countries were made in the 1970s. The economic problems of past decade have again prompted a debate on the issue of additional trade restrictions, although there has not been much actual movement in that direction.

10.2. The shares of imports and exports

Finland was an open economy at the end of the nineteenth century. The modest volume of merchandise imports in the 1860s had already risen to account for a quarter of GDP expenditure by the end of the 1870s; exports grew to account for about a fifth of gross domestic product during the same period (Chart 19).[5] Generally, the share of imports remained at this level up until the end of the 1920s. Imports fell during the depression of the 1930s and their share remained at this lower level until the early 1970s. During the last ten years or so, the relative magnitude of imports has once again been about the same as it was in the period 1870–1928.

The share of merchandise exports in gross domestic product was close to

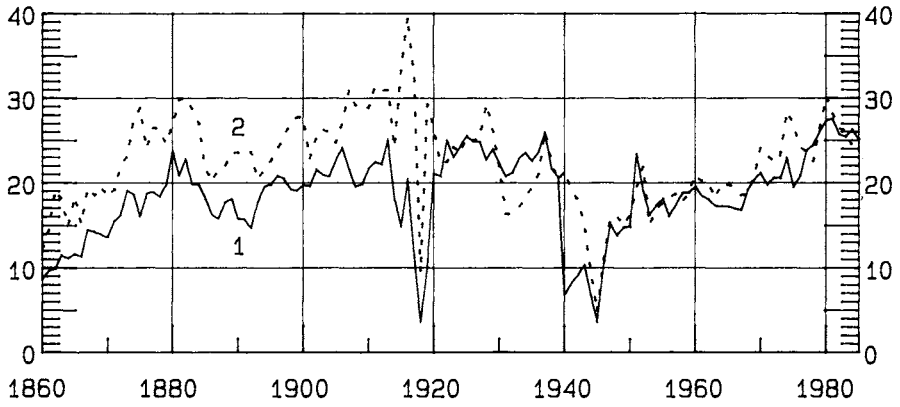


Chart 19. Ratios of Merchandise Exports and Imports to Gross Domestic Product at Market Prices, 1860–1985, %

1 Exports
2 Imports

a fifth from the 1870s up until the beginning of this century, and then, with the exception of the years of the First World War, about a quarter up until the end of the 1930s.[6] The share of exports declined during the Second World War and thereafter up until the end of the 1960s remained below its long-term average at somewhat less than a fifth. It did not reattain its quarter share until the end of the 1970s.

Annual fluctuations in exports and imports have been relatively large (the standard deviation of the annual changes in the volume of exports is 38.6, and imports 42.7). As one would expect, foreign trade was severely disrupted during both world wars and the years immediately after them, and the shares of imports and exports have both declined to exceptionally low levels during these periods.

The export of services accounted for an average of 4.3 per cent of gross domestic product over the period 1948 – 1985; the corresponding ratio for imports of services was 2.8 per cent.

Finland's dependence on the world economy measured in terms of foreign trade was – contrary perhaps to earlier belief – on average greater before the Second World War than after it. It has only been in the last ten years that the GDP share of foreign trade has risen to reattain its pre-war level. Recent internationalization has been most evident in movements of capital. Direct foreign investment in Finland has risen since the 1960s, and in the past few years direct Finnish investments abroad have outgrown them.

The significance of exports can also be examined from a different perspective. The GDP share of the open sectors producing goods for export – primary production and manufacturing – has fallen, while the share of the services sector producing mainly for the domestic market has grown. In principle, this structural change is a factor reducing the share of exports. If we examine the share of merchandise exports in value added of the export sectors (Chart 20), we see that this share has risen strongly even though its growth has not been steady. The openness of the open sectors has increased. It should, however, be remembered that because the chart compares the export value of final goods to value added, the ratio is artificially high.

In the 1860s exports were just under a fifth of the value added of these sectors. Most of agricultural production – the most important branch of production at that time – went directly for the use of the producer. Nevertheless, economic openness grew very quickly in the 1860s and 1870s.

There was a turning point in this development at the beginning of the 1880s, a few years after the Long Depression had begun. The share of exports in the value added of the open sectors declined sharply. Products of the iron industry became uncompetitive on the Russian market as the

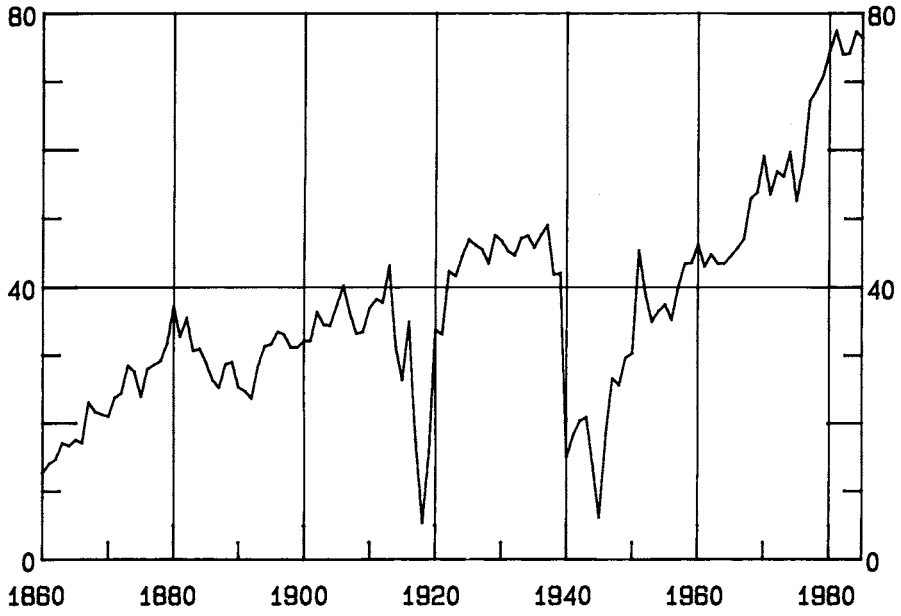


Chart 20. Ratio of Merchandise Exports to the Combined Value Added of the Primary and Secondary Sectors, 1860–1985, %

Russians developed their own production. Furthermore, Russia introduced tariffs and import quotas in 1885 in order to protect its fledgling industry. At the same time, Finnish import tariffs rose in real terms as world market prices fell. Finland's foreign trade wallowed in the doldrums for almost the whole of the 1880s. Demand in Finland shifted from imported merchandise to domestically produced goods, which in turn led to the growth of domestic manufacturing. This increase in the demand for domestic produce ended the Long Depression in Finland ten years earlier than in many countries of Western and Central Europe.[7]

The share of exports plummeted in both world wars. During the inter-war period the export share of the open sectors remained surprisingly stable. The strong growth that lasted from the end of the Second World War up until the latter half of the 1960s led to the reattainment of the level achieved at the end of the 1930s. After the recession of the 1970s the share resumed its steep upward climb. Indeed, one could ask whether this might not explain why Finland's growth in the 1980s has been relatively favourable by international standards.

As far as European trade as a whole is concerned, Finland's foreign trade has been a minor factor. For this reason, Finland has usually found itself

playing an adaptive role. The following data does, however, indicate that Finland's share of European exports has been increasing over time:[8]

1880	0.4 %
1913	0.7 %
1938	1.7 %
1960	1.9 %
1979	1.6 %

These figures certainly do not adequately describe Finland's standing in the export market, because as a supplier of a few essential export products – sawn goods, plywood, cellulose, newsprint – Finland has been one of a small band of major sellers in the foreign market. Finnish exporters have sometimes found themselves in a strong position when negotiating the trading conditions of these products. On the other hand, for example, the demand for sawn goods is particularly susceptible to cyclical fluctuations; for this reason, the effects of international cyclical trends and fluctuations in export trade have been experienced quite strongly in Finland.

10.3. The balance of trade and improving terms of trade

Over the period 1860–1985 the volume of merchandise exports grew by an average of 4.1 per cent per annum, and merchandise imports by an average of 4.3 per cent per annum (Chart 21). Between 1860 and the 1920s the value of merchandise imports consistently exceeded the value of merchandise exports by 20–30 per cent.

The visible trade deficits of the 1860s and 1870s were covered by revenues received from shipping and the Russian army. The foreign-exchange situation was also strengthened at that time by long-term loans and, to some extent, the investments of entrepreneurs from Russia and other countries. The visible balance seems to suggest that the current account deficit was quite significant in the mid-1870s. This is probably one reason why in 1877 Finland went on the Gold Standard and simultaneously devalued its currency.[9] After the 1880s the importance of revenues from Finnish merchant shipping declined and incomes received from the Russian army became less important; in their place, however, financial transfers from emigrants and incomes from the Russian villa settlements on the Karelian Isthmus began to increase.

Around the year 1910, the items balancing the invisible account were still shipping, financial transfers from emigrants, incomes from Russian villa

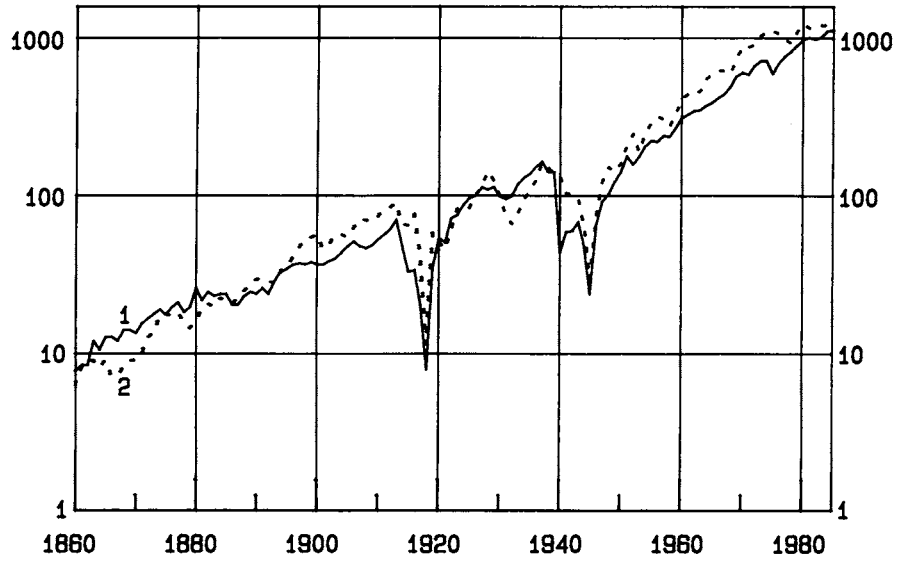


Chart 21. Volume Indices of Exports and Imports, 1860–1985, 1926 = 100

1 Exports
2 Imports

settlements, and expenditures by the Russian army in Finland. Foreign loans were also taken up at this time. The ratio of gross long-term debt to gross domestic product was an estimated 14 per cent at the beginning of the 1890s and about 17 per cent at the beginning of this century.[10] The most important users of long-term debt were the state and the mortgage banks. Furthermore, the export industry used supplier credit (short-term credit provided by foreign buyers), as it had in the past and continued to do thereafter. The rapidly increasing export receipts also opened up opportunities for obtaining credit from abroad. On the other hand, direct foreign investment in Finland remained at a relatively modest level, because, among other reasons, the involvement of foreigners in the Finnish economy was in many ways restricted and generally subject to permission.[11]

Merchandise imports and exports were more or less in balance during the 1920s and 1930s with the exception of the years of the Great Depression, when – as is typical for Finland in international economic downturns – exports were greater than imports (the excess was about 30 per cent). During the years 1918–1923 Finland adapted to the post-First World War situation by devaluing the Finnish markka by 80 per cent against the US dollar and pound sterling. Finland went on the Gold Standard at the beginning of 1926, and then followed the example of the United Kingdom

and abandoned it in the autumn of 1931, devaluing the Finnish markka by about a quarter against sterling in the process. After the devaluation, the Finnish markka was undervalued against the currencies of Finland's trading partners, and this helped to promote Finnish exports during the 1930s.

There is no systematic data available on the current account for the 1920s and 1930s. Receipts were clearly less than expenditures in the invisible items of the 1922 current account. The largest item of expenditure was interest and repayment expenses on foreign loans.[12] There was a substantial deterioration in Finland's debt position during the years following the First World War. Although the net national debt was at its highest level in 1931, when it represented more than 50 per cent of gross domestic product, it had fallen to only 1 per cent by 1939. Finland managed to cope with its foreign debt thanks to the surplus on the visible account and the favourable terms of trade during the 1930s. At this time, foreign loans were difficult to obtain, but interest-rate differentials meant that it was worth converting outstanding foreign loans into domestic debt or endeavouring to find internal finance.

The visible trade deficit was significant during the war years of the 1940s, and imports continued to exceed exports also in the post-war period. Gratuitous exports in the shape of war reparations averaged 28 per cent of total exports during the years 1945 – 1949. The net foreign debt began to grow at that time as war reparations and reconstruction were financed by taking up foreign loans. With foreign trade going through a period of adjustment and the country in the grip of domestic inflation, the Finnish markka was devalued several times in 1945 and 1949.

In the 1950s exports and imports were on average in equilibrium, which was largely due to the tight regulation of trade. Foreign trade was liberalized in 1957 and the exchange rate of the Finnish markka was simultaneously lowered by 39 per cent against all other foreign currencies.

The balance of trade was once again in deficit during the 1960s and 1970s. The balance on invisible items had been positive throughout the post-war period. Inflation – which has been higher than in competitor countries – has at times resulted in a severe weakening of the balance of trade and increased cyclical susceptibility for those export products which have traditionally been of great importance to the nation. The series of large devaluations that had been made since the 1920s continued in 1967, when the Finnish markka was devalued by 31 per cent against the US dollar. Subsequent devaluations have been smaller. Several relatively minor devaluations were made in 1977 – 1978 at the same time as similar measures were taken in other Nordic countries. There has been no sign of any significant imbalances in the current account since 1977. Nevertheless, Finland was obliged to follow suit when the Swedish Krona was devalued in

the autumn of 1982; the external value of the Finnish markka was reduced by 10 per cent. There have also been a couple of occasions during the 1980s when small revaluations have been made.

The final years of the 1970s saw an increase in the amount of foreign debt, which had been relatively small after the beginning of the 1950s. The ratio of the net foreign debt to gross domestic product was just under a fifth in the early 1980s.[13]

Imbalances of foreign trade have at times led to higher levels of indebtedness to other countries. Because foreign loans have been used for the construction of productive infrastructure and the expansion of industrial production, the nation has – often with the help of international inflation – generally done rather well out of its foreign borrowings. With the exception of a few short periods, the size of Finland's foreign debt has not given any cause for alarm.

The terms of trade, i.e. the ratio of export prices to import prices, improved by 100 per cent between the end of the 1860s and the beginning of this century. This was a particularly significant development (Chart 22) and it had an accelerating effect on economic growth during that period. There was a considerable fall in the prices of Finland's merchandise imports – grain and consumer goods – and a relative increase in the prices of the nation's export products.

The terms of trade deteriorated somewhat during the first two decades of

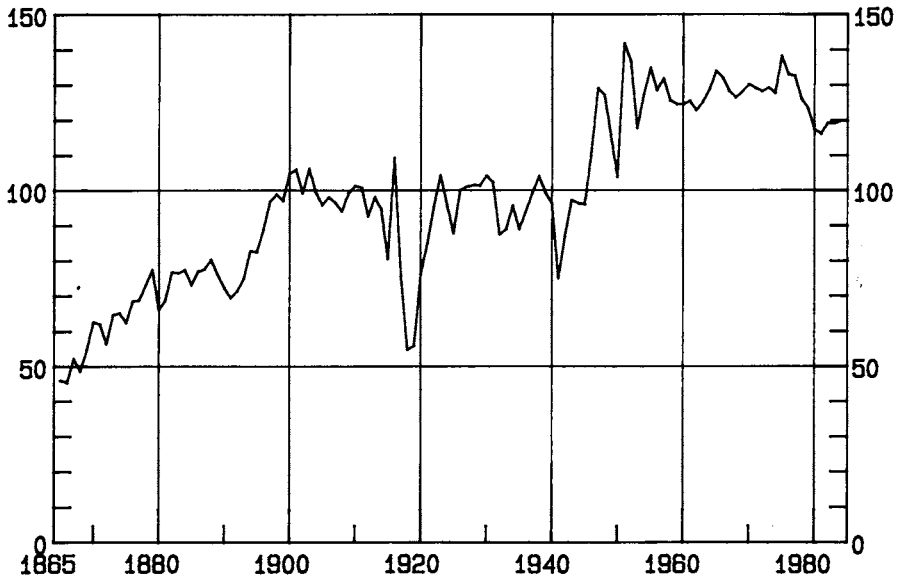


Chart 22. Terms of Trade, 1865–1985, 1926 = 100

this century and then stabilized for the duration of the 1920s and 1930s. The international market prices of forest industry products remained relatively good between the 1920s and the 1950s, compared with the prices of agricultural and other products. The improvement in the terms of trade during the 1950s can be partly explained by the changing pattern of exports, and partly by the favourable development of paper prices. It was also at this stage that products of the metal and engineering industries again began to account for a greater proportion of exports, and exports in general embodied a higher degree of processing.

Annual fluctuations in the terms of trade were quite marked between the beginning of the century and the end of the 1950s. Since then the terms of trade have been fairly stable and annual variations relatively minor. The terms of trade deteriorated somewhat during the late 1970s, but then made a substantial recovery when international crude oil prices fell in 1986.

The improvement in the terms of trade has lightened the burden of Finland's foreign debt and promoted a rise in the standard of living. It has also made it possible to achieve a significant quantitative differential in the long-term growth of exports and imports. The improvement in the terms of trade has been an important factor from the standpoint of welfare development, as increased imports have been paid for with a proportionately smaller rise in exports.

10.4. The fluctuating export market

In the 1860s about a half of the exports of the Grand Duchy of Finland went to Russia. However, the proportion of exports to Western Europe grew to nearly three quarters during the period leading up to the First World War. The United Kingdom and Germany were the most important Western importers of Finnish goods (Chart 23).

In the latter half of the nineteenth century Finland's exports to Western Europe consisted of raw materials and little-processed goods – sawn goods, agricultural products and raw wood. Sawn goods were by far the most important export article for the Western market (Chart 24, also see Table 10B1 in the appendix). Exports of sawn goods were stimulated by the lowering of U.K. tariffs on wooden products that began in the 1840s, the decline in shipping costs and the removal in 1861 of all restrictions on timber sawing in Finland. According to Kai Hoffman's calculations, about 40 per cent of all sawn goods were still being cut by hand in the 1860s, although the proportion had become insignificant by the beginning of the century.[14] The export of tar, which had been so important in earlier times, subsided into insignificance after the 1860s.

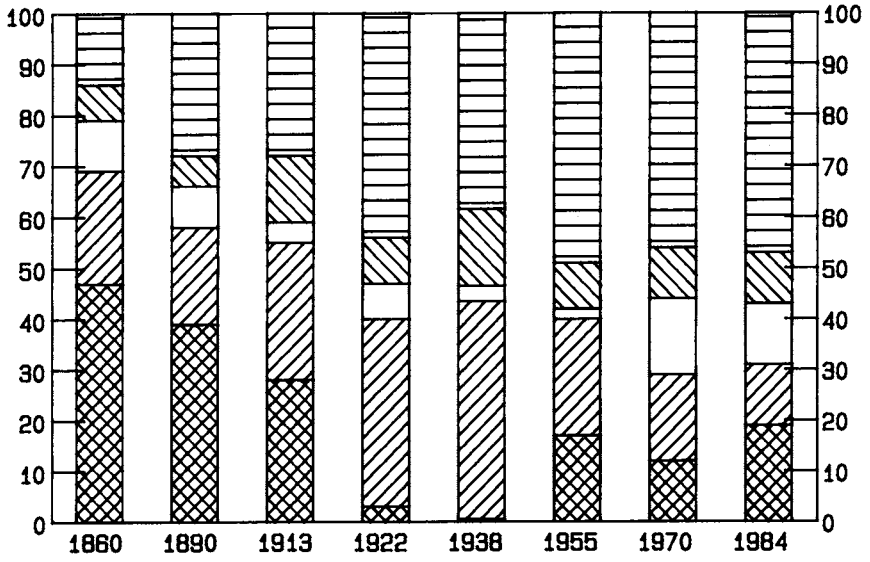


Chart 23. Distribution of Finnish Exports by Country for Selected Years, %

Russia/Soviet Union
United Kingdom
Sweden (1860 includes Norway)
Germany (1860 Prussia; West Germany 1955, 1970 and 1984)
Other countries

Source: Suomen taloushistoria 3 (The Economic History of Finland 3), 1983, pp. 232–241.

Even though butter was already the main agricultural export article during the 1860s, the growing trend in agricultural production towards a predominance of dairy produce resulted in butter securing an even larger share of exports. By the 1890s, it accounted for over a fifth of all exports to the West.

The products of the paper industry – mechanical wood pulp, cellulose and paper – were already beginning to find their way onto the Western European market at the end of the 1880s, although they still accounted for barely a tenth of Western exports in 1913.

Finland was able to sell products to Russia under the imposition of tariffs which were lower than those levied by the countries of Western Europe. This led to the export of a diverse range of manufactured and industrial handicraft products. Founded in 1820, Finlayson's cotton mill was the first Finnish factory to employ modern mechanical technology. Although it was built with the Russian market specifically in mind, it remained a modest concern up until the 1830s. The 1840s and 1850s also saw the establish-

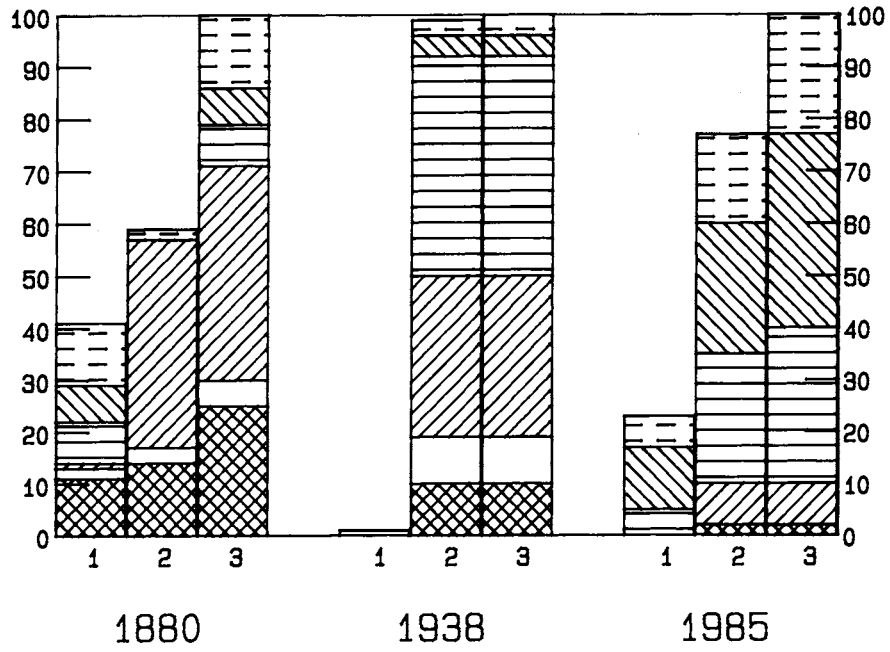


Chart 24. Structure of Finland's Eastern and Western Exports for Selected Years, %

Agriculture
Forestry
Wood industry
Paper industry
Metal and engineering industries
Other manufacturing

1 Eastern exports
2 Western exports
3 Total exports

Sources: PIHKALA 1970; Statistical Yearbook of Finland, various years.

ment of cotton mills by Barker, Forssa and Vaasa. Opening the door to the Russian market, the tariffs agreement of 1859 provided these factories with a significant duty-free sales area. Iron and metal products, however, had the largest share of exports to Russia in 1860 – about a half. Other exports included fairly small quantities of miscellaneous manufactured and industrial handicraft products such as yarn, linen, glassware, soap, candles, paper, wallpaper and leather goods. Agricultural exports were mainly dairy produce.[15]

During the period 1860–1913 the shares of agricultural produce, textiles, metal and other manufactured products in exports to Russia declined,

while the share of paper industry products rose appreciably. The Eastern exports of these manufactured products contracted primarily as a consequence of the expansion and modernization of Russia's own industrial production, and, for example, as a result of the Finnish iron industry becoming uncompetitive. On the other hand, the contraction was due to the expansion of Finland's domestic market. In the early phase of industrialization the Russian market did, however, offer an important section of Finnish industry with better opportunities for development than those afforded by the small domestic market on its own.

Before the First World War the manufacture of paper products had developed into a major Finnish industry as a direct consequence of its Russian market. The pattern of Eastern exports had become increasingly biased in favour of paper during that period, with products of the paper industry accounting for a half of exports. Imports of Finnish paper made up about one third of Russia's total consumption of paper at that time. For this reason, the level of production in Finland was extremely high by domestic standards.[16] Orders from the Russian army provided additional work for the engineering industry after the war with Japan and during the First World War up until 1917.

Trade with Russia stopped almost completely in 1917, and Finnish-Soviet trade was minimal during the 1920s and 1930s. After the First World War, however, Finland was able to replace this lost trade fairly quickly by establishing trade relations with Western Europe and the United States. The United Kingdom became Finland's most important trading partner; during the 1920s and 1930s, about 40 per cent of Finnish exports were bound for the U.K.

The pattern of exports polarized towards forest industry products: in the 1920s and 1930s, 85 per cent of exports was composed of raw wood and various kinds of forest industry products. At the same time, the paper industry's exports became less refined: in earlier times, mainly paper had been exported to Russia, while mechanical and chemical pulp was sold on the Western market. Wood processing also dominated manufacturing at that time.[17]

In some years, Finland was the world's largest exporter of sawn goods and plywood. Cellulose became the most important export product after the depression of the 1930s. The volume of cellulose exports during the Great Depression remained more or less at its pre-depression level, because some scope existed for reducing in export prices. The years of depression also saw the formation of Nordic and international forest industry export cartels, which agreed on production quotas and placed restrictions on production levels. These organizations undoubtedly helped the forest industry to maintain its volume of exports. The most important of these was

the European Timber Exporters Convention (1935), which also numbered the Soviet Union among its participants.[18]

After the Second World War the Soviet Union became an important trading partner of Finland. It accounted for 15 – 17 per cent of total exports between the 1950s and the 1970s, rising to about a quarter in the early 1980s. Western exports have maintained their position of dominance, although there has been a decentralization of the countries receiving them. The significant share held by the United Kingdom in the 1950s (22 – 25 per cent) has contracted to little more than a tenth in the 1980s. The Federal Republic of Germany has consistently accounted for over 10 per cent of Finnish exports. In recent years Sweden has risen to become an important trading partner; it now accounts for over a tenth of Finland's total exports. The European Economic Community nowadays represents Finland's most important trade area.

Since the Second World War Finland's trade has expanded in more fronts than in earlier times, and this has been accompanied by a diversification of exports. Exports to the Soviet Union have mainly consisted of ship deliveries and products of the metal and engineering industries, although products of the paper and textiles industries have been increasing in Eastern exports in recent years.

The bulk of Western exports still comprises products of the wood and paper industry. In the 1950s newsprint replaced cellulose as the most important export article. During the course of the 1970s, however, the pattern of Western exports changed so that for the first time in the entire period of this study wood and paper products accounted for less than a half of total exports. Products and machinery of the metal and engineering industries have also become an important export category, as have products of the clothing and chemical industries. A new type of export product appeared in the 1970s in the form of project exports; these were turn-key construction packages for delivery to the Soviet Union and countries in the Middle East.

The average degree of processing involved in the production of exported goods has risen over the long run. However, especially since the Second World War, Finland's export products have been particularly capital-intensive with regard to their resource base.[19]

What was the significance of war reparations as far as trade with the Soviet Union and the restructuring of foreign trade was concerned? It is probably impossible to give an unambiguous answer to this question. If industry had not had long traditions of manufacturing metal and engineering products as well as trading with Russia, it would hardly have been possible for the metal and engineering industry to deliver its heavy burden of war reparations to the Soviet Union. Despite its modest role as an

exporter, the metal and engineering industry was Finland's fastest growing industrial branch during the 1930s. It accounted for a quarter of industrial value added in 1938, and the need for war materials ensured its continued development during the Second World War.

In accordance with the policy adopted towards war reparations, no new factories were constructed for that specific purpose. Existing plants were extended and their production was in many cases adapted from war materials to the products required as war reparations. The manufacture of these products was largely based on full capacity utilization and an increase in the labour force. Neither did quality requirements pose any insurmountable problems, since some of products demanded in reparation, e.g. small ships, were relatively simple in terms of the technology required for their manufacture. The Finnish metal and engineering industry was already experienced in manufacturing equipment of greater sophistication than those demanded by the Soviet Union: submarines, for example, had been built for the Finnish and German navies as far back as the 1920s and 1930s.

Finnish exports to Russia/Soviet Union have been structurally more diverse and have generally embodied a higher degree of processing than exports to Western countries. Post-war trade agreements with the Soviet Union have again raised the share of the metal and engineering industry in exports and acted as a kind of proving ground for product development work. Trade agreements with the Soviet Union have been an important source of stability for exports. During economic downturns in the West, it has been possible to continue Eastern exports based on long-term trade agreements. For example, there have been occasions during the early 1980s when growth was sustained because the Eastern trade compensated for the weak development of demand for exports on the Western market.

10.5. Imports: consumables give way to investment goods

Russia was the most important supplier of Finland's imports during the Period of Autonomy, although it yielded this position to Germany just before the First World War. During the inter-war period, about a third of imports came from Germany, a fifth from the United Kingdom and an average of a tenth from both Sweden and the United States. After the Second World War the Soviet Union rose to join the Federal Republic of Germany, the United Kingdom and Sweden as the chief suppliers of Finland's import. The Soviet Union was Finland's most important trading partner from the end of the 1970s up until the mid-1980s, when falling oil prices led to a

decline in its share of foreign trade. As far as Finnish imports are concerned, the United States and Japan have also been important during the 1980s; each accounts for about 5 per cent of the country's imports.

Grain imports were important in the latter half of the nineteenth century and their share rose from 12 to 24 per cent of total exports during that period. In 1864 the import tariff on grain was removed in the spirit of free trade. Up until the 1890s most grain imports came from Russia, but after this German flour displaced Russian grain from the market (Charts 25 and 26).[20]

Consumer goods accounted for a large proportion of the other imports (Table 10B2 in the appendix), although especially in the 1880s higher real earnings resulted in a shift to the consumption of home-produced goods. Imports of investment goods rose during the long period of rapid economic growth that spanned the 1890s and the early years of this century.

As far as international trade was concerned, Finland adapted well to free-trading Europe. Duty-free imports of grain kept the prices of basic

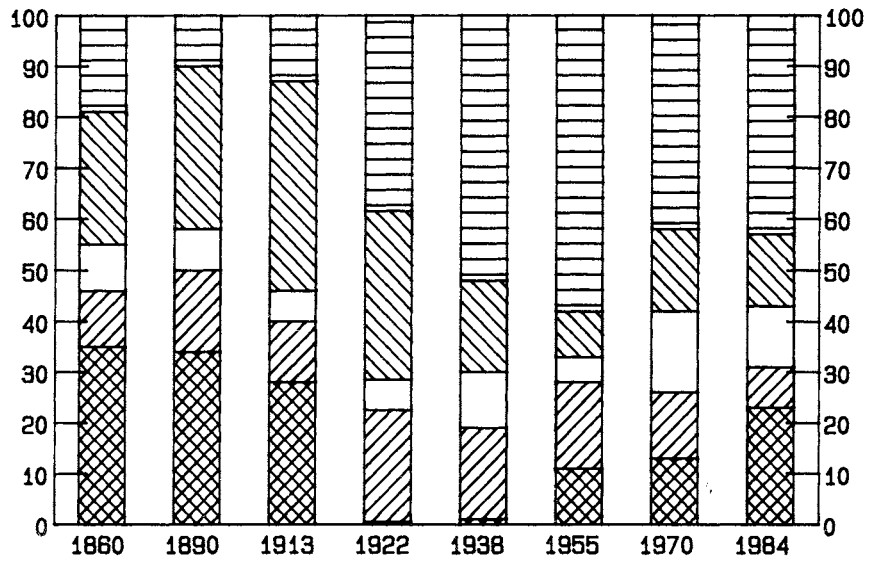


Chart 25. Distribution of Finnish Imports by Country for Selected Years, %

Russia/Soviet Union
United Kingdom
Sweden (1860 includes Norway)
Germany (1860 Prussia; West Germany 1955, 1970 and 1984)
Other countries

Source: Suomen taloushistoria 3 (The Economic History of Finland 3), 1983, pp. 232–241.

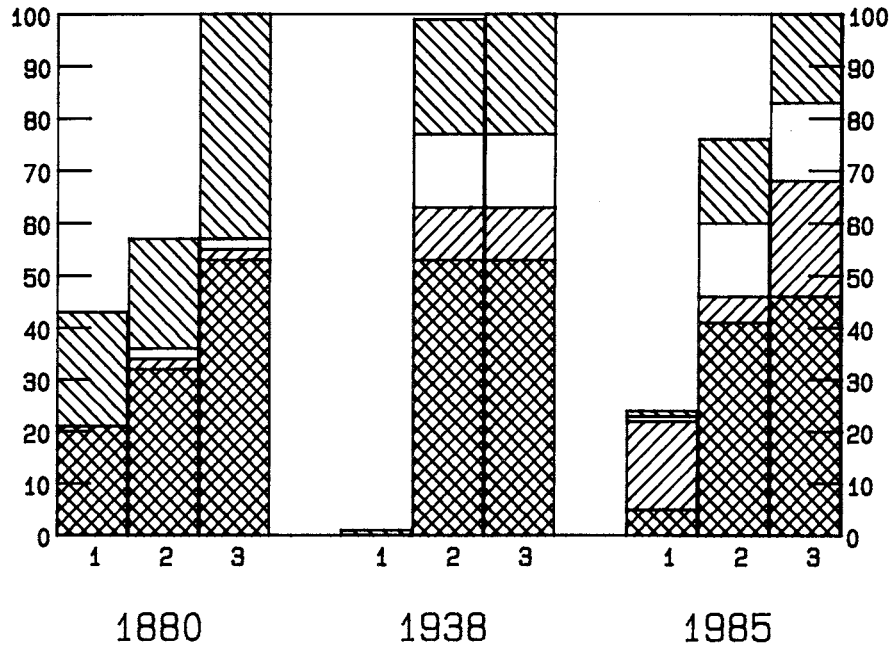


Chart 26. Structure of Finland's Eastern and Western Imports for Selected Years, %

Raw materials
Fuels and lubricants (incl. crude oil)
Investment goods
Consumer goods

1 Eastern imports
2 Western imports
3 Total imports

Sources: PIHKALA 1970; Statistical Yearbook of Finland, various years.

foods lower than they would have been otherwise. Cheap grain also contributed to industry's low level of wages and competitive prices.

In the 1920s and 1930s imports also shifted westward. Imports of grain and other foodstuffs were significant in the 1920s, but the emphasis within agricultural policy on self-sufficiency in food production resulted in a rapid increase in domestic supplies of grain and the decline of its share in imports. This self-sufficiency in agricultural production dovetailed well with protectionism in international trade, and it was also an objective in other countries. Imports of investment goods increased again especially during the period of rapid industrial growth that followed the Great Depression of the 1930s.

Imports of fuel have exhibited the most growth since the end of the Second World War. Imports of crude oil from the Soviet Union grew quickly during the 1960s and at the beginning of the 1970s. At the same time, Finland began to import raw wood from the Soviet Union, and its importation has increased quickly. Other raw materials and production necessities as well as consumer and investment goods have mainly been imported from the West. The composition of Finland's imports since the Second World War has been fundamentally much the same as those in Sweden and Denmark, which are also small open economies.

Raw materials and semi-finished goods have accounted for a large proportion of imports throughout the entire period of study. Contrastingly, the share of consumer goods in imports has declined over a long period of time and their place has been taken by imports of investment goods and fuels. During the early phase of industrialization the home market was supplemented by imports; these consisted of consumer goods, machinery and other products that were not manufactured domestically. Specialization has gradually led to a commercial exchange of goods, in which the composition of the country's imports is closer to the structure of its own production and exports (i.e. an increase in intra-industry trade) than was the case during the early years of industrialization. Imports have become competitive rather than supplementary.[21]

10.6. Exports – the engine of growth?

In the final decades of the nineteenth century the liberalization of world trade and the introduction of technical innovations that lowered freight costs and facilitated transportation resulted in the unprecedented growth of world trade and an increase in international specialization. Goods, capital and people – migrants – all moved more freely across international boundaries. Before the First World War the ratio of foreign trade to GDP in the present-day industrialized countries was generally larger than in the inter-war period and for a long time after the Second World War. Exports have been regarded as the engine of economic growth in small countries on the periphery of Europe during this period of free trade.[22]

The increased demand for exports during the latter half of the Period of Autonomy has also been emphasised in studies of economic growth in Finland, and the term "export-led growth" has often been used. The data then available did not, however, permit an examination of the economy as a whole. The consistent time series of this study provide an opportunity to consider the subject in the light of data supplied by a macroeconomic framework.

The opening up of export possibilities also means that production benefits from economies of scale and opportunities for specialization. This leads to increased productivity in export industries. Increased export revenues, for their part, cause multiplier effects in society. The magnitude of these effects depend on factors such as whether domestic or foreign raw materials are used and whether the ownership of the raw materials is concentrated or widely dispersed. The effects also depend on the distribution of wage and capital incomes and whether production is in domestic or foreign ownership. In principle, there is, of course, no difference between the effects of increasing demand for exports and the effects of greater domestic demand. Thus the origin of increased demand, whether it be domestic or foreign, makes no difference as far as economic growth is concerned.

Other views have also been put forward based on the perception that international trade was basically a mechanism whereby the relatively unrefined primary products of countries on the periphery of Europe were exchanged for the consumer and investments goods of the more developed interior. The sale of primary products had a relatively minor effect on the structural development of the producer country. Countries concentrated on exporting those products in which they had comparative advantages due, for example, to the abundance of their natural resources. Furthermore, a large portion of the increase in absolute growth was swallowed up by rapid population growth and territorial expansion, with the result that there was very little per-capita growth.[23]

As we saw earlier, the share of merchandise exports in Finland's gross domestic product rose appreciably in the 1860s, but the changes since then have been mostly cyclical in nature. On the other hand, the share of exports in the production of the open sectors has risen substantially over the longer run. Even though the GDP share of exports has grown comparatively little, industries producing goods for export have become increasingly dependent on foreign trade. Exports have therefore been of great significance in Finland's economic development over the entire 125-year period precisely because of the factors mentioned above: the export sectors have increased production and productivity, and opened up opportunities for specialization and the achievement of economies of scale.

Development at the beginning of the 1870s is regarded as being of special significance in the onset of economic growth. It was then that exports of sawn goods quadrupled in value and tripled in volume within the span of a few years.[24] These exports were relatively unrefined products of abundant natural resources. At the same time, manufactured products were exported to the Russian market with the aid of preferential tariffs.

The contributions of the various demand components to the growth of aggregate demand (4.1 per cent per annum) over the period 1870–1875

were as follows (calculated by multiplying the growth of each component by its share in aggregate demand):

Private consumption	71 %
Public consumption	0 %
Investment	9 %
Exports	20 %
Total	100 %

Exports grew by 5.6 per cent per annum, and the shares of the various export components in that growth were as follows:

Agricultural products	−16 %
Forestry products	14 %
Wood industry products	109 %
Paper industry products	30 %
Metal and engineering industry products	4 %
Other export products	−41 %
Total	100%

The increase in the exports of forest industry products was clearly the most important factor in the overall growth of exports. Although it may justifiably be referred to as the engine of export growth during those years, can it really be viewed as the engine of growth in the wider context of the economy as a whole? The growth contributions of exports in aggregate demand was only 20 per cent, and, for example, a significantly greater share of overall growth was due to private consumption.

It should be emphasized here that the examination of the growth contribution of exports does not describe a cause-and-effect relationship – in other words, it does not tell us which sector has caused economic growth. It is merely a quantitative description of the combined effect of the growth and share of exports on the growth of aggregate demand.

This kind of examination also fails to take account of the multiplier effect of export revenues. We may assume that the export multiplier in the case of sawn goods was relatively high in Finland, because the comparatively broad ownership of forests meant that stumpage incomes were distributed widely and wage incomes even more widely in society. Furthermore, as the majority of sawmills were owned by Finns, their capital incomes remained in the country.[25]

Great importance should be attached to the considerable improvement in Finland's terms of trade during the 1870s and 1890s, for it was at precisely

these times that the terms of trade were deteriorating in many other countries. This occurred firstly in the United Kingdom and other countries exporting manufactured products founded on new technology, when the prices of cotton fabric and other manufactured products collapsed. Productivity development had to compensate for the fall in prices, otherwise an increase in exports might well have led to a decline in export revenues.[26] Correspondingly, the prices of agricultural products fell as the lower transportation costs opened up new areas of production. The consequences of this increased supply were disastrous for many states on the periphery of Southern and Central Europe.

