

Structural development in agriculture

- A global perspective

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Theme and main results

Agricultural structure - the size, number, specialization, concentration etc. of farms - is changing heavily these years. To a large extent this development is a result of the economic and technological development, which takes place in a developed society. The development follows a rather common global pattern, all though there will be different trends and structures from country to country.

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Summary

The structural trend in agriculture is relatively common for most industrialized countries. However, the structural level (size of farms etc.) seems to differ considerably. Farms in the most developed agriculture are 10-20 times as big as in the least developed agriculture. The general picture shows that the structure in agriculture is most developed in countries with high income levels.

Specialization and concentration is increasing. Also vertical integration is becoming more important, as more and more products are traded under production contracts.

Inputs in agriculture have a changing composition, as capital replaces labour. Hired labour is becoming less important, farmers often have part time jobs outside the farm, and thus part time farming is increasing.

The structural development in agriculture is caused by

- economies of scale,
- technology,
- increasing wages,
- legislation,
- infra structure
- farm income.

The structural development during the latest decades will probably continue in future. The trend does not seem to alter dramatically, as no economic, political or market conditions - which potentially could effect the structural development - seem to change in the years to come.

Certain elements might effect the structural development in agriculture in the nearest future:

- The agricultural policy,
- enviromental policy,
- rural and district policy,
- agricultural income,
- contracting,
- technology and
- structural policy

What is structural development ?

Structural development in agriculture can be defined and described in many different ways. Structure is not only the size and the number of farms. Also specialization, concentration, ownership, vertical integration etc. are changing and are part of the structural development.

In the recent years agricultural structure has had an even broader implication and importance. Now all links in the value chain from R&D, input industry, agricultural production, food processing, distribution, marketing, retail and consumption are more or less included. The entire food system is a new dimension in agricultural structure.

The original methods to describe the structural development are insufficient in describing the development. Changes occur in new dimensions and the industrialization aspect has become predominant.

Empirically, structural development can be visualized by seven different parameters:

The number of farms is an important parameter in the structural development in agriculture.

The number of farms has decreased during decades and is an indicator - or result - of structural development. The trend is global and does indeed influence society and the economic surroundings.

The size of the farms is also a result of structural development. Size is not a definite estimate: There are different ways to measure size, and often an average size covers a large deviation.

Specialization describes the composition of production on the individual farms. When farms focus on one or fewer production branches specialization occurs. There is a clear trend towards increased specialization.

Concentration is also increasing. When a small percentage of farmers produce a large and increasing share of total production, the agricultural structure is becoming more concentrated.

Ownership is essential for structural development. Farms can be owned by individual farmers or by companies, or farms can be tenanted.

Vertical integration and contracting illustrate the link and interdependency between on one hand farmers' production and on the other hand the food industry, processing companies, retail sector, marketing etc. With increasing vertical integration farming becomes more and more industrialized. Demand arises among consumers and demand is transferred through the whole value chain back to farmers.

Agricultural inputs are also an important dimension in agricultural structure. Inputs are changing, as capital and technology replace labour.

***Table 1. Size of farms measured by different estimates
(average size per farm)***

	Land Ha	Production 1000\$	Value added 1000\$	Income 1000\$
EU15	17	33	19	11
Belgium	19	108	50	20
Denmark	40	87	45	17
Germany	30	57	30	13
Greece	5	16	12	12
Spain	20	22	11	11
France	39	69	39	23
Ireland	28	32	17	19
Italy	6	17	12	5
Netherland	18	163	93	30
Austria	15	20	12	6
Portugal	9	14	7	4
Finland	22	31	16	11
Sweden	34	37	15	3
UK	70	94	45	32
United States	207	102	50	17
Japan	2	19	12	6
Canada	247	67	31	8
Australia	295	67	33	16
New Zealand	220	81	37	18

