GROWTH AND EQUITY IN AGRICULTURAL DEVELOPMENT

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Growth and Equity – Experience in Developed Countries with a Market Economic System

INTRODUCTION

This paper focuses on the long term experience of growth and equity in the agricultural development of eight countries: three big ones: France, Germany and the United Kingdom; three small ones: Denmark, The Netherlands and Sweden; and two countries of recent European settlement: Australia and the United States. We have used data series on the total and agricultural labour force, and total Gross Domestic Product (GDP) and GDP from agriculture, both in current and constant prices. For most countries sufficient data are available from the mid-nineteenth century onwards: the United States 1840, France, Germany and the United Kingdom 1850, Australia 1860, Denmark and Sweden 1870, and The Netherlands 1920. The series allow us to compare long-term trends in relative income and production per worker in agriculture and other sectors and to estimate the terms of trade of agriculture versus the rest of the economy. Within the limited scope of this paper we cannot deal with the extensive information on equity from historical and farm income studies and we restrict ourselves to long-term development.

In the next section a broad sketch is given of agricultural development in the past two centuries. The third section contains an analysis of the data series. Successively the following subjects are treated: theoretical possibilities of patterns of growth and equity in agricultural development; the relation between production and demand; the expectations of the classical economists; the geographical spread of agricultural growth; the decline of the agricultural workforce; growth of GDP per worker; income per worker; and changes in the terms of trade. The final section contains concluding remarks about growth, equity and social change.

POPULATION, ECONOMIC GROWTH AND AGRICULTURAL DEVELOPMENT

Most European countries experienced continuous population growth in the

eighteenth and nineteenth centuries (Appendix A). The first half of the eighteenth century had been a period of agricultural depression with low real prices.)Abel, 1980; Slicher van Bath, 1963; Boserup, 1981; Grigg, 1980). After 1750, however, real agricultural prices increased steadily as a result of growing demand. Around the year 1800 and again during the years 1810–12 real prices rocketed, especially in the United Kingdom, which had become dependent on grain imports (Abel, Slicher van Bath). As in previous epochs of population growth agricultural production expanded in two ways. First, agricultural land was cropped more intensively. Less land was left in fallow, rough grazing was replaced by forage crops, natural fertilizers were used extensively, the share of root crops (turnips and potatoes) increased and multi-course systems, which had been in use in the Low Countries since the fourteenth century (Slicher van Bath, 1963) and still earlier in Northern Italy (Zangheri, 1969), spread around Western Europe. Second, more land was brought under cultivation and land reclamation was speeded up. Farmers' and peasants' incomes, and, stronger even, rents, rose considerably. Around 1800 in Southern England real wages had declined to about half the level of the first three-quarters of the fifteenth century (Brown and Hopkins, 1956) and on the continent the situation of wage earners was also bad (Slicher van Bath, 1963). In 1789 against the background of five decades of rapid population growth and increasing real food prices Malthus wrote his pessimistic population theory, which would have so much influence on economic thought.

However, soon this theory was refuted. The high price levels seem to have induced new technologies which were more productive and after the Napoleonic wars real grain prices declined rapidly, which Von Thünen and others attributed to over-production (Abel, pp. 239–40). The crisis lasted till around 1830. Population continued to grow, agricultural over-production disappeared, and grain prices started again an upward swing till the 1870s. Despite the low food prices of the 1820s real wages did not rise. Only after about 1830 did real wages start a slow but long upward movement, despite rising food prices, as intensification of agriculture and industrialization led to scarcity of labour (Collins, 1974). Boserup and several other economic historians have shown that in the past population growth was in general rather autonomous, that is not restricted by the production capacity as Malthus thought, but that the production capacity increased and declined in response to changes in population.

In the 1850s grain prices in the United States were still on the same level as in Europe and exports were limited. After the Civil War the great expansion to the plains started. Canals, railways and more efficient transatlantic traffic reduced freight rates drastically (Cochrane, North). Similar developments occurred in Russia. By the end of the 1870s European markets were glutted with cheap American grain and, to a lesser extent, Russian grain. The agricultural depression of the 1880s and 1890s came to an end because the frontier in the United States closed around the year 1900 (Cochrane). Increasing real prices stimulated Australia, Argentina, New Zealand and Canada to expand their infrastructure and to step up

production of grain and animal production for export. World War I prolonged high prices, but afterwards prices fell, first in the 1920s and more severely in the 1930s, because of expansion of agricultural production and decreased demand caused by declining incomes in several countries. World War II and its aftermath pushed prices up, but after 1954 world market prices fell back to low levels.