It can be seen from the balance of aggregate demand that domestic consumption has been the largest component of aggregate demand throughout the entire period of observation. In fact, even though theories of economic growth have not given it any independent weight as a growth factor, one should not overlook the importance of domestic demand as a factor in the sustainment of growth. Indeed, population growth can be regarded as an independent factor increasing domestic demand, provided that it does not lead to a decline in per-capita incomes. Moreover, domestic consumption has a multiplier effect and the domestic production that satisfies it – excluding the production of closed sectors – must compete with imports. Consequently the growth of domestic consumption also leads to economies of scale and specialization in production.

The depression of the 1880s is particularly notable in as much as Finland pulled itself out of the international slump with the aid of domestic demand while its exports were still stagnating. The rate of population increase was then higher than in any other period and emigration had still hardly relieved these pressures at all. The development of agricultural incomes was presumably quite favourable thanks to the structural change that was underway. The public sector increased its demand by building railways and schools with borrowed funds. Domestic production also benefited from the automatic increase of tariff protection that occurred because the tariffs of that time were determined on the basis of the volume rather than the value of imports.

However, supply factors – the availability of labour, capital and natural resources; and the development of technological and institutional circumstances – must be substituted for demand factors in order to examine the determinants of long-term growth. Demand factors are of great importance in short-term development, but in the long run the growth of demand has no significance without an increase in the factors of supply.

In the foregoing chapter we have seen that the population has grown and that this has resulted in an increase in the supply of labour. There has been a significant rise in the rate of investment, with the result that potential output

has grown at an even faster rate than the labour force. The growth of labour productivity has accelerated due to technological development, increased capital input, greater efficiency in the allocation of production resources and improvements in the professional skills of the labour force. For example, without imports of new technology as well as professional skills and know-how Finnish industry would not have been able to respond competitively to the increased demand for exports. Even though wood – Finland's most bountiful natural resource – has always been available in adequate quantities, there has been an increasingly strong trend towards production based on other materials. The growth of these supply factors has been necessary in the growth process to ensure that the increased demand for exports and consumption could be sustained over a long period of time.

1. KUUSTERÄ 1986, p. 137.

2. KUUSTERÄ 1986, p. 139.

3. The government had the discretionary authority to raise certain tariffs (known as "star tariffs") without the prior consent of parliament. See ERKKI PIHKALA Suomen kauppapolitiikka vuosina 1918–1944. Suomen Ulkomaankauppapolitiikka (Finland's Trade Policy 1918–1944. Finland's Foreign Trade Policy), ed. Lauri Haataja, Keuruu 1978.

4. PIHKALA 1978, pp. 12–25.

5. ERKKI PIHKALA's "Suomen ulkomaankauppa 1860–1917" (Finland's Foreign Trade, 1860–1917) (1970), and HEIKKI OKSANEN's and ERKKI PIHKALA's "Suomen ulkomaankauppa 1917–1949" (Finland's Foreign Trade, 1917–1949) (1975) have both been published in the Growth Studies Series. The time series published here are from the Oksanen-Pihkala appendix of tables, but with amended values for exports of sawn goods over the period 1860–1900. The series include merchandise exports at fob values and merchandise imports at cif prices.

Pihkala has reclassified the official foreign trade statistics that date back to the year 1856, i.e. SVT I Kauppa- ja merenkulkutilasto (Trade and Navigation), in order to make them suitable for use in his growth study on foreign trade. In doing so, he has standardized the units of measurement and converted the values of imports to cif prices. Pihkala had to supplement for significant deficiencies in the statistics covering the period 1860–1890: data on trade with Russia was available only in terms of volume, data on trade across land borders was to some extent unavailable, and so on. Compared to the approach adopted by Pihkala in his earlier study, Oksanen and Pihkala have classified the foreign trade statistics in a slightly different way.

Kai Hoffman has revised Pihkala's series on the value of sawn goods exports, and his amended figures have been used in this study. HOFFMAN 1980, p. 211.

6. The proportional growth of foreign trade was similar to that of the income level not only in Finland but also in Denmark and Sweden. See SVEND AAGE HANSEN Økonomisk vækst i Danmark (Economic Growth in Denmark). Bind II: 1914–1975. København 1977, pp. 245, 282–294; KRANTZ – NILSSON 1975.

7. HEIKKINEN – HJERPPE 1986, p. 46. A similar shift of production from exports to the domestic market occurred in Sweden in the 1880s. KRANTZ 1987, pp. 32–34.

8. RIITTA HJERPPE Finland in the European Economy 1860–1980. Festskrift til

Kristof Glamann (Festschrift to Kristof Glamann), Odense 1984, p. 120.

9. No systematic estimate of the current account exists, but Pihkala has made rather a good estimate, in which he provides an explanation for a significant portion of the invisible items of the current account. PIHKALA *1970a, pp. 202–203.*

10. HJERPPE *et al. 1981.*

11. HJERPPE *–* AHVENAINEN *1986, p. 287.*

12. KAHMA *1924, p. 120.*

13. Statistical Yearbook of Finland, various years.

14. HOFFMAN *1980.*

15. See PIHKALA *1970;* PER SCHYBERGSON *Finlands industri och den ryska marknaden under autonomins tid (1809–1917), Några synpunkter (Finnish Industry and its Russian Market during the Period of Autonomy (1809–1917), Some Viewpoints). Turun Historiallinen Arkisto 41, Ekenäs 1986.*

16. ERKKI PIHKALA *Suomen Venäjän-kauppa vuosina 1860–1917 (Finnish Trade with Russia 1860–1917). Bidrag till kännedom av Finlands natur och folk, H. 113, Helsinki 1970, p. 93.*

17. Such a period of extreme one-sidedness in exports was also a feature of industrialization in the United Kingdom; in the 1840s, 65 per cent of exports were textiles, i.e. products in which the British textile industry had a comparative advantage. Other significant export products were manufactured by the engineering industry. CRAFTS *1985, p. 69.*

18. AHVENAINEN *1984, pp. 359–366.*

19. REINO HJERPPE *Tutkimus tehokkaan ja optimaalisen allokaation käsitteestä ja tuotannontekijöiden allokaatiosta Suomen kansantaloudessa 1965–1970 (A Study on the Concept of Efficient and Optimal Allocation and the Allocation of Resources in the Finnish Economy, 1965–1970). Kansantaloudellisia tutkimuksia XXXIV, Helsinki 1975.*

20. However, it was obviously a question of Russian grain milled in Germany. PIHKALA *1970, pp. 150–151.*

21. Also see KRANTZ *1987, pp. 36–37. As the process of industrialization progressed, there was a shift in the imports of the industrialized countries from finished consumer goods to raw materials and semi-finished products. See* MAIZELS *1971.*

22. Cf. e.g. BEREND *–* RANKI *1982. According to Berend and Ranki, the fringe areas of Europe developed due to the demand of the central region for raw materials and food. Correspondingly, the central region presented the fringe areas with the opportunity to develop the transportation network and the production of technology and capital. Also see* KRANTZ *1987, pp. 32–33.*

23. GOULD *1972, pp. 240–247.*

24. EINO JUTIKKALA *Industrialization as a Factor in Economic Growth in Finland. Première conférence internationale d'histoire économique, Contributions, pp. 149–161, Stockholm 1960.*

25. Myllyntaus et al. examines the distribution of export revenues from sawn goods for the year 1907 on the basis of A. B. Helander's data. About 40 per cent went to the forest owners in stumpage incomes, 20 per cent to forest and log-floating work and also to sawmill wages, only about 2 per cent to shipping wages, 10 per cent to sawmill owners and the remaining 13 per cent to freight, intermediaries and agents. MYLLYNTAUS *et al. p. 56. See* HOFFMAN *1980;* DIETER SENGHAAS *The European Experience, A Historical Critique of Development Theory. New Hampshire 1982, pp. 72–79.*

26. CRAFTS *1985, p. 147.*

11. Aggregate Demand and Aggregate Supply

By definition, aggregate supply consists of domestic production and imports, while aggregate demand is composed of consumption, the formation of fixed capital and exports.[1] The development and significance of the individual components of supply and demand have already been dealt with in the foregoing and need not be repeated here. The balance of aggregate demand and aggregate supply can be used to study the most important structural changes that have taken place in the economy during the period 1860–1985 (Charts 27 and 28).

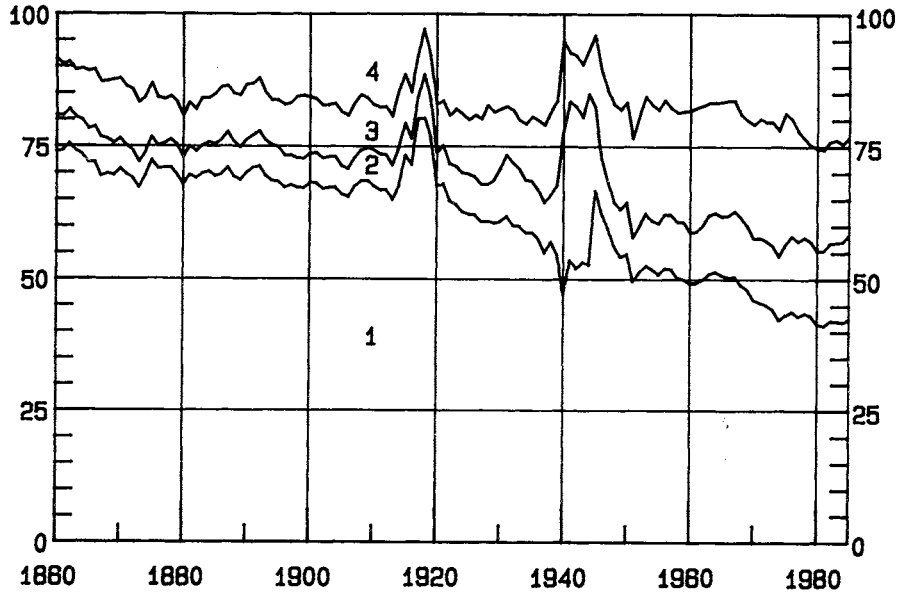


Chart 27. Structure of Aggregate Demand, 1860–1985, %

1 Private consumption
2 Public consumption
3 Investment
4 Exports

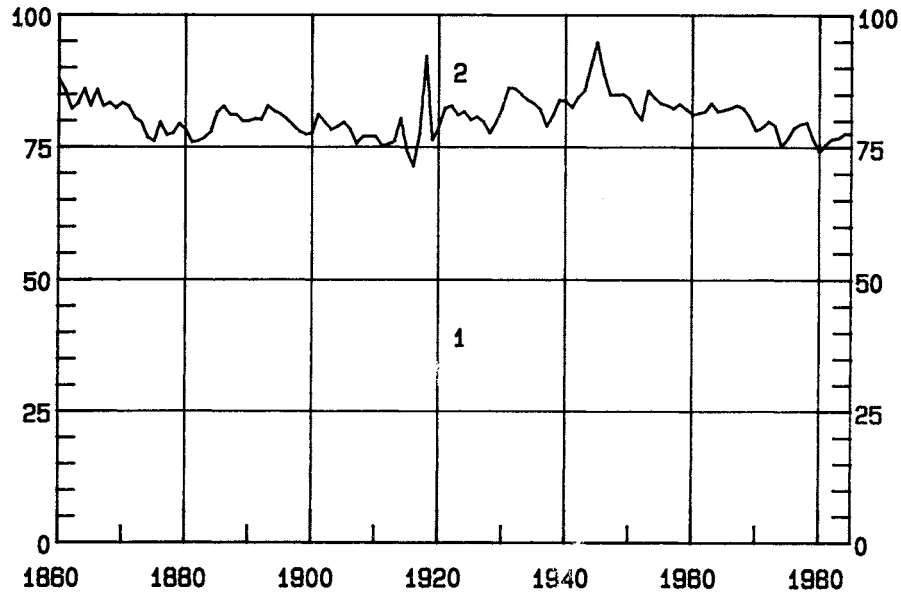


Chart 28. Structure of Aggregate Supply, 1860–1985, %

1 Gross domestic product
2 Imports

In contrast with the preceding chapters, in which the period of observation could be divided up into five or six different time spans on the basis of the growth rate of gross domestic product, the major structural changes in aggregate demand and aggregate supply fall naturally within three temporal categories: the period before the First World War, the two world wars and the years between them, and the post-Second World War era.

Apart from variations of a cyclical nature, the structure of aggregate demand remained almost unchanged throughout the period between the 1870s and 1913. Private consumption completely dominated aggregate demand and the share of public consumption was still modest. The share of investment fluctuated in accordance with cyclical development, rising in upswings and declining in downswings. The rate of investment was low – as one would expect in an underdeveloped economy still exhibiting slow growth. On the other hand, the rising tide of international commerce raised the share of foreign trade from its relatively low level in the 1860s to a level in the 1870s that has almost been maintained to the present day. The growth in the share of exports largely corresponds to the decline of the residual in the 1860s (see Table 3B1 in the appendix); Chart 27 shows that the proportional growth of exports actually corresponds to the proportional

decline of private consumption. It is rather difficult to find a simple explanation for this.[2]

As we saw earlier, the distribution of gross domestic product by economic activity changed quite slowly until the share of primary production went into decline during the 1890s. The establishment of new fields of production and the introduction of technology in many industries represented the first major steps towards a market economy and commercialism. Nevertheless, these changes had surprisingly little effect on the structure of demand.

The strong influences of the First World War on aggregate supply and aggregate demand manifested themselves above all in production, private consumption and foreign trade. The decline in output was primarily a consequence of the fall off in Western exports, although the discontinuation of exports to Russia in 1918 also played its part. The rate of investment and the share of public consumption remained more or less unchanged. The share of imports remained high at first, particularly as a consequence of the continuation of food imports. The fact that the share of private consumption also grew suggests that it was largely composed of essential consumption which could not be much reduced even during a time of crisis.

The end of hostilities saw the balance of aggregate supply and aggregate demand return to its pre-war structure. Change was, nonetheless, on the way: the share of private consumption began to fall quickly, and there was a corresponding increase in the share of public consumption. The newly independent state not only created the necessary administrative machinery but also increased considerably its input in the areas of health care, education and social welfare. The rise in the rate of investment was even greater. This was a necessary precondition for the distinct acceleration that took place in the growth of total output. Even so, as was stated earlier, the rate of investment and the incremental capital-output ratio were still low considering the degree of growth.

Despite the acceleration of the growth rate, the share of foreign trade remained at more or less the same level as before the war. This partly reflects the general state of the world economy during the 1920s and 1930s, which was dealt with earlier in connection with foreign trade. Foreign trade was hampered by numerous obstacles, old industries were suffering from overproduction, and many countries were striving to achieve national self-sufficiency.

The proportional decline of private consumption was halted for a few years by the Great Depression, even though its volume did indeed fall. Investment was at an all-time low during the years of the depression, and the rate of investment at its lowest was at the same level as in the worst years of the late nineteenth century. This lowered the average rate of investment

right through the 1920s and 1930s. On the other hand, the public sector made significant increases in both its consumption and its investments, thereby alleviating the depression. There was a substantial decline in the proportional share of imports in aggregate supply, but only a slight reduction in the share of exports in aggregate demand.

The structural changes in production during the 1920s and 1930s were large. During the period of rapid growth, the share of primary production declined while those of other economic activities increased. The 1920s also saw the onset of major changes in the structures of aggregate supply and aggregate demand. Even though the effects of the Great Depression were profound, they still represented nothing more than a temporary change of direction. The underlying trend of development was away from private consumption towards investment and public consumption. The restructuring of production had preceded structural change in aggregate demand during the Period of Autonomy, but now both processes were occurring simultaneously.

During the first half of the 1940s the conduct of the war – which is recorded as public consumption – used up a considerable proportion of the economy's resources and took precedence over other forms of demand. Nevertheless, the decline of total output experienced during the Second World War was not as severe as in the first great conflict, and this represents a significant difference between the structural developments of the two wartime periods. The earlier growth in the share of private consumption now turned into decline. The war years of the 1940s saw the rate of investment collapse to the lowest level of the entire period of observation. Exports and imports were also badly hit.

After the war, structural change within the balance of aggregate supply and aggregate demand followed a path of development essentially similar to that upon which it had embarked in the 1920s. The share of investment continued its growth, periodically disrupted by cyclical fluctuations. In the 1950s the rate of investment rose to a particularly high level even by international standards. It rose still higher just before the recession of the 1970s, but since then it has been just below the average level of the post-war period.

The share of public consumption at first fell to its pre-war level and in some years was even just below it. In the 1950s the public sector still accounted for the same proportion of consumption as it had in the 1930s. This situation changed at the beginning of the 1960s, however, when the public sector's share of overall consumption began to rise quickly. The start of the 1970s' recession sparked off the second phase of rapid growth in the share of public consumption. Growth since the 1950s has centred around the activities of the municipalities. These rising shares have been counter-

balanced by the continued decline of private consumption in relative terms.

The shares of merchandise imports and exports did not regain their pre-Second World War levels until the 1970s, since when their shares have risen further (in the chart, exports and imports of services were not included until 1948, which led to the proportional growth of total exports and imports).

Rapid economic growth since the end of the Second World War is consequently associated with a significant change in the structure of aggregate demand as well as a restructuring of production. Initially, the share of investment rose strongly during the period of reconstruction and industrial expansion. The share of public demand has been increasing since the 1960s. During periods of favourable growth, private consumption has given way to other forms of demand, even though its volume has risen.

Between 1860 and 1985 private consumption grew at a somewhat slower rate than gross domestic product, following its fluctuations quite closely. The decline in private consumption was appreciably greater than the reduction in total output both in the Great Depression of the 1930s and during the Second World War. Conversely, public consumption has grown at a faster rate than total output. The relatively mild fluctuations in public consumption during the inter-war years became violent during and immediately after the Second World War. For this reason, the standard deviation in the growth of public consumption was large. Both exports and imports have grown faster than total output, but their annual changes have also fluctuated more than gross domestic product. Imports have followed the development of gross domestic product quite closely; indeed, investment goods have made up a significant proportion of merchandise imports. Annual fluctuations in investment have also been large.

The growth contributions of aggregate supply and aggregate demand components (Table 20) show the combined weight of the growth and aggregate demand shares of different variables in the overall growth of aggregate demand and aggregate supply. The growth contributions are calculated by multiplying the average annual growth of the component (calculated on the basis of the final years) by its average share in aggregate demand or aggregate supply. There is no question of the model explaining causality; it is merely a quantitative description that highlights the relative weight of different components in the growth process. The growth contributions generally give the same picture as the main changes in the shares of the various components. This indicates that there have been no significant differences in the growth rates of the different variables, and that structural changes in the balance of aggregate demand and aggregate supply have — with the exception of the large wartime changes — been relatively slow and steady.

Table 20. Growth Contributions of Aggregate Demand and Aggregate Supply Components for Selected Periods, Average Annual Percentages

	1860—1890	1890—1913	1920—1938	1946—1960	1960—1974	1974—1985	1860—1985
Private consumption	65	61	53	41	47	38	55
Public consumption	4	6	9	4	12	21	9
Gross fixed capital formation	12	11	16	26	20	7	15
Exports	19	22	22	29	21	34	21
Aggregate demand	100	100	100	100	100	100	100
Imports	30	25	19	29	23	10	21
Gross domestic product at market prices	70	75	81	71	77	90	79
Aggregate supply	100	100	100	100	100	100	100

Imports and exports of services are included in the calculations for the years 1948–1985.

Throughout the whole period of observation, private consumption has accounted for the largest proportion of aggregate demand growth. This contribution has also been on the decline and the share of public consumption has risen correspondingly. The share of public consumption in the growth of aggregate demand has been as much as a fifth during the last ten years.

The growth contribution of investment rose substantially during the 1920s and 1930s. That time could perhaps be called the period of industrial consolidation. The growth contribution of investment was at its height during the period of reconstruction, 1946–1960. Its share declined somewhat between 1960 and 1974 amidst rapid structural change. This was perhaps due to the relatively modest investment needs of the service industries which sprung up and quickly blossomed during that period. During the decade of slow growth that followed, the growth contribution has been lower than in any other preceding period. The rate of investment has not, however, dropped very much; the fact that the relative prices of investment goods have risen faster than others may also be a factor behind this.

The growth contribution of exports was of the order of a fifth up until the Second World War. Considering the great importance that has been attached to exports both in the debate on economic policy and in studies of economic history, their contribution to the growth of aggregate demand seems to be surprisingly modest. The share rose appreciably after the Second World War due to the extremely low starting point of 1946. It then fell again in the 1960s to a fifth of aggregate demand growth. Between 1974

and 1985 the growth contribution of exports was larger than ever at about a third. As we saw earlier, it was at this time that there was a significant rise in the share of open-sector exports.

Up until the 1890s the contribution of imports towards the growth of aggregate supply was 30 per cent. After this their share declined slightly. It was low during the inter-war years (19 per cent) and at its lowest during the final decade or so of the observation period (only 10 per cent). The growth of world trade during the inter-war period was retarded by protectionism as well as the Great Depression. Instability also characterized the development of world trade during the period between 1974 and 1985. The slow growth of fixed capital formation during this period also suppressed the importation of investment goods, which may partly explain the decline in the growth contribution of imports.

1. This differs from the balance of aggregate demand and aggregate supply published in the national accounts in as much as imports and exports of services have not been estimated for the years 1860–1948. Net exports of services during this period are amalgamated with the increase in stocks and the statistical discrepancy (Table 3 in the appendix).

2. The residual in Tables 3B1–3B3 in the appendix comprises in the years 1860–1948 the increase in stocks, the statistical discrepancy and net exports of services; in the years 1948–1985 it includes only the increase in stocks and the statistical discrepancy. The fact that the residual has at times been quite large during the years 1860–1948 warrants a somewhat closer examination. Assuming that in the long run net imports of goods are approximately equal to net exports of services, subtracting the net imports of goods from the residual leaves a component that is approximately equivalent to the increase in stocks and statistical discrepancy of the old SNA. This difference is normally quite small, but in this study it is so large in some years that it is indicative of inaccuracy in some component or components of aggregate supply or aggregate demand. During the period 1860–1873 this remaining residual has an excessively high positive value. This means that either some aspect of gross domestic expenditure remains unresolved or aggregate supply has itself been overestimated. At the beginning of this century the residual becomes excessively negative, and, with the exception of a few war years, is again excessively positive from the first half of the 1930s up until 1948.

The degree of positivity exhibited by the residual in the years after the Second World War is a consequence of gratuitous exports in the form of war reparations; these contributed to production and imports, but they did not appear in export figures.

The ratio of private consumption to gross domestic product in the 1860s and at the beginning of the 1870s is suspiciously low, whereas the magnitude of forestry's value added is large. Furthermore, there have been problems in determining import and export prices in years before the 1890s. Laurila's figures for private consumption at the beginning of the century seem to be somewhat high, even though the housing costs included in his estimate have been lowered for this study.

It is difficult to pinpoint the reasons for the excessively large residuals. It does, however, seem clear that despite the problems, the main trend of development has been correctly

identified. Further studies are needed to provide a more detailed picture of aggregate demand and aggregate supply components. Such improvements in precision will not essentially change our view of the main trend of development, although greater detail may bring about new interpretations and explanations.

12. Regularities of Industrial Development

The study of economic history is largely concerned with the search for regularities within the processes of industrialization and economic growth which can be distinguished from the special features of individual nations. The underlying assumption is that the essential features of industrial development are similar no matter when or where it takes place.[1] Indeed, numerous comparative studies of economic development in various countries have used growth studies and time series in order to reveal the common features of the growth process. The exact timing and other features of Rostow's stages of economic growth have been criticized and to a large extent rejected. Nevertheless, many other researchers have employed similar techniques, most notably Clark and Kuznets.

Hollis Chenery and Moises Syrquin have constructed a comparative model, in which they analyze the accumulation of resources, the allocation of resources, the population growth and the distribution of incomes in about 100 countries over the period 1950–1970. Their objective was to determine a typical structure for an economy at various levels of income.[2]

N. F. R. Crafts has developed the Chenery-Syrquin model a stage further and produced a transition or industrialization model of the developed European countries in the nineteenth century. This model attempts to determine the importance of demographic changes such as the birth rate, the mortality rate and urbanization, and to find out how the percentages of production and labour in the primary and secondary sectors, the GDP ratios of consumption, investment and public sector expenditures, and the school enrollment ratio have changed with the growth of per capita incomes.

Crafts summarizes his results in a table showing the average values of the above-mentioned variables at different levels of income. The income levels are expressed in 1970 US dollars and the purchasing power parities calculated by Kravis et al. have been used as the basis for the currency conversions. Crafts does in fact state that the conversion ratios do not differ much from the official exchange rates of 1913.[3]

Table 21 compares data on the Finnish economy using the same indicators as in Crafts's model at four different income levels: 300 dollars, 550 dollars, 900 dollars and 2,300 dollars per capita. The last-mentioned is Crafts's adaptation of the Chenery-Syrquin model and it is calculated from data on 100 countries over the period 1950–1970. Finland's GDP per capita was somewhat more than 300 dollars in 1860–1867, 550 dollars in 1897–1902, 900 dollars in 1928–1933 and 2,300 dollars in 1963. These levels of income were achieved in Finland a good deal later than in the leading Western European countries.[4]

As far as population development is concerned, the birth and mortality rates in Finland have generally been lower than the averages for Europe at corresponding levels of income. Furthermore, the birth and mortality rates in Finland would appear to have changed at the same time as in Western Europe rather than in accordance with the income level.[5]

The proportion of the population living in cities was extremely low in Finland until recent decades. This has largely been due to the fact that the production plants of Finland's main branches of industry were often established in rural areas close by either raw materials or sources of power. The various ways in which countries shape their population centres into cities have also given rise to different population distributions. In Finland, important population and industrial centres are often located in rural boroughs.

The importance of the primary sector, measured in terms of both employment and production, has been fairly high in Finland compared with the average shares at corresponding income levels. This is probably largely attributable to the importance of the role played by forestry, compounded by the afore-mentioned lateness of structural change in Finland. The production share of the secondary sector has been close to the corresponding averages at the various income levels. The high share of the primary sector together with the fact that the share of the secondary sector has been more or less in line with the model means that the share of services in Finland has been a little lower than the average.

The ratio of private consumption to GDP was low in Finland at the 300-dollar income level and correspondingly high at the 550-dollar income level. Furthermore, the substantial rise in the GDP ratio of private consumption during the 1860s and 1870s is in stark contrast to the results of both Crafts and Chenery & Syrquin, who reported a steady decline in the GDP ratio of private consumption as the level of incomes rose. This may also point towards a possible underestimation of private consumption or problems in the level of other aggregate demand components during the first decade of the observation period (see note 2 of chapter 11, p. 178).

Public consumption, the rate of investment, and exports have developed in Finland in almost the same way as the averages at corresponding levels of

Table 21. Comparison of Industrialization Indicators for Western Europe and Finland at Selected Levels of GDP per Capita (in 1970 US dollars)

	$ 300		$ 550		$ 900		$ 2300	
	Western Europe	Finland 1860	Western Europe	Finland 1900	Western Europe	Finland 1930	Western Europe*	Finland 1963
Birth rate, ‰	38.8	36.4	34.0	32.6	30.0	21.8	19.1	18.2
Mortality rate, ‰	28.9	24.8	23.7	21.9	19.5	14.0	9.7	9.3
Natural rate of population growth, ‰	9.9	11.6	10.3	10.7	10.5	7.8	9.4	8.9
Urbanization, %	13	6	31	13	45	19	66	42
Share of primary sector in labour force, %	73	79	55	70	40	52	16	30*****
Share of secondary sector in labour force**	10	13	25	19	36	24	37	30*****
GDP share of primary sector, %	54	61	38	48	25	30****	13	16
GDP share of secondary sector, %	18	16	25	23	30	30****	38	37
Ratio of private consumption to GDP, %	83	74	79	85	76	77****	62	62
Ratio of public consumption to GDP, %	8	7	7	7	6	10	14	13
Ratio of investment to GDP, %	11	11	14	13	17	17****	23	26
Ratio of exports to GDP, %	19	9	21	20	23	23	25	19
School enrollment ratio***	17	..	36	39/15	51	48	86	66

* Crafts's version of the model designed by Chenery and Syrquin; Chenery and Syrquin's model applies to the figures for the 1950s and 1960s.

** Crafts has male labour force; the share of primary production in the male labour force according to Crafts is a couple of percentage points higher than the share of primary production in the total labour force.

*** Percentage of 5–19 year-olds enrolled in primary, secondary and vocational schools. The larger of the two figures for Finland 1900 includes pupils enrolled in church (circuit) schools for small children.

**** An annual average of the corresponding figures for the period 1927–1930 has been calculated in order to eliminate the effects of the depression.

***** Percentage of persons in employment as defined by the revised SNA; calculated on the basis of working hours, the share of primary production is 32 % and the share of secondary production 31 %.

Sources: CRAFTS 1985, pp. 50–52, 55; The Statistical Yearbook of Finland, various years; the results of this study.

income, with the sole exception of the high GDP ratio of public consumption in Finland at the 900-dollar income level. It is possible that the level of public consumption is rather more dependent on the point in time, and that, for example, times of crisis or the following of examples given by other countries influence the development of the public sector. The 900-dollar income level was achieved in Finland at the end of the 1920s, when the early effects of the Great Depression were already pushing up public expenditure.[6]

The share of Finland's exports at the 300-dollar income level was low in comparison with the model, while it corresponded closely with the average at all other levels. The modest share of exports at the 300-dollar level can be explained by its point-of-time dependence: Finland reached this income level in the 1860s – a time when the share of foreign trade was generally low in many countries. The model's figures for this level of income relate to developing countries in the 1950s and 1960s.

The high school enrollment ratio in Finland at the 550-dollar income level (about 1900) is due to the inclusion in the share of those enrolled in church schools for small children (circuit schools); without the circuit schools the figure is extremely low. At other levels of income the school enrollment rate in Finland was lower than the average of the countries examined.[7]

Comparing Finland's economic indicators with Crafts's model points to some obvious similarities in the structural development of the economies in question at corresponding levels of income. This tends to reinforce the notion that economic development in different temporal and geographical settings are, to some extent, united by common threads. Furthermore, the examination can also be used as a kind of test for the reliability of the calculated time series. If explanations cannot be found for discrepancies, the reliability of the series must be in some doubt. The most obvious differences between the figures for Finland and their equivalents in the transition model appear to be related to the special features of forestry and the forest industry and their role in the Finland's economy. They are also reflected in the industrial structure of the economy and the degree of urbanization. Crafts stresses that the transition model gives a picture of average development and that there were significant differences in the individual indicators of the various countries. For example, it is generally the case that the later the 550-dollar income level was achieved, the higher the proportion of the labour force in agriculture at that income level. It must also be borne in mind that both Crafts and Chenery & Syrquin experienced difficulties obtaining data, and that the comparability of the data was problematic.

1. SIDNEY POLLARD *The Industrialization of Europe, Economic Theory and History, B 1, Eighth International Economic History Congress, Budapest 1982, pp. 5–6.*

2. *See* HOLLIS B. CHENERY – MOISES SYRQUIN *Patterns of Development, 1959–1970. London 1975.*

3. N. F. R. CRAFTS *Patterns of Development in Nineteenth Century Europe, Oxford Economic Papers 1984;* CRAFTS *1985, pp. 48–64;* KRAVIS *1978.*

4. *Crafts's examples of countries at the 300-dollar income level – on the threshold of growth – included*
– *the United Kingdom at the beginning of the eighteenth century*
– *Denmark in the 1820s*
– *France in the 1830s*
– *Finland in the 1860s*
– *Russia in the 1890s.*
Countries at the 550-dollar income level – economic growth had begun – included
– *the United Kingdom in 1840*
– *Belgium in 1850*
– *the Netherlands in 1860*
– *Denmark, Germany and France in 1870*
– *Austria in 1880*
– *Norway in 1890*
– *Sweden and Hungary in 1900*
– *Finland, Portugal, Italy and Spain in 1910.*
Countries in the examination at the 900-dollar income level – high GDP per capita in nineteenth-century Europe – included
– *the United Kingdom in 1870*
– *Belgium in 1890*
– *Denmark, Germany, the Netherlands and Switzerland in 1900*
– *France in 1910.*
Finland did not achieve the 900-dollar level of income until the 1920s.

Crafts included Finland in his model, but he used data on the level of income per capita in Finland between 1860 and 1910 that are lower than the new results of this study. Correspondingly, the most recent data on Sweden in the 1860s are higher than earlier figures, although their effect on these results is not significant. See N. F. R CRAFTS *Gross National Product in Europe 1870–1910: Some New Estimates, Explorations in Economic History 1983.*

5. *Compared to the Chenery-Syrquin model, demographic pressure in nineteenth-century Europe was significantly less than in countries with a low standard of living after the Second World War.* CRAFTS *1985, p. 54.*

6. *This assumption is supported by the result obtained by Chenery and Syrquin concerning the 1950s and 1960s, which indicated that at corresponding levels of income the ratio of public consumption to GDP (in developing countries) was significantly higher than that of Crafts's example countries in the nineteenth century.*

The rate of investment in Crafts's model, i.e. in the industrialized countries of the nineteenth century, is lower than in the developing countries of Chenery's and Syrquin's model in the 1950s and 1960s; on the other hand, the rate of industrialization is higher at income levels of 400–900 dollars.

7. *It is not easy to determine the proportion of children and young persons receiving an education in Finland in 1860. At other points of time there is no precise data on the number of persons enrolled in vocational training. It seems probable that the number of vocationally trained persons has been underestimated due to deficiencies of data. Even*

so, this is probably not large enough to raise the school enrollment ratio in Finland to the level of Crafts's model. Neither is it absolutely clear which schools are included in Crafts's data.

13. Summary

Economic development in Finland during the period 1860–1985 has exhibited a slight but unmistakable acceleration in the growth of gross domestic product. Gross domestic product per capita has grown in real terms by a factor of fifteen; in the process Finland has transformed itself from a relatively poor country on the European periphery into one of the most developed welfare states in the world.

It is difficult to pinpoint a starting or turning point for economic growth during the period of observation. It rather looks as if gross domestic product per capita gradually started to grow over a long period of time that stretches back beyond the beginning of the period under study. Growth during the first decade of observation period was modest by modern standards and a large proportion of it was swallowed by rapid population increase.

Growth has been interrupted by numerous cyclical downturns as well as two world wars. The worst periods of depression for Finland were the Long Depression, which began in the mid-1870s, and the Great Depression of the 1930s – the recession that followed in the wake of the 1973 oil crisis was mild by comparison.

Annual variations in the volume of gross domestic product have become smaller, and gross domestic product has not fallen in any year since the end of the Second World War.

Economic growth in Finland, as in other industrialized countries, has been associated with a process of structural change in which the share of the primary sector has fallen and the shares of the secondary and the services sectors has risen. Structural change stems from differences in the productivity levels of individual industries or economic activities, changes in relative prices, and changes in demand caused by higher levels of income.

The structural changes that took place in the Finnish economy were late in comparison with those of other industrialized countries, and there were some differences. In other countries there has been a transition from the primary to secondary production and then from secondary production to the services sector. In Finland the secondary and services sectors have grown side by side – with the exception of the last 25–30 years, during which time services have increased their share and the secondary sector has

remained almost at a standstill. Furthermore, the notable decline that has taken place in the share of manufacturing in other industrialized countries since the end of the Second World War has not thus far been observed in Finland.

The value added of the services sector has been quite high throughout the period of observation. The often-mentioned rapid rise in the share of the services sector after the Second World War was in fact a return to the inter-war situation with regards the transition of production resources. This was brought about by the post-war period of reconstruction that lasted up until the 1960s. Since then the value added of the services sector has once again developed in accordance with its long-term trend.

Structural change has been rapid during periods of stable economic development and has either been retarded or brought to a halt during times of crisis, when changes – even retrogressive ones – have been relatively large.

According to the examination of the growth contributions of individual industries and economic activities, primary production was the most important sector between 1860 and 1890 as far as the growth of gross domestic product was concerned. Manufacturing was the principal growth accelerator during the inter-war years and also in the 1950s. The contribution of private services has been significant throughout the entire period, and the growth of private and public services has been responsible for most of the GDP growth since the 1960s.

Rapid population growth means increasing consumption demand and reserves of labour. The principal features of demographic development in Finland have followed the pattern of other industrialized countries: birth and death rates have both declined. Population growth was at its most rapid during the 1870s and 1880s. Population growth has been accompanied by greater participation in wage work and, in recent times, an increase in the size of the working-aged population – all three factors have increased labour input.

Technological development has been a crucial factor in economic growth over the past one hundred years or so. It has been responsible for the particularly rapid improvement of labour productivity. It is estimated that two-thirds of Finland's economic growth has been derived from improved productivity and one third from additional labour input. The growth of productivity has clearly accelerated over time.

A significant proportion of productivity growth is a consequence of structural change – when changes in demand lead to productive resources being reallocated to industries with higher levels of productivity. The effect of structural change on productivity was at its greatest before and after the turn of this century.

The recent rise of services to become the largest sector of the economy is thought to have retarded economic growth, because productivity development in service industries is slow. On the other hand, it is doubtful whether the method of calculation employed in present-day national accounting is capable of satisfactorily measuring the growth and productivity development of services.

As far as production inputs are concerned, in addition to the growth of productivity brought about by the increase in the labour force and technological development, gross fixed capital formation has grown appreciably faster than gross domestic product. The rate of investment rose to record levels following both world wars. The ratio of gross fixed capital formation to GDP since the Second World War has more than doubled compared to capital formation in the final decades of the nineteenth century. The amount of capital per worker has increased continuously.

Private consumption per capita increased fourteen fold in real terms between 1860 and 1985. The improvement in the standard of living is also evident in the structure of consumption. Food accounted for three fifths of consumption at the end of the nineteenth century but only one fifth in 1985. In the 1980s, over a half of disposable incomes can be used for less-than-essential consumption, whereas such spending accounted for only one sixth of consumption at the end of the nineteenth century. Similarly, the ratio of private consumption to gross domestic product has fallen from about four fifths to just over a half. It has been the most important component of aggregate demand throughout the entire period.

In recent years public consumption has risen partly to compensate for the decline of private consumption. Both central and local government have increased their spending on health care, education and the social services especially since the 1960s, during which time the share of public consumption in aggregate demand has also risen appreciably. Even more significant than this has been the contribution made by the public sector as a director of transfer payments.

With the exception of the Second World War – when the input of the state was greater than at any other time – public production and consumption grew at the same rate as gross domestic product throughout the one hundred years between 1860 and 1960. However, the economic importance of central government services, i.e. public administration, defence etc, was considerable as far back as mid-nineteenth century. The municipal sector was then only a very minor factor in the economy. The shares of local government in gross domestic product and consumption have gradually grown over time and in the 1980s they are appreciably larger than the corresponding shares of central government.

The economic contribution of the public sector is not fully revealed in this

growth study, as a significant part of public production is included in manufacturing, construction, transport and communication, and banking. These have not been categorized here according to the type of enterprise, but merely classified under the appropriate industry or economic activity. The public sector has also been an important investor throughout the whole period of observation.

Finland's dependence on foreign trade has been considerable throughout the entire 125-year period. The GDP share of imports has been about a quarter and the share of exports about a fifth. The level of foreign trade was below average in the 1860s, during the two world wars, and from the end of the Second World War right up until the 1970s. There was a continuous and significant surplus of imports during the final decades of the nineteenth century. To some extent, the surplus of merchandise imports was paid for by larger exports of services, although foreign borrowings were also used to develop the economy. There has been relatively little direct foreign investment in Finland during the period of observation.

Between the 1860s and the First World War, changes in relative prices resulted in the terms of trade improving by about a hundred per cent. This was an extremely important factor from the standpoint of welfare development, as increased imports could be paid for by a proportionately smaller rise in exports.

International economic fluctuations have been conveyed to Finland via the channel of foreign trade. This problem has been made worse by the fact that sawn goods – the nation's most important export article up until the 1950s – is particularly susceptible to cyclical variations.

Russia and Western Europe were Finland's most important trade areas during the Period of Autonomy. In the inter-war period, trade was directed almost exclusively to Western markets – especially the United Kingdom. The Eastern market opened up again after the Second World War, and the Soviet Union was Finland's most important single trading partner between the end of the 1970s and 1985. Nevertheless, 70–85 per cent of Finland's exports during the post-Second World War period have been westward bound. The United Kingdom no longer plays a key role as an importer of Finnish products, although the EEC, of which the U.K. has been a member since 1973, now accounts for the largest part of Finland's foreign trade. The range of goods exported by Finland has largely consisted of forest industry products. In recent decades metal products have once again – after an interval of nearly a hundred years – achieved a position of significance in exports.

