Who is Subsidizing the Agricultural Sector Most - The EC or the US?

S. Kjeldsen-Kragh (*)

One can subsidize in three different manners

In the EC the goal has been to obtain a high price level for agricultural products so that the farmers get a reasonable income directly by high consumer prices. The goal is obtained by import levies, market interventions, and export restitutions.

In the US they are to a large extent using the deficiency system. We have a market price for agricultural products which is too low to secure a satisfactory income level for the farmers. So the difference between the high price paid to the farmer and the low price paid by the consumer is a public expenditure financed by taxes.

Both supporting schemes have the disadvantage that they artificially stimulate the production of agricultural products. This can be avoided by using a direct income support scheme, where the support is detached form the production volume.

The US supporting policy

The American support scheme is not a pure deficiency payment scheme.

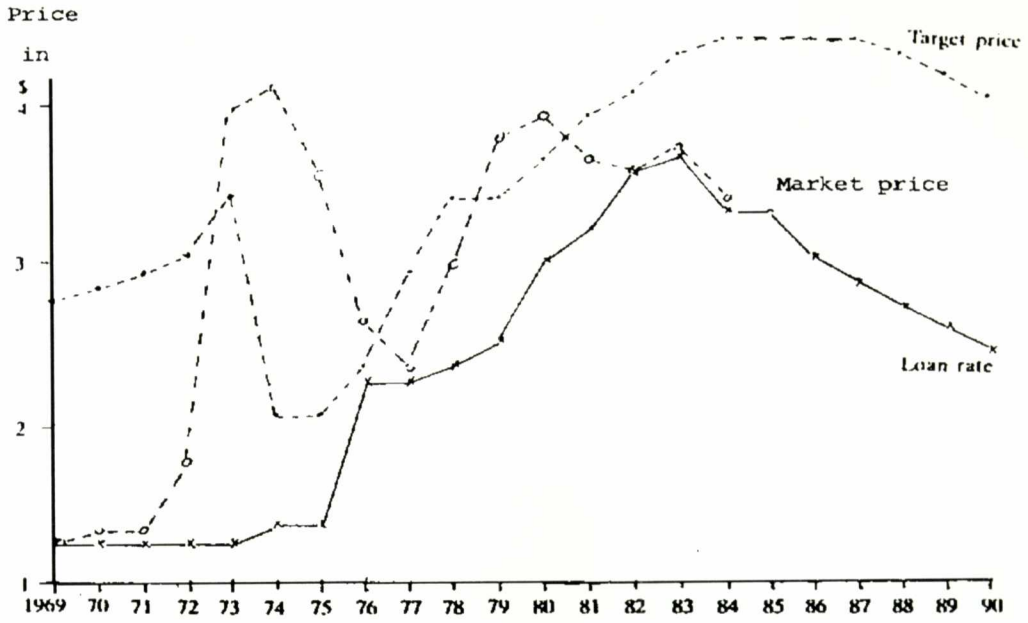
In the US they have a so-called loan rate. When a farmer gets a loan from the public, he can repay the loan either by paying in cash or by repaying in kind at a fixed price. It means that the loan rate is a price floor below which the price cannot fall. The loan rate has the same function as the intervention mechanism in the CAP.

The price the farmer gets is the so-called target price which is higher than the loan rate. The difference between the target price and the market price (which cannot fall below the loan rate) is given to the farmer as a deficiency payment.

As you will see from figure 1, the loan rate increases rapidly from 1979 to 1983. When we have a given world market price it becomes less and less reasonable for the American farmers to export. They will be much better off to repay their loans by delivering their harvest to the Commodity Credit Cooperation (CCC), which is the financing body. The increasing loan rate makes it more profitable for other countries to undercut the price that the Americans have to obtain before they export.

(*) Economic Institute, The Royal Agricultural University, Copenhagen, Dinamarca

Figure 1. Loan rate, target price and market price for wheat in the US 1969-84(90). Price in $ per bushel.