At the end of the eighteenth century many countries had liberated trade in agricultural products. In the depression of the early nineteenth century Great Britain (to a lesser extent France and The Netherlands as well) protected its grain producers to a considerable degree. With the repeal of the Corn Laws trade in agricultural products was liberated again. However, during the agricultural depression at the end of the century several European countries introduced protection for their producers. The liberation of trade after the depression did not last long. During World War I all advanced countries interfered in agricultural markets and during the crisis of the 1930s they all introduced income support to their farmers. During World War II security of food supplies was the dominant policy aim but after the War policies reverted to price stabilization and support to protect farmers against a disastrous fall in income. In Western Europe, especially the EEC countries, relatively high prices induced a strong increase in land productivity and in the 1970s the EEC turned from a net importer into an exporter for most agricultural products.

The 1970s brought structural changes in the world economy. Oil crises, devaluation of the US dollar, failure to produce enough food in several developing and centrally planned countries, heavy price fluctuations in international markets, growth of GDP in the developed countries, and the slowing down of growth of productivity in US agriculture have changed the outlook. In other countries whose currency depreciated with the US dollar the terms of trade of agriculture tended to improve also (if governments permitted it). Most measures developed in the United States since the 1930s to curtail production and to support farmers were abolished in the 1970s (Hathaway). In ten years the volume of US grain exports more than doubled, the downward trend of price levels in international markets disappeared, and farm incomes in the United States are better than ever before.

AGRICULTURAL GROWTH AND EQUITY

Possible patterns of growth and equity

What was the pattern of agricultural growth and how can it be explained? In combination non-agricultural growth, population growth and low income elasticity of demand for agricultural products could have three possible major effects. First, if supply of agricultural products were limited by soil fertility, as the classical economists expected, the terms of trade of agriculture would improve, and ultimately check economic growth. Second, because of low income elasticity of demand for agricultural products,

productivity per man in agriculture could only follow the trend outside agriculture if the agricultural work force declined relatively and, later, even in total numbers. Third, income in agriculture could only follow the general trend if (for the sake of simplicity presuming constant income shares for land, labour and capital) the index of labour productivity times the net product price increased proportionate to wage levels outside agriculture.

Production and demand

The nature of growth in agriculture differs from growth in industry and services. During the past centuries the latter two have introduced large numbers of new products and many existing products have been improved. In agriculture only few new products were introduced and the quality of most agricultural products is still the same, or only modestly improved. Demand for agricultural products *per caput* increased less than real income *per caput,* because elasticity of demand falls to low levels when real income rises. The increase reflects improved diets with higher proportions of meat, fruits and vegetables. As a result total agricultural output in the Western world has increased only 50 per cent *per caput* since 1934–38 (estimated from data in FAO: State of Food and Agriculture, 1955–1981), which is much less than the increase in non-agricultural output *per caput.*

Since output growth has been accompanied by a growing share of non-agricultural inputs, real agricultural value added (GDP) *per caput* has increased less than output *per caput.* We observe great differences in GDP from agriculture *per caput* between countries over the past century (Appendices and Graphs). Over the whole period in the United States it has declined, particularly after the end of the nineteenth century; it ended in the United Kingdom at the same level as it was in 1850 and probably also in Germany (which is uncertain because of major changes in boundaries), but it almost doubled in other countries. The steady decline in the UK until 1940 and the steady increase afterwards is remarkable. In France, Germany and The Netherlands is increased rapidly after stagnation in the interwar period. In Australia, a low cost exporter with elastic supply, agricultural output fluctuates with international demand. In Denmark growth of agricultural GDP *per caput* stagnated after World War II, in Sweden it declined.

The classical economists refuted

The figures in this paper show that the classical economists were, in retrospect, wrong with respect to possibilities to expand agricultural productivity. Fertility of land turned out to be not just a constant factor, but to a large extent man-made, and, instead of food crises and real increases of rents and agricultural prices, the Western world experienced oversupply crises and 'declining importance of agricultural land' (Schultz).

Agricultural growth in Europe and overseas

Productivity can increase by a (relative) decline of input and by a (relative) increase of output. A considerable part of labour and other inputs on farms

are fixed inputs and can often be considered as 'trapped' resources (Johnson) of which the allocation is governed by low 'salvage' prices, not by high 'acquisition' prices. This implies that for individual farms increase in productivity depends on increase in output rather than on decrease in inputs. This may be strengthened by economies of farm size (Tweeten). In the long run on the aggregate level, however, the decline of the labour force is the dominant variable. Given the low man/land ratio and low land productivity in countries of recent European settlement one would expect total production and certainly production per caput in these countries to increase faster there than in Europe, which it has not. Increase in productivity has taken place in different patterns during the nineteenth century. In countries of recent European settlement where labour was scarce and land abundant during the nineteenth century, and in some cases till far in the twentieth century, labour saving innovations, such as mechanization were induced, whereas in Japan and Europe with scarcity of land, and for most periods higher product prices, land saving innovations were pursued (Abel, p. 276; Hayami and Ruttan). In both patterns of technical progress the effect was a rapid expansion of production. In the twentieth century land saving innovations also became gradually widespread in countries of recent European settlement, but increases in land productivity have been relatively small.