The structure of exports has always been more diverse during those periods when trade with Russia/Soviet Union has been possible. The Russian/Soviet market has acted as a kind of proving ground for developments

in production and export products. Imports of raw materials and little-processed products from the Soviet Union have been significant – grain during the nineteenth century, crude oil after the Second World War.

A comparison of the main indicators of Finland's industrialization – demographic changes, the industrial structure and the composition of aggregate demand – with a model describing the industrialization of Europe shows that the industrialization of Finland has to a large extent followed the development trend of the model. Population growth has slowed down as incomes have risen, the share of the primary sector in production has declined, the share of private consumption has fallen, the rate of investment has risen and the public sector has expanded. The most important differences in the development paths of Finland and the countries included in the model appear to stem from special features related to the central role of the forest industry in the Finnish economy.

Appendix of tables

The figures in the tables are at current prices unless otherwise stated.

The figures for the period 1860–1960 have been prepared in accordance with the national accounting framework of 1953 (the old SNA); the figures for the period 1960–1985 comply with the system of national accounts introduced in 1968 (the revised SNA) and have been partly reclassified (see note on Table 4, p. 230).

The figures for 1984 and 1985 are preliminary data which became available in the spring of 1987. The final figures for 1985 include a general adjustment made by the Central Statistical Office of Finland. These adjusted figures have been published for the years since 1976. This adjustment has not been taken into consideration in this study.

Because of rounding, totals do not always tally.

The monetary unit used in the tables is the *new Finnish markka* (= 100 old markkaa), which was introduced in 1963.

1. **Population and Gross Domestic Product, 1860–1985; Population in Thousands, Gross Domestic Product at Market Prices in Millions of 1985 FIM, Indices 1926 = 100**

Year	Population	Index of population	Gross domestic product at 1985 prices	Annual change in gross domestic product, %	Gross domestic product volume index	GDP/ capita index
1860	1747	52.1	7777	0.0	20.9	40.1
1861	1771	52.8	7828	0.7	21.0	39.8
1862	1786	53.2	7419	−5.2	19.9	37.4
1863	1797	53.6	7999	7.8	21.5	40.1
1864	1827	54.5	8189	2.4	22.0	40.4
1865	1843	54.9	8125	−0.8	21.8	39.7
1866	1838	54.8	8242	1.4	22.1	40.4
1867	1824	54.4	7562	−8.3	20.3	37.4
1868	1728	51.5	8308	9.9	22.3	43.3
1869	1740	51.8	8909	7.2	23.9	46.2
1870	1769	52.7	9294	4.3	25.0	47.4
1871	1804	53.8	9386	1.0	25.2	46.9
1872	1835	54.7	9709	3.5	26.1	47.7
1873	1860	55.4	10269	5.8	27.6	49.8
1874	1886	56.2	10493	2.2	28.2	50.1
1875	1913	57.0	10720	2.2	28.8	50.5
1876	1943	57.9	11313	5.5	30.4	52.5
1877	1971	58.8	11064	−2.2	29.7	50.6
1878	1995	59.4	10849	−1.9	29.1	49.0
1879	2033	60.6	10953	1.0	29.4	48.6
1880	2061	61.4	11007	0.5	29.6	48.1
1881	2083	62.1	10735	−2.5	28.8	46.5
1882	2113	63.0	11750	9.4	31.6	50.1
1883	2146	64.0	12200	3.8	32.8	51.2
1884	2181	65.0	12271	0.6	33.0	50.7
1885	2209	65.8	12568	2.4	33.8	51.3
1886	2239	66.7	13204	5.1	35.5	53.2
1887	2278	67.9	13426	1.7	36.1	53.1
1888	2314	69.0	13922	3.7	37.4	54.2
1889	2348	70.0	14401	3.4	38.7	55.3
1890	2380	70.9	15236	5.8	40.9	57.7
1891	2408	71.8	15074	−1.1	40.5	56.4
1892	2423	72.2	14618	−3.0	39.3	54.4
1893	2437	72.6	15186	3.9	40.8	56.2
1894	2466	73.5	16378	7.9	44.0	59.9
1895	2500	74.5	17271	5.5	46.4	62.3
1896	2531	75.4	18399	6.5	49.4	65.5
1897	2568	76.5	19278	4.8	51.8	67.7
1898	2610	77.8	20127	4.4	54.1	69.5
1899	2635	78.5	19651	−2.4	52.8	67.2

Year	Population	Index of population	Gross domestic product at 1985 prices	Annual change in gross domestic product, %	Gross domestic product volume index	GDP/ capita index
1900	2656	79.2	20575	4.7	55.3	69.8
1901	2679	79.8	20340	−1.1	54.6	68.4
1902	2694	80.3	19928	−2.0	53.5	66.7
1903	2717	81.0	21247	6.6	57.1	70.5
1904	2752	82.0	22079	3.9	59.3	72.3
1905	2773	82.6	22432	1.6	60.2	72.9
1906	2804	83.6	23324	4.0	62.6	75.0
1907	2839	84.6	24122	3.4	64.8	76.6
1908	2883	85.9	24400	1.2	65.5	76.3
1909	2915	86.9	25486	4.4	68.4	78.8
1910	2943	87.7	26043	2.2	69.9	79.7
1911	2980	88.8	26764	2.8	71.9	80.9
1912	3016	89.9	28251	5.6	75.9	84.4
1913	3036	90.5	29787	5.4	80.0	88.4
1914	3070	91.5	28474	−4.4	76.5	83.6
1915	3096	92.3	27022	−5.1	72.6	78.6
1916	3114	92.8	27419	1.5	73.6	79.3
1917	3134	93.4	23017	−16.1	61.8	66.2
1918	3115	92.8	19963	−13.3	53.6	57.7
1919	3118	92.9	24107	20.8	64.7	69.7
1920	3148	93.8	26970	11.9	72.4	77.2
1921	3193	95.2	27868	3.3	74.8	78.6
1922	3228	96.2	30774	10.4	82.7	85.9
1923	3259	97.1	33056	7.4	88.8	91.4
1924	3286	97.9	33935	2.7	91.1	93.1
1925	3322	99.0	35843	5.6	96.3	97.2
1926	3355	100.0	37233	3.9	100.0	100.0
1927	3381	100.8	40121	7.8	107.8	106.9
1928	3412	101.7	42858	6.8	115.1	113.2
1929	3435	102.4	43385	1.2	116.5	113.8
1930	3463	103.2	42837	−1.3	115.1	111.5
1931	3490	104.0	41806	−2.4	112.3	108.0
1932	3516	104.8	41617	−0.5	111.8	106.7
1933	3537	105.4	44421	6.7	119.3	113.2
1934	3562	106.2	49437	11.3	132.8	125.1
1935	3590	107.0	51551	4.3	138.5	129.4
1936	3612	107.7	55043	6.8	147.8	137.3
1937	3640	108.5	58161	5.7	156.2	144.0
1938	3672	109.4	61185	5.2	164.3	150.1
1939	3700	110.3	58584	−4.3	157.3	142.7

1 cont.

Year	Population	Index of population	Gross domestic product at 1985 prices	Annual change in gross domestic product, %	Gross domestic product volume index	GDP/ capita index
1940	3696	110.1	55507	−5.3	149	135
1941	3708	110.5	57345	3.3	154	139
1942	3709	110.5	57527	0.3	154	139
1943	3733	111.2	64124	11.5	172	154
1944	3737	111.4	64166	0.1	172	154
1945	3779	112.6	60523	−5.7	162	144
1946	3833	114.2	65350	8.0	175	153
1947	3885	115.8	66858	2.3	179	155
1948	3938	117.4	72159	7.9	193	165
1949	3988	118.9	76545	6.1	205	173
1950	4030	120.1	79487	3.8	213	177
1951	4065	121.1	86277	8.5	231	191
1952	4116	122.7	89128	3.3	239	195
1953	4163	124.1	89783	0.7	241	194
1954	4211	125.5	97634	8.7	262	208
1955	4259	126.9	102596	5.1	275	217
1956	4305	128.3	105692	3.0	283	221
1957	4343	129.4	110684	4.7	297	229
1958	4376	130.4	111286	0.5	298	229
1959	4413	131.5	117869	5.9	316	240
1960	4446	132.5	128682	9.2	345	260
1961	4476	133.4	138489	7.6	372	278
1962	4507	134.3	142619	3.0	383	285
1963	4540	135.3	147304	3.3	395	292
1964	4558	135.8	155021	5.2	416	306
1965	4570	136.2	163242	5.3	438	321
1966	4592	136.9	167115	2.4	448	328
1967	4620	137.7	170739	2.2	458	333
1968	4633	138.1	174671	2.3	469	339
1969	4614	137.5	191429	9.6	514	373
1970	4598	137.0	205729	7.5	552	403
1971	4626	137.9	210026	2.1	564	409
1972	4653	138.7	226054	7.6	607	437
1973	4679	139.4	241217	6.7	647	464
1974	4702	140.2	248522	3.0	667	476
1975	4721	140.7	251388	1.2	675	479
1976	4731	141.0	252061	0.3	677	480
1977	4747	141.5	252550	0.2	678	479
1978	4758	141.8	259025	2.6	695	490
1979	4771	142.2	278198	7.4	747	525
1980	4788	142.7	293844	5.6	789	553
1981	4812	143.4	299143	1.8	803	560
1982	4842	144.3	307998	3.0	827	573
1983	4870	145.1	317034	2.9	851	586
1984	4894	145.9	325857	2.8	875	600
1985	4911	146.4	334870	2.8	899	614

2A. Gross Domestic Product, 1860–1985; 1860–1960 in Thousands FIM, 1960–1985 in Millions FIM

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1860	3069	71	0	3140
1861	3309	81	0	3390
1862	3172	87	0	3259
1863	3330	92	0	3422
1864	3318	85	0	3403
1865	3459	75	0	3534
1866	3308	66	0	3374
1867	2898	62	0	2960
1868	3290	66	0	3356
1869	3485	86	0	3571
1870	3631	98	1	3727
1871	3825	110	0	3935
1872	4081	131	0	4212
1873	4460	145	0	4605
1874	4834	176	0	5010
1875	4841	185	0	5026
1876	5155	201	1	5355
1877	4991	192	0	5183
1878	4291	178	0	4469
1879	4105	160	0	4265
1880	4515	210	0	4725
1881	4553	205	0	4758
1882	4838	244	0	5082
1883	4917	230	0	5147
1884	4810	247	0	5057
1885	4717	249	0	4966
1886	4623	235	0	4858
1887	4616	230	0	4846
1888	4804	269	0	5073
1889	5328	295	0	5623
1890	5620	334	0	5954
1891	5965	314	0	6279
1892	5830	294	0	6124
1893	5886	298	0	6184
1894	6060	327	0	6387
1895	6287	360	0	6647
1896	6782	426	0	7208
1897	7489	466	0	7955
1898	8248	510	0	8758
1899	8526	515	0	9041

2A cont.

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1900	9118	586	0	9704
1901	8996	441	0	9437
1902	8771	439	0	9210
1903	9637	501	0	10138
1904	9865	499	0	10364
1905	10345	522	0	10867
1906	10937	639	0	11576
1907	11587	672	0	12259
1908	11817	660	0	12477
1909	12149	703	0	12852
1910	12565	750	0	13315
1911	13319	807	0	14126
1912	14330	907	0	15237
1913	15014	953	0	15967
1914	14948	798	0	15746
1915	16454	828	0	17282
1916	23172	1105	0	24277
1917	37144	670	157	37657
1918	53732	520	232	54020
1919	81742	4100	42	85800
1920	129830	6880	50	136660
1921	152600	8440	0	161040
1922	164970	11920	0	176890
1923	174560	15340	0	189900
1924	186650	14580	0	201230
1925	200100	16860	0	216960
1926	210530	15790	0	226320
1927	234340	18930	0	253270
1928	251820	21580	0	273400
1929	245270	19930	0	265200
1930	220700	19410	0	240110
1931	196830	16310	0	213140
1932	200020	14920	50	214890
1933	210740	19800	0	230540
1934	236670	24600	0	261270
1935	248840	26120	0	274960
1936	274530	28370	0	302900
1937	325450	32370	1200	356620
1938	352440	33740	1530	384650
1939	342710	33070	1460	374320

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1940	397700	30900	0	428600
1941	475400	56600	1000	531000
1942	573100	88100	2800	658300
1943	740500	110600	7600	843400
1944	844000	118600	16200	946300
1945	1324800	161000	27800	1458000
1946	1917300	312800	42200	2187800
1947	2648600	393900	68400	2974100
1948	3591900	625800	115200	4102600
1949	3811500	726700	99800	4438400
1950	4820500	763600	111600	5472500
1951	7056100	1132200	206100	7982200
1952	7258200	1221600	200800	8279000
1953	7178200	1124400	151700	8150900
1954	8022000	1213300	194000	9041300
1955	9076900	1262400	332500	10006800
1956	10006300	1611200	491200	11126300
1957	10706900	1853600	380300	12180200
1958	11600900	1962400	385100	13178200
1959	12615200	1990400	415000	14190600
1960	14212600	2180400	438300	15954700

	Gross domestic product at factor cost	Commodity taxes (+)	Commodity subsidies (−)	Gross domestic product at market prices
1960	14600	2017	418	16199
1961	16567	2222	427	18362
1962	17679	2410	428	19661
1963	19418	2496	562	21352
1964	22039	2779	735	24083
1965	24218	3186	770	26634
1966	25883	3493	822	28554
1967	27992	4123	794	31321
1968	31840	4905	837	35908
1969	36624	5412	1050	40986
1970	41078	5864	1199	45743
1971	44915	6617	1275	50257
1972	52335	7711	1421	58625
1973	63799	9136	1571	71364
1974	81760	10949	2654	90055
1975	95358	12565	3632	104291
1976	107458	14515	4198	117775
1977	117258	17160	4417	130001
1978	128567	19596	4543	143620
1979	149987	21542	4570	166959
1980	172512	24697	4653	192556
1981	195286	28509	5340	218455
1982	218822	31859	5509	245172
1983	245533	35361	6458	274436
1984	273272	41442	7112	307602
1985	296711	45358	7199	334870

2B. Gross Domestic Product at Constant Prices, 1860–1985; 1860–1960 in Thousands of 1926 FIM (variable weights), 1960–1985 in Millions of 1980 FIM

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1860	46380	880	0	47270
1861	46650	920	0	47580
1862	44190	900	0	45090
1863	47570	1040	0	48620
1864	48800	970	0	49780
1865	48480	900	0	49380
1866	49190	900	0	50100
1867	45140	810	0	45960
1868	49630	860	0	50490
1869	52940	1200	0	54150
1870	55120	1390	20	56490
1871	55540	1500	0	57050
1872	57340	1670	0	59010
1873	60610	1800	0	62420
1874	61850	1930	0	63780
1875	63150	2010	0	65160
1876	66650	2120	10	68760
1877	65140	2110	0	67250
1878	63590	2350	0	65940
1879	64240	2330	0	66570
1880	64280	2610	0	66900
1881	62830	2420	0	65250
1882	68300	3110	0	71420
1883	71120	3030	0	74150
1884	71280	3300	0	74590
1885	72800	3580	0	76390
1886	76640	3620	0	80260
1887	77960	3640	0	81610
1888	80360	4260	0	84620
1889	83280	4250	0	87530
1890	87800	4810	0	92610
1891	87370	4250	0	91630
1892	84720	4130	0	88850
1893	87770	4530	0	92300
1894	94580	4970	0	99550
1895	99510	5470	0	104980
1896	105450	6390	0	111840
1897	110460	6710	0	117180
1898	115260	7070	0	122340
1899	112560	6880	0	119450

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1900	117590	7470	0	125060
1901	117880	5750	0	123640
1902	115400	5730	0	121130
1903	122440	6700	0	129140
1904	127530	6670	0	134210
1905	129290	7060	0	136350
1906	133620	8150	0	141770
1907	138600	8020	0	146620
1908	140260	8050	0	148320
1909	146520	8390	0	154910
1910	149540	8760	0	158300
1911	153450	9230	0	162690
1912	161650	10060	0	171720
1913	170480	10570	0	181060
1914	165030	8050	0	173080
1915	157690	6560	0	164250
1916	160820	5840	0	166660
1917	138230	2180	510	139910
1918	120800	970	430	121340
1919	140440	6150	60	146530
1920	157610	6360	40	163930
1921	162130	7260	0	169390
1922	176390	10670	0	187060
1923	185720	15200	0	200930
1924	191820	14450	0	206270
1925	201600	16270	0	217870
1926	210530	15790	0	226320
1927	225110	18760	0	243870
1928	239310	21190	0	260510
1929	243230	20480	0	263710
1930	238620	21760	0	260380
1931	234650	19460	0	254120
1932	236460	16560	50	252970
1933	247820	22200	0	270020
1934	272920	27580	0	300510
1935	284360	28990	0	313350
1936	304010	30570	0	334580
1937	325180	29450	1090	353530
1938	340550	32850	1490	371910
1939	326860	30590	1350	356100

2B cont.

Year	Gross domestic product at factor cost	Indirect taxes (+)	Subsidies (—)	Gross domestic product at market prices
1940	316090	21310	10	337400
1941	317230	31920	580	348570
1942	310740	40250	1320	349680
1943	348390	44480	3090	389780
1944	352780	43170	5920	390030
1945	334140	40810	7060	367890
1946	353460	50610	6840	397230
1947	362610	53000	9210	406400
1948	386620	63730	11730	438620
1949	401910	73460	10080	465280
1950	426540	66320	9690	483170
1951	466750	70520	12830	524440
1952	478750	75410	12390	541770
1953	483590	71850	9690	545750
1954	527390	78660	12570	593470
1955	562120	83500	21990	623640
1956	572650	100410	30610	642450
1957	588020	106660	21880	672800
1958	592650	104270	20460	676460
1959	633280	105100	21910	716480
1960	693500	111020	22310	782200

	Gross domestic product at factor cost	Commodity taxes (+)	Commodity subsidies (−)	Gross domestic product at market prices
1960	77560	10781	4003	84338
1961	82919	11847	4014	90752
1962	85002	12534	4078	93458
1963	87827	12951	4250	96528
1964	92296	13970	4681	101585
1965	96570	15143	4741	106972
1966	98852	15509	4851	109510
1967	101244	15480	4839	111885
1968	104306	15239	5083	114462
1969	112963	17834	5354	125443
1970	120416	19789	5391	134814
1971	122955	19973	5298	137630
1972	131805	21940	5612	148133
1973	139611	23849	5391	158069
1974	144336	24343	5823	162856
1975	145092	25016	5374	164734
1976	146635	24196	5656	165175
1977	147165	23926	5595	165496
1978	151568	23803	5632	169739
1979	162893	23942	4532	182303
1980	172512	24697	4653	192556
1981	175883	24685	4540	196028
1982	180356	25801	4326	201831
1983	186495	26298	5041	207752
1984	191668	26742	4876	213534
1985	196849	27330	4739	219440

3A1. Aggregate Supply[1] and Aggregate Demand[2], 1860–1948, Thousands of FIM

Year	Gross domestic product at market prices	Imports of goods	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods	Increase in stocks + statistical discrepancy[3]	Aggregate supply = aggregate demand
1860	3140	380	2308	214	331	269	398	3520
1861	3390	491	2530	221	331	327	471	3881
1862	3259	625	2665	225	316	321	357	3884
1863	3422	614	2714	229	327	392	374	4036
1864	3403	506	2649	236	350	376	298	3909
1865	3534	651	2715	240	409	411	410	4185
1866	3374	508	2577	242	385	380	298	3882
1867	2960	575	2312	246	345	430	202	3535
1868	3356	620	2616	243	407	475	234	3976
1869	3571	700	2752	242	473	496	308	4271
1870	3727	680	2898	237	462	503	307	4407
1871	3935	755	3051	239	483	606	311	4690
1872	4212	925	3259	247	542	682	407	5137
1873	4605	1067	3523	252	593	881	424	5672
1874	5010	1367	4089	258	613	930	488	6377
1875	5026	1455	4394	265	619	803	401	6481
1876	5355	1284	4464	273	568	1004	330	6639
1877	5183	1375	4290	278	497	983	511	6558
1878	4469	1178	3739	279	425	819	385	5647
1879	4265	1050	3546	292	409	849	220	5315
1880	4725	1271	3956	302	451	1129	159	5996
1881	4758	1418	4098	317	485	990	286	6176
1882	5082	1528	4419	324	504	1162	201	6610
1883	5147	1473	4439	332	565	1017	267	6620
1884	5057	1369	4352	342	507	994	231	6426
1885	4966	1082	4081	357	551	896	162	6048
1886	4858	974	3943	366	560	787	175	5832
1887	4846	1049	3952	372	481	760	329	5895
1888	5073	1112	4091	393	527	896	277	6185
1889	5623	1324	4522	409	641	1020	356	6947

3A1 cont.

Year	Gross domestic product at market prices	Imports of goods	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods	Increase in stocks + statistical discrepancy[3]	Aggregate supply = aggregate demand
1890	5954	1402	4906	434	724	937	355	7356
1891	6279	1461	5285	455	721	982	298	7740
1892	6124	1451	5215	483	723	896	258	7575
1893	6184	1258	5076	493	649	1096	128	7442
1894	6387	1384	5220	513	641	1249	148	7771
1895	6647	1500	4962	521	695	1315	154	8147
1896	7208	1722	5869	524	829	1504	204	8930
1897	7955	2021	6533	540	945	1631	327	9976
1898	8758	2364	7184	588	1243	1682	426	11122
1899	9041	2510	7443	622	1316	1719	452	11551
1900	9704	2701	8257	664	1270	1915	299	12405
1901	9437	2150	7753	659	1150	1841	184	11587
1902	9210	2331	7702	655	1145	1991	48	11541
1903	10138	2675	8289	714	1199	2122	489	12813
1904	10364	2671	8490	738	1257	2145	405	13035
1905	10867	2682	8719	704	1342	2467	318	13549
1906	11576	3139	9505	764	1456	2801	189	14715
1907	12259	3791	10489	843	1578	2654	487	16050
1908	12477	3635	10817	914	1650	2430	301	16112
1909	12852	3671	10956	982	1509	2545	531	16523
1910	13315	3841	11311	1135	1419	2881	410	17156
1911	14126	4445	11972	1211	1577	3177	633	18571
1912	15237	4700	12844	1255	1748	3377	712	19937
1913	15967	4954	13459	1322	1913	4018	209	20921
1914	15746	3802	13088	1401	2085	2822	152	19548
1915	17282	5784	16379	1343	2062	2559	723	23066
1916	24277	9628	23995	1693	2926	4979	311	33905
1917	37657	12319	43950	2223	4260	4396	−4853	49976
1918	54020	5046	51774	5263	5546	1896	−5413	59066
1919	85800	25099	81264	7347	8661	8506	5120	110899

1920	136660	36260	114890	10570	15550	28960	2940	172920
1921	161040	35850	137860	14660	17030	33410	−6080	196900
1922	176890	39690	149230	16060	20970	44360	−14040	216590
1923	189900	46000	155220	17280	26190	43650	−6440	235910
1924	201230	47150	161570	18790	28460	48840	−9290	248380
1925	216960	55190	172630	20750	28330	55550	−5110	272160
1926	226320	56670	182500	20980	34130	56150	−10780	283000
1927	253270	63850	191540	22010	38680	62860	2020	317130
1928	273400	80120	217630	24610	53260	61900	−3870	353530
1929	265200	70010	207630	27770	43810	63760	−7770	335210
1930	240110	52470	180910	29420	33190	53450	−4390	292580
1931	213140	34640	155710	28920	22930	44030	−3800	247790
1932	214890	35020	150810	29680	24770	45510	−880	249910
1933	230540	39280	156720	28310	23810	52590	8370	269820
1934	261270	47760	174040	29380	31170	61710	12720	309030
1935	274960	53440	187890	30700	38870	61920	9000	328400
1936	302900	63690	205080	32820	46410	71590	10680	366590
1937	356620	93060	242920	41540	64290	92820	8100	449690
1938	384650	86070	257960	40370	70430	83340	18600	470720
1939	374320	75720	256130	61700	74510	77100	−19400	450050
1940	428600	91600	265900	173800	96400	28700	−44800	520200
1941	531000	102000	312400	173500	53500	43200	50300	633000
1942	658300	117300	392600	230000	72400	59900	20500	775600
1943	843400	128800	484300	247400	90500	87100	62800	972200
1944	946300	89100	491300	299400	78300	63300	103000	1035500
1945	1458000	68200	878000	206600	179600	52200	209500	1526200
1946	2187800	242700	1367300	224500	365900	230500	242200	2430600
1947	2974100	469700	1856100	279500	530500	452200	325300	3443800
1948	4102600	663600	2719900	406700	887100	565000	253500	4766200

1. *Aggregate supply = gross domestic product + imports (of goods).*
2. *Aggregate demand = private consumption expenditure + public consumption expenditure + gross fixed capital formation + exports (of goods) + increase in stocks + statistical discrepancy.*
3. *Increase in stocks + statistical discrepancy for the period 1860–1948 includes net exports of services.*

Also see the references to Table 3A3.

3A2. Aggregate Supply and Aggregate Demand, 1948 – 1960, Thousands of FIM

Year	Gross domestic product at market prices	Imports of goods and services	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods and services	Inrease in stocks + statistical discrepancy	Aggregate supply = aggregate demand
1948	4102600	729800	2719900	406700	887100	827900	−9300	4832400
1949	4438400	786900	2856100	470800	987300	951900	−40700	5225300
1950	5472500	1021300	3550300	627900	1220300	1084900	10400	6493800
1951	7982200	1780400	4826100	806700	1820400	2285700	23600	9762600
1952	8279000	2056800	5309200	904700	2156100	1973300	−7500	10335800
1953	8150900	1429400	5270600	989400	2202000	1567600	−449300	9580300
1954	9041300	1689700	5608500	992100	2354900	1845800	−70300	10731000
1955	10006800	1991300	6070700	1141600	2534700	2157000	94100	11998100
1956	11126300	2281900	6941700	1359100	2865300	2173000	69100	13408200
1957	12180200	2581800	7565900	1506000	2919600	2587900	182500	14762000
1958	13178200	2641400	7904700	1659400	3217900	2925300	112300	15819600
1959	14190600	3047800	8577500	1855700	3586900	3153800	64500	17238400
1960	15954700	3834700	9410300	1996800	4325500	3711900	344800	19789400

See references to Tables 3A1 and 3A3.

3A3. Aggregate Supply and Aggregate Demand, 1960–1985, Millions of FIM

Year	Gross domestic product at market prices	Imports of goods and services	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods and services	Inrease in stocks + statistical discrepancy	Aggregate supply = aggregate demand
1960	16199	3755	9857	1931	4589	3640	−63	19954
1961	18362	4092	10905	2156	5133	3911	349	22454
1962	19661	4393	12030	2463	5419	4169	−27	24054
1963	21352	4319	13190	2862	5461	4335	−177	25671
1964	24083	5321	15019	3249	6068	4863	205	29404
1965	26634	5842	16534	3637	7016	5390	−101	32476
1966	28554	6140	17579	4087	7559	5683	−214	34694
1967	31321	6460	19148	4658	7862	6176	−63	37781
1968	35908	7572	20935	5482	8290	8143	630	43480
1969	40986	9517	23679	5934	9768	9905	1217	50503
1970	45743	12310	25901	6613	12010	11745	1784	58053
1971	50257	13139	28116	7618	13817	12226	1619	63396
1972	58625	14797	33042	8959	16359	14946	116	73422
1973	71364	18603	39269	10694	20566	18153	1285	89967
1974	90055	28094	47812	13686	26859	24799	4993	118149
1975	104291	30923	57236	17799	32667	24757	2755	135214
1976	117775	31823	65596	21307	32910	29537	248	149598
1977	130001	34727	72477	24006	35106	36974	−3835	164728
1978	143620	37390	80231	26346	34413	42960	−2940	181010
1979	166959	49948	91494	29876	38689	52486	4362	216907
1980	192556	65016	104038	34895	48638	63386	6615	257572
1981	218455	70239	118016	40837	54686	73321	1834	288694
1982	245172	74367	134161	46661	60987	76397	1333	319539
1983	274436	82770	149607	53305	68987	84061	1246	357206
1984	307602	87768	164296	59676	72274	95739	3385	395370
1985	334870	95852	180208	67587	78337	98803	5787	430722

Note on Tables 3A1–3A3:

Private consumption between 1860 and 1913 is conceptually wider than it should be in the balance of aggregate supply and aggregate demand. Some public consumption – principally public purchases of food, clothing and other such goods – have been included in private consumption. In this respect, there has been some double counting.

Private consumption between 1914 and 1985 is conceptually equivalent to private consumption in the balance of aggregate supply and aggregate demand. It is the series published by Laurila (see LAURILA 1985, pp. 457–459) corrected for the consumption of housing services in the period 1914–1947 and private services in the period 1914–1960.

3B1. Ratios of Aggregate Demand and Aggregate Supply Components to Gross Domestic Product at Market Prices, 1860–1948, %

Year	Imports of goods	Exports of goods	Private consumption	Public consumption	Private and public consumption	Gross fixed capital formation	Inrease in stocks + statistical discrepancy[1]
1860	12.1	8.6	73.5	6.8	80.3	10.6	12.7
1861	14.5	9.6	74.6	6.5	81.2	9.8	13.9
1862	19.2	9.8	81.8	6.9	88.7	9.7	10.9
1863	17.9	11.5	79.3	6.7	86.0	9.5	10.9
1864	14.9	11.0	77.8	6.9	84.8	10.3	8.8
1865	18.4	11.6	76.8	6.8	83.6	11.6	11.6
1866	15.1	11.3	76.4	7.2	83.6	11.4	8.8
1867	19.4	14.5	78.1	8.3	86.4	11.7	6.8
1868	18.5	14.2	78.0	7.2	85.2	12.1	7.0
1869	19.6	13.9	77.1	6.8	83.8	13.2	8.6
1870	18.2	13.5	77.7	6.3	84.1	12.4	8.2
1871	19.2	15.4	77.5	6.1	83.6	12.3	7.9
1872	22.0	16.2	77.4	5.9	83.2	12.9	9.7
1873	23.2	19.1	76.5	5.5	82.0	12.9	9.2
1874	27.3	18.6	81.6	5.1	86.8	12.2	9.7
1875	28.9	16.0	87.4	5.3	92.7	12.3	8.0
1876	24.0	18.7	83.4	5.1	88.5	10.6	6.2
1877	26.5	19.0	82.8	5.4	88.1	9.6	9.9
1878	26.4	18.3	83.7	6.2	89.9	9.5	8.6
1879	24.6	19.9	83.1	6.8	90.0	9.6	5.2
1880	26.9	23.9	83.7	6.4	90.1	9.5	3.4
1881	29.8	20.8	86.1	6.7	92.8	10.2	6.0
1882	30.1	22.9	87.0	6.4	93.3	9.9	4.0
1883	28.6	19.8	86.2	6.5	92.7	11.0	5.2
1884	27.1	19.7	86.1	6.8	92.8	10.0	4.6
1885	21.8	18.0	82.2	7.2	89.4	11.1	3.3
1886	20.1	16.2	81.2	7.5	88.7	11.5	3.6
1887	21.6	15.7	81.6	7.7	89.2	9.9	6.8
1888	21.9	17.7	80.7	7.8	88.4	10.4	5.5
1889	23.5	18.1	80.4	7.3	87.7	11.4	6.3

1890	23.5	15.7	82.4	7.3	89.7	12.2	6.0
1891	23.3	15.6	84.2	7.2	91.4	11.5	4.8
1892	23.7	14.6	85.1	7.9	93.0	11.8	4.2
1893	20.3	17.7	82.1	8.0	90.0	10.5	2.1
1894	21.7	19.6	81.7	8.0	89.8	10.0	2.3
1895	22.6	19.8	82.2	7.8	90.0	10.5	2.3
1896	23.9	20.9	81.4	7.3	88.7	11.5	2.8
1897	25.4	20.5	82.1	6.8	88.9	11.9	4.1
1898	27.0	19.2	82.0	6.7	88.7	14.2	4.9
1899	27.8	19.0	82.3	6.9	89.2	14.6	5.0
1900	27.8	19.7	85.1	6.8	91.9	13.1	3.1
1901	22.8	19.5	82.2	7.0	89.1	12.2	2.0
1902	25.3	21.6	83.6	7.1	90.7	12.4	0.5
1903	26.4	20.9	81.8	7.0	88.8	11.8	4.8
1904	25.8	20.7	81.9	7.1	89.0	12.1	3.9
1905	24.7	22.7	80.2	6.5	86.7	12.3	2.9
1906	27.1	24.2	82.1	6.6	88.7	12.6	1.6
1907	30.9	21.6	85.6	6.9	92.4	12.9	4.0
1908	29.1	19.5	86.7	7.3	94.0	13.2	2.4
1909	28.6	19.8	85.2	7.6	92.9	11.7	4.1
1910	28.8	21.6	84.9	8.5	93.5	10.7	3.1
1911	31.5	22.5	84.8	8.6	93.3	11.2	4.5
1912	30.8	22.2	84.3	8.2	92.5	11.5	4.7
1913	31.0	25.2	84.3	8.3	92.6	12.0	1.3
1914	24.1	17.9	83.1	8.9	92.0	13.2	1.0
1915	33.5	14.8	94.8	7.8	102.5	11.9	4.2
1916	39.7	20.5	98.8	7.0	105.8	12.1	1.3
1917	32.7	11.7	116.7	5.9	122.6	11.3	−12.9
1918	9.3	3.5	95.8	9.7	105.6	10.3	−10.0
1919	29.3	9.9	94.7	8.6	103.3	10.1	6.0

3B1 cont.

Year	Imports of goods	Exports of goods	Private consumption	Public consumption	Private and public consumption	Gross fixed capital formation	Inrease in stocks + statistical discrepancy[1]
1920	26.5	21.2	84.1	7.7	91.8	11.4	2.2
1921	22.3	20.8	85.6	9.1	94.7	10.6	−3.8
1922	22.4	25.1	84.4	9.1	93.4	11.9	−7.9
1923	24.2	23.0	81.7	9.1	90.8	13.8	−3.4
1924	23.4	24.3	80.3	9.3	89.6	14.1	−4.6
1925	25.4	25.6	79.6	9.6	89.1	13.1	−2.4
1926	25.0	24.8	80.6	9.3	89.9	15.1	−4.8
1927	25.2	24.8	75.6	8.7	84.3	15.3	0.8
1928	29.3	22.6	79.6	9.0	88.6	19.5	−1.4
1929	26.4	24.0	78.3	10.5	88.8	16.5	−2.9
1930	21.9	22.3	75.3	12.3	87.6	13.8	−1.8
1931	16.3	20.7	73.1	13.6	86.6	10.8	−1.8
1932	16.3	21.2	70.2	13.8	84.0	11.5	−0.4
1933	17.0	22.8	68.0	12.3	80.3	10.3	3.6
1934	18.3	23.6	66.6	11.2	77.9	11.9	4.9
1935	19.4	22.5	68.3	11.2	79.5	14.1	3.3
1936	21.0	23.6	67.7	10.8	78.5	15.3	3.5
1937	26.1	26.0	68.1	11.7	79.8	18.0	2.3
1938	22.4	21.7	67.1	10.5	77.6	18.3	4.8
1939	20.2	20.6	68.4	16.5	84.9	19.9	−5.2
1940	21.4	6.7	62.1	40.6	102.6	22.5	−10.5
1941	19.2	8.1	58.8	32.7	91.5	10.1	9.5
1942	17.8	9.1	59.6	34.9	94.6	11.0	3.1
1943	15.3	10.3	57.4	29.3	86.8	10.7	7.4
1944	9.4	6.7	51.9	31.6	83.6	8.3	10.9
1945	4.7	3.6	60.2	14.2	74.4	12.3	14.4
1946	11.1	10.5	62.5	10.3	72.8	16.7	11.1
1947	15.8	15.2	62.4	9.4	71.8	17.8	10.9
1948	16.2	13.8	66.3	9.9	76.2	21.6	6.2

1. Increase in stocks + statistical discrepancy for the period 1860–1948 includes net exports of services.

3B2. Ratios of Aggregate Demand and Aggregate Supply Components to Gross Domestic Product at Market Prices, 1948–1960, %

Year	Imports of goods and services	Exports of goods and services	Private consumption	Public consumption	Private and public consumption	Gross fixed capital formation	Inrease in stocks + statistical discrepancy
1948	17.8	20.2	66.3	9.9	76.2	21.6	−0.2
1949	17.7	21.4	64.3	10.6	75.0	22.2	−0.9
1950	18.7	19.8	64.9	11.5	76.3	22.3	0.2
1951	22.3	28.6	60.5	10.1	70.6	22.8	0.3
1952	24.8	23.8	64.1	10.9	75.1	26.0	−0.1
1953	17.5	19.2	64.7	12.1	76.8	27.0	−5.5
1954	18.7	20.4	62.0	11.0	73.0	26.0	−0.8
1955	19.9	21.6	60.7	11.4	72.1	25.3	0.9
1956	20.5	19.5	62.4	12.2	74.6	25.8	0.6
1957	21.2	21.2	62.1	12.4	74.5	24.0	1.5
1958	20.0	22.2	60.0	12.6	72.6	24.4	0.9
1959	21.5	22.2	60.4	13.1	73.5	25.3	0.5
1960	24.0	23.3	59.0	12.5	71.5	27.1	2.2

3B3. Ratios of Aggregate Demand and Aggregate Supply Components in Gross Domestic Product at Market Prices, 1960–1985, %

Year	Imports of goods and services	Exports of goods and services	Private consumption	Public consumption	Private and public consumption	Gross fixed capital formation	Inrease in stocks + statistical discrepancy
1960	23.2	22.5	60.8	11.9	72.8	28.3	−0.4
1961	22.3	21.3	59.4	11.7	71.1	28.0	1.9
1962	22.3	21.2	61.2	12.5	73.7	27.6	−0.1
1963	20.2	20.3	61.8	13.4	75.2	25.6	−0.8
1964	22.1	20.2	62.4	13.5	75.9	25.2	0.9
1965	21.9	20.2	62.1	13.7	75.7	26.3	−0.4
1966	21.5	19.9	61.6	14.3	75.9	26.5	−0.7
1967	20.6	19.7	61.1	14.9	76.0	25.1	−0.2
1968	21.1	22.7	58.3	15.3	73.6	23.1	1.8
1969	23.2	24.2	57.8	14.5	72.3	23.8	3.0
1970	26.9	25.7	56.6	14.5	71.1	26.3	3.9
1971	26.1	24.3	55.9	15.2	71.1	27.5	3.2
1972	25.2	25.5	56.4	15.3	71.6	27.9	0.2
1973	26.1	25.4	55.0	15.0	70.0	28.8	1.8
1974	31.2	27.5	53.1	15.2	68.3	29.8	5.5
1975	29.7	23.7	54.9	17.1	71.9	31.3	2.6
1976	27.0	25.1	55.7	18.1	73.8	27.9	0.2
1977	26.7	28.4	55.8	18.5	74.2	27.0	−2.9
1978	26.0	29.9	55.9	18.3	74.2	24.0	−2.0
1979	29.9	31.4	54.8	17.9	72.7	23.2	2.6
1980	33.8	32.9	54.0	18.1	72.2	25.3	3.4
1981	32.2	33.6	54.0	18.7	72.7	25.0	0.8
1982	30.3	31.2	54.7	19.0	73.8	24.9	0.5
1983	30.2	30.6	54.5	19.4	73.9	25.1	0.5
1984	28.5	31.1	53.4	19.4	72.8	23.5	1.1
1985	28.6	29.5	53.8	20.2	74.0	23.4	1.7

3C. Volume Indices of Aggregate Demand and Aggregate Supply Components, 1860–1985, 1926 = 100

Year	Gross domestic product at market prices	Imports of goods	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods
1860	20.9	6.3	18.9	19.1	15.4	7.8
1861	21.0	8.1	19.2	19.1	15.3	8.5
1862	19.9	9.0	18.3	19.6	16.2	8.5
1863	21.5	9.0	19.2	20.4	17.0	12.0
1864	22.0	8.1	19.7	20.6	17.2	10.6
1865	21.8	9.0	19.5	20.5	18.5	12.7
1866	22.1	7.2	20.0	21.0	17.4	12.7
1867	20.3	7.2	17.5	21.5	16.9	12.0
1868	22.3	8.1	19.1	21.5	20.4	14.1
1869	23.9	9.0	21.4	21.5	22.8	14.1
1870	25.0	9.0	23.6	21.2	23.0	13.4
1871	25.2	9.9	23.6	21.1	23.3	15.6
1872	26.1	12.7	23.4	21.0	25.1	..
1873	27.6	13.6	25.0	21.1	26.2	..
1874	28.2	17.2	26.8	20.7	26.1	19.1
1875	28.8	18.1	28.7	21.2	27.2	17.7
1876	30.4	17.2	29.2	21.1	24.9	19.8
1877	29.7	18.1	29.0	21.3	22.8	21.2
1878	29.1	16.3	28.4	22.4	20.6	18.4
1879	29.4	14.5	28.9	23.7	21.0	19.8
1880	29.6	16.3	29.2	23.2	21.9	26.2
1881	28.8	19.0	28.9	23.5	23.1	21.9
1882	31.6	20.8	32.4	24.6	24.6	24.7
1883	32.8	19.9	33.3	24.9	26.6	23.3
1884	33.0	22.6	33.7	26.6	26.7	24.0
1885	33.8	21.7	33.4	27.7	29.1	24.0
1886	35.5	20.8	35.3	28.7	29.2	20.5
1887	36.1	22.6	36.6	29.5	26.1	20.5
1888	37.4	25.3	37.1	30.4	28.2	23.3
1889	38.7	27.1	38.5	29.4	29.4	24.7

3C cont.