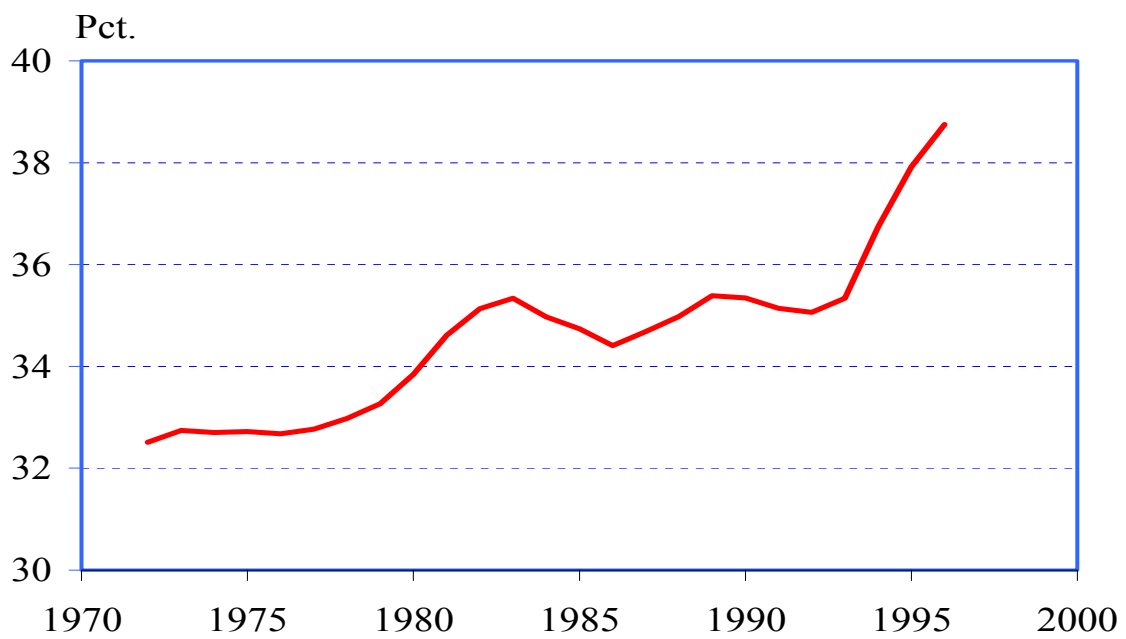
Source: Own calculations based on European Commission (several issues), USDA (several issues), OECD (1997), OECD (1999).

Table 2. The 5 per cent biggest farms' share of total production

	Dairy cows	Cattle	Feeding pigs	Pigs	Land
Belgium	12,7	21,3	20,5	23,6	23,0
Denmark	8,0	18,9	26,8	32,0	21,0
Germany	28,0	30,1	53,6	46,0	44,0
Greece	34,3	37,9	90,0	90,8	29,6
Spain	30,7	39,2	61,0	83,4	59,3
France	12,0	18,5	48,9	55,2	20,7
Ireland	16,1	25,0	55,2	33,3	20,6
Italy	33,0	43,6	88,6	90,3	50,7
Netherland	13,9	22,1	24,4	27,9	23,0
Austria	15,9	16,9	55,0	52,2	36,4
Portugal	36,0	46,2	81,0	78,7	64,0
Finland	10,7	15,0	26,0	18,5	17,5
Sweden	16,1	19,1	35,7	37,5	24,8
UK	15,7	18,3	38,0	42,0	19,8

Source: Own calculations based on EUROSTAT (1998).