As you can see, the Americans have learnt their lesson. Now in the coming years they are lowering the loan rate, which will contribute to a falling world market price. It means that the EC has to pay higher export restitutions to stay in the market.

The dollar rate is important for the agricultural markets

A devaluated dollar will increase the world market price level, all other things being equal. The American farmers will be able to compete with other competitors who will have difficulties, apart from the EC whose exports are independent of the dollar, as long as the export restitutions always represent the difference between the EC market price and the world market price.

On the contrary, a revaluated dollar will hamper the US exports of agricultural exports. Other producers will better be able to compete and the world market price - all other things being equal - will decrease.

A devaluated dollar will increase the export restitutions that the EC is paying, and a revaluated dollar will ease the financial burden of the CAP for the EC.

It is a well-known fact that the dollar has fluctuated greatly since the Bretton Woods system broke down at the beginning of the seventies.

The decrease in the American exports of agricultural products in the beginning of the eighties was mostly caused by the increase in the loan rate (see above) and the sharp revaluation of the dollar.

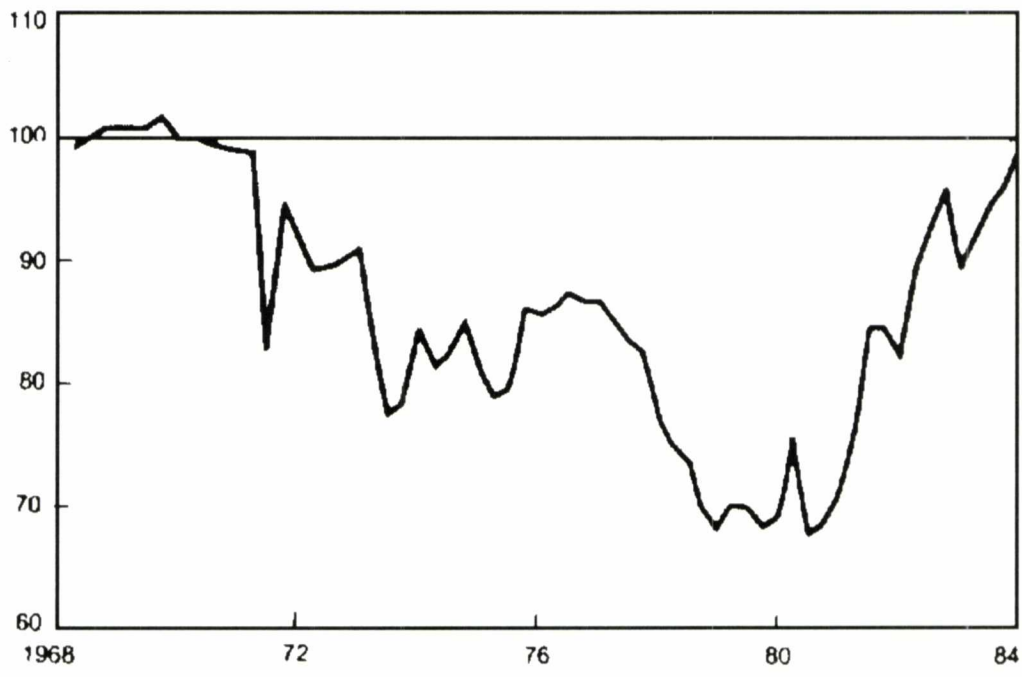
How to measure the exent of the subsidies?

Sometimes it is stated that if a country has no surplus production it is not guilty of the overproduction in the developed countries. Of course, this is contradictory to the theory of the comparative advantages.

Subsidies creating self-sufficiency are naturally as bad as subsidies causing surplus production.

Sometimes the public expenses caused by the agricultural policy are shown to illustrate the public support. However, public expenses are only part of the total costs of subsidizing. As a matter of fact,

Figure 2. Foreign exchange value of the US dollar



an importing country can by introducing high import levies support the agricultural sector at the same time as it collects public receipts from import levies.

