

**Co-evolution of People Politics and Production: Finnish
Agriculture after the Second World War**

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1 Introduction

Finland is one of the northernmost agricultural countries in the world. Therefore, the short growing season and disadvantageous weather conditions are the basic constraints for Finnish agriculture. The growing season in the southernmost parts in Finland is around 180 days, whilst in the north only 120 days. Despite these drawbacks the Finnish agricultural production faced a growth in productivity during the post-war period. This was due to the modernisation and commercialisation of the agriculture. Also, a number of institutional changes can be seen as the reasons behind the growth. Finnish farming was a success story in production terms, though at the same time the rural areas and the population faced structural change, including massive migration from the rural areas.

As one of the pioneers in the study of structural change in agriculture, T. W. Schultz, already stated in the early 1950s, the development of Western economies can be characterised by a decline of the aggregate input of the community to produce farm products¹. Also in Finland the growth of productivity enabled the feeding of the Finnish people with less labour input into agricultural production. Right after the Second World War Finland was still a country highly dependent on the agricultural sector. By the end of the century the situation changed dramatically: the status of agriculture in Finland declined in terms of

both its contribution to the national economy and its role as an employer. Primary production in 1950 accounted for 26% of gross domestic production (GDP) and 46% of the labour force, whilst by 1985 its share has declined to 8% of GDP and 14% of the labour force (Table 1). In 2002 the proportion of agriculture² was only 1.5% of GDP and 4% of the labour force, though in the vast rural areas agriculture and forestry together formed the most important field of activity.³

The changes in Finnish agriculture are among the basic determinants in explaining the economic, social and political developments of the country during the latter half of the 20th century. The development of agricultural production was a key factor in launching the massive emigration from the rural areas to the urban centres – thus preparing the ground for urbanisation of Finland that occurred during this time period. Furthermore, the rise in production and productivity made it possible to lower the prices of foodstuffs; together with the growth of wealth people spent less on food and drink. For example, in the late 19th century over 50% of the private consumption expenditures still went to foodstuffs (not including drink), whilst this share decreased to one third in the early 1950s, to one fourth by the early 1980s, and to c. 14% by the early 21st century.⁴

During the post-war period agriculture made a considerable impact on the industrial development within the country. The food industry emerged to become the fourth largest industrial branch in Finland, including meat processing, the dairy industry, the bakery industry, and the brewing and soft drink industry. The agriculture based cluster of industries evolved, including not only food industries but also various other industries, for example, the machinery of metal industry production and tools (such as tractors) to be used in agricultural production. The most important industrial sector during the post-war era, namely the forest industry, was also closely linked to the developments of the agricultural sector due to the fact that the greatest proportion of the forest was owned by farms up to the 1970s.

One of the main characteristics of Finnish agricultural produc-

tion throughout history has been the privately owned, relatively small-sized farms. The role played by the central government in providing possibilities for agriculture has been another key factor. This paper aims to stress the co-evolutionary progress of Finnish agricultural production on the one hand, and the changes in society/government as a whole on the other. It is not possible to explain the other without taking into consideration the changes in the other determinant. Namely, during the period Finnish society and the economy in particular faced a number of changes. Agricultural production can be seen as pivotal in this process. Also, agricultural production was highly dependent on the complex socio-economical and macro-level political constraints. Following the basic ideas of Nobel laureate Ronald Coase, agricultural production in privately owned farms was basically possible only because of property rights provided by the government; namely the rights to own farm land.⁵

The government also used its rights to govern land ownership in several phases in Finnish history, starting with general parcelling out of land in the 18th and 19th centuries, land acquisition acts in the early 20th century and right after the Second World War. In 1950 one third of all Finnish farms, namely over 100,000 farms, were established by land acquisition acts.⁶ All these changes were only possible by infringement of private ownership, and they all laid the basis for the further development not only in agricultural production but for the countryside in Finland as a whole.

Table 1. *Distribution of Employment 1860 – 1999, percent shares*

	Primary production	Secondary production	Services	Total
1860	79	14	7	100
1890	74	17	9	100
1920	60	20	20	100
1950	46	29	36	100
1980	13	34	53	100
1999	6	28	66	100

Sources: Tilastokeskus (www.stat.fi); Hjerppe, *Suomen talous 1860–1985: Kasvu ja rakennemuutos*, 286 – 291; Hjerppe, *The Finnish Economy 1860–1985. Growth and Structural Change*, 63; Tykkyläinen and Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*, 14; Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 15 – 16.

The structural change of the Finnish economy can be viewed from the macro level as a change from agriculture to a service economy in a short period of time. As Riitta Hjerppe has pointed out, the development of the Finnish economy differs from those of many other Western European countries, such as Sweden, Germany, or United Kingdom: the structural transition of the economy happened directly from primary production to services, without a period of industrial dominance in the economy – both in terms of labour force and share of the GDP.⁷ Yet agriculture was a major source of livelihood for a number of people until the end of the century. Even in the early 21st century ‘farmer’ was among the most common classifications of employment in Finland; for example, in 2002 there were almost 80,000 farmers in Finland⁸.

This article purports to answer the question how and why the change occurred. The structural change of Finnish agriculture during the post-war period has not yet been studied accurately enough. This paper tries to describe the basic development patterns by using the current research literature as well as statistical material as sources for the study. First, we will concentrate on the general structural changes in the Finnish economy by stressing the

institutional constraints, and second, on the change in the productivity of Finnish agriculture, with emphasis on the modernisation and commercialisation of agricultural production. For starters, some conceptual considerations are made.

2 Conceptual Setting

What were the possibilities for individual farmers in Finland to develop their agricultural production during the post-war era? On one hand, one might stress the exogenous constraints: the international competition on farm products which lowered their prices and made the domestic production highly difficult without the aid provided by the state. On the other hand, one might say that these subsidies by the state constrained production even further. These points are worth keeping in mind, though it is necessary to point out that even though these exogenous pressures existed there was still room for individual strategies not only at the governmental level for the national agricultural policies, but also for the individual farmers. Therefore, the key issue in the development of Finnish agriculture during the post-war era is to understand macro-level exogenous constraints and micro-level endogenous possibilities, and the co-evolutionary historical paths of these two levels.

The concept 'co-evolution' is being used in describing the long term development of industries in different societies. As Johann Peter Murmann has pointed out, in order to understand the 'paths' – either success or failure – of certain industries in certain countries, the role played by society, and the governmental role in particular, have to be taken into the analysis. Firms and industries are related to the society where they emerge and develop, and furthermore, the society as well is dependent on the evolution of the industries and other branches of the economy.⁹ Following this line of thought, also the development of agriculture should be seen as a product of co-evolution of society and production, people and politics. As Jon Lauck has pointed out, also in the United States during the post-war period farmers and politics interacted, launching processes of competition and concentration¹⁰.

In describing the evolution of Finnish agriculture, a number of rather complicated concepts are used, such as modernisation,

technological change, innovation, productivity, (structural) change, continuity (discontinuity), and the role played by the institutions. Even 'agriculture' itself is a highly problematic concept in the Finnish context. Namely, when analysing primary sources of livelihood for the agrarian people in this time period, the farm itself did not necessarily provide the main income for the family. The role of forestry was especially pronounced in providing extra income in many parts of Finland. Furthermore, working outside the farm was also common.¹¹

The possibilities for individual farmers to influence their sources of livelihood were seen in the contemporary texts as well as in research narrow – on the contrary the role played by the state as 'rule maker' is stressed. Regulation and protection in a semi-closed and protected economy was characteristic of all economic activities in Finland up to the early 1980s, of agricultural production in particular. Furthermore, protection and regulation were characteristic of the agricultural production and trade on agricultural products also in an international setting throughout the post-war era up to the 1990s, though attempts were made to 'open' and deregulate production and especially trade¹².