**Figure 1. Cooperatives in EU
Share of total agricultural production**



**Figure 2. Added value in the total food sector:
Distribution between agriculture and food industry (OECD)**

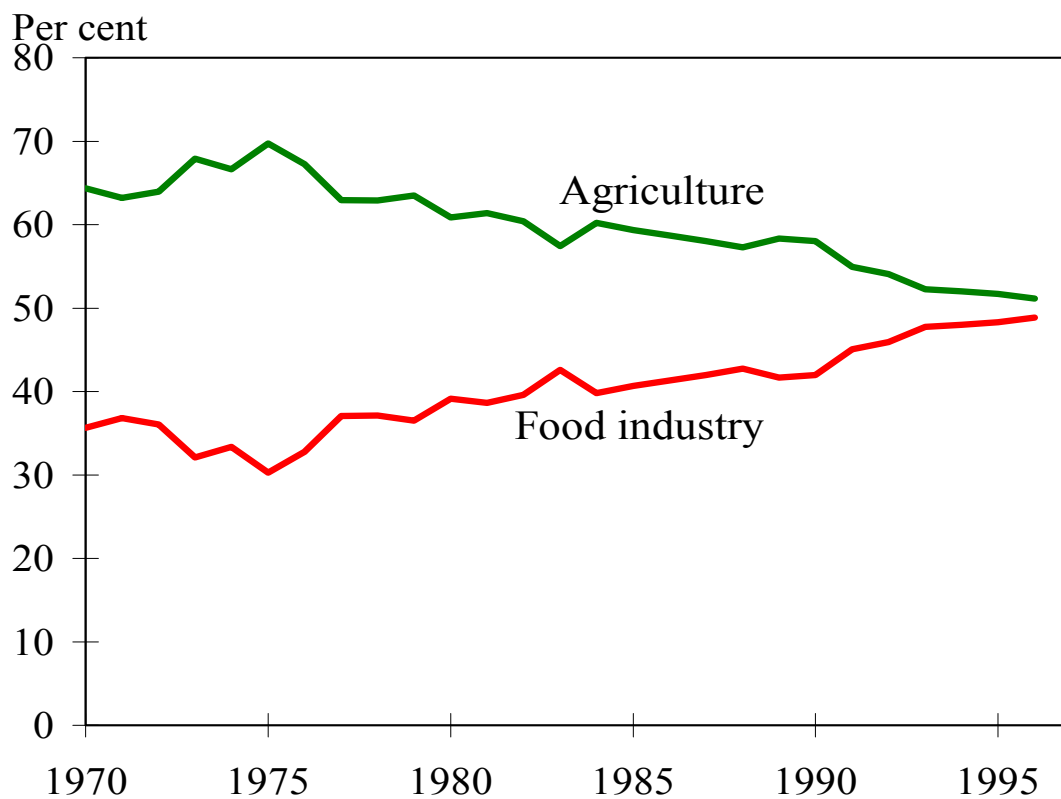
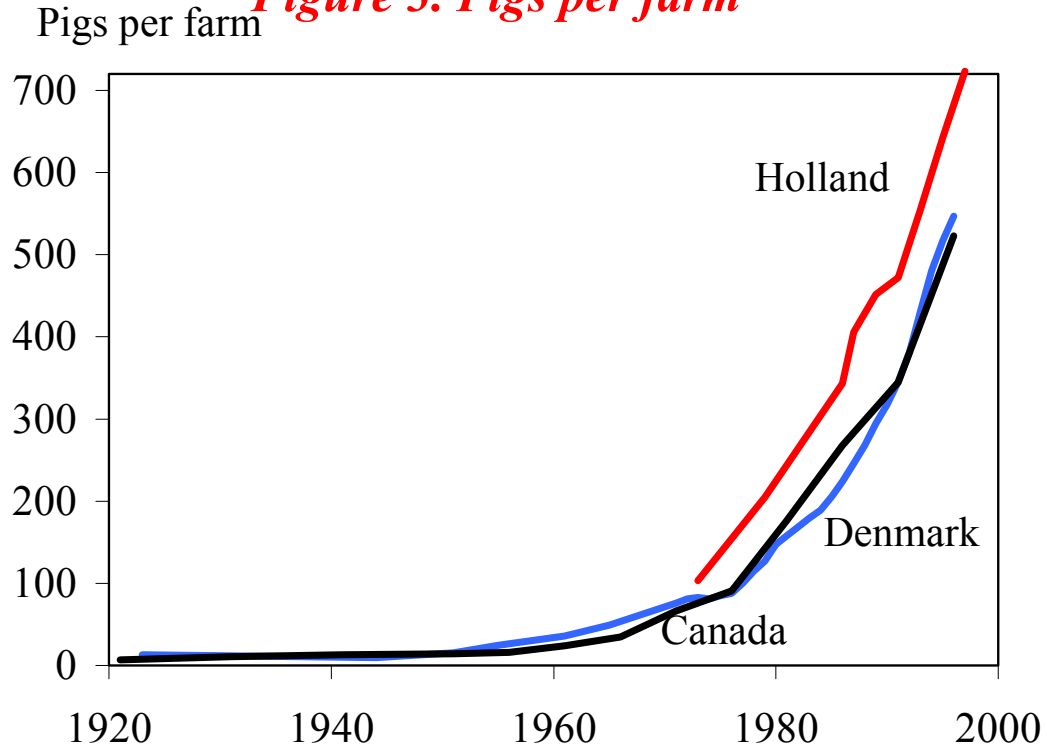