One way of measuring the level of subsidizing could be to build an econometric model. Often the models are based on constant price elasticities that are taken from other investigations.

Instead of the tedious work of building a model one can do as the World Bank did in its latest report[1]. They calculated the so-called nominal protection coefficient which is the domestic price divided by the order price (the world market price). The results are shown in table 1.

Average for several products - cereals as well as animal products - show that the US is supporting agriculture much less than Japan and the European countries.

Table 1. Nominal protection coefficient for producer prices. A weighted average.

Country or region	*NPC*
Australia	1.04
Canada	1.17
EC	1.54
Other Europe	1.84
Japan	2.44
New Zealand	1.00
United States	1.16
Weighted average	1.40

1) World Development Report 1986, Washington 1986

The weaknesses of the analysis

One should be very cautious not to rely on a weighted average of the nominal protection are. It is due to three factors.

a. It is not meaningful to calculate an average protection rate for all products. Cereals and other vegetable products are important inputs in the production of animal products.

If the price in the milk sector and in the pig production sector is higher in the EC than in the US, it is not necessarily because the protection level is higher. The difference could merely correspond to the difference in the feeding costs in the two regions.

b. Then one has to compare prices in different countries. We need to compare figures denominated in different currencies. We can only compare these figures by transforming them to the same currency. One can choose dollar, ECU or a third currency. Whatever currency is chosen, there is the problem of the foreign exchange rate. We have had wide fluctuations in the foreign exchange rates caused by capital movements. Those fluctuacions are not reflecting real economic factors. Therefore, it might lead to wrong conclusions to use the actual foreign exchange rate as the conversion factor.

It should be better to calculate the foreign exchange rate, which would give equilibrium in the current transactions.

c. When comparing price levels in different countries as we are doing by calculating nominal effective rates, we are not saying anything about what will happen if prices are falling.

It depends on the supply elasticity, how the supply will react. However, it is not the supply elasticity in the short run, but the elasticity in the long run that matters.

On a longer view some of the costs will adapt to the lower price level for farm products. The supply curve will move to the left. The land rent for example will fall. If all the farm prices are decreasing at the same rate, the long run supply elasticity will be much lower than the short run elasticity.

A comparison of the producer price level in the EC and the US

In the following a price comparison between the producer prices in the US and in Denmark is shown.

The calculations are made for each product to avoid the criticism above in a. The criticism in b is also avoided as shown below, but the criticism inc can also be levelled against our investigation.

The price comparison in the EC and the US is based on an equilibrium foreign exchange rate. The relative purchasing power parity theory has been used. Let us illustrate the content of the theory.

We have two countries A and B. The foreign exchange rate for country A is at time zero: ExR_o. This is the rate that assures balance of payment equilibrium in year zero. We have two price indices PI_1^A and PI_1^B for year 1 in the two countries A and B. If both indices are 100 in year zero, the relationship PI_1^A/PI_1^B shows how the inflation has developed in country A in comparison with country B.

The theory of the purchasing power parity says that the exchange rate (PPP) in period one will be

$$PPP_1^A = PI^A/PI^B \cdot ExR_o$$

According to the theory the foreign exchange rate will move so that the differences in inflation rates between the countries will be neutralized.

Behind the theory of the relative purchasing power parity we have a theory saying that each commodity price is the same in each country.

When we have turbulent conditions in the foreign exchange markets, as we have had since 1971, then investigations show that the PPP-theory does not work either in the short or in the medium run. Of course, it works better in the long run.

Therefore, the official dollar rate cannot be used when one wants to convert the European price in ECU into dollars. Instead one should use the echange rate that corresponds to the PPP-theory.

What are the results?

Vegetable products

Figure 3 for wheat shows a pronounced difference in the price development in the period 1973-84. At the beginning the US price level is a little bit higher than the EC level.