The decline of the agricultural workforce

At the start of the epoch of modern economic growth the European countries had a vast agricultural workforce which constituted 60–65 per cent of the total workforce (except Great Britain and the Low Countries) (Appendices B and C). The countries of recent European settlement were still largely underpopulated with some concentration of settlers along coasts and rivers. As Dovring observed the agricultural populations remained fairly stable till 1950. There are several explanations for this. The introduction of new techniques in the nineteenth century was in general still low and population growth, especially in the new countries, was high. The non-agricultural sectors were relatively small and not yet able to absorb large rural masses. In the twentieth century the decline of the agricultural labour force was retarded by high product prices during the two world wars and unemployment and slow economic growth in the interwar period. In the 1930s there was even a tendency for unemployed town people to go back to the countryside (Bellerby). After World War II when in most countries the share of the agricultural labour force was near to 20 per cent a rapid decline of 25–70 per cent took place, slowest with 1 per cent per year in Australia and most rapid in Germany with 4 per cent per year.

Growth of GDP per worker

Acceleration of economic growth per worker (increase in labour productivity) started in most countries between the end of the eighteenth and the middle of the nineteenth century. Over the period 1870–1979 GDP per worker in agriculture multiplied by about ten times (Appendix G). For Sweden it was

even 14 (see note on Germany in Appendices). Including the early decades of the period of modern economic growth the total multiplication factor can be estimated at about 12–15. It is remarkable that the differences between countries are small. In all countries the growth of GDP per worker in the non-agricultural sectors industry plus services (equals total minus agriculture) was slower than in agriculture but the growth pattern differed considerably between countries (Appendix F). Countries that had a high level of total GDP per worker in 1870 (not shown in the Appendix), the United States, Australia and the United Kingdom, experienced slower non-agricultural growth than Denmark, France and Germany.

For the period 1870–1913 and for countries for which data for previous decades are available, growth of labour productivity in agriculture was slower than outside this sector, except in Australia and Sweden; whereas in the period 1913–50 growth of GDP per worker in non-agricultural sectors lagged behind (the exception of Germany may be caused by changes in boundaries, see note in Appendices). In the period 1950–79 labour productivity in agriculture rose about twice as fast as in other sectors in all countries, except in Australia and Denmark where it rose only slightly faster.

Except in Sweden and the United States the slowdown of economic growth since 1973 in the developed countries is not accompanied by a declining growth of labour productivity in agriculture. In Sweden the main cause is declining agricultural production, in the United States agricultural production stagnates and the decline of the agricultural labour force has slowed down as well.

Over the whole period for which data are available on agricultural and non-agricultural growth per worker, all countries except France show a better performance of agriculture. The ratio of the indices of agricultural and non-agricultural labour productivity was 4.1 in Australia over the period 1860–1979, 3.1 in Sweden over the period since 1870 and 2.8 in the United Kingdom since 1860. The ratio for The Netherlands since 1913 is 2.5. For the United States where data are available on the period since 1840 the ratio is 1.5 in favour of agriculture, for Germany it is 1.2 since 1850 (see footnote Appendices) and for Denmark 1.1 since 1860. For France the ratio is only 0.85 since 1850, which result is stronger than in other countries affected by relatively slow growth of labour productivity in agriculture before 1870.

Income per worker

Average income in agriculture, measured as GDP in current prices per worker, has most of the time lagged behind that in other sectors (see Appendix H, Graphs). Exceptions are Australia where agricultural income was relatively high for most of the time, the United Kingdom where it has been relatively high since World War II and the United States after 1970. Relative income in agriculture has been particularly low in Sweden, France, The Netherlands and the United States. Since 1870 relative income in agriculture has increased strongly in the United States where it

rose from 45 to 106 per cent of non-agricultural income and in Sweden from 25 to 52 per cent. Modest but still significant was the relative improvement of agricultural income in Australia (from 69 to 104 per cent), the United Kingdom (63 to 92 per cent) and The Netherlands after 1900 (33 to 53 per cent). In France it remained at about 50 per cent of non-agricultural income whereas in Denmark and (most likely) Germany it lagged behind. There are some similarities between countries. With the exception of Australia relative income in agriculture decreased from 1870–1900 (no data for The Netherlands), it increased in all countries till 1913 (in fact till around 1920). The interwar period was marked by depressed agricultural incomes, which is only partly revealed by the data in Appendix H. There were marked differences between various countries and years because of different government policies and differences in general economic conditions. During the period 1940–54 relative income in agriculture was high in all countries as a result of lagging supply, but afterwards it declined in the United Kingdom, The Netherlands, Australia, Denmark and Germany. In France it changed little, in Sweden it increased modestly and in the United States it rose from below 60 per cent in 1965 to around 100 per cent at the end of the 1970s.