State intervention is usually understood as a necessity to correct market failures. By referring to the institutional economics the institutions should, however, be seen in a broader context. Following Douglass C. North, we stress that institutions should be understood as the 'rules of the game', whilst individual actors and organisations are 'players'. These rules include not only formal state legislation, but also various informal constraints, such as codes of conduct, values and historical dependencies.¹³ The school of 'public choice' has paid more attention to the interaction between institutions, organisations and individuals.¹⁴ The development of Finnish agriculture during the post-war period was highly dependent – at least at the political level – on the nexus-of-contracts and interplay between a number of actors. In the corporatist system the role played by the farmers' interest group, The Central Union of Agricultural Producers and Forest Owners (MTK) was paramount. Farmers succeeded in influencing national (agricultural) policies through it. The situation was similar in Sweden. The corporate decision making

process enabled MTK to get a more powerful position in the negotiations during the 1980s than it should have had in proportion to agriculture's share in GDP and the number of members in the interest group.¹⁵

'Modernisation' is in this paper understood as an outcome of a number of technological and institutional innovations. A number of factors contributed to the modernisation in agriculture, including the biological and natural conditions for agricultural production; the urban environment and industrialisation as a background for the demand of agricultural products but also in supplying tools and machinery for agricultural production; professional activity of farmers, including training, education and the services provided by a number of advisor organisations. Finally, modernisation is highly dependent on the possibilities of the individual farm to adapt to innovations, whether in terms of mental readiness for change or due to financial possibilities.¹⁶

Institutional innovations are here understood mainly as the results of national agricultural policies – though they were products of long processes in which the different actors had possibilities to exercise influence on the outcomes. Technological innovations include not only the mechanisation of agricultural production, but also cereal and cattle breeding, schooling of farmers, farm advising organisations and so on. Furthermore, neither the institutional nor the technological innovations are important before they are taken into common use.¹⁷ Within the technological innovations productivity and efficiency of production is usually stressed – as well in contemporary discussion as in the research. The growth of productivity was among the key issues in Finnish agricultural policy throughout the period – the concept, its causes and consequences were not called into question. However, even the measurement of productivity is tricky¹⁸. Although the growth of productivity enabled more production with less human input, it required more capital input. Therefore, agricultural production changed from labour-intensive to capital-intensive. This caused financial difficulties to individual farms due to investments to more efficient machines and better facilities, and also due to a number of environmental problems caused by massive utilization of artificial fertilizers and pesticides.¹⁹

The changes in Finnish agricultural production did not occur in a vacuum. On the contrary, the international structural changes in agriculture, food industries, politics and the trade of agricultural products describe a lot of the 'Finnish story' – especially from the late 1980s onwards when Finnish agriculture had to be adjusted not only to the standards and restrictions of the European Union, but also to GATT and WTO agreements.²⁰

3 The Change of the Finnish Economy and Agriculture

The basic patterns that influenced Finnish agriculture during the different decades are described in Table 2. In its perspective institutional patterns are overemphasized – the production and productivity patterns, as well as technological development will be described later. The general trend in the Table marks the primary problems in each time period, whilst 'key issues' refers especially to the debates in agricultural policy. The role played by the state is prominent. As a whole the principal aims of Finnish agricultural policy since the 1950s have been efficiency, self-sufficiency in farm products, an adequate income level for the farming population, ensuring the availability of foodstuffs, and the need to maintain settlement over the whole country²¹. The two last columns, namely type of production and ownership refer to the actor-level changes in individual farms.

Immediately after the war the key issue in Finnish domestic politics was the resettlement of the soldiers and the people from the lost Karelia.²² The process was enforced by a land acquisition act. Altogether 100,000 new homesteads were founded. From these homesteads one third were engaged in full-time agriculture, c. 15% practised agriculture as a secondary source of income, and the rest were not engaged in farming at all. The homesteads were established either by dividing the farmland of the older farms or by clearing land for cultivation. Over 9% of all farming land in the 1950s was created through land acquisition. Since the urban centres in Finland did not provide enough possibilities and the poor post-war country did not have anything else to offer, the resettlement to the countryside was an act of necessity in the post-war situation, but had long-term consequences. First, the average size of Finnish farms decreased

due to the fact that the new farms were small-sized, practically all below 15 hectares. Second, the resettlement partly delayed the urbanisation process in Finland, which began only during the 1960s when the people from the rural areas started to move in masses to the urban areas. Third, again partly due to the resettlement, agriculture remained as one of the most important sources of livelihood for the majority of the people. Fourth, resettlement was one of the major reasons for the problems related to the overproduction during the 1960s and 1970s.²³

Table 2.

Phases of development in Finnish agriculture, from the 1940s to the 21st century

	1940s and 1950s	1960s and 1980s	1990s and the early third millennium
General trend	Adaptation to the post-war economy	Overproduction	Adaptation to the European Union
Key issues	Resettlement, controlled economy, encouragement of agricultural production	Restrictions on production, out-migration from rural areas	Growth and structural change, viability of the rural Finland; Commercialisation
Type of production	Diversified, central role played by the additional incomes	Concentrated, additional income important	Concentration
Typical farm ownership	Small, family owned	Middle sized farms, family ownership	'Euro-sized' production units, family owned

Until the mid-1950s the Finnish economy was tightly controlled, especially food production due to the lack of some vital foodstuffs. Therefore, agricultural production as a whole

was encouraged to meet the growing demand. The resettlement of the armed forces and Karelian people were parts in this process as well. By the end of the 1950s the encouragement of greater agricultural production even proved to be too successful: agriculture was suffering from severe overproduction.

The restrictions of the agricultural production were among the most debated issues in Finnish politics throughout the 1960s and 1970s. Critical political borderlines were drawn according to the standpoints concerning the future of agriculture. The Agrarian Party (later Centre Party) had deep roots in the countryside and close connections to the Central Union of Agricultural Producers and Forest Owners (MTK) and supported policies that would have kept Finnish agriculture profitable, whilst the Social Democrats opposed further subsidies to agricultural production. Among the debated issues from the 1950s on was, for example, how to ensure through incomes policies similar wage trends to farmers as the workers in the society had²⁴. The overproduction became a topic of public discussion in the late 1950s. Especially the overproduction of dairy products and eggs caused problems. Four special governmental committees were established to cope with the problems, the main concern being overproduction. The first committee (1958–1962) concentrated on the acute problems of exporting agricultural products to European countries and on the structural changes in rural areas. The second committee (1965–1967) concentrated more clearly on the overproduction and recommended quite unique solutions. The third (1977–1980) and fourth (1985–1987) committees concentrated on similar issues, with more emphasis on the structural changes not only in agriculture, but in the rural areas of Finland as whole.²⁵

The role played by the state in regulating agricultural production was important. Already in the beginning of Finnish independence it was regarded as a necessity to secure the domestic production of food in the case of crises. Therefore, domestic production was being subsidized, which was even highlighted in the post-war resettlement. Already during the late 1950s Finnish agriculture produced more food than could be consumed in domestic markets (Table 3). This continued in the

1970s, 1980s and 1990s, though there were annual changes in self-sufficiency in foodstuffs.

The export of agricultural products was problematic. In most of the industrialised countries, the import of agricultural products has been under control throughout the post-war era – these restrictions in import and farming subsidies are sometimes accused of being the main reasons for the high prices of agricultural products and overproduction²⁶. Finland, among other countries, has used import duties and quotas as the central tools in maintaining domestic agricultural production – the fact was that the production of agricultural products in Finland was not competitive in world markets. Therefore, export of the overproduction needed, again, governmental subsidies. Thus, it became evident that domestic production had to be cut. This was, however, politically difficult – the leading party (Agrarian Party) was dependent on rural votes. Cuts in the production could have also led to dramatic consequences in the Finnish economy as a whole.

Table 3.

Self-sufficiency in foodstuffs: production as percent of consumption

Product group	1970	1980	1990	2000
Cereals	114	70	175	103
Dairy products – liquids	..	129	122	112
Dairy products – fats	126	128	143	132
Beef	110	102	109	93
Pork	110	119	114	101
Eggs	136	151	137	114
Sugar	27	60	91	71

Source: Official Statistics of Finland (www.stat.fi); Ministry of Agriculture and Forestry (<http://tike.mmm.fi>).