Year	Gross domestic product at market prices	Imports of goods	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods
1890	40.9	29.8	40.5	31.8	35.2	24.0
1891	40.5	29.8	40.0	32.6	36.1	26.2
1892	39.3	28.9	37.8	34.4	36.9	24.0
1893	40.8	28.0	38.8	35.7	33.2	29.0
1894	44.0	33.4	43.4	37.9	33.9	33.2
1895	46.4	36.1	46.4	38.3	35.6	34.6
1896	49.4	40.7	49.1	37.9	40.4	36.8
1897	51.8	47.0	53.1	37.7	44.0	37.5
1898	54.1	53.3	56.0	39.5	54.5	36.8
1899	52.8	55.1	55.6	40.5	55.1	38.2
1900	55.3	56.9	60.3	45.3	53.8	36.8
1901	54.6	46.1	57.4	45.5	50.6	36.8
1902	53.5	49.7	56.7	45.4	50.3	38.9
1903	57.1	56.9	62.1	47.2	52.4	40.3
1904	59.3	56.9	62.6	49.8	53.7	43.8
1905	60.2	55.1	64.5	46.7	54.8	48.1
1906	62.6	62.3	67.7	49.4	56.5	51.6
1907	64.8	71.4	71.8	51.7	62.5	48.1
1908	65.5	70.5	71.4	55.9	70.4	46.7
1909	68.4	68.7	73.6	60.3	64.3	48.8
1910	69.9	74.1	75.5	68.9	58.9	53.0
1911	71.9	82.2	77.7	69.0	66.1	57.3
1912	75.9	84.9	80.8	69.9	84.3	61.5
1913	80.0	90.4	84.7	73.1	80.6	70.7
1914	76.5	66.0	78.9	76.0	79.9	48.1
1915	72.6	65.1	79.5	64.1	61.3	33.2
1916	73.6	76.8	83.6	62.1	56.3	33.9
1917	61.8	42.9	73.2	44.7	46.6	20.5
1918	53.6	11.4	56.1	70.9	45.5	7.9
1919	64.7	58.9	70.3	77.2	57.9	35.9

1920	72.4	51.5	73.2	76.6	57.9	54.4
1921	74.8	45.9	76.5	81.2	58.9	50.8
1922	82.7	61.0	85.0	86.2	70.3	72.1
1923	88.8	83.1	91.5	89.9	80.7	76.2
1924	91.1	80.4	92.2	90.5	85.2	87.7
1925	96.3	84.3	93.5	98.3	83.2	97.6
1926	100.0	100.0	100.0	100.0	100.0	100.0
1927	107.8	114.3	105.5	105.5	109.0	112.4
1928	115.1	142.3	116.0	110.6	145.8	109.3
1929	116.5	124.8	114.6	124.2	121.5	113.3
1930	115.1	100.3	107.3	138.0	96.7	98.8
1931	112.3	76.2	100.6	143.0	79.1	95.6
1932	111.8	66.6	96.1	150.6	83.7	99.8
1933	119.3	77.7	101.1	145.4	86.6	118.1
1934	132.8	95.8	112.0	148.4	105.3	130.5
1935	138.5	105.0	116.4	149.6	125.5	137.7
1936	147.8	126.8	125.4	158.1	142.0	153.0
1937	156.2	161.7	138.7	184.4	163.1	164.0
1938	164.3	150.6	145.8	178.6	177.5	141.4
1939	157.3	136.1	139.3	262.0	175.5	140.8
1940	149	132	117	639	187	43
1941	154	103	114	548	81	59
1942	154	101	112	595	94	60
1943	172	97	120	546	109	68
1944	172	64	111	622	86	47
1945	162	29	128	260	116	24
1946	175	76	138	219	163	66
1947	179	123	150	182	194	92
1948	193	151	168	217	216	102
1949	205	141	177	236	236	122
1950	213	159	194	247	248	141
1951	231	206	209	245	278	177
1952	239	246	222	257	322	157
1953	241	189	218	276	331	175
1954	262	248	233	276	258	205
1955	275	288	253	301	391	222
1956	283	316	264	309	426	218
1957	297	306	258	322	414	239
1958	298	273	252	333	430	235
1959	316	328	270	357	477	267

3C cont.

Year	Gross domestic product at market prices	Imports of goods	Private consumption expenditure	Public consumption expenditure	Gross fixed capital formation	Exports of goods
1960	345	410	292	370	561	310
1961	372	440	314	392	610	326
1962	383	462	333	423	615	345
1963	395	455	348	453	585	349
1964	416	547	367	462	625	373
1965	438	593	388	484	688	391
1966	448	621	398	506	723	418
1967	458	621	406	529	700	442
1968	469	593	406	560	666	490
1969	514	736	450	579	753	572
1970	552	885	484	611	845	603
1971	564	874	492	646	895	586
1972	607	907	533	696	945	669
1973	647	1029	565	735	1014	716
1974	667	1107	575	768	1050	716
1975	675	1107	593	821	1119	592
1976	677	1062	599	868	1029	692
1977	678	974	592	905	950	763
1978	695	924	608	942	862	822
1979	747	1097	643	976	900	900
1980	789	1233	655	1019	1000	979
1981	803	1159	664	1060	1051	1008
1982	827	1171	691	1097	1076	979
1983	851	1208	710	1141	1124	1018
1984	875	1208	729	1173	1115	1116
1985	899	1282	754	1224	1168	1126

Note on Table 3C:
Estimates of the imports and exports of services have not been made for the period 1860–1948; consequently, the volume indices for the whole period 1860–1985 represent imports and exports of goods only.

4. Gross Domestic Product by Kind of Economic Activity, 1860–1985; 1860–1960 in Thousands of FIM, 1960–1985 in Millions of FIM

PRIMARY PRODUCTION

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1860	1133	589	170	1893
1861	1210	696	164	2070
1862	1179	548	168	1896
1863	1280	592	162	2034
1864	1263	552	162	1976
1865	1195	693	159	2046
1866	1165	605	167	1937
1867	963	457	181	1601
1868	1328	448	163	1939
1869	1355	505	173	2033
1870	1426	497	173	2095
1871	1479	544	179	2202
1872	1591	600	176	2367
1873	1700	712	166	2579
1874	1824	814	168	2806
1875	1884	756	184	2824
1876	1976	853	201	3030
1877	1711	922	204	2837
1878	1487	687	191	2365
1879	1490	589	194	2273
1880	1739	610	193	2543
1881	1646	604	210	2460
1882	1777	665	212	2654
1883	1875	663	213	2751
1884	1793	642	217	2651
1885	1727	626	216	2569
1886	1635	632	221	2488
1887	1609	655	221	2485
1888	1671	642	222	2535
1889	1808	749	223	2780
1890	1935	747	226	2909
1891	2219	765	233	3217
1892	2090	746	232	3068
1893	2173	762	230	3165
1894	2168	819	230	3216
1895	2245	838	233	3316
1896	2376	890	245	3512
1897	2509	1059	249	3817
1898	2589	1274	249	4111
1899	2482	1411	253	4146

4 cont.

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1900	2658	1525	257	4439
1901	2679	1397	248	4325
1902	2456	1377	258	4092
1903	2539	1807	265	4611
1904	2664	1707	263	4634
1905	2836	1748	259	4843
1906	2845	1862	272	4980
1907	3079	1809	284	5171
1908	3357	1616	285	5258
1909	3392	1699	280	5371
1910	3285	1833	294	5412
1911	3365	2133	287	5785
1912	3767	2190	285	6242
1913	3760	2390	309	6460
1914	3837	2176	306	6318
1915	3913	1999	323	6234
1916	5125	2948	382	8455
1917	12709	4806	548	18063
1918	21833	5081	1240	28154
1919	29823	9099	1204	40126
1920	42940	16330	1150	60430
1921	53660	16480	1320	71470
1922	46500	21970	1280	69760
1923	39390	25460	1350	66200
1924	43670	25070	1380	70130
1925	47850	26160	1570	75590
1926	43440	30260	1560	75270
1927	46280	37050	1550	84880
1928	45830	37160	1620	84620
1929	42970	32320	1790	77080
1930	39800	23390	1760	64960
1931	34420	17830	1920	54180
1932	36610	20800	1840	59250
1933	35690	25790	1970	63460
1934	40290	31970	1860	74120
1935	43570	32650	1820	78050
1936	46640	37020	2190	85850
1937	52880	52240	2290	107420
1938	54160	61120	2350	117630
1939	59620	41720	2030	103380

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1940	61900	36400	2600	100900
1941	75000	51500	3900	130500
1942	100500	53700	7000	161200
1943	134500	100100	7000	241700
1944	183800	95000	6200	285100
1945	316900	222900	13600	553500
1946	417200	299900	27200	744300
1947	603000	361500	26900	991500
1948	694500	410000	34000	1138500
1949	688300	338400	28000	1054700
1950	759800	445200	29400	1234400
1951	885400	959800	32900	1878100
1952	937400	1155100	40600	2133100
1953	951900	761000	46500	1759400
1954	958900	880600	50800	1890300
1955	1044400	1035100	53100	2132600
1956	1142300	937700	57700	2137700
1957	1212600	874400	63300	2150300
1958	1372700	925700	62900	2361300
1959	1468800	894300	61700	2424800
1960	1530100	1183100	61900	2775100
1960	1355	1263	60	2678
1961	1586	1475	80	3141
1962	1492	1409	73	2974
1963	1535	1531	85	3151
1964	1746	1784	72	3602
1965	1805	1978	86	3869
1966	1883	1721	90	3694
1967	1988	1672	93	3753
1968	2451	1794	107	4352
1969	2564	2163	109	4836
1970	2335	1628	99	4062
1971	2717	2718	120	5555
1972	2982	2662	135	5779
1973	3166	3467	172	6805
1974	3419	4697	226	8342
1975	5152	4748	257	10157
1976	5596	4764	303	10663
1977	5743	5362	347	11452
1978	6141	5229	451	11821
1979	6546	6712	505	13763
1980	7788	8234	558	16580
1981	7661	8976	613	17250
1982	9399	9135	665	19199
1983	11134	8988	672	20794
1984	12310	10091	768	23169
1985	12455	10977	746	24178

4 cont. SECONDARY PRODUCTION

Year	Mining and quarrying	Manufacturing and industrial handicrafts				Electricity gas, water and other utilities	Total industry and industrial handicrafts
		Wood and paper industry	Metal and engineering industries	Other manufacturing	Total		
1860	9	33	62	129	224	0	232
1861	7	41	56	151	248	0	255
1862	8	42	63	169	274	1	284
1863	8	50	69	136	255	1	265
1864	7	59	80	134	273	1	280
1865	7	58	96	134	288	1	297
1866	7	59	98	124	281	1	288
1867	6	45	83	128	256	1	263
1868	6	44	83	123	250	1	258
1869	7	43	93	153	289	1	296
1870	8	46	91	164	301	1	310
1871	9	66	98	172	336	1	346
1872	9	89	133	192	414	1	424
1873	12	141	159	200	500	2	513
1874	12	168	168	222	558	2	572
1875	10	126	164	230	520	2	532
1876	11	162	148	232	542	2	554
1877	9	237	121	226	584	2	595
1878	7	134	95	202	431	2	440
1879	7	91	97	195	383	2	392
1880	9	139	120	224	483	2	493
1881	8	182	121	249	552	2	563
1882	8	224	127	258	609	3	621
1883	7	161	137	258	556	3	565
1884	7	163	129	257	549	4	559
1885	5	129	130	262	521	4	531
1886	7	119	110	259	488	4	499
1887	7	113	107	295	515	5	527
1888	8	144	119	311	574	5	587
1889	12	205	140	366	711	5	728
1890	13	186	174	408	768	6	786
1891	14	123	177	437	737	7	758
1892	14	142	162	394	698	7	720
1893	12	146	148	373	667	7	687
1894	13	186	146	416	748	8	769
1895	17	176	171	464	811	8	837
1896	19	233	195	521	949	10	978
1897	18	280	227	584	1091	10	1119
1898	19	324	269	658	1251	12	1282
1899	21	337	314	687	1338	12	1372

Year	Mining and quarrying	Manufacturing and industrial handicrafts				Electricity gas, water and other utilities	Total industry and industrial handicrafts
		Wood and paper industry	Metal and engineering industries	Other manufacturing	Total		
1900	29	447	305	724	1476	14	1519
1901	27	371	287	705	1363	19	1410
1902	23	386	281	673	1339	18	1380
1903	26	464	281	744	1489	24	1538
1904	24	474	329	763	1566	25	1614
1905	29	484	393	836	1712	27	1769
1906	23	569	433	940	1943	29	1996
1907	29	641	392	1048	2081	33	2144
1908	34	565	377	1047	1989	40	2064
1909	27	716	360	1079	2155	55	2238
1910	29	846	415	1052	2312	51	2393
1911	36	905	435	1085	2425	61	2522
1912	48	935	487	1169	2591	69	2708
1913	45	956	529	1234	2719	89	2852
1914	53	819	385	1317	2521	143	2717
1915	73	871	659	1737	3267	153	3493
1916	77	1629	1214	2652	5495	226	5798
1917	86	1399	1530	3520	6449	360	6895
1918	53	1444	1306	4575	7325	488	7866
1919	128	3483	2205	6898	12586	760	13474
1920	260	8550	3510	11760	23820	1360	25450
1921	240	10350	4250	12680	27280	2140	29680
1922	320	11730	4730	15640	32100	2570	35000
1923	360	13620	5110	16740	35480	2880	38730
1924	400	13180	5230	17210	35640	3490	39540
1925	420	14880	5480	18410	38780	3580	42790
1926	560	16750	5820	19180	41760	4150	46480
1927	740	19100	5910	22870	47900	4750	53400
1928	930	18190	7690	25870	51760	5190	57880
1929	1130	16710	9010	24170	49890	5930	56960
1930	910	13910	6660	22790	43370	5120	49400
1931	690	12300	5540	19880	37720	4720	43140
1932	700	14310	5640	18440	38400	3690	42800
1933	530	16880	6270	20190	43360	4150	48050
1934	670	19710	7910	23030	50660	4340	55680
1935	1020	17830	9020	24980	51830	4510	57370
1936	1130	22220	10510	25860	58600	4860	64600
1937	1660	27170	14200	32990	74360	5700	81740
1938	1610	19790	16870	37170	73850	6160	81620
1939	1810	17050	18120	37030	72210	5850	79880

4 cont.

Year	Mining and quarrying	Manufacturing and industrial handicrafts				Electricity gas, water and other utilities	Total industry and industrial handicrafts
		Wood and paper industry	Metal and engineering industries	Other manufacturing	Total		
1940	2000	14400	23800	44000	82400	6400	90900
1941	2900	20100	27500	47300	95100	8300	106300
1942	3800	30700	37500	51300	119500	9500	133000
1943	9300	42000	44900	66200	153200	11700	174200
1944	4900	37400	49500	74000	161000	10600	176600
1945	7500	73300	80100	120600	274100	15500	297300
1946	10700	126300	130900	197200	454500	28600	493900
1947	15400	210900	175000	254600	640600	50400	706500
1948	22700	268700	269500	432600	970800	74400	1068000
1949	25200	262800	290800	495600	1049300	83400	1158000
1950	26200	348700	314300	662000	1325200	99800	1451300
1951	40600	691700	531700	832500	2056000	145100	2241800
1952	39700	359500	531900	814200	1705600	140700	1886100
1953	40400	339000	531000	928200	1798300	165000	2003800
1954	43400	508000	609200	1042300	2159600	198800	2401900
1955	46800	543500	674700	1199000	2417200	240200	2704400
1956	58200	528600	725500	1333800	2588100	269300	2915600
1957	63800	646700	766800	1372400	2786000	304100	3153900
1958	73900	772600	760800	1398700	2932100	345100	3351300
1959	93700	800000	889600	1559300	3249000	371500	3714200
1960	96500	996600	1084300	1692400	3773400	411000	4281100
1960	97	941	1073	1624	3638	439	4174
1961	104	1045	1210	1860	4115	486	4705
1962	101	972	1303	2011	4286	537	4924
1963	110	1091	1352	2180	4623	584	5317
1964	145	1229	1507	2423	5159	615	5919
1965	171	1285	1653	2619	5557	658	6386
1966	176	1257	1780	2888	5925	746	6847
1967	188	1301	1931	3154	6386	798	7372
1968	228	1633	2273	3651	7557	871	8656
1969	324	2425	2826	4171	9422	940	10686
1970	365	2806	3323	4741	10870	1091	12326
1971	222	2622	3649	5304	11575	1174	12971
1972	264	2979	4531	6317	13827	1398	15489
1973	382	4218	5601	7361	17180	1695	19257
1974	488	6103	7743	9816	23662	2178	26328
1975	365	4734	9403	11059	25196	2764	28325
1976	458	4767	11026	12654	28447	2994	31899
1977	499	5585	10566	14125	30276	3820	34595
1978	539	7337	11796	15422	34555	4212	39306
1979	769	10026	13710	18052	41788	4938	47495
1980	861	12320	15656	20432	48408	4991	54260
1981	800	12080	17595	23394	53069	6757	60626
1982	919	10977	20944	25427	57348	7737	66004
1983	1009	13258	22401	28277	63936	8233	73178
1984	1167	16493	24732	30512	71737	8570	81474
1985	1309	14863	27265	33061	75189	9296	85794

SECONDARY PRODUCTION (cont.)

Year	Construction			Total secondary production
	House construction	Land and water construction	All construction	
1860	186	70	256	487
1861	191	70	261	516
1862	183	58	240	524
1863	187	59	246	510
1864	194	59	252	532
1865	218	61	278	575
1866	195	59	254	543
1867	164	60	224	487
1868	164	109	273	531
1869	196	108	305	601
1870	207	116	323	633
1871	212	116	327	674
1872	225	117	342	766
1873	241	120	361	875
1874	262	116	377	949
1875	258	113	371	903
1876	262	97	359	913
1877	267	74	341	936
1878	238	76	314	754
1879	208	87	295	687
1880	209	98	307	800
1881	228	98	326	889
1882	226	100	326	946
1883	253	102	355	920
1884	234	105	339	899
1885	235	133	368	899
1886	229	149	378	877
1887	207	111	318	845
1888	213	113	326	912
1889	254	129	382	1110
1890	250	161	411	1198
1891	260	156	417	1174
1892	275	155	430	1150
1893	249	152	401	1087
1894	244	159	403	1172
1895	267	143	410	1247
1896	291	153	444	1422
1897	331	178	510	1628
1898	369	183	552	1833
1899	373	190	563	1936

4 cont.

Year	Construction			Total secondary production
	House construction	Land and water construction	All construction	
1900	395	197	592	2111
1901	380	192	572	1982
1902	403	173	576	1956
1903	411	157	568	2107
1904	421	152	573	2187
1905	428	183	611	2380
1906	470	174	644	2640
1907	484	201	685	2829
1908	468	209	677	2740
1909	408	193	601	2839
1910	391	215	606	2999
1911	435	222	657	3179
1912	453	237	690	3398
1913	475	257	732	3585
1914	520	336	856	3573
1915	505	352	857	4350
1916	715	410	1125	6923
1917	1103	524	1627	8522
1918	1810	677	2487	10353
1919	2358	902	3260	16734
1920	4020	1160	5190	30650
1921	4140	1630	5780	35460
1922	5930	2280	8210	43210
1923	7820	2540	10370	49100
1924	8600	2890	11490	51030
1925	8180	3240	11420	54220
1926	9370	3520	12890	59370
1927	10180	4180	14370	67770
1928	14760	5020	19790	77680
1929	11350	5440	16800	73760
1930	8640	5760	14410	63810
1931	5660	5140	10800	53950
1932	6100	5500	11610	54420
1933	4920	5840	10760	58820
1934	6620	6260	12890	68580
1935	8150	6460	14610	71990
1936	9750	7270	17030	81630
1937	11980	7540	19520	101260
1938	15360	8010	23380	105000
1939	14800	8220	23020	102900

Year	Construction			Total secondary production
	House construction	Land and water construction	All construction	
1940	15000	7400	22500	113400
1941	15200	8300	23600	129900
1942	14900	8500	23400	156400
1943	13500	10000	23600	197900
1944	13800	10700	24500	201200
1945	40500	26000	66500	363800
1946	73700	35600	109400	603400
1947	102700	51500	154200	860800
1948	199600	94200	293800	1361800
1949	228100	130000	358100	1516100
1950	312500	161000	473500	1924800
1951	440700	185000	625700	2867500
1952	456800	226000	682800	2568900
1953	444200	292400	736600	2740400
1954	502700	288300	791000	3192900
1955	527200	304600	831800	3536200
1956	555000	371400	926400	3842000
1957	582400	409900	992300	4146200
1958	590700	503100	1093800	4445100
1959	634900	555900	1190800	4905000
1960	781900	532000	1313900	5595000
1960	923	512	1435	5609
1961	1096	500	1596	6301
1962	1211	530	1741	6665
1963	1328	580	1908	7225
1964	1490	666	2156	8075
1965	1738	714	2452	8838
1966	1841	807	2648	9495
1967	2003	857	2860	10232
1968	2033	975	3008	11664
1969	2371	1030	3401	14087
1970	2952	1062	4014	16340
1971	3227	1175	4402	17373
1972	4040	1388	5428	20917
1973	5123	1668	6791	26048
1974	6572	2087	8659	34987
1975	7859	2560	10419	38744
1976	7374	2770	10144	42043
1977	7848	2800	10648	45243
1978	7970	2814	10784	50090
1979	8907	3052	11959	59454
1980	10124	3530	13654	67914
1981	11480	3980	15460	76086
1982	13313	4349	17662	83666
1983	15965	4606	20571	93749
1984	16879	4698	21577	103051
1985	17709	5429	23138	108932

4 cont. SERVICES

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1860	117	90	11	215	101	534
1861	118	106	13	218	107	562
1862	130	123	16	211	108	588
1863	146	136	20	208	109	619
1864	140	135	21	228	113	637
1865	154	130	24	242	114	664
1866	150	121	22	242	117	652
1867	148	125	24	230	108	635
1868	164	129	22	226	104	646
1869	178	134	22	233	110	677
1870	160	138	21	243	165	727
1871	179	153	19	252	168	772
1872	191	158	23	265	127	764
1873	203	180	20	284	133	820
1874	209	209	26	298	145	886
1875	198	227	29	309	151	914
1876	236	258	33	317	159	1003
1877	234	248	36	320	167	1005
1878	219	225	36	314	164	957
1879	188	218	33	307	173	919
1880	195	219	30	310	183	938
1881	196	217	33	316	197	959
1882	193	235	35	323	202	988
1883	171	257	35	318	207	988
1884	172	254	38	314	215	992
1885	165	240	35	307	224	971
1886	170	233	36	309	225	973
1887	173	233	38	313	235	992
1888	175	250	43	333	243	1044
1889	179	276	63	347	251	1116
1890	182	303	59	361	275	1180
1891	202	335	60	351	280	1228
1892	198	358	67	355	283	1262
1893	202	353	68	354	293	1270
1894	211	357	67	362	302	1299
1895	228	345	85	375	310	1343
1896	248	377	108	403	320	1457
1897	279	449	135	435	338	1635
1898	322	539	172	473	366	1872
1899	350	586	175	501	383	1995

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1900	386	610	178	540	405	2119
1901	433	635	183	555	421	2227
1902	433	598	200	594	432	2256
1903	457	682	219	596	470	2424
1904	481	712	232	619	483	2527
1905	496	739	219	626	502	2582
1906	546	755	272	648	531	2752
1907	637	804	301	636	593	2970
1908	668	846	339	618	638	3109
1909	665	894	370	605	659	3193
1910	699	993	398	637	688	3414
1911	715	1012	441	686	745	3599
1912	781	1106	480	748	789	3904
1913	869	1213	479	781	815	4157
1914	812	1295	485	800	844	4235
1915	1068	1516	461	1024	939	5008
1916	1534	2151	564	1475	1106	6831
1917	2173	2888	692	1757	1764	9274
1918	1722	3472	1131	2589	2646	11560
1919	4492	5030	2433	3417	3817	19189
1920	7040	8570	4000	4590	6390	30600
1921	7400	10250	4660	5260	8600	36180
1922	8200	12560	4530	6890	9420	41620
1923	9060	13290	5050	9040	10540	46980
1924	10000	14200	5050	10410	11870	51540
1925	10890	15360	5930	11610	12420	56230
1926	11490	17050	6440	13170	12950	61110
1927	12700	18050	7130	14690	14270	66850
1928	13600	19560	8140	16600	14700	72620
1929	13830	20860	8240	17460	15340	75750
1930	13370	19320	7770	17200	15490	73170
1931	12540	17500	7180	16440	16080	69740
1932	12720	16830	6840	16390	14960	67760
1933	13200	17640	6650	16080	15620	69190
1934	15010	19210	6600	16610	16350	73800
1935	15630	21210	6610	17200	17210	77870
1936	17430	24970	6510	17890	18760	85580
1937	21000	28020	7120	18800	19310	94280
1938	21960	32350	8190	19870	21450	103830
1939	23970	32220	8000	21390	22310	107910

4 cont.

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1940	24800	32800	8200	20900	21700	108500
1941	23300	38300	9600	22800	26700	120800
1942	27100	45100	11300	26100	30300	140200
1943	32700	53200	13400	27700	35900	163100
1944	34400	56900	15000	28600	42800	178000
1945	60300	91300	20700	32100	91300	295700
1946	97500	142700	35700	35200	103100	414400
1947	150800	201900	38400	45600	178200	614900
1948	199700	299300	55600	58400	219400	832400
1949	236100	374900	68400	73600	197800	950800
1950	313100	492200	94900	87300	255800	1243300
1951	471900	675400	124300	143100	350700	1765400
1952	482900	758300	139700	186200	388400	1955500
1953	486000	738700	154800	251300	408700	2039500
1954	534200	804700	162900	324300	442800	2268900
1955	656800	934900	178600	387200	482800	2640300
1956	770400	1059200	202700	504800	559300	3096400
1957	806100	1077500	216700	661900	612800	3375000
1958	843900	1136200	226800	785500	645200	3637600
1959	916200	1247900	251000	880400	710200	4005700
1960	1042600	1405200	280300	949300	783100	4460500
1960	1167	1421	300	1085	1186	5159
1961	1306	1595	321	1254	1348	5824
1962	1423	1781	400	1466	1533	6603
1963	1567	2009	417	1648	1725	7366
1964	1840	2305	504	1795	1956	8400
1965	1974	2547	593	1994	2222	9330
1966	2163	2744	629	2174	2496	10206
1967	2347	2867	706	2455	2782	11157
1968	2724	3032	815	2725	3144	12440
1969	3040	3459	913	2948	3550	13910
1970	3394	3889	1021	3197	4022	15523
1971	3735	4290	1212	3440	4591	17268
1972	4200	5036	1530	4090	5335	20191
1973	4967	6255	2030	4881	6349	24482
1974	6116	7956	2823	5953	7877	30725
1975	6968	9554	3345	6873	9563	36303
1976	8668	10832	3918	7733	11129	42280
1977	9725	11393	4507	8568	12347	46540
1978	10819	12485	5029	9504	13620	51457
1979	12809	14612	5585	10217	15869	59092
1980	14186	17296	6951	11072	18786	68291
1981	16079	19289	8202	13066	21989	78625
1982	17648	21439	9034	15009	25354	88484
1983	19832	23395	10210	16274	29466	99177
1984	22522	25418	11989	17688	33726	111343
1985	24548	27598	13582	19097	38367	123192

SERVICES (cont.)

Year	Public services			Total of services	Gross domestic product at factor cost
	Central government	Local government	Total		
1860	146	10	156	689	3069
1861	151	11	162	724	3309
1862	153	11	164	752	3172
1863	155	11	167	786	3330
1864	160	12	172	809	3318
1865	162	12	174	838	3459
1866	163	13	175	827	3308
1867	162	13	174	810	2898
1868	161	13	174	820	3290
1869	161	14	174	851	3485
1870	161	14	175	902	3631
1871	162	15	177	949	3825
1872	166	18	184	948	4081
1873	168	19	187	1007	4460
1874	172	21	193	1079	4834
1875	177	23	199	1114	4841
1876	183	25	208	1211	5155
1877	186	27	213	1218	4991
1878	188	28	216	1172	4291
1879	195	31	226	1145	4105
1880	202	33	235	1173	4515
1881	210	36	246	1205	4553
1882	213	38	251	1238	4838
1883	218	40	258	1247	4917
1884	223	44	267	1260	4810
1885	231	48	279	1250	4717
1886	235	49	284	1257	4623
1887	243	52	295	1287	4616
1888	257	56	312	1357	4804
1889	264	58	323	1438	5328
1890	273	61	333	1513	5620
1891	281	65	346	1574	5965
1892	286	65	350	1612	5830
1893	295	70	364	1634	5886
1894	300	73	373	1671	6060
1895	304	78	382	1725	6287
1896	309	82	392	1848	6782
1897	318	89	407	2043	7489
1898	332	99	432	2303	8248
1899	342	108	450	2445	8526

4 cont.

Year	Public services		Total	Total of services	Gross domestic product at factor cost
	Central government	Local government			
1900	332	117	449	2568	9118
1901	338	125	462	2689	8996
1902	335	133	467	2723	8771
1903	348	148	496	2920	9637
1904	369	148	517	3044	9865
1905	385	156	541	3122	10345
1906	399	167	566	3317	10937
1907	429	188	617	3587	11587
1908	496	214	710	3819	11817
1909	515	231	746	3939	12149
1910	494	247	740	4155	12565
1911	485	269	755	4354	13319
1912	491	295	785	4690	14330
1913	494	319	813	4970	15014
1914	485	336	821	5057	14948
1915	488	375	863	5870	16454
1916	560	403	962	7793	23172
1917	707	578	1285	10559	37144
1918	2730	936	3666	15226	53732
1919	4223	1471	5693	24882	81742
1920	5780	2360	8140	38750	129830
1921	6270	3200	9480	45660	152600
1922	6800	3560	10360	51990	164970
1923	7900	4360	12260	59250	174560
1924	8820	5120	13940	65480	186650
1925	8760	5290	14050	70280	200100
1926	9030	5730	14760	75880	210530
1927	8410	6410	14820	81680	234340
1928	9900	6980	16890	89520	251820
1929	10890	7780	18680	94430	245270
1930	10680	8060	18740	91920	220700
1931	10640	8300	18950	88700	196830
1932	10320	8260	18580	86340	200020
1933	10770	8480	19260	88460	210740
1934	11370	8780	20160	93960	236670
1935	11760	9150	20920	98790	248840
1936	11990	9470	21460	107040	274530
1937	12590	9890	22480	116760	325450
1938	15460	10500	25970	129800	352440
1939	17360	11140	28500	136420	342710

Year	Public services			Total of services	Imputed bank service charges	Gross domestic product at factor cost
	Local government	Central government	Total			
1940	64400	10200	74700	183200	..	397700
1941	82300	11600	94000	214900	..	475400
1942	102200	12900	115100	255300	..	573100
1943	121800	15900	137700	300800	..	740500
1944	162500	17000	179600	357600	..	844000
1945	81400	30100	111600	407300	..	1324800
1946	110300	44800	155100	569500	..	1917300
1947	111600	69700	181300	796300	..	2648600
1948	149900	109200	259100	1091500	..	3591900
1949	160000	129800	289800	1240600	..	3811500
1950	235700	182300	418000	1661300	..	4820500
1951	292300	252700	545000	2310400	..	7056100
1952	314500	286100	600600	2556100	..	7258200
1953	318500	320300	638800	2678300	..	7178200
1954	326400	343500	669900	2938800	..	8022000
1955	370200	397500	767700	3408000	..	9076900
1956	442700	487500	930200	4026600	..	10006300
1957	480400	554900	1035300	4410300	..	10706900
1958	509900	647000	1156900	4794500	..	11600900
1959	545800	733800	1279600	5285300	..	12615200
1960	600400	781600	1382000	5842500	..	14212600
1960	..	..	1327	6486	−173	14600
1961	..	..	1500	7324	−199	16567
1962	..	..	1665	8268	−228	17679
1963	..	..	1932	9298	−256	19418
1964	..	..	2270	10670	−308	22039
1965	..	..	2550	11880	−369	24218
1966	..	..	2900	13106	−412	25883
1967	..	..	3338	14495	−488	27992
1968	..	..	3927	16367	−543	31840
1969	..	..	4350	18260	−559	36624
1970	..	..	4809	20332	−656	41078
1971	..	..	5463	22731	−744	44915
1972	..	..	6339	26530	−891	52335
1973	..	..	7597	32079	−1133	63799
1974	..	..	9610	40335	−1904	81760
1975	..	..	12489	48792	−2335	95358
1976	..	..	15176	57456	−2704	107458
1977	..	..	17020	63560	−2997	117258
1978	..	..	18646	70103	−3447	128567
1979	..	..	21309	80401	−3631	149987
1980	..	..	24405	92696	−4678	172512
1981	..	..	28624	107249	−5299	195286
1982	..	..	33037	121521	−5564	218822
1983	..	..	37978	137155	−6165	245533
1984	..	..	42897	154240	−7188	273272
1985	..	..	48378	171570	−7969	296711

Note on Table 4: Comparability of the old and revised national accounts

Economic activity in the old SNA	Groups included in economic activities of the revised SNA
Agriculture	Agriculture (private and public sectors)
Forestry	Forestry and logging
Hunting and fishing	Fishing and hunting
Mining and quarrying	Mining and quarrying
Manufacturing	Manufacturing
– Wood industry, furniture and carpentry industry and paper industry	– Manufacture of wood and wood and cork products, except furniture; Manufacture of furniture and fixtures, except primarily of metal; Manufacture of paper and paper products
– Basic metals industry, metal products industry, engineering industry, electrical goods industry and transport equipment industry	– Basic metal industries; Manufacture of fabricated metal products including machinery except electrical; Manufacture of electrical machinery, apparatus, appliances and supplies and professional and scientific and measuring and controlling equipment n.e.c. and of photo-graphic and optical goods; Manufacture of transport equipment
– Other manufacturing industries	– Other manufacturing groups
Electricity, gas, water and other utilities	Electricity, gas and water
House construction	Building
Land and water construction	Other construction
Transport and communication	Transport, storage and communication (private and public sectors)
Trade	Wholesale and agency trade; Retail trade
Banking and insurance	Financial institutions and insurance (private and public sectors)
Ownership of dwellings	Letting and operating of dwellings and use of owner-occupied dwellings
Private services*	Real estate and business services (private sector); Community, social and personal services (private sector); Restaurants and hotels; Non-profit institutions
Public services*	Personal and household services; Community, social and personal services (public sector); Real estate and business services (public sector)
–	Imputed bank service charges

* *The old SNA's "Public administration and defence" and "Services" (private and public) have been divided up between private services and public services in this study.*

5. Gross Domestic Product by Kind of Economic Activity, 1860–1985, Percentage Shares

	PRIMARY PRODUCTION			SECONDARY PRODUCTION		
Year	Agriculture and hunting and fishing	Forestry	Total primary production	Manufacturing	Construction	Total secondary production
1860	42.5	19.2	61.7	7.5	8.3	15.9
1861	41.5	21.0	62.5	7.7	7.9	15.6
1862	42.5	17.3	59.8	8.9	7.6	16.5
1863	43.3	17.8	61.1	7.9	7.4	15.3
1864	42.9	16.6	59.6	8.4	7.6	16.0
1865	39.1	20.0	59.2	8.6	8.0	16.6
1866	40.3	18.3	58.6	8.7	7.7	16.4
1867	39.5	15.8	55.2	9.1	7.7	16.8
1868	45.3	13.6	58.9	7.8	8.3	16.1
1869	43.8	14.5	58.3	8.5	8.7	17.2
1870	44.0	13.7	57.7	8.5	8.9	17.4
1871	43.4	14.2	57.6	9.1	8.6	17.6
1872	43.3	14.7	58.0	10.4	8.4	18.8
1873	41.8	16.0	57.8	11.5	8.1	19.6
1874	41.2	16.8	58.1	11.8	7.8	19.6
1875	42.7	15.6	58.3	11.0	7.7	18.7
1876	42.2	16.5	58.8	10.8	7.0	17.7
1877	38.4	18.5	56.8	11.9	6.8	18.7
1878	39.1	16.0	55.1	10.3	7.3	17.6
1879	41.0	14.4	55.4	9.5	7.2	16.7
1880	42.8	13.5	56.3	10.9	6.8	17.7
1881	40.8	13.3	54.0	12.4	7.2	19.5
1882	41.1	13.8	54.8	12.8	6.7	19.6
1883	42.5	13.5	55.9	11.5	7.2	18.7
1884	41.8	13.3	55.1	11.6	7.1	18.7
1885	41.2	13.3	54.5	11.3	7.8	19.1
1886	40.2	13.7	53.8	10.8	8.2	19.0
1887	39.6	14.2	53.8	11.4	6.9	18.3
1888	39.4	13.4	52.8	12.2	6.8	19.0
1889	38.1	14.1	52.2	13.7	7.2	20.8
1890	38.5	13.3	51.8	14.0	7.3	21.3
1891	41.1	12.8	53.9	12.7	7.0	19.7
1892	39.8	12.8	52.6	12.3	7.4	19.7
1893	40.8	12.9	53.8	11.7	6.8	18.5
1894	39.6	13.5	53.1	12.7	6.6	19.3
1895	39.4	13.3	52.7	13.3	6.5	19.8
1896	38.7	13.1	51.8	14.4	6.5	21.0
1897	36.8	14.1	51.0	14.9	6.8	21.7
1898	34.4	15.4	49.8	15.5	6.7	22.2
1899	32.1	16.5	48.6	16.1	6.6	22.7

5 cont.