Terms of trade

The terms of trade have been derived by dividing the (implicit) GDP deflators for agriculture and non-agriculture. With the exception of Australia and the United Kingdom the terms of trade for agriculture increased over the period till 1913. The general upward trend was interrupted at the end of the century. In fact the terms of trade reached a peak at the end of World War I and deteriorated rapidly afterwards. The depressed price levels of the 1930s were followed by the postwar and Korea boom, during which the terms of trade reached again a peak, in several countries a higher one than in 1913. After the Korea boom the terms of trade for agriculture decreased rapidly. In The Netherland, Germany and the United Kingdom the decline was about 60 per cent since 1950, in France, Denmark and Australia it was about 45 per cent and in Sweden one-third. In the United States the decline in the terms of trade was limited to only about 10 per cent.

CONCLUDING REMARKS

We can now attribute the relative change in income in agriculture to the relative increase of production per worker in agriculture and non-agriculture and changes in the terms of trade. In most countries in the period 1870–1913 productivity in agriculture lagged behind but this was partly offset by improving terms of trade. In Australia the opposite occurred. In the period after World War I relative incomes in agriculture deteriorated because of worsening terms of trade and despite a growth of labour productivity in agriculture, which exceeded that in the rest of the economy. When the terms

of trade turned in favour of agriculture after World War II the result was a strong relative increase in income. After 1950 labour productivity in agriculture rose in most countries almost twice as fast as in other sectors but its effect on relative income was in most cases more than offset by the halving of the terms of trade.

Of great importance for understanding who benefits from economic growth is W.A. Lewis's 'unlimited supplies of labour' model. It is clear that production per worker in agriculture can hardly grow without outside demand. As long as there is a large and elastic supply of labour in the countryside, whether it be as a result of continuous population growth, unequal distribution of land, or another reason, labour productivity and employment for the mass of the rural population will be low and remain low until a sufficient amount of labour is siphoned off to more productive employment elsewhere. For this reason one should expect that agricultural income in the early phases of development would lag behind.

Relative income in agriculture in the western world in the past depended on the relative strength of supply factors in agriculture (factors employed in agriculture, technical progress, imports and prices) and the demand factors for agricultural product (population growth, export demand and, to a lesser extent, the level of income). In the periods 1818–30, 1880–1900, 1920–40 and 1954–73 supply moved faster than demand. Most crises lasted long, not only because supply of factors of production in agriculture is inelastic and urban demand for rural labour grew slowly, but primarily because technical progress was the most important factor and was not very dependent on prices. Periods with lagging supply 1850–70, 1900–20, 1940–53, and the 1970s particularly in the United States, seem to have been caused by slowing down of technological progress, disruption of trade and rapid growth of demand.

Since the start of the epoch of modern economic growth, average product per worker in agriculture increased 10–15 fold which is a little better than growth of GDP per worker. Who benefited from growth in agriculture? The main beneficiaries were those farmers who formed the vanguard for new innovations and all consumers because they benefited from larger and cheaper supplies, but for the large majority of the farmers and rural labourers rapid growth has been a nightmare. Slowly but steadily they or their children moved to non-agricultural jobs. As Kuznets has pointed out rapid growth requires rapid structural change because of changing consumer demand and unequal growth between sectors. On the one hand there are the benefits for the consumers and the successful innovating producers and on the other hand there is the pain of structural change.

The development of agriculture implied a thorough change in society. However, family farms still are the dominant mode of production. Contrary to the expectation of Marx and many others, large capitalist farms employing large numbers of rural labourers did not develop. The expectation was based on the mistaken belief that economies of size and scale in agriculture, similar to industry, would make large capitalist enterprises economically superior (Mitrani, Ghayanov, Dovring). Increasing economies

of size do exist but in most cases large family farms are big enough to realize resulting productivity gains and self-employed family labour appears more productive than a rural prolerariat.

Acknowledgement I am indebted to Professor R. van Hees, Mr T.J. Kastelein, Professor A. Maddison and Mr D. Strijker for their helpful comments, and to Mr B. van Ark, Mrs G. Jolink, Mrs M. Bernadina-Lukkien, Mrs A. Stanneveld and Mr P. van Veen for their assistance. Errors, however, are my sole responsibility.