Due to overproduction, agriculture became to be highly subsidized in most of the Western countries. In Finland the subsidies to agriculture were highly controversial. The restriction

methods and subsidies formed a complex system, in which most of the export subsidies were paid by the farmers themselves.²⁷

More drastic measures to cut the overproduction were introduced during the 1960s and 1970s. Among the most innovative institutional restrictions was the field reservation system, suggested by the second agricultural committee in 1969. Within the field reservation system compensation was paid for fields allowed to lie fallow. Around 10% of the total area of cultivated land was withdrawn from active cultivation. The field reservation system was widely criticised, on the one hand on emotional grounds: it was seen as the embodiment of the stagnation of rural areas, where now the areas previously cleared for farming land with hard work were abandoned or reforested. On the other hand, the field reservation system also proved to be an insufficient measure to deal with the problems of overproduction. At the same time the market situation became easier due to the sales to the Soviet Union, weak crops and oil crises, which all increased world market prices for agricultural products. Furthermore, the massive out-migration from almost all the rural areas of the country diminished the number of active farms, especially small sized ones.²⁸ The migration did not include only a flow of people, but also a flow of capital from rural to urban areas – the patterns of forest ownership changed drastically, in particular. The outcome of migration was profound in the whole of Finnish society: in 1950 around one third of the population lived in urban centres, whilst by the end of the millennium the share was about 67%.²⁹

The measures by the state to restrict production somewhat stabilised the situation but at the same time restricted 'natural' development of the individual farms. For example, the production quotas on the dairy farms meant that the production had to be adjusted to a certain level for years to come.³⁰ The production quotas allotted to milk production were defined in the middle of the 1980s and were still in use in the early 21st century, though farms were enabled to 'buy' more quotas from each other from the 1990s on.

During the 1990s Finnish agriculture again faced a period of

change. The main determinant was Finnish membership in the European Union: Finnish agriculture had to adjust itself to its agricultural politics, diminishing farming subsidies, production quotas and other restrictions. Though Finland got a number of advantages to agriculture in the Treaty of Accession to the EU, joining the EU has caused the most profound structural changes in production since the resettlement after the Second World War. The number of active farms was decreasing rapidly, people were again moving from the countryside to urban centres, and the population in rural areas was growing old. The number of milk suppliers decreased to over half in 1990–2002, namely from about 43,500 to 20,000 farms. Furthermore, about 74,000 farms applied for the basic forms of agricultural support in 2002, whilst the number in 1994 was about 105,600 farms.³¹ Thus almost 30% of active farms had disappeared in less than ten years. More emphasis in political discussion was put on the viability of the rural areas, on the need to keep the countryside inhabited. The cultural values of the rural areas and landscape were stressed in public discussion.

Environmental considerations such as the pollutant impact of agriculture gained more interest in public discussion throughout the period. The massive use of fertilizers emerged. However, their use has decreased during the 1990s, due to growing interest in organic production, on the one hand, and because of the decrease of production on the other. Also, the development of fertilizers has enabled a decrease in their use. During the 1980s the use of fertilizers increased from ca. 1,000 million kilos to 1,200 million kilos, but during the 1990s it decreased to circa 750 million kilos (in 2002). When proportioning the amount of used fertilizers to the area in production, the decrease of usage was over 35% in 1990–2002.³² The organic production of dairy products started in the 1960s. State subsidized organic production, and the number of organic farms grew to 671 in 1990 and to 5,000 in 2001. Finnish organic farms comprised 6.5% of all Finnish farms in 2001 and took 5.5% of the country's arable area, i.e. 150,000 hectares was under organic cultivation.³³

4 The Changes in Agriculture on Farms

Behind the macro level changes from the 1940s to the end of the 1990s a number of changes occurred in the individual farms as well. A 'typical' Finnish farm cannot be found because of the variation in types of production (for example, from grain growing in the southernmost parts of the country to reindeer-keeping in the north) and because geographic and climatic conditions are so different in different parts of the country. Nevertheless, some general micro-level features might be listed.³⁴ Even though there were different types of farms, the structures were rather similar and farms developed to become more similar during the time period under investigation. The institutional constraints or normative pressures – especially domestic and EU laws – forced the farms to adapt to similar kind of structures and production. Furthermore, the competitive environment including technical (and even climatic) opportunities was the same to most of the farms.³⁵

The most typical Finnish farm throughout the period was owned by the family. In 2002 private persons owned 88% of farms, heirs and family companies eleven, corporations, foundations and cooperatives 0.7 and the state, municipalities and congregations 0.1%.³⁶ Family ownership of farms was not questioned in public debate and it seems to be evident that other modes of ownership were simply not regarded as possible in Finland thanks to the traditions of private ownership of farms and forests.³⁷ Furthermore, there have arisen problems related to the uneven – young people sought jobs in towns – age structure of farmers. To solve them, a number of measures were taken in order to facilitate the transfer of farms to descendants.³⁸

Throughout the period the employment of an extra labour force has been rare, except in the largest farms. Rather farmers themselves have sought auxiliary incomes, for example, in industries and services, either as a salaried employee or as a private entrepreneur. Statistics show that in 1951–1952 55.6% of the average income of Finnish farmers came from agriculture, 28.3% from forestry, and 15.3% from secondary sources. The share of additional income was larger in small-sized farms.³⁹ In 2002 over one fourth of Finnish farmers practised other entrepreneurship besides traditional farming; of them almost 70% were engaged in

different services such as contracting and tourism.⁴⁰

Forestry has always played an important role. As was with farm land, the private ownership of forest land remains dominant in Finland: in 2003 private families owned two-thirds of the country's forests and the remaining one-third belonged to the state, municipalities and companies. In the early 21st century an average farm had 58 hectares forest. During the 1960s over 50% of forest land was owned by farms; this number decreased to around 34% in 1986–1994, and in 2001 only 18% of the owners of the forest were farmers.⁴¹ This development is due to the fact that in a number of cases the partition of the forest was carried out between heirs, out of whom an increasing number lived in urban centres. In many parts of the country, one can argue, forestry is actually a more important source of income for farmers than agriculture. In general, the arable land area is larger and correspondingly, the forest area is smaller in the south than in the north.⁴²

'Typical' farming changed from diversified production to a more concentrated type of production. This meant that farms specialised in different types of production; in the early 1960s almost all Finnish farms produced dairy products (milk), whilst in the early 1980s only one third of Finnish farms still had cows⁴³. The proportional share of dairy production in Finnish agriculture has further decreased during the 1990s and early 21st century: in 1995 one third of farms produced dairy products, whilst in 2002 the share was a little over one fourth. At the same time the share of crop farms increased from 42 to 55%.⁴⁴ Certain farm animals such as sheep almost disappeared from the rural areas.⁴⁵

Especially from the 1980s onward the average size of the farms has been growing; together with modernisation of production equipment the 'typical' early 21st century Finnish farm has become quite different when compared to its late 1940s predecessor. The average area of arable land in 1950 was around eight hectares, whilst in 2000 it was already 25 hectares. At the same time the number of cows on an average dairy farm grew from four to fifteen, but the arable land and the labour force engaged in agriculture decreased. Therefore, the productivity of Finnish agriculture grew significantly.

5 Production and Productivity

The most typical farm was small, having around 5 to 10 hectares during the 1950s.⁴⁶ The rural settlement measures favouring small-sized farms implemented in the early years of independence and after the Second World War resulted in this, and actually already from the mid-19th century the average size of farms had decreased due to the settlement and partition of farms.⁴⁷ During the 1950s only a number of small farms with less than 10 hectares land increased (Table 4). The problems related to the small farm size were also recognized in governmental regulation: from the early 1960s on the centre of gravity within Finnish agricultural policies was to rationalise by increasing the size of farms.⁴⁸ The total number of farms decreased rapidly from the 1960s on; from 1972 to 1992 approximately 5500 farms were closed down every year⁴⁹. During the period under scrutiny, the number of small farms decreased rapidly, whilst in the largest farms it grew still: the number of farms with 30–50 hectares of arable land area increased 1.5-fold, and the number of the largest farms with over 50 hectares was almost eight times the number in 2002 than it was in 1950. Most of the growth of the largest farms occurred in the 1990s. The average size of the farm in the late 1960s was still under ten hectares, in the late 1980s it was around 12.5 hectares, in 1990 about 17 hectares, whilst in 2002 it was already 30 hectares⁵⁰. The most important reason for the relatively small size of the farms after the war was the land acquisition legislation at the beginning of Finnish independence and after the war. In 1950 of all active farms around 13% were created right after independence by the Leaseholders' Act and 19% by the land acquisition laws after the war. Thus the 'old' farms constituted below 70% of all farms though the area of arable land and the number of animals on the 'old' farms was higher than on the 'new' farms.⁵¹

The area of arable land decreased during the post-war era by about one fifth, the number of farms to one fourth and the agricultural labour force to one eighth (Table 5). However, at the same time the production of the crop yield (combined production

of wheat, rye, barley and oats) increased almost threefold, and total milk production decreased only by about one third. Consequently, the productivity within the agricultural sector grew (Table 6).