Year	Agriculture and hunting and fishing	Forestry	Total primary production	Manufac-turing	Construc-tion	Total secondary production
1900	32.0	16.7	48.7	16.7	6.5	23.2
1901	32.5	15.5	48.1	15.7	6.4	22.0
1902	31.0	15.7	46.7	15.7	6.6	22.3
1903	29.1	18.8	47.8	16.0	5.9	21.9
1904	29.7	17.3	47.0	16.4	5.8	22.2
1905	29.9	16.9	46.8	17.1	5.9	23.0
1906	28.5	17.0	45.5	18.2	5.9	24.1
1907	29.0	15.6	44.6	18.5	5.9	24.4
1908	30.8	13.7	44.5	17.5	5.7	23.2
1909	30.2	14.0	44.2	18.4	4.9	23.4
1910	28.5	14.6	43.1	19.0	4.8	23.9
1911	27.4	16.0	43.4	18.9	4.9	23.9
1912	28.3	15.3	43.6	18.9	4.8	23.7
1913	27.1	15.9	43.0	19.0	4.9	23.9
1914	27.7	14.6	42.3	18.2	5.7	23.9
1915	25.7	12.1	37.9	21.2	5.2	26.4
1916	23.8	12.7	36.5	25.0	4.9	29.9
1917	35.7	12.9	48.6	18.6	4.4	22.9
1918	42.9	9.5	52.4	14.6	4.6	19.3
1919	38.0	11.1	49.1	16.5	4.0	20.5
1920	34.0	12.6	46.5	19.6	4.0	23.6
1921	36.0	10.8	46.8	19.5	3.8	23.2
1922	29.0	13.3	42.3	21.2	5.0	26.2
1923	23.3	14.6	37.9	22.2	5.9	28.1
1924	24.1	13.4	37.6	21.2	6.2	27.3
1925	24.7	13.1	37.8	21.4	5.7	27.1
1926	21.4	14.4	35.8	22.1	6.1	28.2
1927	20.4	15.8	36.2	22.8	6.1	28.9
1928	18.8	14.8	33.6	23.0	7.9	30.8
1929	18.2	13.2	31.4	23.2	6.9	30.1
1930	18.8	10.6	29.4	22.4	6.5	28.9
1931	18.5	9.1	27.5	21.9	5.5	27.4
1932	19.2	10.4	29.6	21.4	5.8	27.2
1933	17.9	12.2	30.1	22.8	5.1	27.9
1934	17.8	13.5	31.3	23.5	5.4	29.0
1935	18.2	13.1	31.4	23.1	5.9	28.9
1936	17.8	13.5	31.3	23.5	6.2	29.7
1937	17.0	16.1	33.0	25.1	6.0	31.1
1938	16.0	17.3	33.4	23.2	6.6	29.8
1939	18.0	12.2	30.2	23.3	6.7	30.0

Year	Agriculture and hunting and fishing	Forestry	Total primary production	Manufac-turing	Construc-tion	Total secondary production
1940	16.2	9.2	25.4	22.9	5.7	28.5
1941	16.6	10.9	27.5	22.4	5.0	27.3
1942	18.8	9.4	28.1	23.2	4.1	27.3
1943	19.1	13.5	32.6	23.5	3.2	26.7
1944	22.5	11.3	33.8	20.9	2.9	23.8
1945	25.0	16.8	41.8	22.4	5.0	27.5
1946	23.2	15.6	38.8	25.8	5.7	31.5
1947	23.8	13.7	37.4	26.7	5.8	32.5
1948	20.3	11.4	31.7	29.7	8.2	37.9
1949	18.8	8.9	27.7	30.4	9.4	39.8
1950	16.4	9.2	25.6	30.1	9.8	39.9
1951	13.0	13.6	26.6	31.8	8.9	40.6
1952	13.5	15.9	29.4	26.0	9.4	35.4
1953	13.9	10.6	24.5	27.9	10.3	38.2
1954	12.6	11.0	23.6	29.9	9.9	39.8
1955	12.1	11.4	23.5	29.8	9.2	39.0
1956	12.0	9.4	21.4	29.1	9.3	38.4
1957	11.9	8.2	20.1	29.5	9.3	38.7
1958	12.4	8.0	20.4	28.9	9.4	38.3
1959	12.1	7.1	19.2	29.4	9.4	38.9
1960	11.2	8.3	19.5	30.1	9.2	39.4
1960	9.7	8.7	18.3	28.6	9.8	38.4
1961	10.1	8.9	19.0	28.4	9.6	38.0
1962	8.9	8.0	16.8	27.9	9.8	37.7
1963	8.3	7.9	16.2	27.4	9.8	37.2
1964	8.2	8.1	16.3	26.9	9.8	36.6
1965	7.8	8.2	16.0	26.4	10.1	36.5
1966	7.6	6.6	14.3	26.5	10.2	36.7
1967	7.4	6.0	13.4	26.3	10.2	36.6
1968	8.0	5.6	13.7	27.2	9.4	36.6
1969	7.3	5.9	13.2	29.2	9.3	38.5
1970	5.9	4.0	9.9	30.0	9.8	39.8
1971	6.3	6.1	12.4	28.9	9.8	38.7
1972	6.0	5.1	11.0	29.6	10.4	40.0
1973	5.2	5.4	10.7	30.2	10.6	40.8
1974	4.5	5.7	10.2	32.2	10.6	42.8
1975	5.7	5.0	10.7	29.7	10.9	40.6
1976	5.5	4.4	9.9	29.7	9.4	39.1
1977	5.2	4.6	9.8	29.5	9.1	38.6
1978	5.1	4.1	9.2	30.6	8.4	39.0
1979	4.7	4.5	9.2	31.7	8.0	39.6
1980	4.8	4.8	9.6	31.5	7.9	39.4
1981	4.2	4.6	8.8	31.0	7.9	39.0
1982	4.6	4.2	8.8	30.2	8.1	38.2
1983	4.8	3.7	8.5	29.8	8.4	38.2
1984	4.8	3.7	8.5	29.8	7.9	37.7
1985	4.4	3.7	8.1	28.9	7.8	36.7

5 cont.	SERVICES			TOTAL GDP
Year	Trade, banking, transport and communication, housing and private services	Public services	Total services	Gross domestic product at factor cost
1860	17.4	5.1	22.5	100.0
1861	17.0	4.9	21.9	100.0
1862	18.5	5.2	23.7	100.0
1863	18.6	5.0	23.6	100.0
1864	19.2	5.2	24.4	100.0
1865	19.2	5.0	24.2	100.0
1866	19.7	5.3	25.0	100.0
1867	21.9	6.0	27.9	100.0
1868	19.6	5.3	24.9	100.0
1869	19.4	5.0	24.4	100.0
1870	20.0	4.8	24.9	100.0
1871	20.2	4.6	24.8	100.0
1872	18.7	4.5	23.2	100.0
1873	18.4	4.2	22.6	100.0
1874	18.3	4.0	22.3	100.0
1875	18.9	4.1	23.0	100.0
1876	19.5	4.0	23.5	100.0
1877	20.1	4.3	24.4	100.0
1878	22.3	5.0	27.3	100.0
1879	22.4	5.5	27.9	100.0
1880	20.8	5.2	26.0	100.0
1881	21.1	5.4	26.5	100.0
1882	20.4	5.2	25.6	100.0
1883	20.1	5.3	25.4	100.0
1884	20.6	5.6	26.2	100.0
1885	20.6	5.9	26.5	100.0
1886	21.1	6.1	27.2	100.0
1887	21.5	6.4	27.9	100.0
1888	21.7	6.5	28.2	100.0
1889	20.9	6.1	27.0	100.0
1890	21.0	5.9	26.9	100.0
1891	20.6	5.8	26.4	100.0
1892	21.6	6.0	27.7	100.0
1893	21.6	6.2	27.8	100.0
1894	21.4	6.1	27.6	100.0
1895	21.4	6.1	27.4	100.0
1896	21.5	5.8	27.3	100.0
1897	21.8	5.4	27.3	100.0
1898	22.7	5.2	27.9	100.0
1899	23.4	5.3	28.7	100.0

Year	Trade, banking, transport and communication, housing and private services	Public services	Total services	Gross domestic product at factor cost
1900	23.2	4.9	28.2	100.0
1901	24.8	5.1	29.9	100.0
1902	25.7	5.3	31.0	100.0
1903	25.1	5.1	30.3	100.0
1904	25.6	5.2	30.9	100.0
1905	25.0	5.2	30.2	100.0
1906	25.2	5.2	30.3	100.0
1907	25.6	5.3	31.0	100.0
1908	26.3	6.0	32.3	100.0
1909	26.3	6.1	32.4	100.0
1910	27.2	5.9	33.1	100.0
1911	27.0	5.7	32.7	100.0
1912	27.2	5.5	32.7	100.0
1913	27.7	5.4	33.1	100.0
1914	28.3	5.5	33.8	100.0
1915	30.4	5.2	35.7	100.0
1916	29.5	4.2	33.6	100.0
1917	25.0	3.5	28.4	100.0
1918	21.5	6.8	28.3	100.0
1919	23.5	7.0	30.4	100.0
1920	23.6	6.3	29.8	100.0
1921	23.7	6.2	29.9	100.0
1922	25.2	6.3	31.5	100.0
1923	26.9	7.0	33.9	100.0
1924	27.6	7.5	35.1	100.0
1925	28.1	7.0	35.1	100.0
1926	29.0	7.0	36.0	100.0
1927	28.5	6.3	34.9	100.0
1928	28.8	6.7	35.5	100.0
1929	30.9	7.6	38.5	100.0
1930	33.2	8.5	41.6	100.0
1931	35.4	9.6	45.1	100.0
1932	33.9	9.3	43.2	100.0
1933	32.8	9.1	42.0	100.0
1934	31.2	8.5	39.7	100.0
1935	31.3	8.4	39.7	100.0
1936	31.2	7.8	39.0	100.0
1937	29.0	6.9	35.9	100.0
1938	29.5	7.4	36.8	100.0
1939	31.5	8.3	39.8	100.0

Year	Trade, banking, transport and communication, housing and private services	Public services	Total services	Imputed bank service charges	Gross domestic product at factor cost
1940	27.3	18.8	46.1	..	100.0
1941	25.4	19.8	45.2	..	100.0
1942	24.5	20.1	44.6	..	100.0
1943	22.0	18.6	40.6	..	100.0
1944	21.1	21.3	42.4	..	100.0
1945	22.3	8.4	30.8	..	100.0
1946	21.6	8.1	29.7	..	100.0
1947	23.2	6.8	30.1	..	100.0
1948	23.2	7.2	30.4	..	100.0
1949	24.9	7.6	32.6	..	100.0
1950	25.8	8.7	34.5	..	100.0
1951	25.0	7.7	32.7	..	100.0
1952	26.9	8.3	35.2	..	100.0
1953	28.4	8.9	37.3	..	100.0
1954	28.3	8.4	36.6	..	100.0
1955	29.1	8.5	37.5	..	100.0
1956	30.9	9.3	40.2	..	100.0
1957	31.5	9.7	41.2	..	100.0
1958	31.4	10.0	41.3	..	100.0
1959	31.8	10.1	41.9	..	100.0
1960	31.4	9.7	41.1	..	100.0
1960	35.3	9.1	44.4	−1.2	100.0
1961	35.2	9.1	44.2	−1.2	100.0
1962	37.3	9.4	46.8	−1.3	100.0
1963	37.9	9.9	47.9	−1.3	100.0
1964	38.1	10.3	48.4	−1.4	100.0
1965	38.5	10.5	49.1	−1.5	100.0
1966	39.4	11.2	50.6	−1.6	100.0
1967	39.9	11.9	51.8	−1.7	100.0
1968	39.1	12.3	51.4	−1.7	100.0
1969	38.0	11.9	49.9	−1.5	100.0
1970	37.8	11.7	49.5	−1.6	100.0
1971	38.4	12.2	50.6	−1.7	100.0
1972	38.6	12.1	50.7	−1.7	100.0
1973	38.4	11.9	50.3	−1.8	100.0
1974	37.6	11.8	49.3	−2.3	100.0
1975	38.1	13.1	51.2	−2.4	100.0
1976	39.3	14.1	53.5	−2.5	100.0
1977	39.7	14.5	54.2	−2.6	100.0
1978	40.0	14.5	54.5	−2.7	100.0
1979	39.4	14.2	53.6	−2.4	100.0
1980	39.6	14.1	53.7	−2.7	100.0
1981	40.3	14.7	54.9	−2.7	100.0
1982	40.4	15.1	55.5	−2.5	100.0
1983	40.4	15.5	55.9	−2.5	100.0
1984	40.7	15.7	56.4	−2.6	100.0
1985	41.5	16.3	57.8	−2.7	100.0

6. Volume Indices of Production by Kind of Economic Activity, 1860–1985, 1926 = 100

PRIMARY PRODUCTION

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1860	45.9	31.4	166.5	42.8
1861	45.1	32.4	145.4	42.2
1862	38.4	32.3	127.2	37.9
1863	43.9	33.8	131.6	41.7
1864	45.9	33.2	138.5	42.8
1865	42.3	36.4	133.5	41.9
1866	45.7	33.3	152.1	43.0
1867	36.4	31.8	153.3	37.2
1868	44.7	31.6	139.4	41.5
1869	50.1	31.6	162.6	45.2
1870	53.8	30.5	171.4	47.1
1871	52.7	31.3	167.0	46.7
1872	53.6	33.6	152.8	47.7
1873	57.0	35.2	144.1	50.2
1874	56.7	36.6	134.8	50.4
1875	57.6	35.1	148.1	50.6
1876	59.8	40.2	161.2	54.1
1877	55.1	40.9	169.3	51.9
1878	56.6	36.0	175.6	51.0
1879	58.0	34.3	192.6	51.5
1880	58.3	34.5	171.1	51.3
1881	52.5	33.8	175.8	47.7
1882	60.1	35.9	190.0	53.3
1883	64.9	36.1	198.4	56.4
1884	63.4	35.1	204.4	55.2
1885	65.0	35.0	216.9	56.4
1886	70.8	37.0	244.3	61.2
1887	71.8	37.7	251.5	62.2
1888	72.5	37.5	248.8	62.4
1889	74.7	41.2	236.2	64.9
1890	78.2	40.9	230.3	66.7
1891	74.4	40.5	209.4	63.9
1892	67.1	40.2	198.9	59.4
1893	73.5	40.7	208.7	63.5
1894	81.2	42.4	230.5	69.0
1895	89.1	44.8	240.2	74.7
1896	92.5	46.0	249.7	77.4
1897	93.1	49.0	243.6	78.9
1898	92.7	50.5	234.1	79.1
1899	81.4	51.3	229.6	72.9

6 cont.

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1900	85.3	56.0	227.8	77.1
1901	86.1	53.9	222.7	76.4
1902	78.1	53.9	231.9	72.3
1903	84.7	60.5	240.3	79.1
1904	87.2	64.6	236.0	82.4
1905	90.7	61.3	235.6	82.6
1906	90.7	63.9	235.9	83.9
1907	94.9	65.8	237.7	87.1
1908	93.8	65.2	229.0	86.1
1909	97.2	69.7	227.3	90.1
1910	93.3	72.6	238.9	89.6
1911	91.7	77.0	223.6	90.3
1912	98.5	78.5	217.6	94.6
1913	99.7	84.8	235.9	98.5
1914	100.8	73.1	233.0	93.9
1915	97.5	63.8	205.3	87.3
1916	94.8	64.3	182.1	85.6
1917	94.8	57.3	134.9	81.4
1918	88.6	46.8	89.2	72.3
1919	91.9	55.5	97.7	78.2
1920	104.1	70.0	94.0	91.3
1921	108.7	71.0	86.1	94.4
1922	108.3	79.5	86.0	97.2
1923	99.6	89.8	89.8	95.8
1924	100.0	90.9	90.6	96.4
1925	105.6	96.0	98.3	101.9
1926	100.0	100.0	100.0	100.0
1927	105.8	111.0	97.7	107.5
1928	98.7	108.0	99.7	102.1
1929	101.9	99.6	111.0	101.3
1930	112.7	88.5	118.8	103.9
1931	114.8	83.2	140.8	102.9
1932	117.7	82.1	136.3	103.8
1933	117.6	92.8	150.3	109.2
1934	129.3	108.5	143.3	122.8
1935	131.3	105.5	138.8	122.3
1936	131.0	110.9	167.1	125.3
1937	140.0	121.6	166.4	135.1
1938	141.6	105.2	166.0	128.0
1939	147.6	86.3	140.8	121.5

Year	Agriculture	Forestry	Hunting and fishing	Total primary production
1940	113	58	151	90
1941	105	65	192	90
1942	99	62	291	86
1943	119	92	259	110
1944	129	79	218	109
1945	116	128	337	126
1946	121	116	423	124
1947	110	113	322	116
1948	117	94	303	110
1949	133	80	245	110
1950	129	87	226	111
1951	131	106	217	120
1952	142	104	257	127
1953	138	87	291	117
1954	138	105	323	127
1955	125	114	349	125
1956	126	104	340	120
1957	135	107	329	126
1958	144	108	299	130
1959	152	107	289	133
1960	158	127	281	146
1961	173	133	351	157
1962	161	125	304	146
1963	158	124	308	144
1964	165	135	260	153
1965	156	137	278	150
1966	159	116	280	140
1967	154	120	294	140
1968	163	125	326	148
1969	165	138	287	155
1970	152	144	316	152
1971	162	132	349	151
1972	157	129	361	147
1973	151	130	383	145
1974	149	121	430	139
1975	155	106	471	134
1976	162	104	497	137
1977	155	114	537	139
1978	150	117	686	139
1979	153	145	737	157
1980	170	152	793	168
1981	156	142	795	157
1982	173	130	830	158
1983	190	126	831	164
1984	191	129	878	166
1985	176	136	838	163

6 cont. SECONDARY PRODUCTION

Year	Manufacturing	Construction			Total secondary production
		House construction	Land and water construction	Total construction	
1860	4.6	21.4	25.1	23.2	8.1
1861	4.7	21.9	24.7	23.6	8.2
1862	4.8	23.6	23.0	24.5	8.5
1863	4.7	24.8	23.8	25.6	8.6
1864	5.0	24.5	22.5	25.0	8.7
1865	5.6	25.2	21.2	25.2	9.3
1866	5.6	23.5	21.3	23.9	9.1
1867	5.5	21.8	23.9	23.3	8.9
1868	6.0	22.7	45.0	29.4	10.4
1869	5.9	26.3	42.8	31.6	10.7
1870	6.3	27.8	45.6	33.6	11.4
1871	6.9	28.2	44.9	33.7	11.9
1872	8.5	29.4	44.3	34.5	13.3
1873	9.9	30.5	43.8	35.2	14.6
1874	11.0	31.7	40.1	35.1	15.4
1875	12.0	32.5	40.6	35.9	16.4
1876	12.0	32.6	34.1	34.1	16.1
1877	12.0	32.9	25.5	32.1	15.7
1878	10.0	31.7	28.0	31.8	14.0
1879	10.0	29.9	34.8	32.2	14.1
1880	11.0	29.3	37.8	32.6	15.0
1881	12.0	31.5	36.9	34.0	16.1
1882	13.0	32.4	39.0	35.2	17.1
1883	13.0	35.3	38.4	37.3	17.5
1884	13.0	36.8	44.5	40.1	18.0
1885	13.0	37.4	56.4	43.9	18.6
1886	13.0	36.2	62.5	44.7	18.8
1887	14.0	34.0	48.0	39.0	18.6
1888	16.0	35.4	49.0	40.3	20.5
1889	18.0	34.5	45.4	38.7	22.0
1890	20.0	38.0	63.1	46.3	25.0
1891	21.0	40.7	62.6	48.1	26.1
1892	20.0	43.6	62.5	50.2	25.7
1893	20.0	40.1	61.8	47.4	25.2
1894	23.0	40.5	65.9	48.9	27.9
1895	24.0	42.9	57.0	48.1	28.5
1896	28.0	44.8	58.0	49.7	32.0
1897	31.0	48.0	63.4	53.7	35.2
1898	34.0	51.8	62.6	56.2	38.1
1899	36.0	49.3	60.6	53.8	39.2

Year	Manufacturing	Construction			Total secondary production
		House construction	Land and water construction	Total construction	
1900	37.0	52.6	63.0	56.9	40.6
1901	36.0	53.2	74.0	60.4	40.4
1902	36.0	57.6	70.0	62.6	40.9
1903	37.0	54.0	58.0	56.5	40.5
1904	39.0	60.2	58.0	61.2	43.0
1905	41.0	57.0	65.0	60.8	44.5
1906	44.0	62.2	61.0	63.5	47.5
1907	46.0	63.7	69.0	66.9	49.7
1908	46.0	67.9	74.0	71.4	50.6
1909	50.0	60.6	69.0	64.6	52.5
1910	52.0	59.6	75.0	65.5	54.3
1911	56.0	60.9	76.0	66.7	57.8
1912	58.0	81.9	83.0	83.3	62.4
1913	65.0	65.6	87.0	73.5	66.4
1914	62.0	71.4	92.0	79.2	65.0
1915	60.0	59.6	85.0	68.8	61.5
1916	66.0	52.1	92.0	66.1	65.9
1917	48.0	46.4	63.0	52.5	48.8
1918	30.0	53.5	55.0	54.7	34.3
1919	44.0	53.3	52.0	53.6	45.6
1920	58.0	59.5	48.0	56.4	57.7
1921	58.0	62.1	61.0	61.8	58.8
1922	69.0	76.5	75.0	76.1	70.5
1923	81.0	83.6	80.0	82.6	81.3
1924	83.0	91.4	88.0	90.5	84.6
1925	90.0	88.0	96.0	90.1	90.0
1926	100.0	100.0	100.0	100.0	100.0
1927	110.0	106.5	116.0	109.1	109.8
1928	127.0	149.0	125.0	142.6	130.3
1929	133.0	116.0	140.0	122.4	130.8
1930	121.0	93.9	164.0	112.6	119.2
1931	111.0	76.5	178.0	103.9	109.5
1932	113.0	90.1	211.0	122.8	115.4
1933	123.0	75.3	224.0	115.7	121.5
1934	147.0	92.0	225.0	128.0	142.8
1935	163.0	107.9	225.0	139.4	157.8
1936	183.0	122.1	227.0	150.2	175.7
1937	214.0	122.3	205.0	144.3	198.3
1938	228.0	154.1	202.0	166.4	214.1
1939	217.0	150.5	194.0	161.6	204.6

6 cont.

Year	Manufacturing	Construction			Total secondary production
		House construction	Land and water construction	Total construction	
1940	165	112	153	123	155
1941	177	96	128	104	159
1942	181	79	109	87	158
1943	210	69	114	81	178
1944	198	67	108	79	168
1945	204	111	136	116	183
1946	238	131	144	132	212
1947	261	153	153	150	234
1948	297	182	220	190	272
1949	308	206	274	225	288
1950	327	222	272	233	305
1951	371	233	265	237	339
1952	362	238	295	251	336
1953	378	243	374	284	356
1954	426	264	359	291	394
1955	470	259	369	292	428
1956	482	259	415	309	441
1957	495	262	438	319	453
1958	480	262	511	347	448
1959	523	270	554	368	486
1960	591	315	503	375	540
1961	643	350	465	389	579
1962	672	349	475	391	598
1963	700	356	499	403	621
1964	746	364	516	414	655
1965	789	408	524	447	697
1966	828	411	535	453	724
1967	853	427	535	464	745
1968	898	400	548	449	767
1969	1016	448	538	480	855
1970	1126	502	518	512	938
1971	1143	486	519	501	944
1972	1276	535	549	545	1047
1973	1361	596	571	594	1122
1974	1419	618	555	606	1164
1975	1357	646	573	631	1136
1976	1386	579	553	578	1131
1977	1387	599	515	580	1133
1978	1456	592	498	570	1171
1979	1611	596	500	573	1270
1980	1735	638	519	608	1364
1981	1785	621	533	601	1392
1982	1800	661	542	632	1415
1983	1861	702	525	656	1465
1984	1944	672	532	637	1508
1985	2019	662	567	641	1557

	SERVICES					
Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1860	7.9	5.8	2.2	32.8	24.4	14.8
1861	8.9	6.6	2.4	33.3	25.1	15.6
1862	8.9	6.8	2.6	33.7	25.8	15.9
1863	9.9	7.7	3.5	34.3	26.4	16.8
1864	9.9	8.9	3.7	34.7	27.2	17.4
1865	9.9	7.7	4.6	35.4	27.9	17.4
1866	9.9	7.8	4.6	35.8	28.8	17.7
1867	9.9	7.9	5.0	36.2	27.9	17.6
1868	10.9	8.0	4.5	36.6	26.4	17.5
1869	11.9	9.0	4.7	37.3	27.6	18.5
1870	11.9	9.6	4.6	37.8	29.3	19.2
1871	12.8	10.2	4.1	38.4	29.8	19.8
1872	12.8	9.5	4.6	39.3	30.4	19.9
1873	14.8	10.5	3.9	39.9	30.9	20.9
1874	15.8	11.3	4.4	40.6	31.5	21.7
1875	15.8	12.2	4.8	41.4	32.1	22.3
1876	19.8	13.7	5.5	42.0	32.9	24.0
1877	20.7	14.0	6.2	42.7	33.8	24.7
1878	19.8	14.6	7.3	43.1	34.6	25.1
1879	17.8	15.6	7.5	43.9	35.2	25.3
1880	18.8	13.5	5.9	44.3	36.2	24.9
1881	19.8	12.8	6.0	45.0	37.2	25.3
1882	19.8	14.7	6.9	45.6	38.3	26.4
1883	17.8	17.1	7.2	46.2	39.2	27.1
1884	17.8	17.5	7.8	46.9	40.2	27.6
1885	17.8	17.6	7.8	47.8	40.6	27.9
1886	17.8	18.1	8.6	48.3	41.6	28.5
1887	18.8	18.9	9.4	49.1	42.8	29.5
1888	19.8	20.3	10.7	49.3	44.2	30.6
1889	19.8	20.4	14.1	50.0	45.3	31.4
1890	20.7	22.4	13.2	50.7	46.6	32.7
1891	22.7	23.0	12.6	51.4	47.3	33.5
1892	22.7	25.0	14.7	52.3	48.1	34.6
1893	22.7	25.5	16.0	53.1	48.8	35.2
1894	23.7	28.5	15.7	53.7	49.5	36.5
1895	24.7	27.6	20.2	54.5	50.6	37.3
1896	28.7	30.1	25.2	55.4	51.6	39.8
1897	30.6	35.0	30.1	56.4	52.8	42.6
1898	35.6	40.9	37.1	57.5	53.9	46.5
1899	37.5	42.7	36.2	58.6	54.9	47.9

6 cont.

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1900	41.5	42.0	35.3	59.5	56.0	48.8
1901	39.5	45.2	37.1	60.6	57.0	49.9
1902	40.5	42.6	40.4	62.0	58.0	50.2
1903	45.5	49.1	45.4	63.3	59.0	54.0
1904	44.5	50.8	48.2	64.5	60.0	55.0
1905	45.5	52.0	46.0	65.7	61.2	55.8
1906	50.4	50.8	53.8	66.8	62.4	57.8
1907	54.3	50.6	55.7	68.2	63.7	59.3
1908	53.4	51.1	64.2	69.6	64.9	60.6
1909	54.3	56.3	68.5	70.9	66.1	63.1
1910	59.3	61.8	72.1	72.1	67.3	66.5
1911	65.2	61.7	78.4	73.1	68.7	68.8
1912	69.2	64.7	82.8	75.6	70.4	71.7
1913	81.0	71.7	82.5	77.1	71.7	76.4
1914	69.0	72.6	76.0	78.8	73.0	74.5
1915	84.4	69.1	56.7	80.2	74.3	74.5
1916	100.7	71.4	46.3	81.2	76.4	77.6
1917	80.3	54.1	35.1	81.9	77.2	68.1
1918	42.8	41.7	33.0	82.9	76.0	57.6
1919	69.7	44.9	56.6	83.9	78.6	66.6
1920	69.1	49.6	57.4	85.2	80.4	68.7
1921	69.6	59.8	62.3	86.8	83.2	73.1
1922	87.5	71.2	63.1	89.0	86.1	80.5
1923	90.4	77.4	77.7	91.6	89.0	85.5
1924	95.9	86.7	77.7	94.4	92.4	90.4
1925	95.3	90.9	88.9	97.2	96.4	94.1
1926	100.0	100.0	100.0	100.0	100.0	100.0
1927	109.0	106.5	109.8	103.3	104.3	106.1
1928	121.6	112.8	124.2	107.8	104.7	112.5
1929	121.0	125.7	131.5	110.5	105.3	117.2
1930	117.7	125.3	135.4	112.3	105.0	117.2
1931	112.3	128.3	133.0	113.5	109.4	118.2
1932	110.3	124.2	117.9	115.3	102.4	114.0
1933	121.9	131.4	115.8	116.3	106.3	118.8
1934	139.7	135.2	115.0	117.9	111.1	124.4
1935	147.5	145.6	113.9	119.9	118.3	130.5
1936	161.4	169.6	108.9	122.4	130.8	142.0
1937	182.8	166.7	100.6	125.3	132.6	145.4
1938	198.0	192.8	123.9	129.0	139.8	159.2
1939	206.7	158.2	114.9	132.9	137.3	151.9

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1940	173	155	88	122	126	137
1941	170	137	84	124	129	131
1942	180	121	80	130	121	125
1943	217	129	83	131	112	130
1944	211	115	84	125	114	125
1945	198	133	81	129	134	135
1946	224	151	89	135	138	147
1947	255	176	80	140	140	160
1948	276	220	87	146	143	180
1949	280	242	93	151	151	190
1950	313	282	106	157	158	213
1951	367	305	117	164	172	236
1952	359	330	127	171	174	245
1953	374	319	133	178	172	245
1954	407	355	141	186	179	266
1955	455	426	148	195	179	301
1956	461	444	157	205	189	312
1957	465	427	163	216	194	310
1958	461	409	168	226	185	303
1959	502	458	184	236	196	332
1960	553	509	201	246	206	364
1961	592	554	216	259	219	389
1962	619	597	236	273	229	412
1963	633	618	258	288	241	432
1964	676	654	271	303	249	453
1965	713	701	299	318	261	481
1966	752	718	316	335	273	502
1967	756	730	330	353	281	515
1968	795	711	335	371	287	525
1969	865	796	347	389	301	563
1970	931	862	358	410	325	603
1971	954	899	374	429	338	627
1972	1032	986	395	452	356	672
1973	1110	1084	418	477	370	716
1974	1168	1116	427	506	384	745
1975	1150	1152	453	533	391	763
1976	1126	1151	477	559	391	769
1977	1137	1070	490	586	386	761
1978	1168	1090	512	612	394	782
1979	1291	1171	526	633	416	832
1980	1364	1214	572	654	439	874
1981	1410	1226	612	675	459	904
1982	1422	1278	640	693	481	935
1983	1466	1294	685	712	504	968
1984	1505	1320	755	729	527	1005
1985	1539	1366	803	746	553	1043

6 cont. SERVICES (cont.)

Year	Public services			Total services	Total gross domestic product
	Central government	Local government	Total		
1860	31.1	4.2	21.1	14.8	22.0
1861	31.4	4.3	21.3	15.5	22.2
1862	33.7	4.5	22.8	16.0	21.0
1863	34.5	4.7	23.4	16.9	22.6
1864	34.2	4.7	23.2	17.4	23.2
1865	33.2	4.7	22.6	17.2	23.0
1866	33.3	4.9	22.7	17.4	23.4
1867	34.6	5.1	23.6	17.6	21.4
1868	34.9	5.3	23.8	17.8	23.6
1869	33.8	5.4	23.1	18.6	25.1
1870	33.3	5.6	23.0	19.0	26.2
1871	33.3	5.8	23.0	19.5	26.4
1872	33.1	6.5	23.1	19.6	27.2
1873	32.8	6.9	23.1	20.4	28.8
1874	32.2	7.4	22.9	21.2	29.4
1875	33.0	7.8	23.5	21.8	30.0
1876	32.9	8.2	23.6	23.6	31.7
1877	32.9	8.6	23.7	24.2	30.9
1878	34.3	9.1	24.8	24.6	30.2
1879	35.9	9.8	26.0	24.9	30.5
1880	35.6	10.2	25.9	24.3	30.5
1881	36.1	10.7	26.4	24.7	29.8
1882	37.0	11.3	27.3	25.7	32.4
1883	36.9	11.8	27.4	26.3	33.8
1884	39.7	13.4	29.7	27.1	33.9
1885	40.3	14.1	30.3	27.5	34.6
1886	40.7	14.3	30.6	28.0	36.4
1887	42.4	15.3	32.1	29.0	37.0
1888	43.4	15.9	32.9	30.1	38.2
1889	40.4	15.5	30.9	30.3	39.6
1890	43.4	16.6	33.2	31.8	41.7
1891	44.9	18.0	34.6	32.8	41.5
1892	45.8	17.9	35.1	33.8	40.2
1893	47.2	19.2	36.5	34.6	41.7
1894	48.4	20.3	37.6	36.0	44.9
1895	48.0	21.4	37.8	36.6	47.3
1896	47.7	22.3	37.9	38.8	50.1
1897	47.1	23.3	37.9	41.2	52.5
1898	47.1	25.0	38.5	44.8	54.8
1899	46.8	26.5	38.9	46.0	53.5

Year	Public services			Total services	Total gross domestic product
	Central government	Local government	Total		
1900	51.2	28.0	42.2	47.4	55.9
1901	52.5	30.3	43.9	48.7	56.0
1902	52.5	32.5	44.7	49.0	54.8
1903	50.5	33.4	43.8	52.2	58.2
1904	55.0	34.5	47.0	53.6	60.6
1905	55.5	35.4	47.7	54.4	61.4
1906	56.7	37.4	49.2	56.4	63.5
1907	57.7	40.3	50.9	58.0	65.8
1908	66.2	46.7	58.5	60.5	66.6
1909	68.9	50.9	61.9	63.4	69.6
1910	66.5	54.6	61.9	66.4	71.0
1911	61.3	55.3	58.9	67.8	72.9
1912	60.9	59.3	60.2	70.5	76.8
1913	61.0	63.8	62.0	75.0	81.0
1914	59.8	66.7	62.3	73.3	78.4
1915	54.7	67.2	59.4	72.7	74.9
1916	51.9	58.1	54.2	74.4	76.4
1917	40.6	52.0	44.9	63.9	65.7
1918	106.9	56.2	87.2	62.1	57.4
1919	122.0	64.6	99.8	72.3	66.7
1920	105.8	66.2	90.4	72.4	74.9
1921	88.6	73.5	82.8	74.5	77.0
1922	91.0	75.6	85.0	81.1	83.8
1923	95.6	82.1	90.4	86.3	88.7
1924	97.7	89.5	94.5	91.1	91.1
1925	97.1	92.6	95.4	94.2	95.8
1926	100.0	100.0	100.0	100.0	100.0
1927	87.7	106.2	94.9	104.0	106.9
1928	102.3	113.4	106.6	111.7	113.7
1929	111.5	120.7	115.0	117.4	115.5
1930	109.1	131.4	117.7	117.9	113.3
1931	111.7	145.1	124.6	120.1	111.5
1932	114.5	154.1	129.8	117.9	112.3
1933	120.1	159.5	135.2	122.8	117.7
1934	124.1	157.3	136.9	127.6	129.6
1935	123.4	156.3	136.1	132.3	135.1
1936	124.7	158.5	137.7	141.8	144.4
1937	126.0	154.7	137.1	144.4	154.5
1938	147.9	160.1	152.7	158.8	161.8
1939	161.9	154.9	159.4	154.2	155.3

6 cont.

Year	Public services		Total	Total services	Total gross domestic product
	Central government	Local government			
1940	601	144	428	198	150
1941	640	139	450	197	150
1942	661	142	465	195	147
1943	638	146	452	196	165
1944	795	148	552	211	167
1945	210	144	183	149	158
1946	200	148	178	158	167
1947	193	157	177	168	172
1948	176	164	169	184	183
1949	179	181	178	195	190
1950	189	189	187	215	202
1951	187	205	195	235	221
1952	190	223	205	245	227
1953	186	244	214	247	229
1954	188	260	223	266	250
1955	193	281	236	298	267
1956	197	293	244	308	272
1957	200	313	256	309	279
1958	201	339	269	307	281
1959	206	363	284	333	300
1960	216	368	292	361	329
1961	..	..	307	385	352
1962	..	..	322	406	361
1963	..	..	337	425	373
1964	..	..	349	445	392
1965	..	..	362	470	410
1966	..	..	376	490	419
1967	..	..	391	505	430
1968	..	..	411	517	443
1969	..	..	431	552	479
1970	..	..	453	589	511
1971	..	..	475	614	522
1972	..	..	504	655	559
1973	..	..	537	699	592
1974	..	..	573	732	613
1975	..	..	604	754	616
1976	..	..	640	770	622
1977	..	..	670	773	625
1978	..	..	700	798	643
1979	..	..	731	845	691
1980	..	..	759	885	732
1981	..	..	795	918	747
1982	..	..	826	951	766
1983	..	..	853	983	792
1984	..	..	873	984	814
1985	..	..	897	1053	836

7. Distribution of Private Consumption at Five-Yearly Intervals, 1860–1985, %

Year	Nutrition and stimulants				Clothing	Housing	Other private consumption	Total
	Food	Beverages	Tobacco	Total				
1860	58.9	2.0	1.0	61.9	6.1	16.8	15.2	100.0
1865	59.3	1.5	1.1	61.9	6.0	15.3	16.8	100.0
1870	56.5	3.3	1.0	60.7	7.7	13.9	17.6	100.0
1875	58.0	4.8	1.3	64.1	8.3	12.1	15.5	100.0
1880	55.6	3.8	1.7	61.1	8.1	12.6	18.3	100.0
1885	55.5	5.2	1.4	62.1	6.3	12.8	18.8	100.0
1890	53.0	4.8	1.5	59.3	9.4	12.2	19.1	100.0
1895	54.2	4.0	1.6	59.8	8.7	11.4	20.1	100.0
1900	52.2	4.7	2.8	59.6	8.8	11.2	20.3	100.0
1905	49.3	3.8	2.2	55.2	9.8	12.0	23.0	100.0
1910	47.9	3.7	2.3	53.9	10.0	10.0	26.0	100.0
1915	48.2	1.8	2.1	52.1	13.0	10.4	24.5	100.0
1920	47.6	0.9	4.3	52.8	15.6	9.2	22.4	100.0
1925	45.5	1.4	3.2	50.1	13.4	11.3	25.2	100.0
1930	38.1	1.6	3.0	42.7	12.9	13.7	30.7	100.0
1935	37.5	3.0	2.6	43.1	14.2	12.7	30.0	100.0
1940	35.6	4.1	3.7	43.3	14.0	12.6	30.1	100.0
1945	37.9	10.0	2.6	50.5	9.6	9.3	30.5	100.0
1950	35.6	4.4	3.1	43.1	18.4	8.0	30.5	100.0
1955	31.7	4.7	2.6	39.0	13.7	11.9	35.4	100.0
1960	30.1	3.2	3.2	36.4	10.7	18.2	34.7	100.0
1965	28.4	3.5	3.2	35.2	8.1	18.1	38.6	100.0
1970	24.2	5.0	2.9	32.1	8.3	17.9	41.7	100.0
1975	22.2	5.0	2.1	29.3	6.2	18.8	45.7	100.0
1980	20.9	4.5	2.1	27.6	6.3	18.4	47.7	100.0
1985	19.8	4.4	2.0	26.2	5.2	18.1	50.5	100.0

8. Public Consumption, 1860–1985; 1860–1960 in Thousands of FIM, 1960–1985 in Millions of FIM

Year	Central government	Local government	Total
1860	173	41	214
1861	178	43	221
1862	181	44	225
1863	184	45	229
1864	189	47	236
1865	192	48	240
1866	192	50	242
1867	191	55	246
1868	189	54	243
1869	188	53	242
1870	188	49	237
1871	189	50	239
1872	194	53	247
1873	195	57	252
1874	199	58	258
1875	204	61	265
1876	210	63	273
1877	213	65	278
1878	214	65	279
1879	220	72	292
1880	226	76	302
1881	236	81	317
1882	240	84	324
1883	246	86	332
1884	253	89	342
1885	262	96	357
1886	267	99	366
1887	277	95	372
1888	292	101	393
1889	302	107	409
1890	311	123	434
1891	321	133	455
1892	329	155	483
1893	340	153	493
1894	347	166	513
1895	354	167	521
1896	362	162	524
1897	374	166	540
1898	391	197	588
1899	403	218	622

Year	Central government	Local government	Total
1900	404	260	664
1901	415	244	659
1902	412	242	655
1903	413	302	714
1904	440	299	738
1905	408	296	704
1906	446	318	764
1907	479	364	843
1908	487	427	914
1909	513	469	982
1910	597	537	1135
1911	618	593	1211
1912	623	632	1255
1913	670	652	1322
1914	664	738	1401
1915	656	687	1343
1916	783	910	1693
1917	914	1309	2223
1918	2803	2460	5263
1919	4346	3001	7347
1920	6130	4430	10570
1921	8620	6040	14660
1922	9100	6960	16060
1923	9380	7900	17280
1924	10100	8680	18790
1925	11370	9380	20750
1926	11460	9520	20980
1927	12300	9710	22010
1928	13490	11110	24610
1929	15390	12380	27770
1930	15850	13560	29420
1931	15270	13640	28920
1932	16460	13220	29680
1933	14650	13660	28310
1934	15630	13740	29380
1935	16030	14670	30700
1936	17280	15530	32820
1937	25060	16470	41540
1938	22870	17500	40370
1939	42780	18910	61700

8 cont.