Figure 3. Pigs per farm



**Figure 4. Farms with poultry
Per cent of total no. of farms**

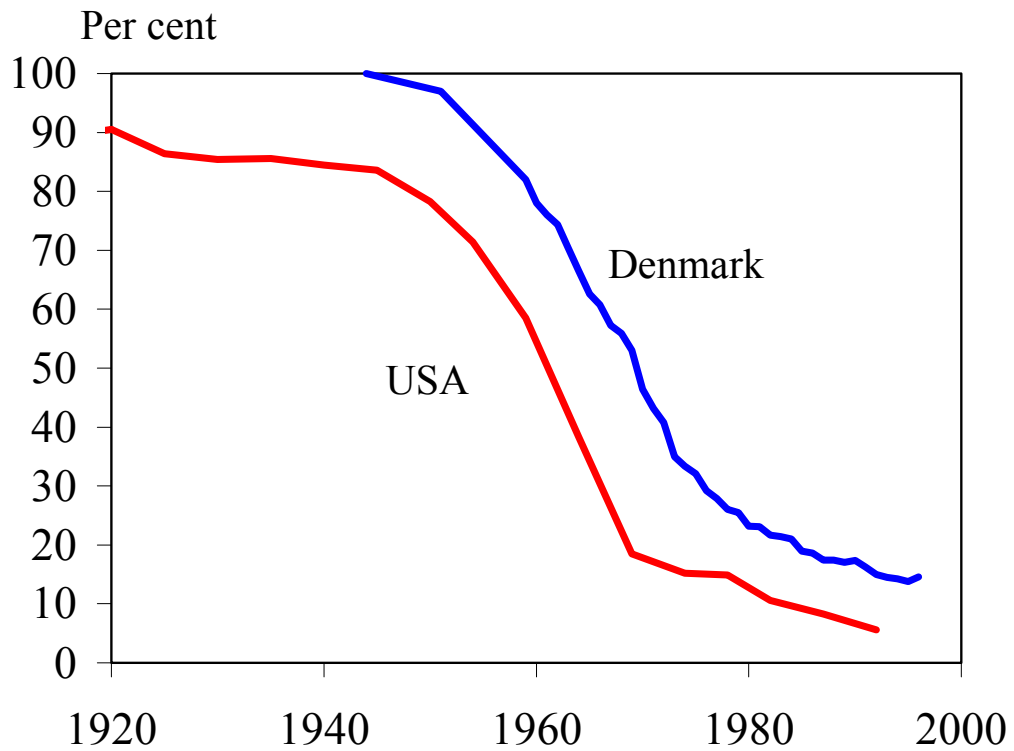


Figure 5. Production contracts in EU
Share of total production