Table 4. *Number of Finnish farms by size of arable land area, 1950 – 2000*

Year	1–10	10–30 ⁵²	30–50 ⁵³	50–	Total
1950	231,371	62,478	9,931	1,507	305,287
1959	249,506	70,533	9,652	1,572	331,263
1969	206,731	77,575	11,034	1,912	297,252
1980	138,616	74,399	8,753	2,953	224,721
1990	47,035	64,637	12,678	4,764	129,114
2000	17,209	35,163	15,621	10,897	78,890

Sources: Niemelä, *Lännenlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, 351, 420; Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 16–18; Finnish Official Statistics (www.stat.fi); Information Centre of the Ministry of Agriculture and Forestry (<http://tike.mmm.fi>).

In order to measure the productivity of agriculture one has to take into consideration the number of farms and the labour force in farms compared to the production output. To put it simply, one can argue that productivity corresponds with the size of a farm; the average size of farms (arable land in use) increased threefold during the time period under study. Nevertheless, it has been emphasized in several studies that the small sized farms actually operate quite efficiently⁵⁴. The growth of average-size farms during the 1980s was approximately at the same level as in EC-countries at the time. However, the agricultural labour-force decreased more rapidly in Finland than in Europe. In a long-term perspective, the productivity of Finnish agriculture already increased before the Second World War significantly, but right after the war it diminished: the productivity in 1947 and 1948 was one fourth lower than it had been before the war. From the early 1950s on, however, agricultural productivity increased, but not as

much as in Finnish industries.⁵⁵ During the 1990s the productivity of agriculture increased more rapidly, for instance, in Sweden and in Denmark than in Finland.⁵⁶ In OECD-countries the productivity growth rate of agriculture was higher than the growth of productivity in manufacturing or services, or the growth of productivity per capita GDP during the post-war era.⁵⁷

Other productivity figures of Table 6 also show significant increase. Average milk production per cow doubled and the production of milk by dairy farms grew sevenfold – at the same time the number of cows diminished to one third (from 1.1 million to 355,000). The productivity growth in milk production was due to the fact that the small farms with only one or two cows ceased to exist. Furthermore, agriculture was specialized so that certain farms started to produce, for example, milk, and others concentrated on grain production. Thus, in 1950 over 90% of all farms produced milk, whilst in 2000 their share was below 30%. Average production per cow presumably grew even more than can be detected from Table 6, because the production is calculated only from the farms under the cattle control system – in the early 1950s only about one fourth of cows were monitored by the system, whilst in early 2000 the share was around three fourths. Crop yield production per farm increased over tenfold, even though the milk farms are included in the numbers. The overall productivity growth of the labour force can be seen from the fact that the arable land area per worker increased almost sevenfold during the time period.

However, the figures in Table 6 emphasize labour-related productivity at the expense of capital productivity. In order to produce more with less labour input, investments to modern technology have been necessary. Therefore, the productivity of capital, and with it, the total factor productivity has not necessarily developed as favourably as labour productivity. This also leads to the conclusion that despite the relative increase in productivity, agricultural production was not profitable during the 1990s. Similar phenomena also occurred in Finnish industry at the turn of the 1980s and 1990s.⁵⁸

Table 5.
Production indices in Finnish agriculture 1950 – 2000 (1950 = 100)

	Arable land in use	Agricultural labour force	Number of farms	Crop yield (total)	Milk (total)
1950	100	100	100	100	100
1960	108	79	109	152	69
1970	113	47	97	202	77
1980	103	31	74	236	81
1990	86	22	42	306	72
2000	83	12	26	291	65

Sources: Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*; STV, Suomen tilastollinen vuosikirja (Statistical yearbook of Finland); SVT, Suomen Virallinen Tilasto III, Maatalous; Maatalouslaskenta, Maatalouslaskenta 1990 (Agricultural census 1990); Maataloustilastollinen, Maataloustilastollinen vuosikirja 2002; Silntanen and Ala-Mantila, *Maatalouden kokonaislaskelmat 1980 - 1988*, 6 - 7.

Table 6. *Productivity indices in Finnish agriculture 1950 – 2000 (1950 = 100)*

	Average size (arable land)	Milk/cow	Production of milk/ milk farms	Production of crop yield/all farms	Arable land area/worker (hectarage)
1950	100	100	100	100	100
1960	100	116	70	140	137
1970	116	142	101	207	240
1980	140	170	222	320	336
1990	203	105	410	725	394
2000	316	207	710	1115	664

Sources: see previous table.

6 Mechanization and Commercialization

Productivity growth was highly dependent on the commercialisation and the technological change in agricultural production. Technological development included not only mechanisation, namely, machinery and tools, but also better production plants (for example, barns, piggeries, grain driers), and even cereal and cattle breeding. Also, centralised advising played an important role. As in all technological development the innovations as such are not important until they are taken into use. For example, tractors first came to Finnish fields already in the early 20th century, but it was only after the Second World War that the tractors replaced the older means of cultivating and harvesting in the fields. As an outcome, farming took on characteristics of factory-like production – ‘an industrial logic or ideal in agriculture’ emerged, as Deborah Fitzgerald has pointed out in the case of the United States - and the primary sector was commercialized towards ‘agribusiness’.⁵⁹ Though the commercialization or industrialization of agriculture in the Finnish case did not reach the level of the United States or some other major producers of agricultural products, the progress was all the same significant – especially when taking into consideration the climatic, geographical, population and capital constraints.

In the work on fields mechanisation was by no means the most important factor in the productivity growth; mechanization in field crops resulted in greatly increased hectarage (as seen in Table 6)⁶⁰. Furthermore, the use of fertilizers increased significantly production of crop yield. In milk production mechanisation alone cannot explain the growth in productivity, though mechanical milking machines and highly equipped dairy barns made it possible to increase the number of cows in farms. The growth of milk production per cow was related to the cattle control system which included all kinds of counselling from animal feeding to best-practise working methods.

The first phase of mechanisation in Finnish agriculture occurred during the latter part of the 19th century. At the time the most important inventions were new types of equipment used with horses in field work. The second mechanisation period occurred

from the 1950s to the 1970s, when tractors replaced horses and the combine harvesters became general⁶¹

Technological development has made it possible to overcome a number of climatic and geographical constraints that Finnish agriculture has faced throughout history. Mäkelä has pointed to three big problems in Finnish agriculture: a cold climate, small farm size and long distances from consumption centres. The cold climate and the short growing season do not only limit the possibilities for cultivation and crops, but also cause high production costs for dairy farming: warm buildings are needed for the cattle throughout the wintertime. The small size of the farms is partly related to the climate: it has been argued that it takes more time to take care of twenty cows in Finland than fifty cows in France or 150 cows in New Zealand. Thus, for example, in 1995 the average number of cows per dairy farm in Finland was only 11, in Germany it was 23, in Sweden 26, in Denmark 40, and in Great Britain 64⁶². In sparsely populated Finland marketing agricultural products is problematic and transportation costs are high.⁶³ Together they contribute to high production and transaction costs. With technological development, however, Finnish farms have at least partly been able to overcome these problems by more efficient machinery in fields and barns. Due to the short growing season and disadvantageous weather conditions Finnish agriculture is forced to use efficient machinery in the fields, and, for example, drying grain in special grain driers.⁶⁴

Usually there is only a limited time both for sowing in the spring and for harvesting in the autumn: therefore the work has to be completed as rapidly and efficiently as possible. As the average size of the farms increased but the possibilities to use a hired workforce remained limited, technology offered a solution to the problem. In field work the most important technological innovations that were taken into common use were tractors with all possible equipment and accessories, and the self-propelled combine harvester.