Year	Central government	Local government	Total
1940	155200	18600	173800
1941	152400	21100	173500
1942	206600	23400	230000
1943	218000	29300	247400
1944	266400	33000	299400
1945	154000	52600	206600
1946	140200	84300	224500
1947	157700	121700	279500
1948	215900	190800	406700
1949	234600	236200	470800
1950	320000	307900	627900
1951	401600	405100	806700
1952	444300	460400	904700
1953	464400	525000	989400
1954	450800	541300	992100
1955	518800	622800	1141600
1956	635800	723300	1359100
1957	709900	796100	1506000
1958	741900	917500	1659400
1959	812300	1043400	1855700
1960	885100	1111700	1996800
1960	866	1065	1931
1961	1000	1156	2156
1962	1125	1338	2463
1963	1317	1545	2862
1964	1505	1744	3249
1965	1653	1984	3637
1966	1840	2247	4087
1967	2034	2624	4658
1968	2410	3072	5482
1969	2559	3375	5934
1970	2840	3773	6613
1971	3235	4383	7618
1972	3687	5272	8959
1973	4224	6470	10694
1974	5271	8415	13686
1975	6785	11014	17799
1976	7822	13485	21307
1977	8526	15480	24006
1978	9430	16916	26346
1979	10643	19233	29876
1980	12379	22516	34895
1981	14127	26710	40837
1982	16458	30203	46661
1983	18993	34312	53305
1984	20161	39515	59676
1985	22797	44790	67587

9A. Gross Fixed Capital Formation by Type of Capital Goods, 1860–1985; 1860–1960 in Thousands of FIM, 1960–1985 in Millions of FIM

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1860	126	77	75	54	331
1861	133	76	75	48	331
1862	124	84	57	51	316
1863	126	88	53	59	327
1864	138	88	53	71	350
1865	158	94	55	102	409
1866	139	85	54	107	385
1867	108	81	55	101	345
1868	123	69	126	89	407
1869	143	93	125	112	473
1870	154	98	124	87	462
1871	160	99	123	101	483
1872	167	110	125	141	542
1873	178	119	128	168	593
1874	191	133	120	169	613
1875	188	137	113	181	619
1876	186	144	82	155	568
1877	182	154	48	112	497
1878	163	138	49	75	425
1879	146	116	65	81	409
1880	145	116	79	110	451
1881	159	135	81	110	485
1882	163	129	83	129	504
1883	179	154	83	149	565
1884	168	142	89	108	507
1885	160	153	128	110	551
1886	154	152	151	103	560
1887	142	133	103	104	481
1888	134	149	102	142	527
1889	182	162	119	178	641
1890	178	167	155	224	724
1891	188	175	145	213	721
1892	201	192	142	189	723
1893	182	169	137	160	649
1894	164	183	148	146	641
1895	191	194	125	186	695
1896	221	207	135	266	829
1897	256	235	151	303	945
1898	288	262	223	469	1243
1899	291	264	244	516	1316

9A cont.

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1900	272	327	225	447	1270
1901	264	308	238	340	1150
1902	314	305	213	313	1145
1903	291	335	194	379	1199
1904	321	336	187	413	1257
1905	300	364	224	454	1342
1906	341	405	218	492	1456
1907	377	401	256	544	1578
1908	370	395	274	611	1650
1909	272	380	252	605	1509
1910	277	348	281	513	1419
1911	326	378	298	575	1577
1912	592	423	316	668	1999
1913	402	382	346	783	1913
1914	448	430	449	758	2085
1915	406	409	471	776	2062
1916	522	592	563	1249	2926
1917	781	866	713	1900	4260
1918	1519	1342	893	1792	5546
1919	1826	1908	1259	3668	8661
1920	3020	3620	1700	7200	15550
1921	3100	3830	2340	7740	17030
1922	4890	5640	3330	7090	20970
1923	7020	7200	3780	8170	26190
1924	7740	8200	4280	8220	28460
1925	7010	8120	4790	8400	28330
1926	8940	8930	5310	10940	34130
1927	9570	10160	5990	12950	38680
1928	16670	13640	7230	15710	53260
1929	10120	12350	7640	13690	43810
1930	6420	9960	7940	8860	33190
1931	3750	6380	7160	5620	22930
1932	5380	6150	7550	5670	24770
1933	3090	5710	8520	6480	23810
1934	4460	8240	9440	9010	31170
1935	7150	9230	9950	12530	38870
1936	8310	11950	11140	15000	46410
1937	10510	15830	11970	25970	64290
1938	14440	19240	12720	24010	70430
1939	16490	18500	13320	26190	74510

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1940	15300	16100	11800	53100	96400
1941	13000	17500	13400	9400	53500
1942	12700	14800	12400	32400	72400
1943	8200	15200	14100	52800	90500
1944	7600	16900	14200	39500	78300
1945	44400	45100	38400	51600	179600
1946	91700	78300	51600	144200	365900
1947	123200	122300	75900	209100	530500
1948	216700	261200	130900	278300	887100
1949	243300	293700	199000	251300	987300
1950	301000	384900	259900	274500	1220300
1951	461000	536900	286700	535800	1820400
1952	533100	537400	365600	720000	2156100
1953	568900	500800	502300	630000	2202000
1954	576000	582700	539000	657200	2354900
1955	625000	502300	546700	860700	2534700
1956	618200	562800	689400	994900	2865300
1957	713600	541700	754600	909700	2919600
1958	632000	623000	928200	1034700	3217900
1959	673000	665000	947200	1301700	3586900
1960	821000	811000	923500	1770000	4325500
1960	925	931	852	1881	4589
1961	1132	1032	880	2089	5133
1962	1294	983	943	2199	5419
1963	1407	1073	997	1984	5461
1964	1391	1304	1228	2145	6068
1965	1587	1628	1380	2421	7016
1966	1743	1612	1438	2766	7559
1967	1912	1794	1604	2552	7862
1968	2049	1729	1718	2794	8290
1969	2429	2141	1680	3518	9768
1970	3107	2678	1785	4440	12010
1971	3469	2692	2174	5482	13817
1972	4332	3180	2382	6465	16359
1973	5621	4404	3068	7473	20566
1974	7692	5804	3839	9524	26859
1975	8411	7267	4732	12257	32667
1976	8461	6718	4917	12814	32910
1977	9885	7716	4962	12543	35106
1978	10576	7637	4975	11225	34413
1979	11562	8524	5223	13380	38689
1980	14054	10905	6162	17517	48638
1981	15161	11739	6882	20904	54686
1982	17315	13739	7736	22197	60987
1983	19104	17400	7938	24545	68987
1984	20137	17388	8409	26340	72274
1985	20910	18545	9270	29612	78337

9B. Gross Fixed Capital Formation by Type of Capital Goods, 1860–1985, Percentage Shares

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1860	38.0	23.1	22.6	16.3	100.0
1861	40.1	22.9	22.5	14.5	100.0
1862	39.2	26.6	18.0	16.1	100.0
1863	38.6	27.1	16.3	18.1	100.0
1864	39.5	25.1	15.1	20.3	100.0
1865	38.6	23.0	13.5	24.9	100.0
1866	36.1	22.1	14.0	27.8	100.0
1867	31.3	23.5	15.9	29.3	100.0
1868	30.2	16.9	31.0	21.8	100.0
1869	30.2	19.6	26.5	23.7	100.0
1870	33.3	21.1	26.7	18.8	100.0
1871	33.2	20.4	25.5	20.9	100.0
1872	30.8	20.2	23.0	26.0	100.0
1873	30.0	20.1	21.5	28.3	100.0
1874	31.2	21.7	19.5	27.6	100.0
1875	30.4	22.1	18.3	29.2	100.0
1876	32.8	25.4	14.5	27.3	100.0
1877	36.6	31.1	9.7	22.5	100.0
1878	38.3	32.5	11.5	17.6	100.0
1879	35.7	28.5	15.9	19.8	100.0
1880	32.2	25.8	17.6	24.4	100.0
1881	32.8	27.8	16.7	22.7	100.0
1882	32.4	25.6	16.4	25.6	100.0
1883	31.7	27.3	14.6	26.4	100.0
1884	33.1	28.1	17.5	21.3	100.0
1885	29.0	27.8	23.2	20.0	100.0
1886	27.5	27.1	27.0	18.4	100.0
1887	29.5	27.5	21.3	21.6	100.0
1888	25.4	28.3	19.3	26.9	100.0
1889	28.4	25.3	18.5	27.8	100.0
1890	24.6	23.0	21.4	30.9	100.0
1891	26.1	24.3	20.1	29.5	100.0
1892	27.8	26.5	19.6	26.1	100.0
1893	28.1	26.1	21.2	24.7	100.0
1894	25.6	28.5	23.1	22.8	100.0
1895	27.5	27.8	17.9	26.7	100.0
1896	26.7	25.0	16.3	32.1	100.0
1897	27.1	24.9	16.0	32.1	100.0
1898	23.2	21.1	18.0	37.7	100.0
1899	22.1	20.1	18.6	39.2	100.0

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1900	21.4	25.7	17.7	35.2	100.0
1901	23.0	26.8	20.7	29.6	100.0
1902	27.4	26.6	18.6	27.3	100.0
1903	24.3	27.9	16.2	31.6	100.0
1904	25.5	26.7	14.9	32.9	100.0
1905	22.4	27.1	16.7	33.8	100.0
1906	23.4	27.8	15.0	33.8	100.0
1907	23.9	25.4	16.2	34.5	100.0
1908	22.4	23.9	16.6	37.0	100.0
1909	18.0	25.2	16.7	40.1	100.0
1910	19.5	24.5	19.8	36.2	100.0
1911	20.7	24.0	18.9	36.5	100.0
1912	19.5	24.2	18.1	38.2	100.0
1913	21.0	20.0	18.1	40.9	100.0
1914	21.5	20.6	21.5	36.4	100.0
1915	19.7	19.8	22.8	37.6	100.0
1916	17.8	20.2	19.2	42.7	100.0
1917	18.3	20.3	16.7	44.6	100.0
1918	27.4	24.2	16.1	32.3	100.0
1919	21.1	22.0	14.5	42.4	100.0
1920	19.4	23.3	10.9	46.3	100.0
1921	18.2	22.5	13.8	45.5	100.0
1922	23.4	26.9	15.9	33.8	100.0
1923	26.8	27.5	14.5	31.2	100.0
1924	27.2	28.8	15.0	28.9	100.0
1925	24.8	28.7	16.9	29.7	100.0
1926	26.2	26.2	15.6	32.1	100.0
1927	24.8	26.3	15.5	33.5	100.0
1928	31.3	25.6	13.6	29.5	100.0
1929	23.1	28.2	17.4	31.3	100.0
1930	19.4	30.0	23.9	26.7	100.0
1931	16.4	27.8	31.3	24.5	100.0
1932	21.7	24.8	30.5	22.9	100.0
1933	13.0	24.0	35.8	27.2	100.0
1934	14.3	26.4	30.3	28.9	100.0
1935	18.4	23.8	25.6	32.2	100.0
1936	17.9	25.7	24.0	32.3	100.0
1937	16.4	24.6	18.6	40.4	100.0
1938	20.5	27.3	18.1	34.1	100.0
1939	22.1	24.8	17.9	35.2	100.0

9B cont.

Year	Residential buildings	Non-residential buildings	Land and water construction	Machinery and equipment	Total
1940	15.9	16.7	12.3	55.1	100.0
1941	24.5	32.9	25.0	17.6	100.0
1942	17.5	20.5	17.2	44.8	100.0
1943	9.1	16.9	15.6	58.4	100.0
1944	9.7	21.6	18.2	50.5	100.0
1945	24.7	25.1	21.4	28.8	100.0
1946	25.1	21.4	14.1	39.4	100.0
1947	23.2	23.1	14.3	39.4	100.0
1948	24.4	29.4	14.8	31.4	100.0
1949	24.6	29.7	20.2	25.5	100.0
1950	24.7	31.5	21.3	22.5	100.0
1951	25.3	29.5	15.7	29.4	100.0
1952	24.7	24.9	17.0	33.4	100.0
1953	25.8	22.7	22.8	28.6	100.0
1954	24.5	24.7	22.9	27.9	100.0
1955	24.7	19.8	21.6	34.0	100.0
1956	21.6	19.6	24.1	34.7	100.0
1957	24.4	18.6	25.8	31.2	100.0
1958	19.6	19.4	28.8	32.2	100.0
1959	18.8	18.5	26.4	36.3	100.0
1960	19.0	18.7	21.4	40.9	100.0
1960	20.2	20.3	18.6	41.0	100.0
1961	22.1	20.1	17.1	40.7	100.0
1962	23.9	18.1	17.4	40.6	100.0
1963	25.8	19.6	18.3	36.3	100.0
1964	22.9	21.5	20.2	35.3	100.0
1965	22.6	23.2	19.7	34.5	100.0
1966	23.1	21.3	19.0	36.6	100.0
1967	24.3	22.8	20.4	32.5	100.0
1968	24.7	20.9	20.7	33.7	100.0
1969	24.9	21.9	17.2	36.0	100.0
1970	25.9	22.3	14.9	37.0	100.0
1971	25.1	19.5	15.7	39.7	100.0
1972	26.5	19.4	14.6	39.5	100.0
1973	27.3	21.4	14.9	36.3	100.0
1974	28.6	21.6	14.3	35.5	100.0
1975	25.7	22.2	14.5	37.5	100.0
1976	25.7	20.4	14.9	38.9	100.0
1977	28.2	22.0	14.1	35.7	100.0
1978	30.7	22.2	14.5	32.6	100.0
1979	29.9	22.0	13.5	34.6	100.0
1980	28.9	22.4	12.7	36.0	100.0
1981	27.7	21.5	12.6	38.2	100.0
1982	28.4	22.5	12.7	36.4	100.0
1983	27.7	25.2	11.5	35.6	100.0
1984	27.9	24.1	11.6	36.4	100.0
1985	26.7	23.7	11.8	37.8	100.0

10A. Foreign Trade, 1860–1985, Thousands of FIM, Current Prices, Indices 1926 = 100

Year	Exports	Imports	Export price index	Import price index	Balance of trade	Terms of trade
1860	269	380	..	..	−111	..
1861	327	491	..	..	−164	..
1862	321	625	..	..	−304	..
1863	392	614	..	..	−222	..
1864	376	506	..	..	−130	..
1865	411	651	..	12.52	−240	..
1866	380	508	5.31	11.75	−128	45
1867	430	575	6.36	12.19	−145	52
1868	475	620	5.99	12.31	−145	49
1869	496	700	6.24	11.41	−204	55
1870	503	680	6.67	10.65	−177	63
1871	606	755	6.94	11.19	−149	62
1872	682	925	7.26	12.86	−243	56
1873	881	1067	8.75	13.52	−186	65
1874	930	1367	8.67	13.30	−437	65
1875	803	1455	8.08	12.97	−652	62
1876	1004	1284	9.03	13.19	−280	68
1877	983	1375	8.25	11.98	−392	69
1878	819	1178	7.93	10.86	−359	73
1879	849	1050	7.63	9.86	−201	77
1880	1129	1271	7.68	11.61	−142	66
1881	990	1418	8.04	11.72	−428	69
1882	1162	1528	8.36	10.90	−366	77
1883	1017	1473	7.76	10.15	−456	76
1884	994	1369	7.36	9.51	−375	77
1885	896	1082	6.64	9.09	−186	73
1886	787	974	6.83	8.87	−187	77
1887	760	1049	6.60	8.51	−289	78
1888	896	1112	6.84	8.51	−216	80
1889	1020	1324	7.34	9.65	−304	76
1890	937	1402	6.94	9.60	−465	72
1891	982	1461	6.68	9.62	−479	69
1892	896	1451	6.64	9.29	−555	71
1893	1096	1258	6.73	8.98	−162	75
1894	1249	1384	6.69	8.08	−135	83
1895	1315	1500	6.76	8.19	−185	82
1896	1504	1722	7.28	8.20	−218	89
1897	1631	2021	7.75	8.00	−390	97
1898	1682	2364	8.14	8.23	−682	99
1899	1719	2510	8.02	8.26	−791	97

10A cont.

Year	Exports	Imports	Export price index	Import price index	Balance of trade	Terms of trade
1900	1915	2701	9.27	8.84	−786	105
1901	1841	2150	8.82	8.32	−309	106
1902	1991	2331	8.35	8.43	−340	99
1903	2122	2675	9.11	8.58	−553	106
1904	2145	2671	8.67	8.72	−526	99
1905	2467	2682	8.51	8.88	−215	96
1906	2801	3139	9.30	9.49	−338	98
1907	2654	3791	9.94	10.30	−1137	96
1908	2430	3635	9.16	9.75	−1205	94
1909	2545	3671	9.71	9.79	−1126	99
1910	2881	3841	10.0	9.9	−960	101
1911	3177	4445	10.1	10.0	−1268	101
1912	3377	4700	9.8	10.6	−1323	93
1913	4018	4954	10.2	10.4	−936	98
1914	2822	3802	10.5	11.1	−980	95
1915	2559	5784	13.6	17.0	−3225	80
1916	4979	9628	25.9	23.7	−4649	109
1917	4396	12319	38.3	50.7	−7923	76
1918	1896	5046	42.5	77.7	−3150	55
1919	8506	25099	42.1	75.3	−16593	56
1920	28960	36260	94.6	124.3	−7300	76
1921	33410	35850	117.1	137.9	−2430	85
1922	44360	39690	109.5	114.9	4660	95
1923	43650	46000	101.9	97.7	−2340	104
1924	48840	47150	99.2	103.5	1690	96
1925	55550	55190	101.4	115.5	350	88
1926	56150	56670	100.0	100.0	−520	100
1927	62860	63850	99.6	98.6	−990	101
1928	61900	80120	100.8	99.4	−18220	101
1929	63760	70010	100.2	99.0	−6240	101
1930	53450	52470	96.2	92.3	970	104
1931	44030	34640	82.1	80.3	9380	102
1932	45510	35020	81.2	92.8	10490	87
1933	52590	39280	79.3	89.2	13310	89
1934	61710	47760	84.2	88.1	13940	96
1935	61920	53440	80.1	89.9	8480	89
1936	71590	63690	83.3	88.7	7900	94
1937	92820	93060	100.7	101.6	−230	99
1938	83340	86070	104.9	100.9	−2720	104
1939	77100	75720	97.5	98.2	1370	99

Year	Exports	Imports	Export price index	Import price index	Balance of trade	Terms of trade
1940	28700	91600	118	122	−62800	96
1941	43200	102000	130	174	−58700	75
1942	59900	117300	177	204	−57400	87
1943	87100	128800	226	232	−41600	97
1944	63300	89100	236	245	−25800	96
1945	52200	68200	387	404	−15900	96
1946	230500	242700	616	558	−12200	110
1947	452200	469700	867	671	−17400	129
1948	565000	663600	982	773	−98600	127
1949	656000	662700	953	823	−6700	116
1950	814700	891400	1021	984	−76600	104
1951	1868800	1554600	1865	1315	314100	142
1952	1568200	1821800	1769	1294	−253500	137
1953	1315500	1218600	1334	1133	96900	118
1954	1566100	1521300	1361	1070	44800	127
1955	1812500	1769600	1443	1070	42900	135
1956	1779800	2035500	1443	1123	−255700	128
1957	2123800	2279200	1579	1198	−155400	132
1958	2479300	2333000	1878	1496	146300	126
1959	2673200	2673000	1769	1422	200	124
1960	3164700	3403000	1810	1454	−238200	124
1961	3374000	3690200	1837	1465	−316100	125
1962	3533100	3928600	1824	1486	−395500	123
1963	3678000	3866800	1878	1502	−188800	125
1964	4131900	4816500	1970	1532	−684600	129
1965	4565900	5265000	2070	1546	−699100	134
1966	4816900	5524400	2042	1546	−707400	132
1967	5231100	5794400	2097	1635	−563200	128
1968	6874200	6710800	2480	1963	163300	126
1969	8344700	8504800	2571	2007	−160000	128
1970	9686700	11071400	2845	2185	−1384700	130
1971	9897100	11734400	3029	2346	−1837200	129
1972	12081900	13106600	3240	2529	−1024600	128
1973	14605100	16601300	3635	2811	−1996200	129
1974	20686400	25666300	5163	4045	−4979900	128
1975	20247400	28001900	6073	4398	−7754400	138
1976	24504500	28555000	6256	4705	−4050500	133
1977	30931400	30707700	7228	5452	223600	133
1978	35206200	32337700	7653	6069	2868500	126
1979	43430400	44222000	8624	6992	−791600	123
1980	52794500	58250300	9596	8179	−5455800	117
1981	60308000	61269000	10629	9146	−961000	116
1982	63026000	64751000	11395	9553	−1725000	119
1983	69692000	71528000	12161	10208	−1836000	119
1984	80904000	74682000	12831	10698	6222000	120
1985	84022000	81406000	13214	11024	2616000	120

10B1. Structure of Exports by Type of Goods, 1860–1985, Percentage Shares[1]

Year	Agriculture	Forestry	Wood industry	Paper industry	Textile industry	Metal and engin. industries	Other manufacturing	Total manufacturing	Other products	Total
1860	26.8	7.7	28.7	0.8	5.6	14.2	12.2	61.5	4.0	100.0
1865	18.9	5.4	42.1	1.1	4.7	12.3	11.3	71.5	4.2	100.0
1869	31.3	3.9	27.2	3.2	8.7	14.1	9.7	62.9	1.8	100.0
1875	22.5	6.2	35.5	7.3	12.1	8.4	7.4	70.7	0.6	100.0
1880	27.2	5.3	36.2	8.7	7.7	8.0	6.3	66.9	0.6	100.0
1885	21.1	5.0	39.8	10.0	6.1	9.6	7.9	73.4	0.5	100.0
1890	29.1	5.2	35.2	9.2	5.1	6.3	9.8	65.6	0.1	100.0
1895	28.7	6.7	33.9	9.8	5.5	5.9	9.5	64.6	0.0	100.0
1900	17.8	11.0	46.5	11.3	3.9	4.8	4.6	71.1	0.1	100.0
1905	22.0	10.4	40.0	13.9	2.2	7.5	4.0	67.5	0.0	100.0
1910	17.5	9.5	46.5	17.4	2.9	1.4	4.7	73.0	0.0	100.0
1913	17.0	11.1	45.4	17.7	2.4	2.0	4.4	71.9	0.0	100.0
1920	2.8	6.1	50.3	37.3	0.0	0.8	2.7	91.1	0.0	100.0
1925	13.7	10.3	44.0	27.7	0.7	0.9	2.7	76.0	0.0	100.0
1930	11.8	8.1	41.0	34.5	0.5	1.4	2.7	80.1	0.0	100.0
1935	8.9	7.0	36.5	40.6	1.1	2.4	3.4	84.0	0.0	100.0
1938	10.1	9.0	31.3	41.7	1.0	3.7	3.2	80.9	0.0	100.0
1950	4.1	10.0	35.1	41.6	0.8	4.9	3.5	85.9	0.0	100.0
1955	2.1	11.0	28.3	41.8	1.1	13.7	1.9	86.8	0.0	100.0
1960	5.0	6.8	26.9	42.2	1.3	14.4	3.4	88.2	0.1	100.0
1965	5.5	1.3	20.1	47.4	2.9	17.5	5.3	93.2	0.0	100.0
1970	4.4	0.9	15.9	39.1	6.5	25.2	7.8	94.5	0.2	100.0
1970	1.7	1.0	15.9	40.1	2.1	25.0	13.5	96.6	0.4	100.0
1975	1.6	0.3	10.8	35.7	9.1	32.1	10.0	97.7	0.4	100.0
1980	1.7	0.6	14.7	29.8	7.8	28.6	16.2	97.1	0.6	100.0
1985	2.8	0.0	8.0	29.8	6.3	29.1	23.5	96.7	0.5	100.0

1. *It has not been possible to take the classification change of 1974 into account here. The most significant difference resulting from the change has arisen out of the transference of butter and cheese from agricultural exports to exports of the food industry (See Official Statistics of Finland I A:94, Foreign Trade II, pp. 10–12).*

10B2. Structure of Imports by Type of Goods, 1860–1985, Percentage Shares[1]

Year	Raw materials	Fuels and lubricants	Investment goods	Consumer goods	Other goods	Total
1860	58.9	1.3	1.6	36.9	1.3	100.0
1865	66.8	1.2	0.6	26.5	4.8	100.0
1869	63.3	1.4	4.7	30.3	0.3	100.0
1875	52.6	1.2	2.2	42.7	1.3	100.0
1880	52.3	1.8	1.8	42.3	1.8	100.0
1885	54.1	2.5	3.0	36.7	3.6	100.0
1890	56.1	2.5	6.1	35.5	0.0	100.0
1895	58.8	2.4	4.8	33.9	0.0	100.0
1900	61.1	3.8	7.7	27.5	0.0	100.0
1905	62.4	3.5	7.0	26.9	0.0	100.0
1910	62.2	3.7	6.2	28.0	0.0	100.0
1913	60.0	5.2	8.2	26.6	0.0	100.0
1920	69.6	5.9	9.3	15.2	0.0	100.0
1925	69.7	5.4	7.0	18.0	0.0	100.0
1930	63.7	8.9	8.6	18.9	0.0	100.0
1935	61.3	7.8	12.3	18.7	0.0	100.0
1938	53.2	9.6	15.8	21.4	0.0	100.0
1950	56.8	11.5	14.1	17.6	0.0	100.0
1955	53.6	12.2	19.3	14.9	0.0	100.0
1960	48.9	9.7	27.4	14.0	0.0	100.0
1965	44.8	9.8	28.7	16.7	0.0	100.0
1970	44.4	11.3	26.2	18.2	0.0	100.0
1970	62.2	3.8	17.6	15.8	0.6	100.0
1975	60.9	6.0	18.7	14.3	0.1	100.0
1980	66.3	7.0	13.7	12.8	0.2	100.0
1985	62.5	6.8	14.3	15.9	0.5	100.0

1. *It has not been possible to take the classification change of 1974 into account here. It caused significant differences in the distribution of imports. The biggest differences arose out of the transference of crude oil from fuels to raw materials, automobiles from investment goods to consumer goods, and machinery and equipment components from investment goods to raw materials (See Official Statistics of Finland I A:94, Foreign Trade 1974 II, pp. 10–12).*

11A. Employment by Kind of Economic Activity, 1860–1960, Thousands of Work-Years

	PRIMARY PRODUCTION			SECONDARY PRODUCTION		
Year	Agriculture	Forestry	Total	Manufacturing	Construction	Total
1860	405.4	50.4	455.8	34.2	44.8	77.5
1861	402.9	51.9	454.8	35.3	45.7	79.3
1862	387.8	51.8	439.6	36.2	43.5	78.6
1863	378.9	55.4	434.3	37.3	41.7	78.4
1864	377.3	53.4	430.7	38.0	42.8	79.8
1865	371.0	55.6	426.6	40.5	50.6	90.5
1866	368.9	53.4	422.3	39.2	49.7	88.5
1867	373.0	51.2	424.2	37.7	43.7	81.0
1868	388.8	49.7	438.5	37.0	51.8	88.9
1869	397.3	49.8	447.1	38.1	58.5	97.3
1870	420.7	49.1	469.8	39.3	61.8	101.6
1871	439.0	50.5	489.5	41.6	62.6	103.8
1872	443.9	52.0	495.9	45.5	65.4	111.1
1873	448.9	53.4	502.3	49.1	69.2	118.9
1874	447.7	54.0	501.7	51.6	73.2	126.0
1875	444.1	53.4	497.5	53.4	72.3	126.7
1876	436.3	57.3	493.6	54.2	71.7	127.2
1877	440.8	56.9	497.7	51.9	70.1	124.0
1878	440.5	53.6	494.1	47.7	57.1	107.4
1879	436.3	53.8	490.1	45.7	52.8	100.4
1880	446.7	54.2	500.9	48.7	53.4	103.9
1881	460.4	53.9	514.3	50.7	57.0	115.2
1882	464.9	55.4	520.3	52.2	55.5	114.1
1883	470.8	55.5	526.3	51.4	60.7	120.7
1884	496.9	54.4	551.3	52.1	57.3	117.3
1885	514.9	54.4	569.3	50.9	60.3	120.5
1886	525.7	57.1	582.8	51.8	62.3	123.1
1887	541.9	57.8	599.7	54.1	56.0	117.6
1888	561.2	57.9	619.1	57.2	57.1	121.9
1889	564.2	60.0	624.2	64.7	64.1	139.7
1890	554.7	60.1	614.8	70.6	64.3	144.4
1891	554.7	59.0	613.7	71.8	59.6	141.7
1892	560.2	60.0	620.2	68.9	67.7	150.3
1893	567.7	61.5	629.2	68.0	62.5	141.6
1894	583.2	63.1	646.3	71.3	62.7	146.1
1895	607.4	65.5	672.9	76.5	62.6	151.2
1896	625.1	65.5	690.6	83.6	62.5	159.3
1897	619.5	67.7	687.2	92.1	65.0	171.9
1898	612.9	69.9	682.8	101.6	59.5	174.2
1899	605.6	70.6	676.2	107.1	56.8	177.0
1900	585.7	76.8	662.5	108.9	59.3	177.7
1901	571.8	76.9	648.7	104.5	57.9	171.5
1902	571.2	75.7	646.9	103.1	61.1	174.6
1903	569.9	84.3	654.2	107.5	57.3	175.3
1904	569.4	89.7	659.1	110.2	57.6	179.0
1905	580.2	84.6	664.8	116.8	59.9	188.6
1906	584.5	87.4	671.9	121.3	59.7	193.5
1907	591.6	89.2	680.8	126.3	58.7	197.2
1908	596.3	89.6	685.9	124.2	56.6	192.5
1909	599.1	93.5	692.6	124.2	51.2	186.0

	PRIMARY PRODUCTION			SECONDARY PRODUCTION		
Year	Agriculture	Forestry	Total	Manufac-turing	Construc-tion	Total
1910	603.2	96.9	700.1	128.7	49.1	188.2
1911	608.1	103.8	711.9	134.2	53.7	199.5
1912	604.9	106.6	711.5	140.1	54.5	220.8
1913	599.7	113.4	713.1	147.6	53.5	212.9
1914	595.1	97.9	693.0	150.4	63.3	227.1
1915	590.6	101.0	691.6	148.4	60.6	222.1
1916	585.5	92.4	677.9	162.2	61.6	239.7
1917	586.5	84.7	671.2	152.9	44.8	209.5
1918	586.7	74.0	660.7	120.4	46.3	180.3
1919	587.9	79.1	667.0	138.3	46.4	185.0
1920	589.3	91.6	680.9	170.8	52.8	224.3
1921	580.1	93.8	673.9	174.9	44.3	220.0
1922	574.2	103.6	677.8	192.3	61.7	255.5
1923	575.4	111.9	687.3	206.3	70.9	279.6
1924	575.4	114.5	689.9	199.2	74.1	276.3
1925	569.6	120.0	689.6	200.9	69.9	273.9
1926	573.2	125.1	698.3	215.0	75.7	294.7
1927	566.1	136.0	702.1	230.7	81.8	317.3
1928	554.9	133.3	688.2	253.2	102.9	363.3
1929	545.5	124.1	669.6	246.2	85.7	337.8
1930	541.5	113.9	655.4	221.1	77.7	303.8
1931	536.8	106.9	643.7	197.1	72.1	273.6
1932	541.6	110.2	651.8	193.5	85.8	285.1
1933	545.7	119.0	664.7	206.6	77.0	288.1
1934	545.5	132.4	677.9	235.0	90.4	332.4
1935	545.2	131.4	676.6	253.9	95.9	358.2
1936	550.5	136.7	687.2	270.7	100.4	381.1
1937	546.8	148.6	695.4	307.0	102.0	421.0
1938	545.4	137.0	682.4	313.2	113.7	442.2
1939	527.0	116.3	643.3	291.6	102.1	413.7
1940	516.9	94.7	611.6	264.9	91.5	370.6
1941	503.1	117.7	620.8	261.3	80.3	355.2
1942	498.5	107.7	606.2	259.9	66.0	337.7
1943	496.5	138.7	635.2	269.1	57.1	336.4
1944	518.9	125.7	644.6	270.6	54.3	334.7
1945	520.6	192.7	713.3	315.7	70.9	400.4
1946	526.9	200.3	727.2	343.5	88.2	451.2
1947	499.7	195.7	695.4	359.2	85.0	462.6
1948	526.9	190.9	717.8	369.5	125.5	495.0
1949	..	..	662.7	363.5	146.5	510.0
1950	..	..	642.8	368.7	152.0	520.7
1951	..	..	677.7	394.6	146.6	541.2
1952	..	..	668.6	383.9	151.9	535.8
1953	..	..	630.4	377.2	165.5	542.7
1954	..	..	635.7	402.7	169.1	571.8
1955	..	..	645.5	421.1	164.0	585.1
1956	..	..	633.5	430.9	165.1	596.0
1957	..	..	616.6	422.3	167.6	589.9
1958	..	..	606.7	407.8	180.3	588.1
1959	..	..	596.2	418.1	188.1	606.2
1960	..	..	580.0	449.5	193.4	642.9

11A cont. SERVICES

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Sub-total
1860	13.3	2.9	0.1	1.0	16.5	33.8
1861	13.9	3.3	0.1	1.1	16.9	35.3
1862	14.7	3.8	0.1	1.2	17.4	37.2
1863	15.7	4.1	0.1	1.3	17.8	39.0
1864	16.1	4.0	0.1	1.4	18.3	39.9
1865	15.5	3.8	0.1	1.4	18.8	39.7
1866	17.4	3.5	0.2	1.5	19.4	42.0
1867	17.1	3.5	0.2	1.6	18.8	41.1
1868	17.7	3.6	0.2	1.7	17.8	40.9
1869	17.9	3.7	0.2	1.8	18.6	42.1
1870	18.3	3.7	0.2	1.9	19.8	43.9
1871	18.4	4.0	0.2	2.0	20.1	44.7
1872	18.2	4.1	0.2	2.1	20.5	45.0
1873	18.5	4.5	0.2	2.2	20.9	46.2
1874	18.4	5.1	0.2	2.3	21.3	47.2
1875	20.0	5.5	0.3	2.3	21.7	49.8
1876	21.2	6.5	0.3	2.4	22.2	52.7
1877	21.1	6.6	0.3	2.5	22.8	53.3
1878	20.4	6.3	0.3	2.6	23.3	53.0
1879	19.7	6.4	0.3	2.7	23.7	52.9
1880	19.2	6.8	0.4	2.8	24.4	53.5
1881	18.1	7.0	0.4	2.9	25.1	53.5
1882	17.6	7.9	0.4	3.0	25.8	54.7
1883	18.2	9.0	0.4	3.1	26.5	57.1
1884	18.1	9.3	0.4	3.1	27.1	58.0
1885	16.5	8.8	0.4	3.2	27.4	56.3
1886	16.7	8.5	0.4	3.3	28.0	57.0
1887	16.5	8.4	0.4	3.4	28.9	57.6
1888	17.0	9.1	0.4	3.5	29.8	59.8
1889	17.5	10.1	0.4	3.6	30.5	62.2
1890	17.5	11.7	0.5	3.7	31.4	64.8
1891	18.3	12.3	0.5	3.8	31.9	66.8
1892	17.7	12.6	0.5	3.9	32.4	67.1
1893	18.8	12.5	0.5	4.0	32.9	68.7
1894	19.3	12.7	0.6	4.1	33.3	69.9
1895	19.3	12.5	0.6	4.1	34.1	70.6
1896	20.3	13.9	0.6	4.2	34.8	73.8
1897	22.4	15.2	0.6	4.3	35.6	78.1
1898	25.3	16.6	0.6	4.4	36.3	83.3
1899	27.1	17.4	0.7	4.5	37.0	86.7
1900	27.8	19.1	0.7	4.6	37.7	89.9
1901	34.5	19.1	0.7	4.7	38.4	97.4
1902	34.4	18.5	0.7	4.8	39.1	97.4
1903	36.0	19.0	0.7	4.9	39.7	100.3
1904	37.4	19.7	1.0	4.9	40.5	103.5
1905	38.4	21.2	1.2	5.0	41.3	107.1
1906	40.6	22.1	1.3	5.1	42.1	111.2
1907	46.0	23.7	1.5	5.2	42.9	119.3
1908	47.4	25.3	1.6	5.3	43.7	123.4
1909	46.7	25.9	1.9	5.4	44.5	124.4

Year	Transport and communication	Trade	Banking and insurance	Ownership of dwellings	Private services	Subtotal
1910	47.4	25.6	2.0	5.5	45.3	125.9
1911	46.2	28.0	2.1	5.6	46.3	128.2
1912	47.8	30.2	2.1	5.7	47.4	133.2
1913	49.6	33.3	2.2	5.8	48.3	139.2
1914	49.7	32.6	2.3	5.9	49.2	139.6
1915	50.1	32.7	2.4	5.9	50.1	141.3
1916	53.1	35.1	2.8	6.0	51.5	148.5
1917	50.6	36.3	3.0	6.0	52.0	148.0
1918	50.1	34.3	3.2	6.0	51.2	144.9
1919	56.6	38.0	3.7	6.0	53.0	157.2
1920	67.5	42.7	4.3	6.0	54.2	174.7
1921	63.5	43.6	4.6	6.1	56.1	174.0
1922	66.0	48.5	5.2	6.2	58.0	183.9
1923	70.0	51.6	5.5	6.3	60.0	193.4
1924	71.0	54.0	5.9	6.4	62.3	199.5
1925	68.0	56.1	6.5	6.5	65.0	202.0
1926	64.0	62.1	7.0	6.6	67.4	207.1
1927	65.5	63.4	7.3	6.7	70.3	213.2
1928	69.5	70.2	7.5	6.8	70.6	224.5
1929	69.0	72.6	7.6	6.8	70.9	227.0
1930	67.0	71.0	7.0	6.9	70.8	222.8
1931	63.5	68.6	6.9	7.0	73.8	219.9
1932	64.0	67.6	6.7	7.1	69.0	214.5
1933	65.0	68.7	6.8	7.2	71.7	219.4
1934	68.5	72.9	6.9	7.3	74.9	230.5
1935	70.0	75.2	7.3	7.4	79.8	239.7
1936	73.5	82.7	7.7	7.6	88.1	259.6
1937	77.9	92.5	8.0	7.7	89.4	275.6
1938	78.9	100.3	8.5	7.9	94.2	289.8
1939	78.4	104.0	8.7	7.9	92.5	291.6
1940	66.0	90.4	8.8	8.0	85.3	258.5
1941	69.5	86.7	8.7	8.0	87.3	260.2
1942	74.0	83.6	8.7	8.1	81.6	255.9
1943	76.4	86.6	8.6	8.1	75.6	255.4
1944	75.0	82.5	8.4	8.1	77.2	251.3
1945	80.9	89.2	8.5	8.2	90.5	277.3
1946	86.9	96.0	9.2	8.2	93.3	293.7
1947	91.8	104.9	9.7	8.3	94.7	309.4
1948	92.9	118.2	10.2	8.3	96.6	326.2
1949	95.2	127.4	11.0	9.0	102.0	344.6
1950	99.0	136.6	11.8	8.5	107.0	362.9
1951	102.8	147.6	13.1	10.1	116.3	389.9
1952	104.9	158.9	14.2	10.7	117.7	406.4
1953	105.0	157.2	14.8	11.2	116.5	404.7
1954	107.6	163.6	15.6	12.2	120.8	419.8
1955	113.3	181.8	16.3	12.8	121.1	445.3
1956	118.4	183.1	17.1	15.1	127.6	461.3
1957	121.3	179.9	17.9	15.1	131.0	465.2
1958	121.6	177.5	18.7	15.2	124.9	457.9
1959	123.9	184.3	19.8	15.2	132.1	475.3
1960	129.3	195.8	21.3	15.3	139.1	500.8

11A cont. SERVICES (cont.)