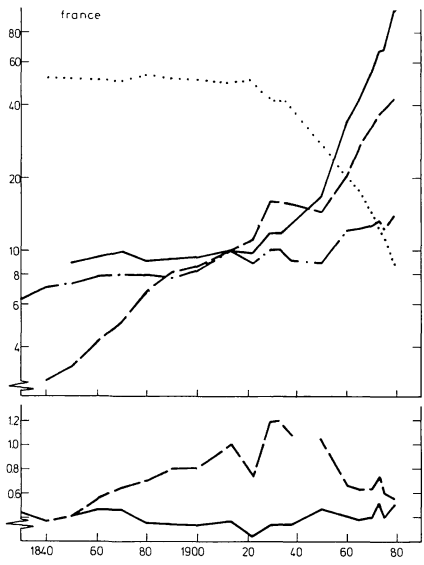
APPENDICES

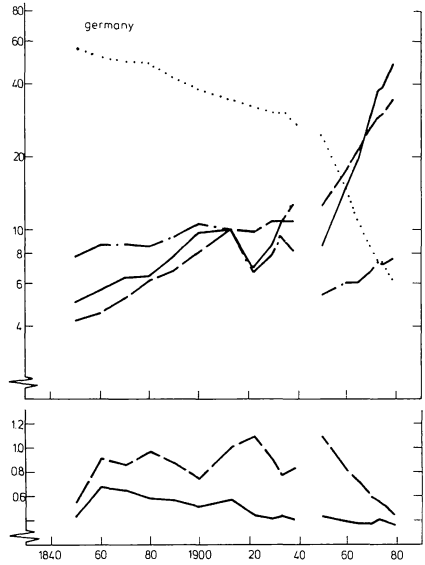
	France	West Germany	UK	Denmark	Nether-lands	Sweden	Australia	USA
A. Population in millions								
1760	25.2	18.3	11.1	0.8	2.0	1.9	0	1.6
1830	32.7	28.0	23.8	1.2	2.6	2.9	0.1	12.9
1870	38.4	39.2	31.3	1.8	3.6	4.2	1.6	39.9
1913	39.8	67.0	45.6	2.8	6.2	5.6	4.8	97.2
1950	41.8	50.0	50.4	4.3	10.1	7.0	8.2	152.3
1979	53.5	61.4	56.0	5.1	14.0	8.3	14.4	220.6
B. Agricultural workforce in millions								
1850	7.20	8.30	2.02	0.65	0.55	–	–	4.55
1870	7.56	8.54	3.12	0.49	(0.48)	1.05	0.19	6.82
1910	8.69	10.54	2.40	0.54	0.64	0.98	0.44	11.84
1929	7.94	9.41	1.50	0.64	0.66	0.91	0.55	10.45
1938	7.28	9.01	1.27	0.59	–	0.86	0.61	9.69
1950	5.44	4.97	1.19	0.49	0.58	0.63	0.52	7.64
1979	1.87	1.54	0.63	0.21	0.28	0.24	0.40	3.30
C. Agricultural workforce in per cent of total workforce								
1850	52	56	22	49	44	–	–	61
1870	50	49	22	52	35	54	31	53
1910	50	36	12	40	28	37	24	32
1950	28	24	5	23	15	18	16	13
1979	9	6	3	8	6	6	7	3
D. GDP per caput (1913 = 100)								
1850	38	39	45	–	64	–	–	33
1870	51	50	68	44	76	38	74	50
1950	167	111	137	150	138	253	126	190
1979	495	355	257	345	336	536	246	364

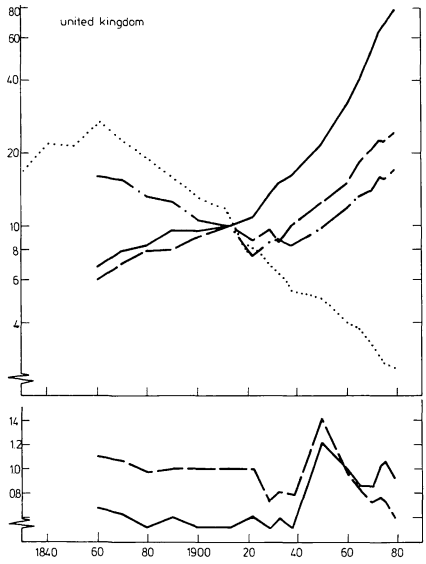
	France	West Germany	UK	Denmark	Nether-lands	Sweden	Australia	USA
E. GDP from agriculture per caput (constant prices, 1913 = 100)								
1850	73	77	–	–	–	–	–	95
1870	79	87	156	89	–	66	81	97
1950	89	54	98	135	96	122	137	86
1979	141	76	170	135	160	107	147	83
F. Non-agricultural GDP per non-agricultural worker (constant prices, 1913 = 100)								
1850	33	42	–	–	–	–	–	40
1870	51	52	70	32	–	62	90	63
1929	159	108	97	107	138	115	95	120
1938	155	127	100	114	–	119	100	96
1950	144	125	124	122	135	172	104	156
1979	426	347	241	288	336	276	226	255
G. GDP from agriculture per agricultural worker (constant prices, 1913 = 100)								
1850	89	50	–	–	–	–	–	58
1870	99	63	79	63	–	45	57	67
1929	118	85	135	132	130	94	106	129
1938	129	108	160	156	–	113	127	146
1950	168	86	215	228	173	237	212	201
1979	989	482	782	639	838	635	537	654
H. Ratio GDP per worker agriculture/non-agriculture (current prices)								
1850	41	43	–	–	–	–	–	38
1870	46	65	63	88	–	25	69	45
1900	33	51	52	53	33	35	78	37
1913	37	57	52	62	37	43	89	45
1922	24	44	61	49	23	39	96	58
1933	–	44	69	47	–	31	106	62
1950	47	43	121	84	70	46	161	58
1970	40	37	86	60	68	44	91	72
1979	50	36	92	66	53	52	104	106
I. Terms of trade agriculture/non-agriculture (1913 = 100)								
1850	41	55	–	–	–	–	–	57
1870	65	86	107	71	–	76	116	92
1900	81	75	100	76	–	81	103	66
1922	74	09	100	89	100	82	92	72
1933	119	77	81	49	63	–	75	49
1950	104	109	141	74	125	100	89	97
1970	64	59	72	43	80	67	67	63
1979	56	45	60	40	49	66	53	89