The general attitude in the rural areas towards modernisation has been, according to several studies, mainly supportive. Efficient farm production, modern production machines and faci-

lities, commercialisation, and progressiveness are understood among the farmers as positive values. They were also supported by agricultural politics; for example, the taxation system supported (even to excess) investments to modern production technology, such as tractors from the late 1960s on.⁶⁵ The positive attitude toward investments can be seen in the fact that from 1995–2002 around one fifth of the production costs in Finnish agriculture came from machinery and equipment. Together with building costs (10%) investments constituted almost one third of all production costs. The relative share of investments can be partly explained by the fact that the share of hired labour of production costs was below 10% for ‘outside’ labour was not typical for Finnish agriculture.⁶⁶

Table 7. *The number of tractors and horses on Finnish farms*

Year	Tractors	Horses
1920	147	391,000
1930	1,924	357,000
1941	5,916	350,000
1950	17,000	409,000
1960	87,000	225,000
1970	155,000	90,000
1980	220,000	21,000
1990	235,000	44,000
2000	333,000	58,000

Source: Aarnio, ‘Traktori’, 99; Jussila, *Spatial Diffusion of Modernization. A Study of Farm Mechanization in Finland at Regional and Local Levels*, 53; Tilastokatsaus, Tilastokatsaus IV, 35; Maataloustilastollinen, Maataloustilastollinen vuosikirja 2002; STV, Suomen tilastollinen vuosikirja (Statistical yearbook of Finland); SVT, Suomen Virallinen Tilasto III, Maatalous; Maatalouslaskenta, Maatalouslaskenta 1990 (Agricultural census 1990), 262.

The coming of tractors to farming is usually used as an indicator of the mechanisation of agriculture. As can be seen in Table 7, the number of tractors surpassed the number of horses

during the 1960s. During the 1930s there was approximately one tractor to every 200 farms, while by the late 1970s practically every farm had at least one tractor. Actually, the change was even more drastic as a consequence of the development of tractors: average horse power grew and the four wheel drive became common in the 1980s: by the end of the decade about 80% of the newly-bought tractors were four-wheel driven.⁶⁷ For an individual farm the purchase of a tractor was a huge investment. The tractors alone constituted, for example, in 2000 c. 50% of the value of sales of all farm machinery. Furthermore, different kinds of accessories and equipment for tractors (ploughs, harrows, fertilizers, and trailers) together constituted over 25% of all investments.⁶⁸

It was not the tractors themselves that made a change in the fieldwork methods, but the equipment that could be connected to them – especially after hydraulic lifting and three-point connection had become general. Tractors carried all kinds of equipment in sowing and harvesting time, but they were widely used also in forestry work, as well as in removing snow. Among the most important equipment and machinery one can mention, for example, combined drills which are said to have increased the crops of grains from 10% to 15% during the 1960s and 1970s.⁶⁹ In grain growing the single most important technological innovation that was adapted into common use was the self-propelled combine harvester.⁷⁰ In forestry chain saw made a huge impact also on agriculture, since especially for the small-sized farms forestry with traditional methods had provided important extra incomes. Thus, technological development as a whole led to structural change and to internal migration from the countryside to urban centres.⁷¹

The agricultural machines were at first mainly imported to Finland, but domestic production began quite early. Thus also the production of agriculture machinery followed the standard steps of technology transfer: from adaptation to own production and even to own development⁷². For example, the first Finnish-made tractors were produced already in 1918, but tractor production gained more importance only in the post-war period

when the tractor became common on farms. Governmentally owned tractor producer started to produce them during the 1950s – first under the name *Valmet*, lately under the name *Valtra*.⁷³ The company grew to be the leading producer in Scandinavia and among the most important producers in the world by the end of the century. After a number of corporate arrangements, the production of *Valtra* tractors was sold to US-based *Acgo* in 2003. Besides tractors, Finnish industrial companies started to produce, for example, self-propelled combine harvesters, different kinds of equipment, and especially machinery for forestry.

Besides heavy investment in machinery such as tractors and equipment, farm buildings were also improved. Plant breeding and the use of fertilizers, pesticides and herbicides became more common. On dairy farms the evolution of silage took place – the adaptation of the AIV-method on a large scale and flail forage harvesters played an important role.⁷⁴ Cattle breeding, better feeding, improvements in dairy barns and milking machinery, as well as farming advice and overall professionalization in agriculture is reflected particularly in the growth of productivity in dairy production. As an average one cow produced in 1950 c. 3,300 kg milk in a year, while in the late 1960s the production was already around 4,400 and in 2002 the medium yield was 7,100 kg of milk in a year.⁷⁵

But it was not only machinery, tools, plant breeding or other rather obvious technological changes that took place. Also, practical training and, in its vein, human capital accumulation has been stated as one reason for more efficient agricultural production. However, in recent studies it has been argued that the education of agricultural people actually increased productivity of work outside the farm rather than in farming itself; namely, educated youth moved away from the rural areas.⁷⁶

7 The Defeat of Cooperative Organizations

During the period under study here, agricultural production changed from labour-intensive working methods to capital-intensive production – ‘agribusiness’ also emerged in an international context⁷⁷. This commercialization of production led to specialization in production and to overall adjustment of the production to the market economy. When analysing Finnish agriculture and its functioning within the Finnish economy, the role played by the (production) cooperatives is central. Large cooperatives functioned as collective marketing mechanisms. As in other Nordic countries (e.g. Denmark), the cooperatives were linked either to workers’ movement or to rural communities. The rural cooperatives were formed to secure cheap commodities (retail trade cooperatives) to people who lived in the countryside, but also to offer financing (bank cooperatives), and to buy the products produced in the district (dairy, meat, cereal and forest product cooperatives). The cooperatives were jointly owned by the people who joined them. Cooperatives were seen, at least in the beginning, as organisations that satisfied the needs of the people better than purely business-oriented organisations. Thus, ideological stress was pronounced when cooperatives were created.

From the late 19th and early 20th century on the cooperatives played a crucial role in buying the products from farmers, in manufacturing the products and marketing them to customers. There were usually local cooperatives for dairy products, and they together formed powerful and influential national cooperatives. These national cooperatives, such as *Valio* in dairy products and *Atria* in meat, and *Metsäliitto* in forestry, were farmer-controlled marketing organizations that helped to blunt the impact of monopoly in prices by enabling producers to assert collective control over the sale of their commodities to processors.⁷⁸ Thus these cooperatives also had an important impact on industrialisation in the country, especially in the food industry. Furthermore, a specialised cooperative was founded to sell machines and equipments to farmers (*Hankkija*), and even the retail stores and banks in rural areas were dominated by cooperatives (*SOK* in retail trade, and *Osuuspankki* in banking). Common to all these

cooperatives was that though they were 'companies', they did not act according to the 'rules' of the market economy. Namely, the aim of the cooperatives was not to create value-add but to take care of the interests of the owners, namely, rural people in the wider sense. Thus, for example, the aim of *Metsäliitto* (a forest cooperative) was not only to sell forest products (pulp, paper, timber) profitably, but also to buy raw wood at a reasonable price from the forest owners⁷⁹. Rather than produce 'market value', *Valio's* major aim was to keep producer prices of milk at a reasonable level, as was *Atria's* to achieve the same with the price of meat. Beside these cooperatives a number of privately owned companies operated in the same businesses.

A major change occurred in cooperative structures during the 1980s and 1990s: in practice all national cooperatives were reformed to be more market oriented. This had a huge impact on the commercialization of the whole 'agribusiness' in Finland. For example, *Valio* was no longer (necessarily) the 'most reliable' buyer of milk-products, neither was *Atria* of meat, nor *Metsäliitto* of raw wood. Furthermore, some cooperatives collapsed in bankruptcies as was the case with *Hankkija*.⁸⁰ In many parts of the country, however, (small) local cooperatives held their ground – some of them even separated from the national cooperatives.