Year	Central government	Local government	Total public services	All services	Total employment
1860	6.6	1.1	7.7	41.5	576.4
1861	6.8	1.1	7.9	43.2	579.1
1862	7.0	1.2	8.1	45.4	564.6
1863	7.1	1.2	8.3	47.4	560.7
1864	7.3	1.2	8.5	48.4	559.9
1865	7.5	1.2	8.8	48.5	566.1
1866	7.3	1.3	8.6	50.6	561.7
1867	7.2	1.3	8.5	49.6	555.1
1868	7.0	1.3	8.3	49.3	576.6
1869	6.8	1.4	8.2	50.3	594.1
1870	6.7	1.4	8.1	52.0	622.8
1871	6.8	1.5	8.2	52.9	646.6
1872	6.8	1.7	8.5	53.5	660.4
1873	6.9	1.8	8.7	54.9	675.5
1874	7.0	1.9	8.9	56.1	682.5
1875	7.1	2.0	9.1	58.9	682.1
1876	7.1	2.1	9.2	61.9	681.4
1877	7.2	2.2	9.4	62.6	682.4
1878	7.3	2.3	9.5	62.5	661.3
1879	7.3	2.4	9.7	62.6	651.2
1880	7.4	2.4	9.8	63.3	666.4
1881	7.5	2.5	10.1	63.6	685.6
1882	7.7	2.6	10.3	65.0	693.0
1883	7.9	2.8	10.6	67.7	706.1
1884	8.0	2.9	11.0	69.0	729.7
1885	8.2	3.1	11.3	67.6	748.2
1886	8.4	3.2	11.6	68.6	765.6
1887	8.7	3.4	12.1	69.6	779.4
1888	9.0	3.5	12.5	72.3	805.6
1889	9.3	3.7	13.0	75.2	828.2
1890	9.7	3.8	13.4	78.3	828.1
1891	9.8	4.0	13.9	80.6	825.7
1892	10.0	3.9	13.9	81.0	837.7
1893	10.2	4.1	14.3	83.0	842.7
1894	10.4	4.3	14.7	84.6	865.0
1895	10.6	4.5	15.1	85.7	897.8
1896	10.8	4.7	15.6	89.4	926.0
1897	11.1	5.0	16.1	94.2	938.6
1898	11.3	5.3	16.6	99.9	943.8
1899	11.5	5.6	17.1	103.8	943.9
1900	13.2	5.9	19.1	109.0	939.7
1901	13.1	6.2	19.2	116.6	927.8
1902	12.8	6.6	19.4	116.8	927.9
1903	13.4	7.0	20.4	120.7	939.7
1904	13.8	6.9	20.7	124.3	951.1
1905	14.3	7.2	21.5	128.6	970.2
1906	15.4	7.5	22.9	134.1	986.9
1907	16.4	7.9	24.3	143.6	1009.5
1908	17.0	8.4	25.3	148.8	1015.5
1909	17.2	8.9	26.1	150.5	1018.4

Year	Central government	Local government	Total public services	All services	Total employment
1910	17.3	9.2	26.5	152.4	1030.3
1911	16.9	9.8	26.6	154.8	1054.6
1912	16.2	10.5	26.7	160.0	1066.1
1913	15.7	11.4	27.1	166.3	1080.5
1914	15.8	12.1	27.9	167.5	1074.2
1915	15.4	12.7	28.1	169.4	1070.0
1916	16.7	13.3	29.9	178.4	1080.2
1917	14.1	13.7	27.7	175.7	1044.6
1918	42.6	14.9	57.6	202.4	1029.9
1919	49.4	15.8	65.2	222.4	1074.1
1920	43.1	16.3	59.5	234.2	1138.7
1921	35.9	17.9	53.8	227.8	1120.8
1922	36.8	18.4	55.2	239.1	1170.9
1923	37.8	20.5	58.3	251.7	1216.2
1924	38.5	22.4	60.9	260.5	1223.7
1925	37.8	22.9	60.8	262.8	1223.2
1926	38.0	24.2	62.2	269.2	1258.3
1927	38.6	24.8	63.4	276.6	1291.2
1928	38.8	26.0	64.9	289.4	1333.7
1929	39.0	27.3	66.3	293.3	1294.8
1930	40.4	28.8	69.2	291.9	1246.2
1931	41.0	30.1	71.0	290.9	1203.8
1932	40.6	30.9	71.5	285.9	1217.0
1933	42.2	31.9	74.1	293.4	1241.7
1934	43.3	33.0	76.3	306.8	1310.1
1935	42.5	33.6	76.0	315.8	1342.2
1936	42.4	34.3	76.6	336.2	1394.5
1937	43.2	35.8	79.0	354.6	1459.0
1938	51.3	37.3	88.6	378.4	1487.7
1939	56.3	36.0	92.2	383.8	1420.8
1940	240.3	36.9	277.2	535.6	1503.6
1941	255.8	36.3	292.1	552.3	1514.7
1942	264.8	38.3	303.1	559.0	1491.1
1943	253.7	39.6	293.4	548.7	1510.1
1944	319.2	40.2	359.4	610.7	1580.2
1945	75.3	41.8	117.2	394.5	1494.4
1946	71.5	44.1	115.6	409.3	1568.1
1947	67.6	45.8	113.4	422.8	1562.4
1948	63.7	48.5	112.2	438.4	1651.2
1949	65.5	50.4	115.9	460.5	1633.2
1950	71.2	52.0	123.2	486.1	1649.6
1951	70.6	57.0	127.6	517.5	1736.4
1952	71.3	60.7	132.0	538.4	1742.8
1953	69.8	64.0	133.8	538.5	1711.6
1954	70.4	66.7	137.1	556.9	1764.4
1955	72.1	71.2	143.3	588.6	1819.2
1956	73.0	74.0	147.0	608.3	1837.8
1957	73.5	77.7	151.2	616.4	1822.9
1958	74.5	83.0	157.5	615.4	1810.2
1959	75.5	89.0	164.5	639.8	1842.2
1960	77.5	89.3	166.8	667.6	1890.5

11B. Employment Indices, 1860–1985, 1926 = 100

Year	Primary production	Manufacturing	Construction	Total secondary production	Trade, banking, transport and communication, ownership of dwellings, private services	Public services	All services	Total employment
1860	65.3	15.9	59.2	27.2	16.3	12.4	15.4	45.8
1861	65.1	16.4	60.4	27.9	17.0	12.8	16.0	46.0
1862	62.9	16.8	57.4	27.4	18.0	13.1	16.9	44.9
1863	62.2	17.3	55.1	27.2	18.9	13.4	17.6	44.6
1864	61.7	17.7	56.5	27.8	19.3	13.7	18.0	44.5
1865	61.1	18.8	66.8	31.3	19.2	14.1	18.0	45.0
1866	60.5	18.2	65.6	30.6	20.3	13.9	18.8	44.6
1867	60.7	17.5	57.6	28.0	19.9	13.6	18.4	44.1
1868	62.8	17.2	68.4	30.5	19.8	13.4	18.3	45.8
1869	64.0	17.7	77.3	33.2	20.3	13.2	18.7	47.2
1870	67.3	18.3	81.6	34.8	21.2	13.1	19.3	49.5
1871	70.1	19.3	82.6	35.8	21.6	13.3	19.7	51.4
1872	71.0	21.2	86.4	38.2	21.7	13.7	19.9	52.5
1873	71.9	22.9	91.4	40.7	22.3	14.0	20.4	53.7
1874	71.8	24.0	96.6	42.9	22.8	14.3	20.9	54.2
1875	71.2	24.8	95.4	43.2	24.1	14.6	21.9	54.2
1876	70.7	25.2	94.7	43.3	25.4	14.8	23.0	54.1
1877	71.3	24.1	92.6	42.0	25.7	15.1	23.3	54.2
1878	70.8	22.2	75.4	36.0	25.6	15.3	23.2	52.6
1879	70.2	21.2	69.7	33.9	25.6	15.6	23.3	51.8
1880	71.7	22.7	70.5	35.1	25.8	15.8	23.5	53.0
1881	73.7	23.6	75.2	37.0	25.8	16.2	23.6	54.5
1882	74.5	24.3	73.2	37.1	26.4	16.6	24.1	55.1
1883	75.4	23.9	80.1	38.5	27.6	17.1	25.1	56.1
1884	78.9	24.2	75.7	37.7	28.0	17.6	25.6	58.0
1885	81.5	23.7	79.6	38.3	27.2	18.2	25.1	59.5
1886	83.5	24.1	82.2	39.2	27.5	18.7	25.5	60.8
1887	85.9	25.2	73.9	37.8	27.8	19.4	25.9	61.9
1888	88.6	26.6	75.3	39.3	28.9	20.1	26.8	64.0
1889	89.4	30.1	84.6	44.3	30.0	20.9	27.9	65.8

1890	88.0	32.9	84.9	46.4	31.3	21.6	29.1	65.8
1891	87.9	33.4	78.6	45.2	32.2	22.3	29.9	65.6
1892	88.8	32.0	89.4	47.0	32.4	22.4	30.1	66.6
1893	90.1	31.6	82.5	44.9	33.2	23.1	30.8	67.0
1894	92.6	33.2	82.8	46.1	33.8	23.7	31.4	68.7
1895	96.4	35.6	82.6	47.9	34.1	24.4	31.8	71.3
1896	98.9	38.9	82.5	50.2	35.6	25.1	33.2	73.6
1897	98.4	42.8	85.9	54.1	37.7	25.8	35.0	74.6
1898	97.8	47.3	78.5	55.4	40.2	26.7	37.1	75.0
1899	96.8	49.8	74.9	56.4	41.9	27.5	38.6	75.0
1900	94.9	50.6	78.3	57.9	43.4	30.7	40.5	74.7
1901	92.9	48.6	76.4	55.9	47.0	31.0	43.3	73.7
1902	92.6	48.0	80.7	56.5	47.1	31.2	43.4	73.7
1903	93.7	50.0	75.6	56.7	48.5	32.8	44.8	74.7
1904	94.4	51.2	76.1	57.7	50.0	33.3	46.2	75.6
1905	95.2	54.3	79.1	60.8	51.7	34.5	47.8	77.1
1906	96.2	56.4	78.8	62.2	53.7	36.8	49.8	78.4
1907	97.5	58.8	77.5	63.7	57.6	39.1	53.3	80.2
1908	98.2	57.8	74.7	62.2	59.6	40.8	55.3	80.7
1909	99.2	57.8	67.5	60.3	60.1	42.0	55.9	80.9
1910	100.2	59.9	64.8	61.2	60.8	42.7	56.6	81.9
1911	101.9	62.4	70.9	64.7	61.9	42.8	57.5	83.8
1912	101.9	65.2	72.0	66.9	64.3	43.0	59.4	84.7
1913	102.1	68.7	70.6	69.2	67.2	43.6	61.8	85.9
1914	99.2	70.0	83.6	73.5	67.4	44.8	62.2	85.4
1915	99.0	69.0	80.0	71.9	68.2	45.3	62.9	85.0
1916	97.1	75.4	81.4	77.0	71.7	48.1	66.3	85.8
1917	96.1	71.1	59.1	68.0	71.5	44.6	65.3	83.0
1918	94.6	56.0	61.1	57.3	70.0	92.6	75.2	81.8
1919	95.5	64.3	61.3	63.5	75.9	104.8	82.6	85.4

11B cont.

Year	Primary production	Manufacturing	Construction	Total secondary production	Trade, banking, transport and communication, ownership of dwellings, private services	Public services	All services	Total employment
1920	97.5	79.4	69.8	76.9	84.4	95.7	87.0	90.5
1921	96.5	81.3	58.5	75.4	84.0	86.5	84.6	89.1
1922	97.1	89.4	81.4	87.4	88.8	88.8	88.8	93.1
1923	98.4	96.0	93.6	95.4	93.4	93.7	93.5	96.7
1924	98.8	92.7	97.9	94.0	96.4	98.0	96.7	97.3
1925	98.7	93.4	92.3	93.2	97.6	97.7	97.6	97.2
1926	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1927	100.5	107.3	108.0	107.5	103.0	101.9	102.7	102.6
1928	98.5	117.8	135.9	122.5	108.4	104.4	107.5	106.0
1929	95.9	114.5	113.2	114.2	109.6	106.6	108.9	102.9
1930	93.9	102.8	102.6	102.8	107.6	111.3	108.4	99.0
1931	92.2	91.7	95.2	92.6	106.2	114.3	108.1	95.7
1932	93.3	90.0	113.3	96.1	103.6	115.0	106.2	96.7
1933	95.2	96.1	101.7	97.6	105.9	119.1	109.0	98.7
1934	97.1	109.3	119.4	111.9	111.3	122.8	114.0	104.1
1935	96.9	118.1	126.6	120.3	115.8	122.3	117.3	106.7
1936	98.4	125.9	132.5	127.6	125.4	123.3	124.9	110.8
1937	99.6	142.8	134.7	140.7	133.1	127.1	131.7	116.0
1938	97.7	145.7	150.1	146.8	140.0	142.5	140.5	118.2
1939	92.1	135.6	134.8	135.4	140.8	148.3	142.6	112.9
1940	87.6	123.2	120.7	122.6	124.8	445.9	199.0	119.5
1941	88.9	121.5	106.0	117.5	125.7	469.9	205.1	120.4
1942	86.8	120.9	87.1	112.1	123.6	487.6	207.6	118.5
1943	91.0	125,2	75.4	112.2	123.3	471.9	203.8	120.0
1944	92.3	125.9	71.7	111.7	121.3	578.2	226.8	125.6
1945	102.1	146.8	93.7	133.0	133.9	188.5	146.5	118.8
1946	104.1	159.8	116.4	148.5	141.8	186.0	152.0	124.6
1947	99.6	167.1	112.2	152.8	149.4	182.4	157.0	124.2
1948	102.8	171.9	165.7	170.3	157.6	180.5	162.9	131.2
1949	94.9	169.1	193.4	175.4	166.4	186.5	171.1	129.8

1950	92.0	171.5	200.7	179.1	175.3	198.2	180.6	131.1
1951	97.0	183.5	193.6	186.1	188.3	205.3	192.2	138.0
1952	95.7	178.6	200.6	184.3	196.3	212.4	200.0	138.5
1953	90.3	175.4	218.5	186.7	195.5	215.3	200.0	136.0
1954	91.0	187.3	223.3	196.7	202.8	220.6	206.9	140.2
1955	92.4	195.9	216.5	201.2	215.0	230.5	218.6	144.6
1956	90.7	200.4	218.0	205.0	222.8	236.5	225.9	146.1
1957	88.3	196.4	221.3	202.9	224.7	243.2	229.0	144.9
1958	86.9	189.7	238.1	202.3	221.2	253.4	228.6	143.9
1959	85.4	194.5	248.4	208.5	229.6	264.6	237.7	146.4
1960	83.1	209.1	255.4	221.1	241.9	268.3	248.0	150.2
1961	82.8	216.4	252.7	225.4	249.5	285.9	257.3	153.0
1962	78.5	218.2	248.7	225.4	256.5	294.1	264.5	151.8
1963	78.5	214.3	246.7	222.1	259.7	306.7	269.3	152.1
1964	77.8	217.4	251.3	225.6	265.8	322.3	277.0	154.0
1965	76.8	219.7	258.5	229.4	273.3	329.8	284.5	155.8
1966	73.6	219.0	254.4	227.7	273.8	349.8	288.1	154.3
1967	70.3	213.3	245.6	221.1	269.6	351.6	284.9	150.1
1968	66.6	212.0	229.7	215.4	267.3	374.6	286.6	147.0
1969	64.5	221.2	233.0	222.7	266.7	394.0	289.3	147.8
1970	62.9	233.3	234.5	231.5	270.4	405.5	294.2	149.7
1971	57.8	232.7	221.2	227.1	270.5	420.5	296.7	146.2
1972	53.4	240.6	231.7	235.7	273.5	437.7	302.0	146.4
1973	50.5	245.4	242.7	242.3	280.0	464.0	311.8	148.1
1974	48.7	248.1	240.5	243.5	280.9	489.5	316.6	148.2
1975	44.9	243.9	238.4	240.0	279.6	513.1	319.3	145.7
1976	44.0	241.2	210.9	229.8	274.0	546.3	320.0	143.1
1977	42.3	229.6	206.8	220.5	268.9	567.5	319.1	139.9
1978	40.7	224.8	199.7	215.1	268.6	592.3	322.8	138.6
1979	38.8	233.6	199.6	221.1	272.8	607.3	328.7	139.9
1980	36.5	242.4	208.4	229.8	278.9	625.9	336.9	142.1
1981	37.4	240.2	205.6	227.4	279.1	647.4	340.5	142.9
1982	36.3	233.9	209.8	224.4	280.2	663.5	344.1	142.3
1983	34.1	228.6	212.3	221.5	281.8	683.7	348.7	141.2
1984	32.5	225.9	209.7	218.9	282.9	695.6	351.5	140.3
1985	31.4	223.1	204.0	215.2	284.9	712.9	356.0	139.8

Note on Table 11B:
Employment index numbers are based on labour input in work years (old SNA) for the period 1860 – 1960 and labour input in working hours (revised SNA) for the period 1960 – 1985.

12A. Wage and Salary Totals and Entrepreneurial Incomes in Selected Areas of Economic Activity, 1860–1948, Thousands of FIM

Year	Forestry	Manufacturing	Construction	Trade, banking, transport and communication, private services	Public services
1860	589	139	190	206	74
1861	696	143	194	227	79
1862	548	152	183	250	81
1863	592	165	188	268	84
1864	552	167	193	272	88
1865	693	176	213	267	90
1866	605	167	194	264	91
1867	457	158	171	259	90
1868	448	150	191	260	89
1869	505	156	215	268	89
1870	496	160	227	325	89
1871	544	175	230	345	91
1872	599	205	240	323	97
1873	712	233	254	349	99
1874	814	250	268	390	104
1875	755	262	264	412	111
1876	853	266	261	457	118
1877	921	256	253	458	122
1878	686	232	232	432	124
1879	589	225	216	426	132
1880	610	251	220	433	140
1881	603	265	235	444	148
1882	665	279	235	461	152
1883	662	279	259	488	159
1884	641	286	245	494	164
1885	625	285	259	483	175
1886	631	282	265	476	180
1887	653	297	231	486	189
1888	641	314	236	512	205
1889	748	363	278	550	213
1890	746	406	296	591	221
1891	763	429	298	636	230
1892	744	406	307	652	232
1893	760	398	286	663	241
1894	817	421	288	678	247
1895	836	463	299	680	254
1896	887	523	321	730	261
1897	1056	592	367	826	273
1898	1271	674	397	947	292
1899	1407	730	410	1004	303

Year	Forestry	Manufac-turing	Construction	Trade, banking, transport and communication, private services	Public services
1900	1408	757	445	1050	298
1901	1302	699	465	1142	303
1902	1280	693	462	1108	304
1903	1655	741	448	1211	329
1904	1572	808	456	1262	346
1905	1618	871	491	1310	364
1906	1690	958	513	1347	383
1907	1609	1026	553	1484	424
1908	1456	1036	541	1571	504
1909	1538	1078	486	1613	529
1910	1628	1163	493	1712	513
1911	1914	1239	527	1720	519
1912	1957	1325	549	1847	540
1913	2119	1448	586	1968	558
1914	1926	1385	700	1969	561
1915	1819	1555	698	2259	587
1916	2698	2263	907	2903	684
1917	4341	3056	1297	4299	1006
1918	4653	3516	1967	5619	3321
1919	8160	6526	2568	8579	5130
1920	14380	12170	4040	15020	7360
1921	14630	15360	4240	18500	8580
1922	18990	18240	6410	21190	9280
1923	22240	21170	8060	23370	10920
1924	21700	21170	8970	25300	12410
1925	22700	22450	8970	26740	12360
1926	26530	24620	10090	28540	12780
1927	32460	27550	11310	30740	13430
1928	31940	30540	15420	33160	14000
1929	27870	30120	13160	34090	15390
1930	20270	26020	11500	33400	14980
1931	15770	21030	8750	31820	15260
1932	18550	19720	9310	30560	14800
1933	23060	20910	8450	31650	15340
1934	28320	24360	10160	33510	15970
1935	28860	26720	11660	35780	16520
1936	32620	29730	13600	40450	16630
1937	45400	36320	15510	43280	17130
1938	53650	39720	18460	48410	20130
1939	35260	37130	18270	49830	22070
1940	33900	39000	17600	46300	67700
1941	44900	46700	18400	53500	85900
1942	47000	56800	18600	64900	105700
1943	81500	71700	18900	77500	127000
1944	85600	81700	19600	86600	167800
1945	208500	178100	53100	162000	94400
1946	270100	279000	86000	225300	130100
1947	326900	395200	121400	349900	147500
1948	374400	597900	224000	490800	210600

12B. Wage and Salary Totals in Selected Areas of Economic Activity, 1948–1985, Millions of FIM

Year	Forestry	Manufacturing	Construction	Trade, banking, transport and communication, private services	Public services
1948	212	598	224	397	211
1949	147	644	269	474	229
1950	164	797	357	611	333
1951	324	1143	471	834	429
1952	331	1171	513	915	464
1953	253	1162	559	924	483
1954	291	1274	595	983	501
1955	378	1406	618	1116	575
1956	388	1565	699	1311	701
1957	356	1648	746	1394	779
1958	352	1679	816	1455	852
1959	345	1832	894	1588	955
1960	414	2118	979	1765	1030
1960	401	2087	1084	2254	1018
1961	450	2349	1192	2524	1150
1962	465	2534	1276	2815	1277
1963	500	2698	1408	3203	1485
1964	553	3095	1600	3745	1750
1965	583	3454	1828	4178	1962
1966	570	3768	1971	7209	2240
1967	572	4070	2113	5067	2570
1968	614	4505	2184	5698	3015
1969	665	5106	2462	6268	3342
1970	714	6028	2858	7010	3653
1971	756	6914	3030	7954	4133
1972	732	8221	3676	9210	4801
1973	827	9906	4440	11085	5731
1974	947	12484	5547	13817	7189
1975	1075	15185	6604	17132	9384
1976	1189	17416	6351	19800	11402
1977	1258	18202	6505	21307	12737
1978	1227	19333	6591	22872	13896
1979	1414	22221	7188	26217	16038
1980	1618	26099	8200	30597	18408
1981	1854	29767	9248	35093	21700
1982	1956	32311	10242	39147	24963
1983	1949	34802	11730	43758	28625
1984	2134	37746	12825	48122	32196
1985	2237	40690	13908	52929	35703

13. Selected Price Indices, 1860–1985, 1926 = 100

Year	Cost-of-living index	Wholesale-price index	Index of buildings costs	Gross domestic product price index
1860	6.6	8.0	5.8	6.6
1861	7.2	8.7	5.8	7.1
1862	8.5	9.6	5.2	7.2
1863	7.9	8.8	5.1	7.0
1864	7.5	8.7	5.4	6.8
1865	7.6	8.3	5.9	7.2
1866	7.1	7.3	5.7	6.7
1867	7.6	7.6	5.2	6.4
1868	7.5	7.7	5.0	6.6
1869	6.8	7.1	5.2	6.6
1870	6.5	7.0	5.2	6.6
1871	6.9	7.3	5.3	6.9
1872	7.4	7.8	5.4	7.1
1873	7.4	8.0	5.7	7.4
1874	8.0	9.1	6.0	7.9
1875	8.0	9.2	5.8	7.7
1876	8.0	9.5	5.9	7.8
1877	7.7	9.1	6.0	7.7
1878	7.0	7.6	5.6	6.8
1879	6.5	6.8	5.2	6.4
1880	7.2	8.0	5.3	7.1
1881	7.6	8.5	5.5	7.3
1882	7.1	7.8	5.3	7.1
1883	6.9	7.6	5.5	6.9
1884	6.8	7.5	4.9	6.8
1885	6.4	6.9	4.9	6.5
1886	5.8	6.5	4.9	6.1
1887	5.6	6.3	4.8	5.9
1888	5.7	6.3	4.8	6.0
1889	6.1	6.9	5.8	6.4
1890	6.3	6.9	5.3	6.4
1891	7.1	7.4	5.2	6.9
1892	7.5	7.1	5.1	6.9
1893	7.1	6.6	5.1	6.7
1894	6.4	6.6	5.0	6.4
1895	6.2	6.6	5.2	6.3
1896	6.3	6.7	5.4	6.4
1897	6.6	6.9	5.8	6.8
1898	6.8	7.2	6.0	7.2
1899	7.1	7.5	6.5	7.6

13 cont.

Year	Cost-of-living index	Wholesale-price index	Index of buildings costs	Gross domestic product price index
1900	7.2	7.8	6.5	7.8
1901	7.1	7.7	6.2	7.6
1902	7.1	7.7	6.1	7.6
1903	7.1	7.5	6.7	7.8
1904	7.1	7.5	6.2	7.7
1905	7.1	7.4	6.7	8.0
1906	7.4	7.8	6.8	8.2
1907	7.6	8.4	6.9	8.4
1908	8.0	8.2	6.3	8.4
1909	7.9	8.4	6.2	8.3
1910	7.9	8.6	6.1	8.4
1911	8.2	8.7	6.7	8.7
1912	8.4	9.0	6.8	8.9
1913	8.4	9.0	6.9	8.8
1914	8.4	9.9	7.0	9.1
1915	10.1	12.6	8.2	10.5
1916	13.4	18.9	13.4	14.6
1917	26.1	30.6	23.4	26.9
1918	89.1	53.2	33.6	44.5
1919	79.0	66.7	44.3	58.6
1920	79.0	108.1	68.4	83.4
1921	98.3	116.2	68.1	95.1
1922	95.8	111.7	79.8	94.6
1923	96.6	100.9	97.2	94.5
1924	98.3	100.9	98.6	97.6
1925	102.5	103.6	98.3	99.6
1926	100.0	100.0	100.0	100.0
1927	101.7	100.9	103.0	103.9
1928	104.2	101.8	107.7	104.9
1929	103.4	97.3	107.4	100.6
1930	95.0	89.2	102.0	92.2
1931	87.4	83.8	82.8	83.9
1932	86.6	90.1	76.3	84.9
1933	84.0	89.2	74.6	85.4
1934	83.2	89.2	83.0	86.9
1935	84.0	90.1	87.9	87.7
1936	84.0	92.8	93.9	90.5
1937	88.2	109.9	116.4	100.9
1938	90.8	102.7	119.7	103.4
1939	92.4	108.1	128.6	105.1
1940	110	145	164	127
1941	130	177	195	152
1942	153	218	235	188
1943	173	248	249	216
1944	184	274	262	242
1945	258	394	472	396
1946	411	618	733	550
1947	534	743	886	731
1948	719	982	1415	935
1949	731	989	1427	953

Year	Cost-of-living index	Wholesale-price index	Index of buildings costs	Gross domestic product price index
1950	833	1151	1696	1132
1951	971	1605	2314	1522
1952	1010	1619	2501	1528
1953	1024	1564	2440	1493
1954	1007	1542	2401	1523
1955	973	1511	2433	1604
1956	1086	1604	2579	1731
1957	1232	1737	2732	1810
1958	1345	1882	2698	1948
1959	1365	1893	2761	1980
1960	1410	1964	2836	2039
1961	1435	1979	2951	2148
1962	1499	2012	3059	2234
1963	1572	2078	3254	2349
1964	1735	2240	3462	2517
1965	1818	2334	3674	2644
1966	1889	2382	3760	2769
1967	1996	2456	3981	2972
1968	2163	2723	4384	3331
1969	2213	2817	4560	3469
1970	2273	2940	4818	3603
1971	2421	3090	5180	3877
1972	2594	3346	5608	4202
1973	2898	3936	6549	4794
1974	3402	4896	8128	5872
1975	4009	5557	9031	6723
1976	4582	6185	9861	7572
1977	5163	6841	11149	8342
1978	5553	7190	11761	8985
1979	5958	7829	12932	9725
1980	6647	9098	14668	10619
1981	7447	10326	16150	11834
1982	8139	11100	17265	12900
1983	8835	11755	18879	14028
1984	9452	12461	20038	15297
1985	10015	13087	21168	16205

Sources: *Cost-of-living index:* 1860–1913 Heikkinen et al. 1983, 1914–1985 Suomen taloushistoria 3 (The Economic History of Finland 3), Statistical Yearbook of Finland 1985/86; *Wholesale-price index:* Suomen taloushistoria 3 (1860–1913 according to the calculations of Heimer Björkqvist), Statistical Yearbook of Finland 1985/86; *Index of building costs:* Heikkonen 1971, Statistical Yearbook of Finland 1985/86; *Gross domestic product price index:* 1860–1948 the results of this study, 1948–1960 National Accounting in Finland 1948–1964, and 1960–1985 National Accounts 1960–1981, National Accounts 1980–1985.

Bibliography

UNPUBLISHED ACADEMIC THESES AND MANUSCRIPTS

AAKU, EERO Suomen liikepankit 1862–1955 (The Commercial Banks of Finland, 1862–1955). Duplicated hand-out, Helsingin Kauppakorkeakoulu, Helsinki 1956.

HEIKKINEN, SAKARI Elinkustannukset Suomessa vuosina 1850–1913 (The Cost of Living in Finland, 1850–1913). Manuscript.

HEIKKINEN, SAKARI Uusia numeroita Suomen teollisuuden historiasta, Eräiden teollisuudenalojen kehityksestä Suomessa vuosina 1871–1885 (New Figures on the History of Finnish Industry, The Development of Certain Industrial Branches in Finland, 1871–1885). Talous- ja sosiaalihistorian pro gradu -työ, Helsingin yliopisto 1977.

HEIKKONEN, KEIJO Yleisten eläkekassojen ja paikkakunnallisten yleishyödyllisten rahastojen pääomat ja niiden sijoitus 1860–1910 (The Extent and Investment of Capital Held in General Pension and Other Local Non-Profit Funds, 1860–1910). Talous- ja sosiaalihistorian pro gradu -työ, Helsingin yliopisto 1970.

KORTTEINEN, TIMO Valtio ja palkkatyö – tutkimus valtiollisen palkkatyön eriytymisen muodoista Suomessa ennen II maailmansotaa (The State and Wage Work – A Study of the Forms of Specialization in State Wage Work in Finland before World War II). Talous- ja sosiaalihistorian lisensiaattityö, Helsingin yliopisto 1984.

JÄRNEFELT, ILONA Suomen sunnuntaikoulut (Finnish Sunday Schools). Talous- ja sosiaalihistorian pro gradu -työ, Helsingin yliopisto 1970.

MAURANEN, TAPANI Kotimaankaupan rakennemuutos 1860–1913 (Restructuring of Domestic Trade, 1860–1913). Talous- ja sosiaalihistorian lisensiaattityö, Helsingin yliopisto 1985.

MAURANEN, TAPANI Kotimaankaupan kasvu ja rakenne 1860–1960 (The Growth and Structure of Domestic Trade, 1860–1960). Manuscript.

MÄKIMATTILA, AINO-ELINA Kuntien talous niiden tehtäväpiirien muutosten kuvaajana Suomessa vuosina 1930–1963 (The Economy of Finland's Municipalities as a Portrayer of the Changes in the Scope of their Responsibilities, 1930–1963). Talous- ja sosiaalihistorian pro gradu -työ, Helsingin yliopisto 1966.

NUMMELA, ILKKA Kuorma-autoliikenteen vaiheet ja taloudellinen merkitys Suomessa talvisotaan mennessä (The History of Heavy Goods Vehicle Traffic in Finland and Its Economic Significance up to the Winter War of 1940). Suomen historian pro gradu -työ, Jyväskylän yliopisto 1978.

PELTONEN, MATTI TAPANI Rakennustoiminnan kehityksestä Suomessa 1860–1913 (The Development of Construction in Finland, 1860–1913). Manuscript 1981.

PELTONEN, MATTI TAPANI Suomalaisen maatilatalouden murros autonomian ajan lopulla, Maataloushistoriallinen tutkimus (The Transformation of Finnish Agriculture at the End of the Period of Autonomy, Agricultural History Study). Talous- ja sosiaalihistorian lisensiaattityö, Helsingin yliopisto 1986.

TAIMIO, HILKKA Valtion menojen ja valtion julkisten palvelujen kasvu Suomessa

1900-luvun alkupuoliskolla (The Growth of Central Government Expenditure and Public Services in Finland in the First Half of the Twentieth Century). Kansantaloustieteen pro gradu -työ, Helsingin yliopisto 1986. (Also appears in the series published by the Bank of Finland's Research Department TU 17/86.)

PUBLISHED SOURCES

Alkoholiliikkeen vuosikertomus 1933 – 1950 (Annual Reports of Alko Ltd (The State Alcohol Monopoly of Finland), 1933 – 1950).

GEBHARD, HANNES Underhållskostnaderna för vägar och broar i Finlands Landskommuner år 1894 (Maintenance Costs of Roads and Bridges in Rural Boroughs in 1894). Statistisk undersökning verkställd på uppdrag af kommunikations-expedition i K. Senaten, Helsingfors 1897.

HEIKKONEN EERO – VALPPU, PIRKKO Talonrakennustoimintaa Suomessa vuosina 1948 – 1964 koskeva kansantulotilasto (National Income Statistics on for House Construction in Finland, 1948 – 1964). Tilastokatsauksia 1966.

Helsingin kaupungin tilastollinen vuosikirja (Statistical Yearbook of the City of Helsinki).

IKONEN, LEANDER Viipurin kaupungin raha-asiat vuosina 1879 – 1915, Tilastollinen tutkimus (Financial Affairs of the City of Viborg, 1879 – 1915, A Statistical Study). Tilastollisia tiedonantoja 22, Helsinki 1916.

International Standard Classification of All Economic Activities (ISIC). Statistical Papers, Series M, No. 4, Statistical Office of the United Nations, Lake Success, New York 1949.

JÄRVINEN, KYÖSTI Suomen maalaiskuntain finanssitilasto I – II (Financial Statistics of Rural Municipalities in Finland I – II). Jyväskylä 1899.

Kansantalouden tilinpito, Aikasarjat vuosilta 1960 – 1981 (National Accounts, Time Series for 1960 – 1981). Tilastollisia tiedonantoja N:o 75, Helsinki 1984.

Kansantalouden tilinpito 1980 – 1985 (National Accounts, 1980 – 1985). Tilastotiedotus, KT 1986:6.

Kertomus Evankelis-luterilaisen kirkon tilasta (Report on the State of the Evangelical Lutheran Church of Finland).

Komiteanmietintö 1899/4. Tientekorasituksesta maalla (Committee Report 1899/4. The Burden of Road Construction in Rural Areas).

Komiteanmietintö 1900/4. Yksityismetsäkomitean mietintö (Committee Report 1900/4. Report of the Committee on Private Forests).

Komiteanmietintö 1900/4. Yksityismetsäin tutkimusta varten asetetun komitean mietinnön kunnittaiset selvitykset ja yhteenvedot (Committee Report 1900/4. Studies on Individual Municipalities and the Summary of the Report of the Committee Set Up to Examine Private Forests).

Komiteanmietintö 1932/6. Maatalouskomitean mietintö (Committee Report 1932/6. Report of the Committee for Agriculture).

Komiteanmietintö 1954/6. Tielaitoksen kehittäminen ja sen rahoitus (Committee Report 1954/6. The Development of the Highways Department and Its Financing).

National Accounts Statistics: Analysis of Main Aggregates, 1982, United Nations, New York. 1985.

Näin on käynyt, Työmarkkinoiden ja talouden kehitys Suomessa 1900 – 1980 (The Way It Was, The Development of the Labour Market and the Economy, 1900 – 1980). Helsinki 1982.

Otavan Musiikkitietosanakirja (Otava's Encyclopedia of Music).
The Salvation Army Year Book 1939, 1949.
Evankelis-luterilaisen kirkon tila 1921 (The State of the Evangelical Lutheran Church of Finland 1921).
Suomen kansantalouden tilinpito vuosina 1948 – 1964, Taulut (National Accounting in Finland 1948 – 1964, Tables). Tilastollisia tiedonantoja N:o 43, Helsinki 1968.
Suomen kauppa- ja teollisuuskalenteri 1914 – 1916 (Almanac of Finnish Trade and Industry 1914 – 1916).
Suomen maalaiskuntain talous vuonna 1904 (The Economy of Finland's Rural Boroughs 1904). Keisarillisen Senaatin Valtionvaraintoimituskunnan toimittama tilastollinen tutkimus, Helsinki 1910.
Suomen osuustoimintatilasto, Pellervon vuosikirja 1930 – 1933 (Statistics on Cooperative Activities in Finland, Pellervo Yearbook 1930 – 1933).
Suomen tilastollinen vuosikirja (STV) 1879 – 1985/86 (Statistical Yearbook of Finland 1879 – 1985/86).
Suomen tukkuhintaindeksi 1913 – 1951 (The Wholesale Price Index in Finland, 1913 – 1951). Tilastollisia tiedonantoja 39, Helsinki 1952.
Suomen virallinen tilasto (SVT) (Official Statistics of Finland (OSF)):
SVT I. Kauppa- ja merenkulkutilasto (Trade and Navigation) 1856 – 1902.
SVT I B. Merenkulkutilasto (Navigation) 1903 –.
SVT I C. Luotsitilasto (Pilotage) 1918 – 1922.
SVT II. Suomen taloudellinen tila (Economic situation of Finland) 1866 – 1900.
SVT IV. Varallisuustilasto (Condition of Wealth) 1865 – 1881.
SVT VI. Väestötilasto (Population) 1880 – 1950.
SVT VII A. Säästöpankkitilasto (The Savings Banks) 1870 – 1972.
SVT IX. Oppikoulut (Secondary School Education) 1884 –.
SVT X. Kansanopetus (Primary School Education) 1865 –.
SVT XI. Lääkintölaitos. Medicinalstyrelsens årsberättelser (Health and Medical Care. Annual Report of the State Medical Board) 1884 – 1903.
SVT XIII. Posti- ja lennätinlaitos (Post and Telegraph) 1885 –.
SVT XV. Luotsi- ja majakkalaitos (Pilot and Lighthouses) 1885 – 1906.
SVT XVIII, SVT XVIII A. Teollisuustilasto (Industry) 1884 –.
SVT XVIII B. Käsityötilasto (Industrial Handicraft) 1913, 1923, 1934.
SVT XIX. Tie- ja vesirakennukset (Road and Waterway Construction) 1885 –.
SVT XX. Rautatietilasto (Railways) 1871 –.
SVT XXI. Köyhäinhoitotilasto (Care of the Poor), myöh. Huoltotilasto (later Social Welfare) 1881 –.
SVT XXII. Vakuutustoiminta (Insurance) 1892 –.
SVT XXVI. Työtilasto (Labour) 1898 – 1925.
SVT XXVI A. Tapaturmatilasto (Accidents) 1926 –.
SVT XXXI Kuntien finanssitilasto (Municipal Finances) 1910 –.
SVT XXXII:2 Asuntolaskenta (Census of Dwellings) 25.4.1919.
SVT XXXV:1 Vuoden 1953 liikeyrityslaskenta (1953 General Economic Census).
A System of National Accounts and Supporting Tables. Studies in Methods, Series F, 2, United Nations, New York 1953.
Teattereiden nykyhetki II ja III (The Theatre of Today II and III). Suomen teatterijärjestöjen keskusliiton julkaisuja, Helsinki 1944 ja 1947.
Tukkukaupan tila (The State of the Wholesale Trade) 1926 –.
Turun kaupungin tilastollinen vuosikirja (Statistical Yearbook of the City of Turku).
Työtilasto VIII. Tutkimus Suomen konttori- ja kauppa-apulaisten oloista 1909 (Work

Statistics VIII. Study of the Condition of Work for Office and Shop Assistants 1909). Teollisuushallitus (ed. G. R. Snellman).

Valtiokalenteri (Official Directory of Public Officials).

Väestön elinkeino, Väestö elinkeinon mukaan kunnittain vuosina 1880–1975 (Population by Industry: Population by Industry and Commune, 1880–1975). Tilastollisia tiedonantoja 63, Helsinki 1979.

Yleisradion vuosikertomukset (Annual Reports of the Finnish Broadcasting Company).

Yritysrekisteri, Liikevaihtoverovelvollisten yritysten toimipaikat (Company Register, Registered Premises of Companies Liable to Turnover Tax). Tilastotiedotus YR 1985:5.

LITERATURE

AALTONEN, ESKO Pitäjän toimihenkilöt (Parochial Employees). Historian aitta IX, ed. Historian ystäväin liitto, Jyväskylä 1939.

AHVENAINEN, JORMA Suomen paperiteollisuuden kilpailukyky 1920- ja 1930-luvulla (The Competitive Position of the Finnish Paper Industry in the Inter-War Years). Acta Forestalia Fennica, Vol. 151, Helsinki 1976.

AHVENAINEN, JORMA Suomen sahateollisuuden historia (The History of the Finnish Sawmill Industry). Porvoo 1984.

ALESTALO, MATTI Structural Change, Classes and the State, Finland in an Historical and Comparative Perspective. Research Reports 33, Research Group for Comparative Sociology, University of Helsinki, Helsinki 1986.

ALHO, KEIJO Suomen uudenaikaisen teollisuuden synty ja kehitys 1860–1914 (The Rise and Development of Modern Finnish Industry 1860–1914). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja B:11, Helsinki 1949.

BAIROCH, PAUL Europe's Gross National Product: 1800–1975. The Journal of European Economic History 1976.

BEACH, E. F. Economic Models, An Exposition. New York 1957.

BENTZEL, RAGNAR Svensk ekonomisk tillväxt 1870 till 1975, Industriell utveckling i Sverige, Teori och verklighet under ett sekel. Uppsatser till ett IUI-symposium i anledning av Marcus Wallenbergs 80-årsdag (Swedish Economic Growth, 1870–1975, Industrial Development in Sweden, Theory and Reality during the Century. Essays for the IUI-symposium on the occasion of Marcus Wallenberg's 80th Birthday), ed. Erik Dahmén and Gunnar Eliasson, Stockholm 1980.

BEREND, IVAN T. – RANKI, GYÖRGY The European Periphery and Industrialization 1780–1914. London and Paris 1982.

BJÖRKQVIST, HEIMER Guldmyntfotens införande i Finland åren 1877–1878 (The Introduction of the Gold Standard in Finland in 1877–1878). Publikationer utgivna av Finlands Banks institut för ekonomisk forskning, Serie B:13, Helsingfors 1953.

BJÖRKQVIST, HEIMER Prisrörelser och penningvärde i Finland under guldmyntfotsperioden 1878–1913, En struktur- och konjunkturanalys (Price Movements and the Value of Money in Finland during the Gold Standard in 1878–1913, A Structural and Business Cycle Analysis). Publikationer utgivna av Finlands Banks institut för ekonomisk forskning, Serie B:19, Helsingfors 1958.

BREDENBERG, ULLA Luottokantatilasto vuosina 1958–1967. Taloudellisia selvityksiä 1968 (Statistics on the Credit Stock 1958–1967. Economic Studies 1968), Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja A:31, Helsinki 1969.

CHENERY, HOLLIS B. – SYRQUIN, MOISES Patterns of Development, 1950–1970. London 1975.

CLARK, COLIN The Conditions of Economic Progress. London 1940.

CRAFTS, N. F. R. Gross National Product in Europe 1870–1910: Some New Estimates. Explorations in Economic History 1983.