Notes: Preliminary statistical estimates, definitions between countries and over time differ. Where possible discontinuities over time were eliminated by linking series. In some cases additional estimates were obtained by interpolation. Underlining indicates discontinuity in the series because of changes in boundaries. For West Germany direct comparison of data before and after 1950 is not possible. As agriculture in the central and eastern part of the country was more important and probably more productive than that of the part which became the Federal Republic – to which data from 1950 onwards do refer – postwar GDP figures may be too low for agriculture and too high for other sectors. The limited space in this paper does not permit a detailed reference of sources, for detailed references the reader may refer to Kuznets (1971) and Maddison (1982). Completed series with notes, sources and definitions will be published elsewhere.

Sources: A. Population: data from A. Maddison (1982); B. Workforce: *Australia,* 1860–1900: N.G. Butlin (1964), 1900–63: M.W. Butlin (1977), and Dowie (1970); *Denmark,* 1870–1952: Bjerke (1955): *France,* 1830–1950: Clark (1957), Toutain (1963); *Germany,* 1850–1959: Hoffmann (1965); *The Netherlands,* 1850–99 Bos: (1959), 1899-1964: CBS (1979); *Sweden,* 1870–1950: Johansson (1967); *UK,* 1830–50: Mitchell (1962), 1855–1965: Feinstein (1972); US, 1830–1930: Lebergott (1966) and Clark (1957); data on recent years were obtained from ILO, OECD and national sources; C. Gross domestic product (Total and agriculture): *Australia,* 1860–1900: N.G. Butlin (1962), 1900–65: M.W. Butlin (1977); Denmark, 1870–1950: Bjerke (1955); *France,* 1825–1938: Markovitch (1966); *Germany,* 1850–1959: Hoffmann (1965); *The Netherlands,* 1850–99: Bos (1959), Theil (1971), CBS (1979); *Sweden,* 1861–1955: Johansson (1967); *UK,* 1950–1965: Mitchell (1975). Feinstein (1972); *US,* 1839–99: Gallman (1960) and Kuznets (1952), 1899–1929: Kendrick (1961), and Hist. Stat. of the US 1789–1945, after 1929: *US Dept. of Com.* (1981) and Hist. Stat. of the US Col. Times to 1957; data on recent years were obtained from UN, OECD and national sources.







GRAPHS

upper part:

——— GDP from agriculture per agricultural worker (constant prices, 1913=10)

– – – – non-agricultural GDP per non-agricultural worker (constant prices, 1913=10)

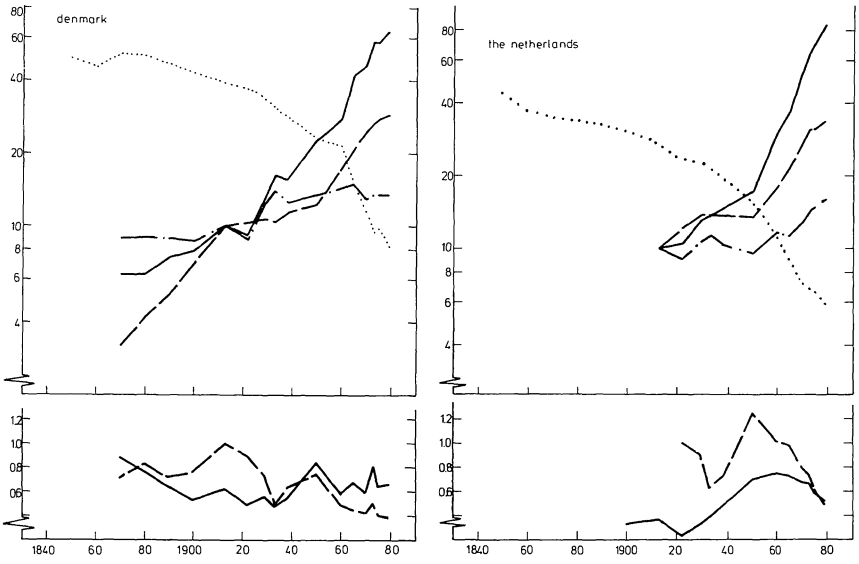
–·–·– GDP from agriculture per capita (constant prices, 1913=10)