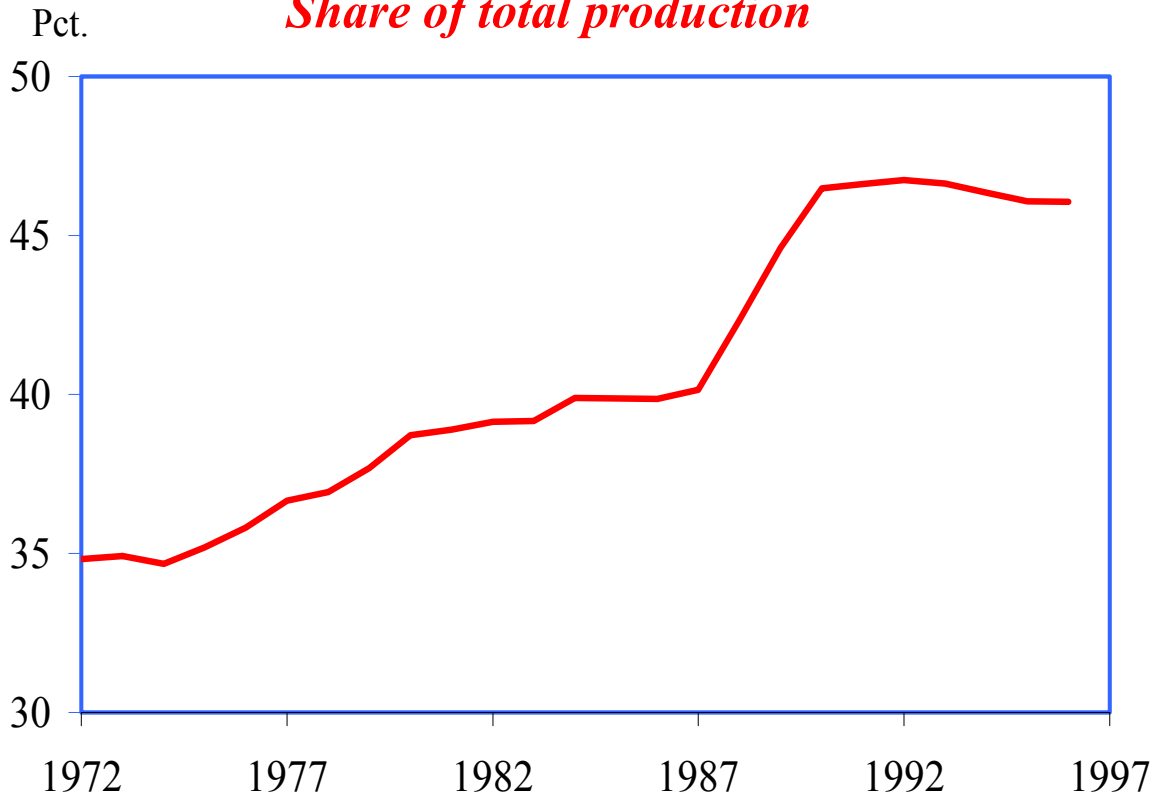
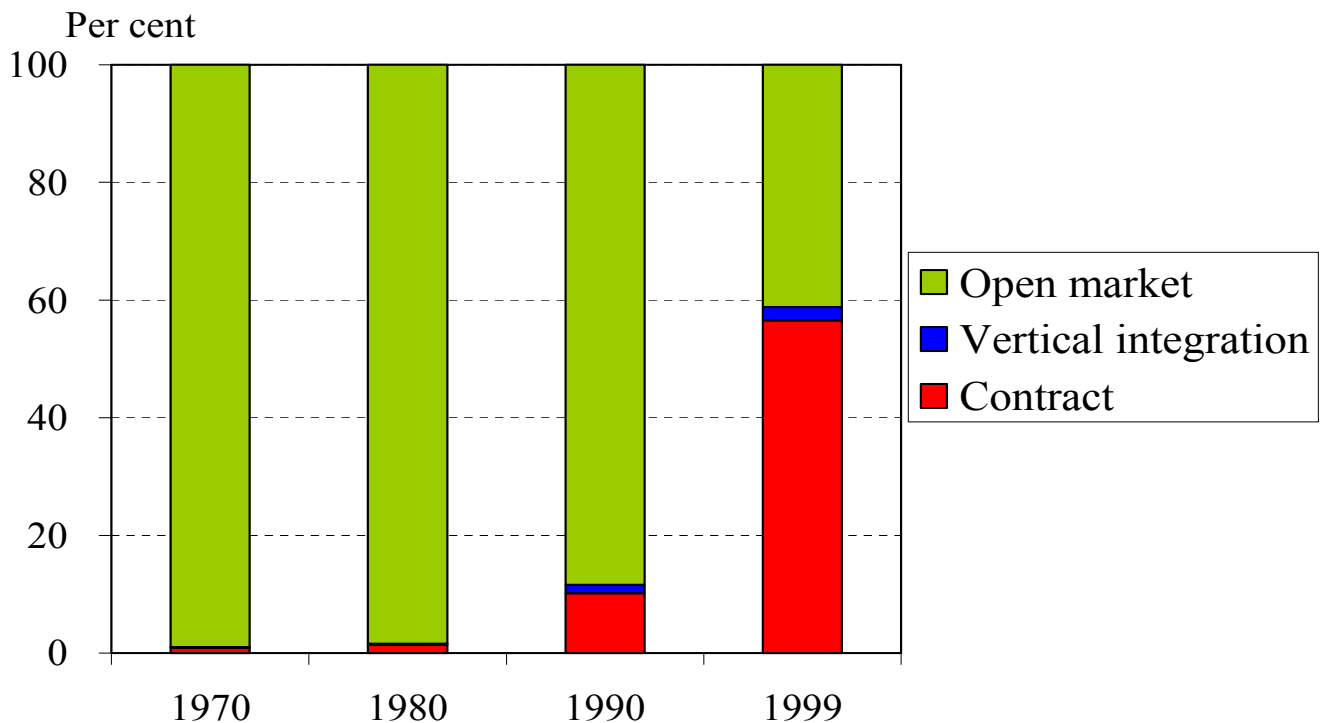
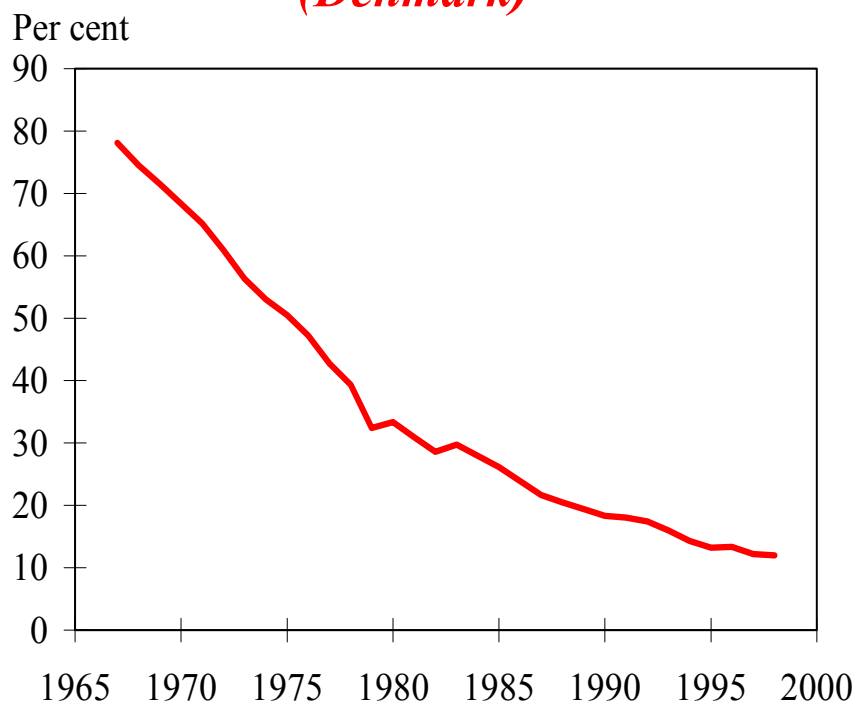