Intensive investments to the modern technology, land acquisitions, and expansion of the estates produced financial difficulties especially from the 1980s on. Before that time period bank loans had been relatively hard to obtain and high inflation rates kept interest rates low. However, during the 1980s certain measures were made to free lending– it was now, for example, possible to obtain foreign loans. This provoked (over)investments. At the same time the interest rates started to rise, inflation decreased, and during the turn of the 1980s and 1990s stagnation hit the whole country. In this situation many farms fell into debt and even into bankruptcy.

In commercialization certain changes in mental patterns of people living in rural areas can be stressed in order to understand development during the time period. For instance, the general attitude towards farming and agriculture changed from seeing it as a way of life to regarding it as a source of livelihood. Farms

became more like enterprises, and farmers transformed from peasants to entrepreneurs. Furthermore, according to Jussila among the farmers a positive attitude toward efficient production emerged, especially during the 1980s.⁸¹

8 Conclusions

Finnish agricultural production during the post-war period faced at least four major institutional changes: the resettlement after the war, overproduction from the turn of the 1950s and 1960s onwards, out-migration from the rural areas, and the adaptation to the European Union during the 1990s and first years of the 21st century. At the same time, major technological change took place: the mechanisation of production, commercialisation of farming and overall productivity growth – which also led to the problems related to overproduction.

Why did Finnish agriculture develop as it did during the post-war period?

The whole development of Finnish agriculture can easily be seen deterministically as if it were a matter of necessity – the actors, whether politicians, technology developers, or individual farmers, did not really have any other choices than the ones that were realised. Change and modernisation are usually seen as matters of necessity, though at the same time the ‘nature’ of agricultural production as history dependent is underlined, showing slow changes and agriculture itself as a conservative and homogeneous activity. Sometimes agriculture is understood more as way of living than as a source of livelihood. Agriculture has not been able, according to, for example, T.W. Shultz, to cope with the rapid structural changes and growth in the economy. Modernisation, including the growth of the average size of farms in western countries as well as the mechanisation of production, was the solution that sought to cope with the change.⁸² Thus also agriculture faced modernisation, and the actors were actively seeking possibilities of, for example, more efficient production.

The evolution of Finnish agriculture during the post-war era was a continuous readjustment to the climatic and geographical constraints, as well as to the political, economical and techno-

logical changes. Some of the institutional constraints were old (as the patterns of land ownership), some were formulated during the period. The drastic institutional changes were faced especially right after the war and after Finland joined the European Union. During both of these changes old structures were reformed, and even the mental patterns in rural areas changed. The adaptation to new and efficient production technology also occurred during the time period. A significant feature is that still after the war technology was mostly imported, whilst in the 1990s Finland was among the leading producers and designers of agricultural technology.

The role played by the state in manoeuvring, controlling, constraining, restricting, subsidising, and enabling agricultural production – and sometimes even technological changes – was without doubt a central piece in the puzzle to understand the post-war development of the Finnish agriculture. Governmental regulation itself was a mixed process, with a lot of political tensions and activity of interest groups. At the same time the state had to secure self-sufficiency of foodstuffs, deal with the problems of overproduction and negotiate the levels of agricultural production in an international setting. The most obvious solution to the problem would have been to increase the average size of farms and mechanisation of production. However, the state had to take into consideration a number of issues related to regional policy, and the fact that the number of people involved in agricultural production was still high until the late 1960s. Thus, for example, in the reports of the agricultural committees during the 1960s and 1980s, the issues related to self sufficiency as well as to the regional issues (such as employment in the rural areas), and ensuring a reasonable income level for farmers were being emphasized. Quality and price of domestically produced agricultural products were also key issues for policymakers.⁸³

Finnish agricultural production also had its own specialities that lasted over the structural changes in the time period. Despite the constraints and exogenous pressures the rural areas remained inhabited and agriculture was preserved.

NOTES

- ¹ T. W. Schultz, 'The Declining Economic Importance of Agricultural Land', *The Economic Journal* 61:244 (1951), 726.
- ² Including fishing and hunting.
- ³ Riitta Hjerppe, *Suomen talous 1860 - 1985: Kasvu ja rakennemuutos*. Helsinki: Suomen Pankki 1988, 286 - 291; Heikki Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*. Oulu: University of Oulu, Research Institute of Northern Finland 1987, 35; Riitta Hjerppe, *The Finnish Economy 1860 - 1985. Growth and Structural Change*. Helsinki: Bank of Finland 1989, 66 - 67; Sami Myyrä and Kyösti Pietola, *Tuottavuuskehitys Suomen maataloudessa vuosina 1987 - 97*. Helsinki: Agricultural Economics Research Institute Finland 1999, 7; Sisko Mäkelä, 'Northern dimension and family farming', *www.mtk.fi* (cited 28th January 2004) (2001); STV, *Suomen tilastollinen vuosikirja (Statistical yearbook of Finland)*. Helsinki: Tilastokeskus 1950 - 2003; SVT, *Suomen Virallinen Tilasto III, Maatalous*. Helsinki: Tilastokeskus 1950 - 2003; Maataloustilastollinen, *Maataloustilastollinen vuosikirja 2002*. Helsinki: Tilastokeskus 2002. - See also: <http://www.finfood.fi/> (cited 28th January 2004); www.stat.fi
- ⁴ Hjerppe, *Suomen talous 1860 - 1985: Kasvu ja rakennemuutos*, 271.
- ⁵ See especially Ronald Coase, 'The Nature of the Firm', *Economica* 4 (1937); Ronald Coase, 'The Problem of Social Cost', *The Journal of Law & Economics* 3 (1960).
- ⁶ SVT III, *Maatalous 1950 (Census of Agriculture)*, Vol 1, 53. For further details see e.g. Eino Jutikkala, *Suomen talonpojan historia*. Turku: 1958; Arvo M. Soininen, *Vanha maataloutemme: maatalous ja maatalousväestö Suomessa perinnällisen maatalouden loppukaudella 1720-luvulta 1870-luvulle*. Helsinki: Suomen maataloustieteellinen seura 1975; Matti Peltonen, *Talolliset ja torpparit: vuosisadan vaihteen maatalouskysymys Suomessa*. Helsinki: Suomen historiallinen seura 1992.
- ⁷ Hjerppe, *The Finnish Economy 1860 - 1985. Growth and Structural Change*, 67 - 68.
- ⁸ See e.g. <http://www.finfood.fi> (cited 28th January 2004)
- ⁹ See e.g. Heather A. Haveman and Hayagreeva Rao, 'Structuring a Theory of Moral Sentiments: Institutional and Organizational Coevolution in the Early Thrift Industry', *American Journal of Sociology* 102:6, (1997), 1606-1651; Johann Peter Murmann and Ernst Homburg, 'Comparing evolutionary dynamics across different national settings: the case of the synthetic dye industry, 1857-1914', *Journal of Evolutionary Economics* 11:2,