Figure 3. Producer price for wheat in the EC and the US 1973-84. Dollars per ton.

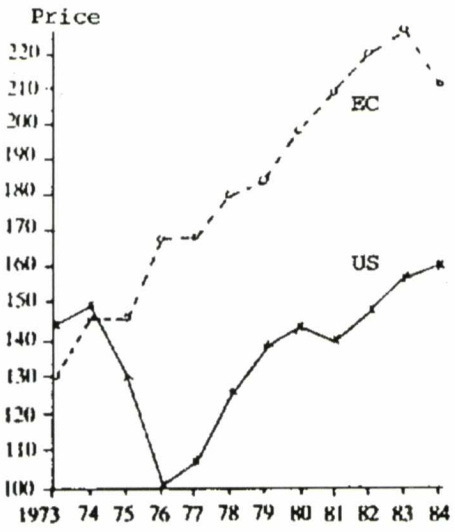
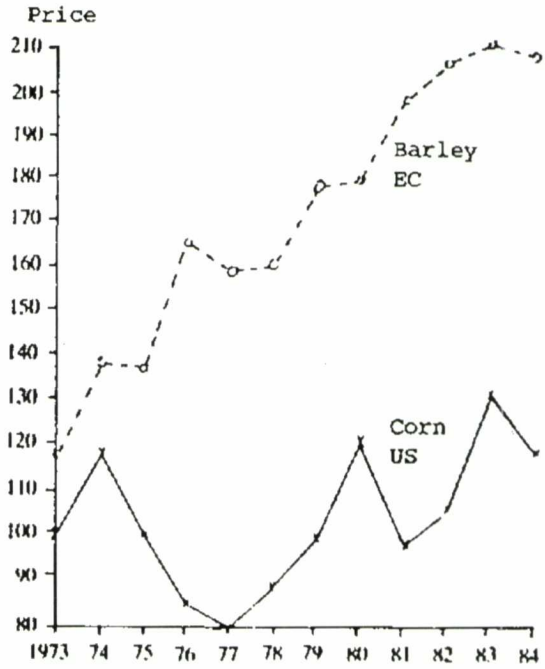


Figure 4. Producer price for barley in the EC and corn in the US. 1973-84. Dollars per ton.



We have a more even development for the EC than for the US. Since the late seventies the price level in the EC is about 40-50 per cent higher than in the US.

Figure 4 compares barley in the EC and corn in the US. Both products are used as fodder.

Again the American development is more uneven than the European development.

At the end of the seventies the price level for barley was twice the price level for corn. In 1983-84 the difference was a little smaller, about 75 per cent.

When comparing the prices, we have to take into consideration that we have 15 per cent more calories in corn that in barley of the same weight.

No doubt cereals are much more protected in the EC than in the US.

Animal products

Figure 5 shows the farm price for milk. It is slightly higher in the US than in the EC. But that is not the whole story. If the soil could alternatively be used for cereal production, the EC producers would have obtained 50-75 per cent more than the American producers.

The opportunity costs of fodder production are therefore higher in the EC than in the US. How much is difficult to indicate. It depends on the grass yield, the yield in cereals by alternative use of the soil and production costs.

If we assume that the fodder expense is 60 per cent higher in the EC than in the US, then the farm milk price has to be 25 per cent higher here than in the US to obtain the same production conditions. It is assumed that the fodder costs are 40 per cent of the total production costs.

The milk sector is definitely more subsidized in the US.

In the pork sector we have prices in the EC which are about 15-20 per cent higher than in the US.

Again, however, the fodder costs are definitely lower in the US. If the fodder costs are 60 per cent higher in the EC, then the price of pork should be raised 30 per cent in the EC to neutralize the artificial production advantage in the US. We assume that the fodder costs constitute half of the farmer's price of pork.

Figure 5. Producer price for milk in the EC and the US 1973-84. Dollars per 100 kg.