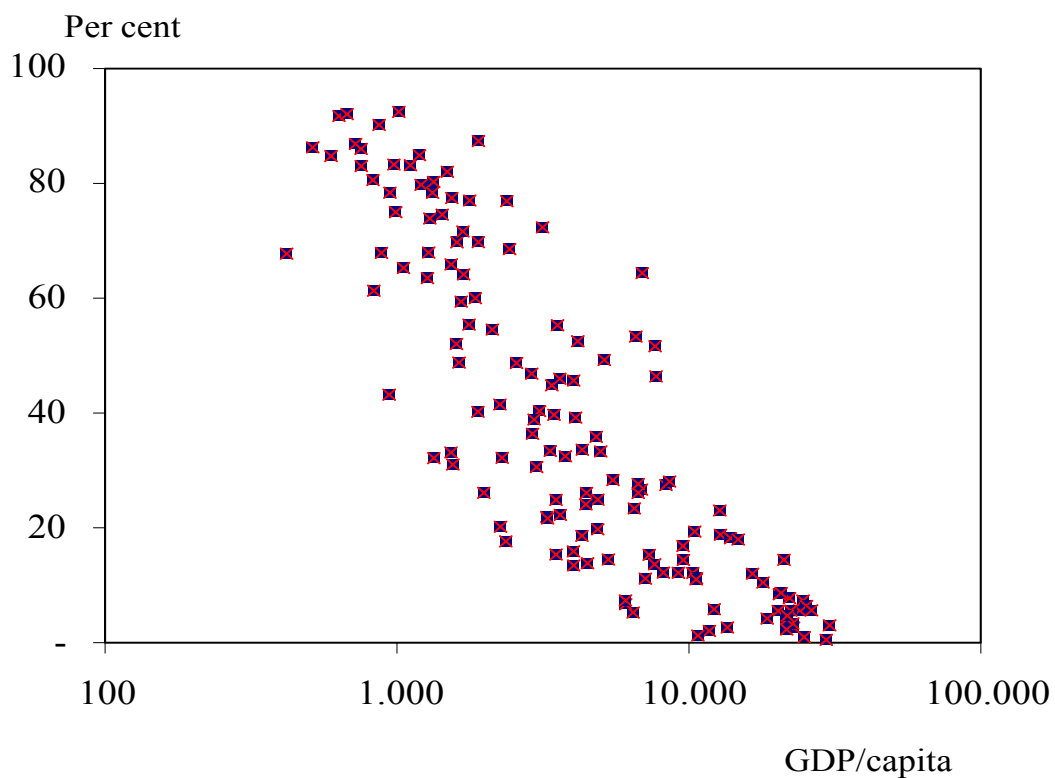
Figure 6. Production contracts in United States
Share of total production of feeding pigs