CRAFTS, N. F. R. Patterns of Development in Nineteenth Century Europe. Oxford Economic Papers 1984.

CRAFTS, N. F. R. British Economic Growth during the Industrial Revolution. Oxford 1985.

DEANE, PHYLLIS – COLE, W. A. British Economic Growth 1688–1959, Trends and Structure. Second ed. Cambridge 1969.

DEATON, A. S. The Structure of Demand 1920–1970. The Fontana Economic History of Europe 5:1, Glasgow 1976.

DENISON, EDWARD F. Accounting for United States Economic Growth 1929–1969. Washington, D.C. 1974.

ESTLANDER, GEORG Helsingin raitiotie- ja omnibussiosakeyhtiö 1891–1931 (The Helsinki Tramway and Omnibus Company Ltd. 1891–1931). Helsinki 1931.

FEINSTEIN, C. H. National Income, Expenditure and Output of the United Kingdom 1855–1964. Cambridge 1972.

FORSSELL, OSMO Kauppaa koskeva kansantulotilasto vuosilta 1946–1962 (National Income Statistics on Trade 1946–1962). Tilastokatsauksia 1964.

FORSSELL, OSMO Kauppa Suomessa 1860–1960 (Finland's Domestic Trade, 1860–1960). Suomen Pankin julkaisuja, Kasvututkimuksia X, Helsinki 1979.

FRIEDMAN, MILTON Interpolation on Time Series. American Statistical Association Journal, Dec. 1962.

GOULD, J. D. Economic Growth in History, Survey and Analysis. London 1972.

GROTENFELT, GÖSTA Suomen maanviljelys, Yleiskatsaus (Farming in Finland, A General Review). Porvoo 1897.

GRÖNLUND, PAAVO – NIITAMO, O. E. Suomen kansantalouden tilinpito vuosina 1948–1964, Käsitteet ja menetelmät (National Accounting in Finland 1948–1964, Concepts and Methods). Tilastollinen päätoimisto, Monistettuja tutkimuksia n:o 5, Helsinki 1968.

HACCHE, GRAHAM The Theory of Economic Growth, An Introduction. London 1979.

HALILA, AIMO Suomen kansakoululaitoksen historia II–IV (The History of Primary Education in Finland). Turku 1949–1950.

HALILA, AIMO Kansanopetus. Suomen kulttuurihistoria 2, Autonomia (General Education. The Cultural History of Finland 2, Autonomy). Ed. Päiviö Tommila et al, Porvoo 1980.

HALILA, AIMO Oppikoululaitos. Suomen kulttuurihistoria 2, Autonomia. (Secondary Education. The Cultural History of Finland 2, Autonomy). Ed. Päiviö Tommila et al, Porvoo 1980.

HALME, VEIKKO Vienti Suomen suhdannetekijänä vuosina 1870 – 1939 (Exports as a Factor in the Trade Cycles of Finland in 1870–1939). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja B:16, Helsinki 1955.

HANSEN, BENT – LUCAS, EDWARD F. On the Accuracy of Index Numbers. The Review of Income and Wealth 1984.

HANSEN, SVEND AAGE Økonomisk vækst i Danmark, Bind II: 1914–1975 (Economic Growth in Denmark, Volume II: 1914–1975). København 1977.

HARTWELL, R. M. The Service Revolution: The Growth of Services in Modern Economy. The Fontana Economic History of Europe 3, Glasgow 1973.

HAUTALA, KUSTAA Suomen tervakauppa 1856–1913, Sen viimeinen kukoistus ja

häviö sekä niihin vaikuttaneet syyt, Taloushistoriallinen tutkimus (The Finnish Tar Trade 1856–1913, Its Final Flourish and Decline and their Background Causes, Economic History Study). Historiallisia tutkimuksia XLV, Helsinki 1956.

HEIKKINEN, SAKARI Kulutus Suomessa autonomian ajan jälkipuoliskolla. När samhället förändras, Kun yhteiskunta muuttuu (Consumption in Finland, 1860–1912. When Society Changes). Historiallinen Arkisto 76, Helsinki 1981.

HEIKKINEN, SAKARI – HJERPPE, RIITTA Suomen teollisuus ja teollinen käsityö 1860–1913 (Industry and Industrial Handicraft in Finland, 1860–1913). The other members of the study group: Kai Hoffman, Timo Myllyntaus and Birger Rabb. Suomen Pankin julkaisuja, Kasvututkimuksia XII, Helsinki 1986.

HEIKKINEN, SAKARI – HJERPPE, RIITTA – KAUKIAINEN, YRJÖ – MARKKANEN, ERKKI – NUMMELA, ILKKA Förändringar i levnadsstandarden i Finland 1750–1913. Levestandarden i Norden 1750–1914, Rapporter til den XX nordiske historikerkongress, Bind III (Changes in the Standard of Living in Finland 1750–1913. The Standard of Living in the Nordic Countries 1750–1914, Report for the XX Nordic History Congress, Volume III), Reykjavik 1987.

HEIKKINEN, SAKARI – KORTTEINEN, TIMO – SOIKKANEN, HANNU – SOININEN, ARVO M. Palkat, toimeentulo ja sosiaalinen rakenne Suomessa 1850–1913 (Wages, Livelihood and Social Structure in Finland 1850–1913). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja N:o 13, Helsinki 1983.

HEIKKONEN, EERO Asuntopalvelukset Suomessa 1860–1965 (Housing in Finland, 1860–1965). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia III, Helsinki 1971.

HEIKKONEN, EERO Talorakennusinvestoinnit ja talorakennuskanta Suomessa 1900–1970 (Investment in House Building and the Housing Stock in Finland 1900–1970). Suomen Pankin julkaisuja, Kasvututkimuksia IX, Helsinki 1977.

HELSINGIUS, A. (ed.) Suomen vaivaistalojen matrikkeli (Register of Poor Houses in Finland). Helsinki 1897.

HIRN, SVEN Kameran edestä ja takaa (Behind and in Front of the Camera). Lahti 1972.

HIRN, SVEN Kuvat kulkevat (Moving Pictures). Hyvinkää 1981.

HIRVONEN, JUHANI – HJERPPE, RIITTA Taloudellinen kasvu Suomessa 1880–1980. Sata vuotta suomalaista kansantaloustiedettä, Kansantaloudellinen yhdistys 1884–1984 (Economic Growth in Finland 1880–1980. A Hundred Years of Finnish Economics, The Finnish Economic Association 1884–1984), Vammala 1984.

HJELT, AUG. – BROMS, O. A. Kunnallinen tuloverotus ja tulosuhteet Suomessa, I, Kaupungit, Tilastollinen tutkimus (Municipal Income Taxation and Incomes in Finland, I, Urban Municipalities, A Statistical Study). Helsinki 1904.

HJELT, AUG. – BROMS, O. A. Kunnallinen tuloverotus ja tulosuhteet Suomessa, II, Maalaiskunnat, Tilastollinen tutkimus (Municipal Income Taxation and Incomes in Finland, II, Rural Boroughs, A Statistical Study). Helsinki 1905.

HJERPPE, REINO Tutkimus tehokkaan ja optimaalisen allokaation käsitteestä ja tuotannontekijöiden allokaatiosta Suomen kansantaloudessa 1965–1970 (A Study on the Concept of Efficient and Optimal Allocation and the Allocation of Resources in the Finnish Economy, 1965–1970). Kansantaloudellisia tutkimuksia XXXIV, Helsinki 1975.

HJERPPE, REINO Measurement of the Role of the Public Sector in the Finnish Economy. Review of Income and Wealth 1980.

HJERPPE, REINO – HJERPPE, RIITTA – MANNERMAA, KAUKO – NIITAMO, O. E. – SILTARI, KAARLO Suomen teollisuus ja teollinen käsityö 1900–1965 (Finnish Industry

and Industrial Handicrafts 1900–1965). Suomen Pankin julkaisuja, Kasvututkimuksia VII, Helsinki 1976.

HJERPPE, REINO – NIITAMO O. E. Uuden SNA:n mukaisen kansantalouden tilinpidon perusrakenne (The Basic Structure of the Revised System of National Accounts). Tilastokeskus, Tutkimuksia N:o 15, Helsinki 1971.

HJERPPE, REINO – PIHKALA, ERKKI Julkinen talous nousee suurimmaksi. Suomen taloushistoria 2 (The Rise of the Public Sector. The Economic History of Finland 2), Helsinki 1982.

HJERPPE, RIITTA Suurimmat yritykset Suomen teollisuudessa 1844–1975 (Major Companies in Finnish Industry 1844–1975). Bidrag till kännedom av Finlands natur och folk H. 123, Helsinki 1979.

HJERPPE, RIITTA Finland in the European Economy 1860–1980. Festskrift til Kristof Glamann (Festschrift to Kristof Glamann), Odense 1984 (1984a).

HJERPPE, RIITTA Kulutuksen muutos – kotityöstä markkinatuotantoon. Kotityöseminaari v. 1983, Seminaariraportti (The Change in Consumption – from Household to Market Production. Cottage Industry Seminar 1983, Seminar Report), Kotitalous- ja kuluttaja-asiain tutkimuskeskus, Helsinki 1984 (1984b).

HJERPPE, RIITTA – AHVENAINEN, JORMA Foreign enterprises and nationalistic control: the case of Finland since the end of the nineteenth century. Multinational enterprise in historical perspective, ed. Alice Teichova et al, Cambridge – Paris 1986.

HJERPPE, RIITTA – HEIKKINEN, SAKARI Suomen teollisuuden ja käsityön työllisyys 1860–1910 (Employment in Finnish Industry and Industrial Handicrafts 1860–1910). Historiallinen aikakauskirja 1978.

HJERPPE, RIITTA – LEFGREN, JOHN Suomen tulonjakautuman kehityksestä 1881–1967 (Long-Run Trends in Finland's Income Distribution, 1881–1967). Kansantaloudellinen aikakauskirja 1974.

HJERPPE, RIITTA – PELTONEN, MATTI – PIHKALA, ERKKI Investment in Finland 1860–1979. The Scandinavian Economic History Review 1984.

HJERPPE, RIITTA – PIHKALA, ERKKI The Gross Domestic Product of Finland in 1860–1913, A preliminary estimate. Economy and History 1977.

HOFFMAN, KAI Suomen sahateollisuuden kasvu, rakenne ja rahoitus 1800-luvun jälkipuoliskolla (The Growth, Structure and Financing of the Finnish Sawmill Industry in the Second Half of the Nineteenth Century). Bidrag till kännedom av Finlands natur och folk H. 124, Tammisaari 1980.

HOFFMAN, KAI – LEHMUSKALLIO, KLAUS Tillväxtforskning i Finland, En litteraturkommentar (Growth Studies in Finland, A Review of the Literature). Ekonomiska Samfundets Tidskrift 1974.

IDSTRÖM, G. Spårvägarna i Finland intill år 1930 (The Railways in Finland up until the Year 1930). Tekniska föreningen i Finland förhandlingar 1930.

IKONEN, VAPPU – VALKONEN, MATTI Milloin ja miksi Suomi teollistui eri kirjoittajien mukaan (When and Why Finland Industrialized according to Various Writers). Kansantaloudellinen aikakauskirja 1987.

JUTIKKALA, EINO Industrialization as a Factor in Economic Growth in Finland. Première conférence internationale d'histoire économique, Contributions, Stockholm 1960.

JUTIKKALA, EINO Omavaraiseen maatalouteen. Suomen taloushistoria 2 (Towards Agricultural Self-Sufficiency. The Economic History of Finland 2), Helsinki 1982.

JÄRVI, T. H. Suomen merikalastus ja jokipyynti (Sea and River Fishing in Finland). Porvoo 1931.

JÄRVINEN, KYÖSTI Kotimainen kauppa (Domestic Trade). Oma Maa VI, Porvoo

1925.

KAHMA, JAAKKO Tullikysymys kansantaloudessamme (The Question of Customs Duty in Our Economy). Helsinki 1924.

KAHRA, ELJAS Työttömyys vuosina 1928–36 (Unemployment in 1928–1936). Työttömyysneuvoston julkaisuja, Helsinki 1938.

KAUKIAINEN, YRJÖ Taloudellinen kasvu ja yhteiskunnan muuttuminen teollistuvassa Suomessa. När samhället färändras, Kun yhteiskunta muuttuu (Economic Growth and the Social Change in Finland in the Period of Industrialization. When Society Changes), Historiallinen Arkisto 76, Helsinki 1981.

KAUKIAINEN, YRJÖ Finnland 1860–1913 (Finland 1860–1913). Handbuch der europäischen Wirtschafts- und Sozialgeschichte, Band 5, Stuttgart 1985.

KAUKOVALTA, K. V. Suomen maalaiskuntien kunnallisen itsehallinnon historia (The History of Municipal Self-Government in the Rural Boroughs of Finland). Helsinki 1940.

KENESSEY, ZOLTAN The Primary, Secondary, Tertiary and Quarternary Sectors of the Economy. Conference Paper: International Association for Research in Income and Wealth, Noordvijkerhout, The Netherlands 1985.

KETO, JAAKKO Elokuvalippujen kysyntä ja siihen vaikuttaneet tekijät Suomessa 1915–1972 (The Demand for Cinema Tickets in Finland between 1915 and 1972 and the Factors that Have Influenced It). Helsinki 1974.

KOJONEN, ROPE Kansanopisto (The Folk High School). Oma Maa IV, Porvoo 1923.

KOLJONEN, KALEVI Pääomakannan käsite ja mittaaminen sekä sovellutus Suomen rakennuskantaan vuosina 1950–1960 (The Concept and Measurement of the Capital Stock and its Application to the Building Stock in Finland in the Years 1950–1960). Tilastollinen päätoimisto, Monistettuja tutkimuksia n:o 8, Helsinki 1968.

KORPINEN, PEKKA Kriisit ja pitkät syklit (Crises and Long Cycles). Helsinki 1981.

KOVERO, MARTTI Suurteollisuuden synty ja kehitys. Suomen kulttuurihistoria IV (The Birth and Development of Large-Scale Industry. The Cultural History of Finland IV), Helsinki 1936.

KRANTZ, OLLE Techniques for Measuring Economic Growth in Sweden. Workshop on Quantitative Economic History, 2–4 September 1985, University of Groningen.

KRANTZ, OLLE Productivity Changes in Scandinavia in the 19th and 20th Centuries. International Productivity Comparisons and Problems of Measurement, 1750–1939, Ed. Patrick O'Brien, Ninth International Economic History Congress, Berne 1986.

KRANTZ, OLLE Utrikeshandel, ekonomisk tillväxt och strukturförändring efter 1850 (Foreign Trade, Economic Growth and Structural Change after 1850). Stockholm 1987.

KRANTZ, OLLE – NILSSON, KARL-AXEL Swedish National Product 1860–1970, New Aspects on Methods and Measurement. Kristianstad 1975.

KRAVIS, IRVING B. – HESTON, ALAN W. – SUMMERS, ROBERT Real GDP per capita for more than 100 countries. The Economic Journal 1978.

KUNNAS, HEIKKI J. Metsästystä ja kalastusta koskevat kansantulolaskelmat vuosilta 1926–1960 (National Income Calculations concerning Hunting and Fishing 1926–1960). Tilastokatsauksia 1962.

KUNNAS, HEIKKI J. Metsätaloustuotanto Suomessa 1860–1965 (Forestry in Finland, 1860–1965). Suomen Pankin julkaisuja, Kasvututkimuksia IV, Helsinki 1973.

KUUSANMÄKI, JUSSI Kunnallisen kansanvallan kehitys ja kunnallishallinnon organisaatio 1875–1917. Suomen kaupunkilaitoksen historia 2 (The Development of Municipal Democracy and the Organization of Municipal Government 1875–1917. The History of Finland's Urban Municipalities 2), Vantaa 1983.

KUUSI, EINO Talvityöttömyys, sen esiintyminen, syyt ja ehkäisytoimenpiteet Suomen

suurimmissa kaupungeissa (Winter Unemployment, Its Occurrence, Causes and Prevention in Finland's Major Cities). Tampere 1914.

KUUSTERÄ, ANTTI Valtio ja vapaan kilpailun harhat – valtion panos autonomian ajan jälkipuoliskon taloudellis-sosiaalisessa muutoksessa. Historian päivät 1985, Historiallinen Arkisto 88 (The State and the Illusions of Unrestricted Competition – the role played by the state in the socio-economic changes that took place during the latter half of the Period of Autonomy. The Days of History, Historical Archive 88), Helsinki 1986.

KUZNETS, SIMON Modern Economic Growth, Rate, Structure, and Spread. New Haven – London 1966.

KÖNÖNEN, ELSA Hengen miekka – auttava käsi, Pelastusarmeijan vaiheet Suomessa (The Sword of the Spirit – A Helping Hand, The History of the Salvation Army in Finland). Porvoo 1964.

LAURILA, EINO H. Suomen kansantulo 1926–1949, Ennakkoarviointien tuloksia (The National Income of Finland 1926–1949, The Results of Preliminary Estimates). Tilastokatsauksia 1950.

LAURILA, EINO H. Suomen kansantalouden kirjanpito (National Accounting in Finland). Kansantaloudellinen aikakauskirja 1953.

LAURILA, EINO H. Mittausongelmista kasvututkimuksissa, Kokonaistaloudellisia ongelmia (On the Problems Concerning Long-Term National Accounting, Macro-economic Problems). Kansantaloudellisia tutkimuksia XXV, Helsinki 1964 (1964a).

LAURILA, EINO H. Suomen kansantulotilaston kehityksestä vuosina 1948–1963. Kokonaistaloudellisia ongelmia (The Development of National Income Statistics in Finland 1948–1963. Macroeconomic Problems), Kansantaloudellisia tutkimuksia XXV, Helsinki 1964 (1964b).

LAURILA, EINO H. Suomen kansantalouden kasvu ja rakennemuutokset kasvututkimuksen valossa (Growth and Structural Change in Finland in the Light of Various Growth Studies). Taloustieteellisen Seuran vuosikirja 1977, Helsinki 1978.

LAURILA, EINO H. Kulutus Suomen kansantaloudessa vuosina 1900–1975 (Consumption in Finnish Economy in the Years 1900–1975). ETLA B 42, Helsinki 1985.

LAURILA, EINO H. Yksityinen kulutus Suomessa ajanjaksona 1880–1980 (Private Consumption in Finland during the period 1880–1980). ETLA B 52, Helsinki 1987.

LEFGREN, JOHN Nälänhätä Suomessa 1867–1868 (Famine in Finland, 1867–1868). Historiallinen aikakauskirja 1974.

LEPPÄNEN, SEPPO Liikenne Suomessa 1900–1965 (Transport and Communication in Finland, 1900–1965). Suomen Pankin julkaisuja, Kasvututkimuksia V, Helsinki 1973.

LEWIS, W. ARTHUR Growth and Fluctuations 1870–1913. London 1987.

LINDBERG, VALTER Incomes in Finland. Bank of Finland Monthly Bulletin 1926.

LINDBERG, VALTER En uppskattning av Finlands nationalinkomst (An Estimate of the National Income of Finland). Unitas 1936.

LINDBERG, VALTER The National Income of Finland. Bank of Finland Monthly Bulletin 1937.

LINDBERG, VALTER Suomen kansantulo vuosina 1926–1938 (The National Income of Finland, 1926–1938). Suomen Pankin suhdannetutkimusosaston julkaisuja, Sarja B:1, Helsinki 1943.

LINDGREN, VERNER Valtion virkamiesten palkat, Kehitys vuosina 1914–1927 (The Development of Civil Service Pay 1914–1927). Suomen virkamiesyhdistysten keskusliiton julkaisuja, Helsinki 1928.

LINDGREN, VERNER Valtion virkamiesten palkat, Kehitys vuosina 1927–1938 (The Development of Civil Service Pay 1927–1938). Suomen virkamiesyhdistysten keskusliiton julkaisuja, Helsinki 1938.

LINNALA, EERO Suomen muusikkojen liitto 1917–1967 (The Finnish Association of Musicians). Kotka 1967.

LUNDAHL, MATTS Sparande, kapitalbildning och ekonomisk utveckling. Ekonomisk historia (Savings, Capital Formation and Economic Development. Economic History), ed. Lennart Jörberg, Stockholm 1975.

LUNTINEN, PERTTI Sotilasmiljoonat (Balancing the Military Burden between the Grand Duchy of Finland and the Russian Empire). Historiallisia tutkimuksia 125, Helsinki 1984.

LUOMA, VÄINÖ Virkamiesten järjestäytyminen Suomessa I–II (Civil Servant Unionism in Finland I–II). Virkamiesliiton julkaisuja N:o 8, Turku 1962.

LUTHER, GEORG Suomen ensimmäiset kansantulolaskelmat. Suomen kansantalouden tilinpitoa sata vuotta (The First Calculations of Finland's National Income. A Hundred Years of National Accounting in Finland), Tilastokeskus, Tutkimuksia, 83, Helsinki 1982.

MADDISON, ANGUS Phases of Capitalist Development. Oxford 1982.

MAIWALD, K. An Index of Building Costs in the United Kingdom, 1845–1938. The Economic History Review 1954.

MAIZELS, LFRED Industrial Growth and World Trade. London 1971.

MANNINEN, PAULI Selvitys Suomen elinkeinorakenteesta ja sen tutkimuksesta 1820–1970 (Essay on the Structure of Finnish Industry and Its Study 1820–1970). Suomen työväenliikkeen historia-projektin selvityksiä N:o 1, Helsinki 1976.

MARJOMAA, PERTTI Suomen kansantalouden tilinpidon historiaa. Taulukoinnista tietoyhteiskuntaan (National Accounting in Finland, Historical Aspects. From Tabulation to Information Society), Helsinki 1986.

MARTIKAINEN, TUOMO Julkisen sektorin kasvu Suomessa (The Growth of the Public Sector in Finland). Helsingin yliopiston yleisen valtio-opin laitoksen tutkimuksia, Sarja C, Helsinki 1975.

MATTHEWS, R. C. O. – FEINSTEIN, C. H. – ODLING-SMEE, J. C. British Economic Growth 1856–1973. Oxford 1982.

MOKYR, JOEL Demand vs. Supply in the Industrial Revolution. The Economics of the Industrial Revolution, ed. Joel Mokyr, London 1985.

MUTIKAINEN, TAPIO Suhdannevaihtelut Suomessa vuosina 1949–1983 (Cyclical Fluctuations in Finland 1949–1983). Kansallis-Osake-Pankki, Taloudellinen katsaus 1984.

MYLLYNTAUS, TIMO Suomen graafisen teollisuuden kasvu 1860–1905 (The Growth of the Graphics Industry in Finland 1860–1905). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja N:o 12, Helsinki 1981.

MYLLYNTAUS, TIMO – MICHELSEN, KARL-ERIK – HERRANEN, TIMO Teknologinen muutos Suomen teollisuudessa 1885–1920, Metalli-, saha- ja paperiteollisuuden vertailu energiatalouden näkökulmasta (Technological Change in Finnish Industry 1885–1920, A Comparative Study of the Metal and Engineering Industry, the Sawmill Industry and the Paper Industry from the Energy Standpoint). Bidrag till kännedom av Finlands natur och folk H. 134, Helsinki 1986.

NARS, KARI Suomen sodanaikainen talous ja talouspolitiikka. Taloudellisia selvityksiä 1966 (Finland's Wartime Economy and Economic Policy. Economic Studies 1966), Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja A:29, Helsinki 1966.

NIITAMO, OLAVI Tuottavuuden kehitys Suomen teollisuudessa vuosina 1925–1952 (The Development of Productivity in Finnish Industry, 1925–1952). Kansantaloudellisia tutkimuksia XX, Helsinki 1958.

NIITAMO, O. E. Työllisyyden kehitys Suomessa vuosina 1938 – 1959, Ennakkolaskelma (The Development of Employment in Finland 1938 – 1959, Preliminary Report). Tilastokatsauksia 1959.

NIITAMO, O. E. National Accounting and National Statistical Service on the Threshold of the 1980s. Liiketaloudellinen Aikakauskirja 1980:1.

NIKULA, OSCAR Kaupunkilaitos 1721 – 1875, Suomen kaupunkilaitoksen historia 1 (The Urban Municipalities 1721 – 1875, The History of Finland's Urban Municipalities 1). Vantaa 1981.

OKSANEN, HEIKKI – PIHKALA, ERKKI Suomen ulkomaankauppa 1917 – 1949 (Finland's Foreign Trade 1917 – 1949). Suomen Pankin julkaisuja, Kasvututkimuksia VI, Helsinki 1975.

PALMÉN, EINAR Suomen kunnansairaalalaitos 50-vuotias (Fifty Years of Municipal Hospitals in Finland). Helsinki 1933.

PEKKARINEN, JUKKA – VARTIAINEN, JUHANA – VÄISÄNEN, JARMO – ÅKERHOLM, JOHNNY Suomalainen finanssipolitiikka ja kysynnän säätely. Sata vuotta suomalaista kansantaloustiedettä. Kansantaloudellinen yhdistys 1884 – 1984 (Finnish Fiscal Policy and Demand Management. A Hundred Years of Finnish Economics. The Finnish Economic Association 1884 – 1984), Vammala 1984.

PELTONEN, MATTI TAPANI Liikenne Suomessa 1860 – 1913 (Transport and Communication in Finland 1860 – 1913). Suomen Pankin julkaisuja, Kasvututkimuksia XI, Helsinki 1983.

PELTONEN, MATTI TAPANI Maatalous ennen traktorin aikaa, Arvio maatalouden työllisyydestä 1860 – 1948 (Agriculture before the Tractor, An Estimate of Agricultural Employment 1860 – 1948). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja, N:o 20, Helsinki 1987.

PESONEN, NIILO Terveyden puolesta sairautta vastaan, Terveyden- ja sairaanhoito Suomessa 1800- ja 1900-luvulla (Health versus Sickness, Health and Medical Care in Finland during the Nineteenth and Twentieth Centuries). Porvoo 1980.

PIHKALA, ERKKI Suomen ulkomaankauppa 1860 – 1917 (Finland's Foreign Trade, 1860 – 1917). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia II, Helsinki 1970.

PIHKALA, ERKKI Suomen vaihtotase vuosina 1860 – 1917, Eräitä näkökohtia (Finland's Balance of Payments, 1860 – 1917). Historiallinen aikakauskirja 1970 (1970a).

PIHKALA, ERKKI Suomen Venäjän-kauppa vuosina 1860 – 1917 (Finnish Trade with Russia 1860 – 1917). Bidrag till kännedom av Finlands natur och folk, H. 113, Helsinki 1970 (1970b).

PIHKALA, ERKKI Vierasmaalainen pääoma ja ammattitaito Suomessa autonomian ajan loppupuoliskolla (Foreign and Russian Capital and Know-how in Finland during the Last Decades of 1800s). Kansantaloudellinen aikakauskirja 1971.

PIHKALA, ERKKI Statens och kommunernas finanser i Finland under depressionsåren på 1930-talet (State and Municipal Finances in Finland during the Depression of the 1930s). Historisk Tidskrift 1974.

PIHKALA, ERKKI Valtion tulojen ja menojen rakenne 1800-luvun jälkipuoliskolla (The Structure of Government Revenues and Expenditure in the Second Half of the Nineteenth Century). Helsingin kauppakorkeakoulun julkaisuja B 23, Helsinki 1977.

PIHKALA, ERKKI Suomen kauppapolitiikka vuosina 1918 – 1944. Suomen ulkomaankauppapolitiikka (Finland's Trade Policy 1918 – 1944. Finland's Foreign Trade Policy), ed. Lauri Haataja, Keuruu 1978.

PIHKALA, ERKKI Institutional changes in the structure of credits granted to the public in Finland in 1840 – 1913. Transformation of Bank Structures in the Industrial Period,

B 10, Eighth International Economic History Congress, Budapest 1982 (1982a).

PIHKALA, ERKKI Rakennustoiminta ja asuminen. Suomen taloushistoria 2 (Construction and Housing. The Economic History of Finland 2), Helsinki 1982 (1982b).

PIHKALA, ERKKI Sotatalous 1939 – 1944. Suomen taloushistoria 2 (The War Economy 1939 – 1944. The Economic History of Finland 2), Helsinki 1982 (1982c).

PIHKALA, ERKKI Ulkomaankauppa ja ulkomaiset maksusuhteet. Suomen taloushistoria 2 (Foreign Trade and Payments. The Economic History of Finland 2), Helsinki 1982 (1982d).

PIHKALA, ERKKI Arvostelu Eino H. Laurilan teoksesta "Kulutus Suomen kansantaloudessa vuosina 1900 – 1975" (Critique of Eino H. Laurila's Work "Consumption in Finnish Economy in the Years 1900 – 1975"). Kansantaloudellinen aikakauskirja 1986.

PIIRAINEN, VEIKKO Kylänkierrolta kunnalliskotiin (From Village Circuit to Old People's Home). Helsinki 1958.

PIPPING, HUGO E. Kultakannan turvissa. Suomen Pankki 1878 – 1914 (Under the Protection of the Gold Standard. The Bank of Finland 1878 – 1914). Helsinki 1969.

PIPPING, HUGO E. – BÄRLUND, RAGNI Suomen talouselämä (The Finnish Economy). Tampere 1968.

POLLARD, SIDNEY The Industrialisation of Europe. Economic Theory and History, B 1, Eighth International Economic History Congress, Budapest 1982.

POMFRET, RICHARD The Economic Development of Canada. Toronto 1981.

RASILA, VILJO Kaupunkien sosiaalipolitiikka ja terveydenhoito 1875 – 1917. Suomen kaupunkilaitoksen historia 2 (Social Policy and Health Care in Finnish Cities 1875 – 1917. The History of the Finland's Urban Municipalities 2), Vantaa 1983.

RASILA, VILJO Agraarikysymys Suomessa 1800-luvun lopulla ja 1900-luvun alussa. Suomalais-neuvostoliittolainen historiantutkijoiden symposium (The Agrarian Question in Finland at the End of the Nineteenth Century and the Beginning of the Twentieth Century. Symposium of Finnish-Soviet History Researchers), Riga 1. – 7.12.1985, Historiallinen Arkisto 88, Helsinki 1986.

RINNE, HARRY A. Trävaruproduktion och trävaruhandel i Björneborgs distrikt 1856 – 1900 (The Production and Trading of Wooden Products in the District of Pori 1856 – 1900). Vammala 1952.

RISBERG, EINAR Suomen lennätinlaitoksen historia 1855 – 1955 (The History of the Telegraph Service in Finland 1855 – 1955). Helsinki 1959.

ROSTOW, W. W. The Stages of Economic Growth, Non-communist Manifesto. Cambridge, Mass. 1960.

SCHYBERGSON, PER Hantverk och fabriker I, Finlands konsumtionsvaruindustri 1815 – 1870; Helhetsutveckling (Industrial Handicrafts and Factories I, The Manufacture of Consumer Goods in Finland 1815 – 1870; Overall Development). Bidrag till kännedom av Finlands natur och folk H. 114, Helsingfors 1973.

SCHYBERGSON, PER Hantverk och fabriker II, Finlands konsumtionsvaruindustri 1815 – 1870; Branschutveckling (Industrial Handicrafts and Factories II, The Manufacture of Consumer Goods in Finland 1815 – 1870; Sectoral Development). Bidrag till kännedom av Finlands natur och folk H. 116, Helsingfors 1974 (1974a).

SCHYBERGSON, PER Hantverk och fabriker III, Finlands konsumtionsvaruindustri 1815 – 1870; Tabellbilagor (Industrial Handicrafts and Factories III, The Manufacture of Consumer Goods in Finland 1815 – 1870; Appendix of Tables). Bidrag till kännedom av Finlands natur och folk H. 117, Helsingfors 1974 (1974b).

SCHYBERGSON, PER Entreprenörer inom Finlands fabriksindustri i början av ryska tiden, Från medeltid till 1900-tal, Till Oscar Nikula 31 maj 1977 (Entrepreneurs in Finnish Manufacturing Industry at the Beginning of the Period of Russian Adminis-

tration, From the Middle Ages to the Twentieth Century. For Oscar Nikula 31 May 1977), Skrifter av Historiska Samfundet i Åbo IX, Åbo 1977.

SCHYBERGSON, PER Finlands industri och den ryska marknaden under autonomins tid (1809–1917), Några synpunkter (Finnish Industry and its Russian Market during the Period of Autonomy (1809–1917), Some Viewpoints). Turun Historiallinen Arkisto 41, Ekenäs 1986.

SENGHAAS, DIETER The European Experience, Historical Critique of Development Theory. New Hampshire 1982.

SIIRALA, MATTI Kätilölaitoksemme viimeaikaisesta kehityksestä 1900–1930 (Recent Development of the Finnish Midwifery System, 1900–1930). Duodecim, Vol. 49, 1933.

SIVÉN, GUNVOR Suomen hammaslääkäriseuran historia 1892–1942 (History of the Finnish Association of Dentists 1892–1942). Helsinki 1942.

SOIKKANEN, HANNU Kunnallinen itsehallinto kansanvallan perusta, Maalaiskuntien itsehallinnon historia (Local Self-government as a Basis for Democracy, The History of Local Self-government in the Rural Boroughs of Finland). Helsinki 1966.

SOININEN, ARVO M. Arvostelu Pentti Viidan teoksesta "Maataloustuotanto Suomessa 1860–1960" (Critique of Pentti Viita's Work "Agricultural Production in Finland 1860–1960). Kansantaloudellinen aikakauskirja 1966.

SOININEN, ARVO M. Kasvututkimus ja dokumentaatio, keskustelua (Growth Study and Documentation, A Discussion). Kansantaloudellinen aikakauskirja 1967.

SOININEN, ARVO M. Vanha maataloutemme, Maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle (Old Traditional Agriculture of Finland in the 18th and 19th Centuries). Historiallisia tutkimuksia 96, Forssa 1974.

SOININEN, ARVO M. Maataloustyöväen palkkakehitys 1800-luvun lopussa ja 1900-luvun alussa, Ajanjakso 1878–1913 (The Development of Agricultural Wages at the End of the Nineteenth Century and the Beginning of the Twentieth Century, Time Period 1878–1913). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja, N:o 11, Helsinki 1981.

SOININEN, ARVO M. Maa- ja metsätalous. Suomen taloushistoria 2 (Agriculture and Forestry. The Economic History of Finland 2), Helsinki 1982.

SOININEN, ARVO M. Uuden maatalouden kehityksen suuntaviivoja, Uutta maataloushistoriaa (Development Trends in Modern Agriculture, The Modern History of Agriculture). Helsingin yliopiston talous- ja sosiaalihistorian laitoksen tiedonantoja, N:o 17, Helsinki 1985.

SOLDAN, AUG. F. Om Finlands träindustri och dess möjliga förbättring (The Finnish Wood Industry and Its Possible Improvement). Helsingfors 1861.

SORSA, PERTTI — KAARTINEN, JOUKO Ravitsemus- ja majoitusliikkeiden kansantulotilasto vv. 1948–1964 (National Income Statistics on Restaurants and Hotels, 1948–1964). Tilastokatsauksia 1966:4.

SOURAMA, HEIKKI — SAARIAHO, OLLI Kansantalouden tilinpito, Rakenne, määritelmät ja luokitukset (National Accounting, Structure, Definitions and Classifications). Tilastokeskus, Tutkimuksia N:o 63, Helsinki 1980.

STRÖMMER, AARNO Väestöllinen muuntuminen Suomessa (The Demographic Transition in Finland). Väestöpoliittisen tutkimuslaitoksen julkaisuja A:13, Tornio 1969.

Suomen taloushistoria 3, Historiallinen tilasto (The Economic History of Finland 3, Historical Statistics), ed. Kaarina Vattula. Helsinki 1983.

Suomen teiden historia I–II (History of Finland's Roads I–II). Lahti 1974.

Suomen valtionrautatiet 1862–1912 (History of the Finnish State Railways, 1862–

1912). Helsinki 1912.

SUPPLE, BARRY The State and the Industrial Revolution 1700–1914. The Fontana Economic History of Europe 3, Glasgow 1973.

TALKKARI, ANTTI Virkamieskunnan kasvu Suomessa (The Growth of the Civil Service in Finland). Tampereen yliopisto, Julkishallinnon laitoksen julkaisuja 2/1971, Tampere 1971.

TALKKARI, ANTTI Valtionhallinon henkilöstön määrällinen ja rakenteellinen muutos itsenäisyyden aikana Suomessa (Quantitative and Structural Change in Government Employees during the Period of Autonomy). Tampereen yliopisto, Hallintotieteiden laitos, Julkishallinnon julkaisuja 3/1979, Tampere 1979.

TALLBERG, MARIANNE Sophie Mannerheim, En historisk beskrivning och analys av hennes verksamhet inom sjukvården och sjuksköterskeutbildningen 1904–1928 (Sophie Mannerheim, An Historical Description and Analysis of her Activities in Nursing and Nursing Education 1904–1928). Helsingfors sjukvårdsinstitut, Helsingfors 1981.

TALVE, ILMAR Suomen kansankulttuuri (The National Culture of Finland). Mikkeli 1979.

TATTARI, VEIKKO Julkista hallintoa koskeva kansantulotilasto vuosilta 1948–1962: Kunnat ja kuntainliitot (National Income Statistics concerning the Public Sector: Municipal and Inter-Municipal Authorities). Tilastokatsauksia 1965.

TERVASMÄKI, VILHO Puolustushallinto sodan ja rauhan aikana 1939–1978, Puolustusministeriön historia II (The Administration of Defence during War and Peace 1939–1978, History of the Ministry of Defence II). Hämeenlinna 1978.

TERÄ, MARTTI V. – TERVASMÄKI, VILJO Puolustushallinnon perustamis- ja rakentamisvuodet 1918–1939, Puolustusministeriön historia I (The Administration of Defence during the Years of Establishment and Building, 1918–1939, History of the Ministry of Defence I). Helsinki 1973.

TIKKANEN, TOIVO Rannikkokalastuksemme koneellistamisesta 1870-luvulta 1920-luvulle (The Mechanization of Our Coastal Fishing Industry from the 1870s to the 1920s). Scripta Ethnologica 29, 1973.

TUOMI-NIKULA, OUTI Keskipohjalaisen kalastajan vuosi, Keski-Pohjanmaan suomenkielisen rannikon ammattimaisen kalastuksen ja hylkeenpyynnin muuttuminen 1800- ja 1900-luvulla (The Year of Northern Fisherman, Change in Professional Fishing and Sealing on the Finnish-Speaking North-West Coast of Finland during the Nineteenth and Twentieth Centuries). Kansatieteellinen arkisto 32, Vammala 1982.

USHER, DAN The Measurement of Economic Growth. Oxford 1980.

VALVANNE, HEIKKI Valtiontalous vuosina 1938–1951 (The Government Economy 1938–1951). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Sarja B:10, Helsinki 1949.

VARTIA, YRJÖ O. Relative Changes and Index Numbers. ETLA A4, Helsinki 1976.

VEISTÄJÄ, VERNERI Teatterimaailma, Maamme teatterit ja niiden taiteilijat (The World of Theatre, Our Country's Theatres and Their Artists). Helsinki 1950.

VEPSÄ, KIRSTI Elintason muutos Suomessa vuosina 1910–1965. Tutkimus elintason perusulottuvuuksista sekä elintason ja taloudellisen kasvun välisestä yhteydestä (The Change in the Level of Living in Finland 1910–1965). Sosiaalipoliittisen yhdistyksen tutkimuksia 21, Helsinki 1973.

VIITA, PENTTI Maataloustuotanto Suomessa 1860–1960 (Agricultural Production in Finland, 1860–1960). Suomen Pankin taloustieteellisen tutkimuslaitoksen julkaisuja, Kasvututkimuksia I, Helsinki 1965.

VIITA, PENTTI Kasvututkimuksesta dosentti Arvo M. Soiniselle, Keskustelua (To Do-

cent Arvo M. Soininen: Growth Study, A Discussion). Kansantaloudellinen aikakauskirja 1967.

VOIONMAA, VÄINÖ Teollinen vallankumous Suomessa. Suomen historia radiossa (The Industrial Revolution in Finland. The History of Finland on the Radio), Helsinki 1930.

VUORELA, TOIVO Suomalainen kansankulttuuri (The Finnish National Culture). Porvoo 1977.

Wages, Cost of Living and National Income of Sweden 1860–1930, I–III. London 1933–1937.

WARIS, HEIKKI Muuttuva suomalainen yhteiskunta (The Changing Society of Finland). Porvoo 1968.

WILLGREN, K. Suomen finanssioikeus (The Fiscal Law of Finland). Porvoo 1910.

JOURNALS

Maalaiskunta (The Rural Borough).

Musiikkilehti (The Music Journal).

THE SERIES OF STUDIES ON FINLAND'S ECONOMIC GROWTH

I VIITA, PENTTI Maataloustuotanto Suomessa 1860–1960 (Agricultural Production in Finland, 1860–1960). 1966. 80 p.

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