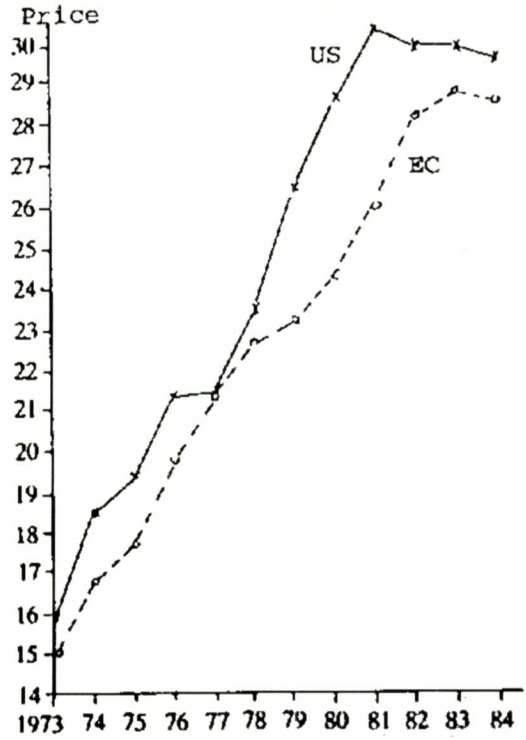


Figure 6. Producer price for pork in the EC and the US 1973-84. Dollars per 100 kg live weight

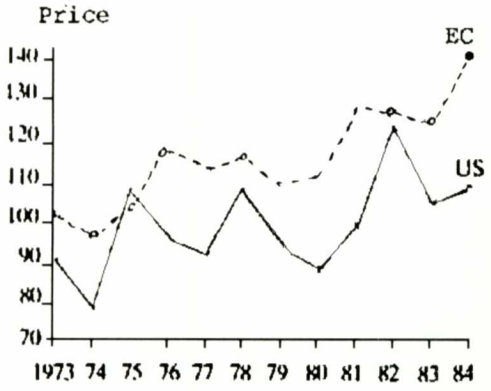


Figure 7. Producer price for beef in the EC and the US 1973-84. Dollars per 100 kg live weight

Here we are not taking into consideration that in Holland and in the Northern part of Germany they use non-cereal substitutes, which can be imported at world market price level.

Altogether our figures show that we are not subsidizing more than the Americans. The opposite is more likely.

Finally, we have the beef production. Here the two regions are subsidizing to the same extent. The lower price level in the US corresponds to a lower level of costs for fodder.

Comparative advantages

By looking at the production costs for the different costs, one can tell which country has the comparative advantage. In table 2 the total production costs for cereals in Denmark and the US are shown.

Table 2. Production costs in Denmark and the US

	Denmark	*US*
Cereals per hkg[1)]	173 kr.	$ 11.5
Milk per hkg	271 kr.	$ 33.5
Milk: Cereals	*1.57*	*$ 2.91*

1) In the case of Denmark it is barley, in the case of the US it is corn.

The costs should be treated with caution. Some of the costs are imputed and the costs are influenced by the agricultural policies in the two regions. The figures do not show what would be the case if the agricultural sector was not subsidized. Nevertheless, the magnitude of the figures should be trusted. It is evident from table 2 that the US has a comparative advantage in cereal production and the EC a comparative advantage in milk production.

Conclusion

It is not really reasonable to ask the question, who is subsidizing most in total, the EC or the US. As we have seen, the EC is subsidizing most in the cereal sector and the US in the milk sector. In the meat sector they are both subsidizing about the same. The US may be subsidizing a bit more than the EC in the pork sector.

What we really are facing is the old story about protectionism. Normally a country is subsidizing most in those sectors where they have the greatest problems related to competition, i.e. the sectors where they have comparative disadvantages.

The only reasonable solution is, of course, that the EC should lower its cereal price and that the US should liberalize the import of dairy products.