- (2001); Johann Peter Murmann, *Knowledge and Competitive Advantage: The Coevolution of Firms, Technology, and National Institutions*. Cambridge (Mass.): Cambridge University Press 2003, 8 – 24.
- ¹⁰ Jon Lauck, *American Agriculture and the Problem of Monopoly: The Political Economy of Grain Belt Farming, 1953-1980*. Lincoln: University of Nebraska Press 2000.
- ¹¹ See e.g. Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 46
- ¹² See e.g. John Martin, *The Development of Modern Agriculture: British Farming since 1931*. London: Macmillan 2000.
- ¹³ See especially Douglass C. North, *Institutions, Institutional Change, and Economic Performance*. Cambridge; N.Y.: Cambridge University Press 1990, 3 – 10.
- ¹⁴ On public choice literature see especially Juha-Antti Lamberg, et al., 'Uusinstitutionismi ja taloushistoria', in: Juha-Antti Lamberg and Jari Ojala (Eds.), *Uusi institutionaalinen taloushistoria. Johdanto tutkimukseen*. Jyväskylä: Atena 1997; Juha-Antti Lamberg, *Taloudelliset eturyhmät neuvotteluprosesseissa. Suomen kauppapolitiikka 1920-1930-luvulla*. Helsinki: Suomen Tiedeseura 1999.
- ¹⁵ Hilka Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958–1987*. Mikkeli - Helsinki: Helsingin yliopisto, maaseudun tutkimus- ja koulutuskeskus 1990, 16. 35, 74; Åke Anderson, *Vårt jordbrukspolitiska system*. Uppsala: Sveriges lantbrukuniversitet 1987; Liisa Sauli, *MTK ja Suomen maatalouspolitiikka - maatalousyhteiskunnasta teollisuusvaltioksi 1950-1980*. Helsinki: Kirjayhtymä 1987.
- ¹⁶ Juhani Tauriainen, *Kehitysalueiden muuttuva maatalous: Tutkimus Itä-, Sisä- ja Pohjois-Suomen maatalouden uudenaikaistumisesta*. Helsinki: Helsingin yliopisto 1970, 50 – 70; Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 32.
- ¹⁷ On innovations and adaptation see e.g. Joel Mokyr, *The Lever of Riches. Technological Creativity and Economic Progress*. New York: Oxford University Press 1990; Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*.
- ¹⁸ On discussion see e.g. Jari Ojala, *Tehokasta liiketoimintaa Pohjanmaan pikkukaupungeissa. Purjemerenkulun kannattavuus ja tuottavuus 1700-1800-luvulla*. Helsinki: Suomen Historiallinen Seura 1999, 22 – 26.
- ¹⁹ See e.g. Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958–1987*, 41, 51, 54.
- ²⁰ On agricultural policies in European Union in retrospective see e.g. John Pinder, *Euroopan Unioni. Erään yhteisön historia*. Helsinki: Tammi 1995, 90

- 107. - On agriculture in international setting see also e.g. Lauck, *American Agriculture and the Problem of Monopoly: The Political Economy of Grain Belt Farming, 1953-1980*; Martin, *The Development of Modern Agriculture: British Farming since 1931*; Deborah Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture*. New Haven: Yale University Press 2003; Tuomas Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*. Sonkajärvi: Finnish Regional Research (FAR) 1996, 45 - 53; Jukka Kola, 'EU:n maatalouspolitiikan muutos-paineet, teknologinen kehitys ja Suomen maatalous', in: Aarne Pehkonen and Heikki Mäkinen (Eds.), *Teknologian mahdollisuudet maatalouden kehittämässä*. Helsinki: Helsingin yliopisto, maa- ja kotitalousteknologian laitos 1998, 57 - 60. - A good overview on the research literature explaining the structural change in agriculture e.g. in Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 8 - 11.
- ²¹ See e.g. Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 50 - 51.
- ²² Finland lost to the Soviet Union around 10% of the agricultural land in the Karelia. - Jari Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*. Helsinki: Suomen historiallinen seura 1996; Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 46; Erkki Laitinen (Ed.), *Rintamalta raivoille: sodanjälkeinen asutustoiminta 50 vuotta*. Jyväskylä: Atena 1995.
- ²³ See especially Oiva Saarinen, 'The implementation and result of the Land Acquisition Act', *Suomen asutustoiminnan aikakauskirja*: 2, (1966), 16 - 49; Tapio Hämynen and Leena K. Lahti, *Sodanjälkeinen asutustoiminta Suomessa*. Joensuu: Joensuun korkeakoulu 1983; Markku Tykkyläinen and Seppo Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*. Joensuu: University of Joensuu, Faculty of Social Sciences 1991, 7 - 8, 16 - 12, 93 - 107; Laitinen, *Rintamalta raivoille: sodanjälkeinen asutustoiminta 50 vuotta*.
- ²⁴ See for example Jyrki Aakula, *Yhteinen valinta maatalouspolitiikassa*. Helsinki: Agricultural Economics Research Institute 1991, 40 - 68; Pertti Alasuutari, *Toinen tasavalta. Suomi 1946 - 1994*. Tampere: Vastapaino 1996, 45 - 48, 65 - 70; Granberg, Leo, *Valtio maataloustulojen tasaajana ja takaajana*. Helsinki: Suomen tiedeseura 1989, 83 - 92.
- ²⁵ Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 23, 30, 36 - 37, 46. - See also Risto Niemi & Matti Häkkinen, *Maatalouspolitiikasta ja maatalouden rakenteen alueellisista muutoksista Suomessa ja Ruotsissa 1950-luvulta 1980-luvulle*. Oulu: Research Institute of Northern Finland 1988.
- ²⁶ Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 9,

- 23; Pinder, *Euroopan Unioni. Erään yhteisön historia*.
- ²⁷ Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 44; Pinder, *Euroopan Unioni. Erään yhteisön historia*.
- ²⁸ Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 39, 48 - 49; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958-1987*, 32 - 33; Sauli, *MTK ja Suomen maatalouspolitiikka - Maatalousyhteiskunnasta teollisuusvaltioksi 1950-1980*, 157 - 159.
- ²⁹ Tykkyläinen and Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*, 15. - As a comparison in Britain already in 1850 c. 50% of the population lived in towns, and in 1950 about 80%. See: Lynn Hollen Lees, 'Urban Networks', in: Martin Daunton (Ed.), *The Cambridge Urban History of Britain III (1840 - 1950)*. Cambridge: Cambridge University Press 2000, 70. - On the Hungarian urbanisation process, see Sándor Horváth, 'Planning Urbanisation in Hungary (1945 - 1989)', *Hungarologische Beiträge* 17 (2005).
- ³⁰ Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 44.
- ³¹ <http://www.mtk.fi/> (cited 28 January 2004). - There is a growing number of researchers analysing the impact of joining European Union for Finnish agriculture. See e.g. Timo Sipiäinen, et al., *Maatalousyrittäjien talous vuosina 1993-2002: EU-jäsenyyden vaikutus tuloihin ja kannattavuuteen*. Helsinki: University of Helsinki, Department of Economics and Management 1998.
- ³² <http://www.finfood.fi/> (cited 28 January 2004)
- ³³ Heli Ahonen, 'Organic Milk Production in Finland', *www.mtk.fi* (cited 28th January 2004) (2002); Lulu Siltanen and Ossi Ala-Mantila, *Maatalouden kokonaislaskelmat 1980 - 1988*. Helsinki: Agricultural Economics Research Institute, Finland 1989, 13.
- ³⁴ E.g. the rural modernisation expanded in Finland from south-west to north-east. Thus the structural change occurred in large scale in the eastern and northernmost parts of the country especially during the 1980s and 1990s. See e.g. Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 13, 55 - 63, 88 - 91; Tykkyläinen and Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*, 15; Kuhmonen, *Maatalouden alueellinen rakennemuutos ja rakennepolitiikka*, 23 - 26.
- ³⁵ On organisational similarity as history dependent process, see especially Paul J. DiMaggio and Walter W. Powell, 'The Iron Cage Revisited:

Institutional Isomorphism and Collective Rationality in Organizational Fields', *American Sociological Review* 48:2, (1983), 147-160.

³⁶ See e.g. <http://www.mtk.fi/> (cited 28th January 2004); Mäkelä, 'Northern dimension and family farming'; Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 19 - 20.

³⁷ On the history of landownership in Finland see e.g. Jutikkala, *Suomen talonpojan historia*; Soininen, *Vanha maataloutemme: maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle*; Viljo Rasila, et al. (Eds.), *Suomen maatalouden historia 1. Perinteisen maatalouden aika: esihistoriasta 1870-luvulle*. Helsinki: Suomalaisen kirjallisuuden seura 2003; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 59.

³⁸ Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 3, 21.

³⁹ STV 1953.

⁴⁰ <http://www.finfood.fi/> (cited 28 January 2004).

⁴¹ Mäkelä, 'Northern dimension and family farming'; <http://www.finfood.fi/> (cited 28th January 2004).

⁴² See e.g. Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 46. See also: <http://www.mtk.fi/> (cited 28th January 2004). – On the importance of forestry in long-term see e.g. Jutikkala, *Suomen talonpojan historia*; Soininen, *Vanha maataloutemme: maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle*, 253 – 301.