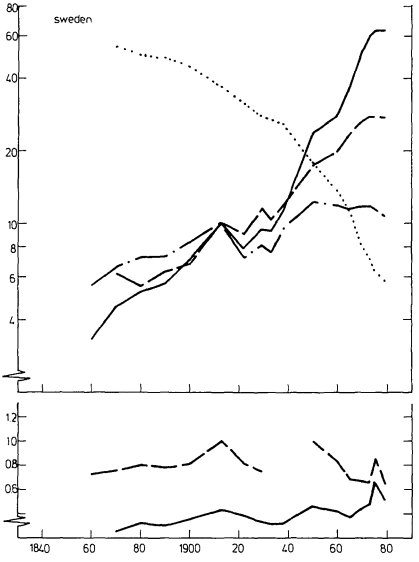
..... agricultural workforce in percent of total workforce

lower part:

——— ratio GDP per worker, agriculture/non-agriculture (current prices)

– – – – terms of trade agriculture/non-agriculture (1913=1.0)





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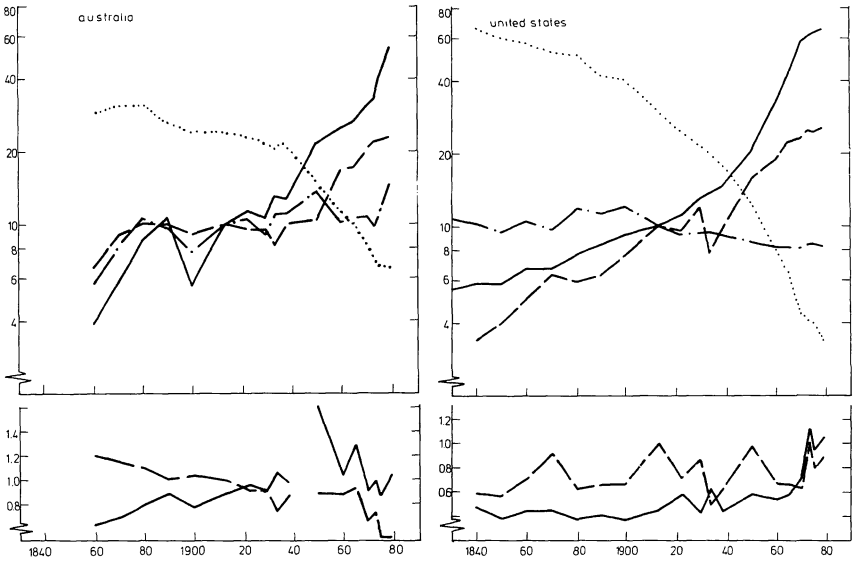
——— ratio GDP per worker, agriculture/non-agriculture (current prices)

— — — terms of trade agriculture/non-agriculture (1913=1.0)



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lower part.

——— ratio GDP per worker, agriculture/non-agriculture (current prices)

— — — terms of trade agriculture/non-agriculture (1913=10)

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DISCUSSION OPENING – W. J. ANDERSON

Professor van der Meer's paper has posed the question: what has been the impact of long term (1850–1979) economic growth on the productivity and income of the traditional agricultural sectors in eight western countries whose economic systems for pricing, allocating resources and income distribution were market oriented? The measurements used are comparative changes in the productivity, income and terms of trade between agricultural and non-agricultural sectors of those countries during that period. Canada would have fitted well with this group so I wonder why Canada was not

included. I suspect that the general directions of trends would have been similar to those of the eight.

Secular trends and relationships common to all countries which stand out in the data are (a) the population growth rate was high in the early part of the period and tapered off; (b) the agricultural workforce declined as a proportion of the total workforce; (c) the rate of increase in productivity per worker in agriculture exceeded that of the non-agricultural sector by a considerable amount in most countries and the rate was much higher after 1913; (d) the chronic income discrepancy resulting from the interaction of growth and demand factors forced structural changes by putting downward pressure on agricultural labour returns; (e) for much of the period agricultural/non-agricultural terms of trade were less than 1.0, which is consistent with the unfavourable income ratios.

While these secular trends are discernible the number of departures from the trends is striking. From the data the impact of the see-saw between supply and demand and the shocks to the macro-economy which overrode the trends and generated alternate periods of prosperity and depression is apparent. These distortions provided an environment of uncertainty and instability which characterized the period of the study. The classical Malthusian-Ricardian model of population pressure on fixed resources resulting in subsistence income turned out to be a special case valid only up to about 1800 after which productive capacity and demand oscillated as to which was the dominant influence. The classical model had not taken into account the ingenuity of people to substitute technology for scarce factors, to develop and exploit new resources and to modify population growth through family planning. The release of the bounds on output and productivity, however, coupled with macro shocks from depression and war, led to instability as supply overreacted to demand changes. Instability has been a disturbing element but infinitely preferable to the problem of a secular trend towards subsistence.