**Figure 7. Farms with both pigs and dairy cows
(Denmark)**



**Figure 8. Agricultural labour (share of total labour)
as a function of GDP per capita**



**Figure 9. Part time farming (% of total no. of farms)
(Denmark)**

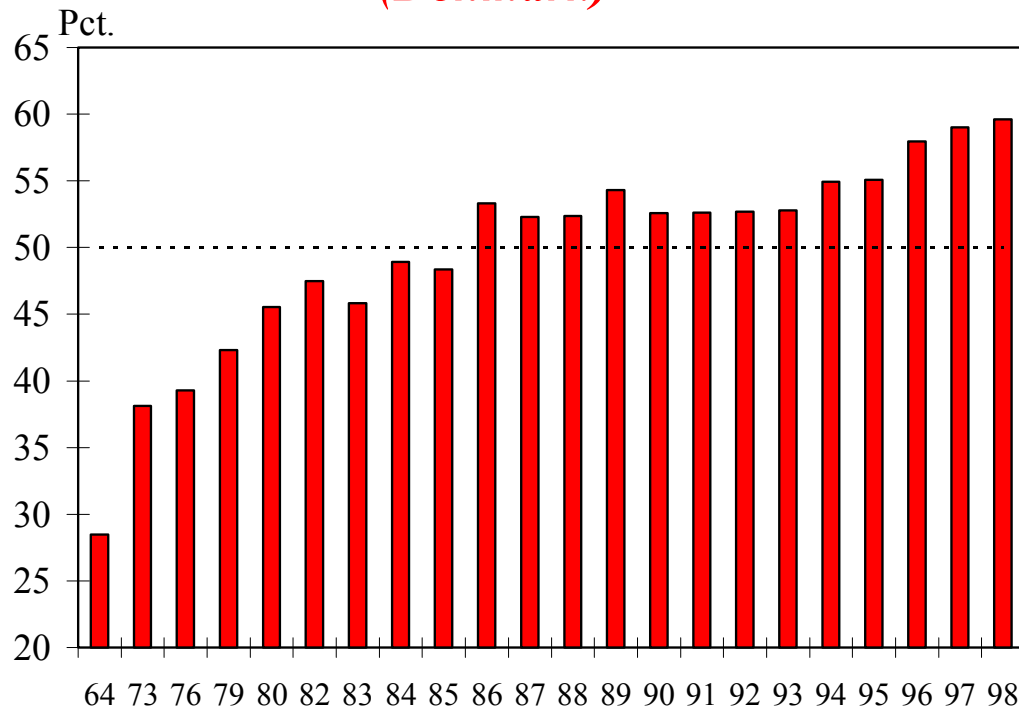
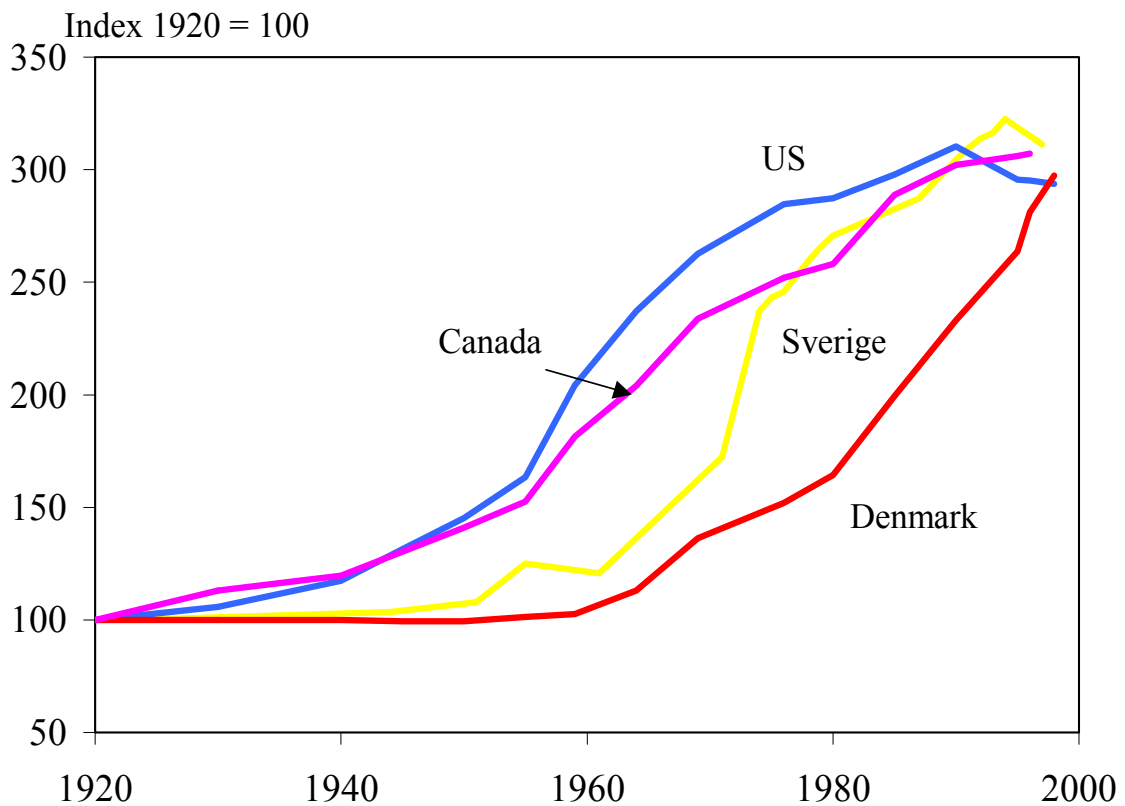


Figure 10. Farm size (hectares per farm). Index 1920 = 100



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