⁴³ Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 42.

⁴⁴ <http://www.finfood.fi/> (cited 28th January 2004).

⁴⁵ Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, 354.

⁴⁶ *Ibid.*, 351.

⁴⁷ During the 1920s over six million hectares of land changed the owner, and over 130,000 new farms were created. See e.g. Kyösti Haataja, *Maanjaot ja tulojärjestelmä*. Helsinki: Suomalainen lakimiesyhdistys 1949; Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 46; Tykkyläinen and Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*, 94; Jutikkala, *Suomen talonpojan historia*; Soininen, *Vanha maataloutemme: maatalous ja maatalousväestö Suomessa perinnäisen maatalouden loppukaudella 1720-luvulta 1870-luvulle*, 127 – 138.

⁴⁸ Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 3.

⁴⁹ Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, 419.

- ⁵⁰ Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, 420; Information Centre of the Ministry of Agriculture and Forestry (<http://tike.mmm.fi>); Mäkelä, 'Northern dimension and family farming'.
- ⁵¹ Tykkyläinen and Kavilo, *Maaseudun asuttaminen ja talouden rakennemuutos Suomessa*, 94.
- ⁵² Years 1950–1969 10 – 25 hectares.
- ⁵³ Years 1950–1969 25 – 50 hectares.
- ⁵⁴ Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 9.
- ⁵⁵ Samuli Suomela, *Tuottavuuden kehityksestä Suomen maataloudessa*. Helsinki: Maatalouden taloudellinen tutkimuslaitos 1958; Risto Ihamuotila, *Productivity and aggregate production functions in the Finnish agricultural sector 1950-1969*. Helsinki: Maatalouden taloudellinen tutkimuslaitos 1972; Hjerpppe, *The Finnish Economy 1860 - 1985. Growth and Structural Change*.
- ⁵⁶ Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 45 – 53; Myyrä and Pietola, *Tuottavuuskehitys Suomen maataloudessa vuosina 1987 – 97*, 10 – 12, 48.
- ⁵⁷ John Cornwall and Wendy Cornwall, 'Growth Theory and Economic Structure', *Economica*, n.s. 61:242 (1994), 240.
- ⁵⁸ Myyrä and Pietola, *Tuottavuuskehitys Suomen maataloudessa vuosina 1987 - 97*, 29 – 30, 50; Matti Pohjola, *Tehoton pääoma. Uusi näkökulma taloutemme ongelmiin*. Helsinki-Juva: WSOY 1996.
- ⁵⁹ On agribusiness and agricultural industrialisation in retrospective see especially: Lauck, *American Agriculture and the Problem of Monopoly: The Political Economy of Grain Belt Farming, 1953-1980*; Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture*, 3.
- ⁶⁰ Fitzgerald, *Every Farm a Factory: The Industrial Ideal in American Agriculture*.
- ⁶¹ See e.g. Alpo Reinikainen, et al., 'Maatalouskoneiden tarkastus- ja koetus-toiminta Suomessa', in: Olli Näri (Ed.), *Koneellistuva maataloutemme - Mechanization of Finnish Agriculture*. Vaasa: Vakola 1987; Teppo Vihola, *Leipäviljasta lypsykarjaan: maatalouden tuotantos suunnan muutos Suomessa 1870-luvulta ensimmäisen maailmansodan vuosiin*. Helsinki: Suomen historiallinen seura 1991.
- ⁶² Markus Pyykkönen, 'Kotieläintuotannon teknologia', in: Aarne Pehkonen and Heikki Mäkinen (Eds.), *Teknologian mahdollisuudet maatalouden kehittämisessä*. Helsinki: Helsingin yliopisto, maa- ja kotitalousteknologian laitos 1998, 81.
- ⁶³ Mäkelä, 'Northern dimension and family farming'.

- ⁶⁴ Osmo Kara, 'Arvioita tulevaisuuden kehityksestä', in: Olli Näri (Ed.), *Koneellistuva maataloutemme - Mechanization of Finnish Agriculture*. Vaasa: Vakola 1987, 355.
- ⁶⁵ See especially Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 42, 46 - 47; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 12 - 13, 33; Tapani Köppä, 'Maatalouspolitiikan arvot ja maaseudun muutos', in: Pertti Suhonen (Ed.), *Suomi, muutosten yhteiskunta*. Juva: WSOY 1989, 195 - 202.
- ⁶⁶ <http://www.finfood.fi/> (cited 28th January 2004).
- ⁶⁷ Kaisa Aarnio, 'Traktori', in: Olli Näri (Ed.), *Koneellistuva maataloutemme - Mechanization of Finnish Agriculture*. Vaasa: Vakola 1987, 105; Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 52 - 53
- ⁶⁸ <http://www.finfood.fi/> (cited 28th January 2004).
- ⁶⁹ Kara, 'Arvioita tulevaisuuden kehityksestä', 355.
- ⁷⁰ Jaakko Kiviniemi and Olli Näri, 'Viljankorjuu', in: Olli Näri (Ed.), *Koneellistuva maataloutemme - Mechanization of Finnish Agriculture*. Vaasa: Vakola 1987, 217-222.
- ⁷¹ Alasuutari, *Toinen tasavalta*, 63; Granberg, *Valtio maataloustulojen tasaajana*, 59.
- ⁷² See e.g. Timo Myllyntaus, et al., *Teknologinen muutos Suomen teollisuudessa 1885-1920: metalli-, saha- ja paperiteollisuuden vertailu energiatalouden näkökulmasta*. Helsinki: Societas scientiarum Fennica 1986.
- ⁷³ Aarnio, 'Traktori', 78 - 89.
- ⁷⁴ Jaakko Kiviniemi, 'Säilörehunkorjuu', in: Olli Näri (Ed.), *Koneellistuva maataloutemme - Mechanization of Finnish Agriculture*. Vaasa: Vakola 1987, 199 - 208.
- ⁷⁵ Niemelä, *Lääninlampureista maaseutukeskuksiin: maaseutukeskusten ja niiden edeltäjien maatalousneuvonta 1700-luvulta 1990-luvulle*, 353; Information Centre of the Ministry of Agriculture and Forestry (<http://tike.mmm.fi>).
- ⁷⁶ Kuhmonen, *Maatalouden alueellinen rakennekehitys ja rakennepolitiikka*, 10.
- ⁷⁷ Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987*, 41; Lauck, *American Agriculture and the Problem of Monopoly: The Political Economy of Grain Belt Farming, 1953-1980*.
- ⁷⁸ Lauck, *American Agriculture and the Problem of Monopoly: The Political Economy of Grain Belt Farming, 1953-1980*.
- ⁷⁹ See especially Juha-Antti Lamberg, 'Isäntien metsäteollisuus - Metsäliittöryhmittymä 1934 - 1998', in: Juha Näsi, et al. (Eds.), *Metsäteollisuusyritysten strategiset kehityspolut. Kilpailu, keskittyminen ja kasvu pitkällä aikaavälillä*. Helsinki: Metsäalan tutkimusohjelma Wood Wisdom 2001; Seppo Zetterberg,

Puusta pitemmälle: Metsäliitto 1934-1984. Helsinki: Kirjayhtymä 1983.

⁸⁰ In detail: Sakari Vapaakallio, *Hankkijasta Noveraksi - mikä petti?* Helsinki: Pellervo-seura 1995; Martti Häikiö, *Satoa ja katoa Hankkijan saralla: Hankkijan ja Noveran historia 1955-1992.* Helsinki: Kirjayhtymä 1997.

⁸¹ Jussila, *Spatial Diffusion of Modernization. A study of farm mechanization in Finland at regional and local levels*, 42, 63; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987:* , 24, 36. – See also: Jan Löfström, 'Maatalouden modernisaation mentaliteettihistoriaa', *Historiallinen aikakauskirja* 99:2 (2001), 216 – 219.

⁸² T. W. Schultz, 'Economic Effects of Agricultural Programs', *The American Economic Review* 30:5, (1941), 127; Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 - 1987:* , 17 – 18, 60.

⁸³ See e.g. Vihinen, *Suomalaisen rakennemuutoksen maatalouspolitiikka 1958 – 1987*, 55.