Professor van der Meer calls attention to the impact of instability on income distribution (equity). He concludes that agricultural/non-agricultural income ratios in these countries depended on the shifting relative strength of supply factors, technical progress, imports and prices, and demand from population growth, exports and levels of income. He notes the periods in which supply moved faster than demand, which squeezed net returns and created adjustment crises, alternated with periods of lagging supply. Throughout the period the farm sector did not share equitably in the growing real income per caput and the variations between countries were considerable. Likewise among farmers, those who were in the vanguard to use high pay-off technology and invested at the right times profited handsomely. Those who came in late on the technological change and/or who made investments prior to a downturn fared very badly. Consumers were less affected by these cycles of demand and supply and generally benefited from agricultural growth and productivity.

The results are consistent with those expected from the combined forces of applied labour-saving technology, low price and income elasticities of

demand, and slowing down in the rate of population growth. However agricultural adjustment problems and agricultural/non agricultural income discrepancies, made more prominent by instability, have not been acceptable socially and politically. Moreover the Malthusian spectre and Physiocratic perceptions have always been in the background politically, not to mention concerns for food security in the event of war. These socio-political reasons produced underlying agricultural fundamentalism among voters which favoured measures to offset instability and to correct what were judged to be market imperfections.

The uncertainties, the income pressures, the declining agricultural labour force and fear that the family farm was endangered, all associated with growth, resulted in agricultural policies with prominent elements of protection. This preoccupation with protection has spawned an array of ingenious national schemes involving supply management, price and income stabilization and implicit and explicit subsidies. Internally these measures have had all sorts of distorting effects on resource use and equity as certain commodities are favoured over others. Internationally these schemes distort trade by putting comparative advantage in the background. Van der Meer notes for example how the EEC has turned from a net importer to a net exporter of most agricultural products. The most serious effects of these measures are not internal because the countries can afford to subsidize and to sacrifice some comparative advantage. But the distortions of trade and resource use are more serious for poorer countries which need all the benefits from comparative advantage in world trade that their resources should permit.

The depression phases which agriculture has experienced in any country have come mainly from two sources. One has been new and cheaper competing supplies when other countries exploited technology and new resources. Agricultural expansion in one country created depression and adjustment problems in others. The other has been the major shocks to the macro-economy from war and depression. A third source of instability has been the business cycle. It has been observed that agriculture has been somewhat independent of the business cycle because (a) food consumption was only moderately affected by short-run fluctuations in the national income and employment and, (b) the old-style capitalist small-scale organization of farms, which combined management, labour and equity capital in the same person, precluded unemployment and modified short-run production adjustments, (c) the considerable degree of internal self-sufficiency in input supply characteristic of farm enterprises in the past provided a measure of independence from the general economy.

The last of those reasons is certainly invalid now. Farms which produce the bulk of the output are highly integrated with the business community and dependent on short-term loans to finance a large proportion of the inputs. This integration makes those producers vulnerable not only to inflation in input prices but to changing interest rates, the main instrument of monetary policy. Farmers now go bankrupt because the cash flow has turned out to be inadequate to cover rising input prices and interest rates on short-term

loans. Inflation and exposure to financial markets has had a marked impact on land values since the mid-1970s, a period when inflation dominated the macro-economy. In addition to the discounted net income stream as the source of land value, land as a hedge against inflation became a dominant feature of the land market. The upward spiral in land prices has been aided by real interest rates, which have been 'zero or less after tax', and favourable tax treatment of capital gains, especially on land transferred as a family farm from one generation to the next. Recently, the high interest rate policy has deflated capital values including land. For established farmers with large equities these are paper profits and losses which do not destroy the business unit. For those producers who invested at high land values the result can be disastrous if they are squeezed between high interest rates on loans, inflation in input costs and less than buoyant commodity markets. It seems that uncertainty, always a major factor in growth and equity, has assumed even greater dimensions.

The road to progress has been a rough one indeed with alternating favourable and unfavourable cost-price relationships and always with inexorable pressures for structural change. The fact that productivity per agricultural worker has shown such a large increase is quite remarkable given the changing pressures from population growth, from additions to supply as new technological potentials were exploited and virgin land was brought into production, and from the shocks of economic boom and depression and two major wars. The secular growth in productivity, which the author notes as having been particularly rapid after 1913, is a tribute to research and development which has been supported mostly by governments, and to the effectiveness of production and resource management in the hands of small-scale capitalist managers. Resource adjustments required in the process of growth have produced returns to some people which are not equitable by socio-political standards. Instability and uncertainty have exacerbated this problem and together with considerations of equity have led to the adoption of protective measures by the rich countries. Stagflation and its remedies have enlarged the scope of instability. This added uncertainty, together with signs that the rate of increase in physical input/output ratios has slowed down, suggests that agriculture in these countries may be going through a period of slower growth in productivity. The combination certainly favours continued public intervention to protect agriculture.