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What is the Future of Farming Within the Agri-Food Chain?

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ABSTRACT

Farming is the subject of frequent criticism as regards the environment, food quality and sustainability. Farmers, technical progress and policies often bear the brunt of accusations. However, the observed evolution has also been induced by economic determinants and by the position of agriculture throughout the agri-food chain. This position is analyzed: the processing and retailing sectors play a considerable role in the transformation of farming systems. The paper deals with the often overlooked influence of the downstream sector.

Key-words: agri-food chain, large-scale retail, value chain, distribution, agricultural production, agri-food system, productivism, changes in agriculture.

JEL classification: Q10, L10, D40, O33, L00, Q18

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Introduction

Over recent years and even decades, much criticism has been levelled at farming systems in France and the rest of Europe. Some of the issues thus called into question include the simplification of these systems, the genetic standardisation of animal breeds and plant varieties, the increasing size of animal production units with a heavy concentration of cattle or poultry, pollution and the reduction in food quality; in short their insufficient sustainability. At the same time, many demands are made upon farming in terms of fulfilling new roles, ensuring food characteristics, protecting the environment, meeting consumer demands and maintaining natural areas.

But what are the factors that determine the evolution of farming systems? The agri-food industry is often analysed only in the direction of the physical movement of goods, from upstream industries to consumers. However, farming systems are also strongly determined by their place in the agri-food chain, particularly in relation to the downstream sector and above all by their position in the value chain. This influence of downstream buyers – processing industries and large-scale retail, a group that will be referred to globally as PMR for the Processing, Marketing and Retail sectors – deserves greater consideration given its repercussions. This text thus presents the importance of the downstream sectors in the evolution of farming systems (1), the economic position of farming in the agri-food chain (2), and the growing role of the large-scale retail sector (3). The analysis is focused on the evolution of the model of agricultural production in France over recent decades as well as on its determining factors and its features. Changes in the general socio-economic context, in demand, and in technologies have an influence on the techno-economic paradigm of agriculture, which is reflected in changes in its technological, economic and environmental characteristics (Bonny, 1998; Moreira, 2004).

1. The importance of downstream demand in the evolution of farming systems

1.1 Demand-driven production: a strategy that is already a reality

Criticism directed at farming as regards the environment or food quality often suggests as a new watchword moving from a 'supply push' approach to a 'demand driven' approach. However, promoting demand in this manner, for which there is almost global consensus, asks few questions about its development and construction processes, and especially its impacts. Demand is seen as an objective that must only be worked towards in order to adapt supply to it, as suggested by Adam Smith in "The Wealth of Nations" as early as 1776: *"Consumption is the sole end and purpose of all production; and the interest of the producer*

ought to be attended to, only so far as it may be necessary for promoting that of the consumer."

This objective of steering agriculture according to demand seems to overlook or underestimate the fact that, to a large extent, this has actually been the case over the last few decades. The demand that has played a part is principally that of FPIs (Food Processing Industries) and above all, to a greater and greater degree, that of large-scale retail, whose demands have influenced production systems (table 1).

Table 1. Examples of the evolution of production systems linked to downstream demand over recent decades

FPI (food processing industries) and LSR (large-scale retail) factors influencing the evolution of farming systems.	Impact on the evolution of farming systems
<ul style="list-style-type: none"> - Significant development of FPIs and LSR dealing with a growing proportion of ag products. They capture an increasing share of the added value while agricultural prices fall. - FPIs and LSR look for cheap agricultural raw materials. Supplies are bought on the world market with low transport costs, hence fierce competition where agricultural commodities are concerned and great pressure to reduce their costs. - FPIs demand products suited to processing; LSR buys varieties and products with a long shelf-life and only accepts those that meet this requirement. - FPIs and LSR look for relatively standardised agricultural raw materials in order to simplify processing (thanks to homogeneous raw materials) and marketing (grading, classification standards for products for trade, etc.). They indirectly select the varieties suited to these objectives. - The downstream sector more recently developed a differentiation strategy for its supply to consumers and increased so the level of contractualisation with producers. - Any very lightly marked fruit or vegetable is refused, along with different products containing a certain level of mycotoxins. Payment according to different quality criteria (composition) becomes commonplace. 	<ul style="list-style-type: none"> - Production of raw materials with a decrease in on-farm processing and direct sales. - To reduce costs of production, farmers aim to produce more per worker. This leads to the use of more productive breeds and varieties and an increase in the size of farms and production units. - Choice of varieties suited to these demands, hence modification of certain qualitative characteristics of products. - Plant varieties and animal breeds become standardised and decrease in number at first, hence a reduction in biodiversity. - Better adaptation to different demands according to quality criteria specified by the downstream sector. - Pesticides are used to meet these standards; nitrates also aim to obtain a satisfactory volume with the required composition.

1.2 The effects of downstream pressure

One of the most striking effects of downstream pressure has been the fall in agricultural prices, enhanced by the fact that supply increasingly takes place at the global rather than the local level in order to obtain low-cost agricultural raw materials. To offset the fall in prices, farmers have been obliged to increase the volumes sold and to reduce the unit costs of the product delivered. But this has led to the specialisation and simplification of systems, with notable effects, particularly as regards the environment with the dissociation of crops and animals. The localisation of production has become more pronounced by the establishment of supply industries in places where input materials are cheapest – for example near ports – and by the location of processing industries. This has led to regional specialisation, with serious environmental consequences due to the excessive concentration of livestock in certain areas and almost total absence in others.

Many farmers react to the fall in the prices of their products by increasing the volumes delivered, and supply is therefore often high. This in turn intensifies the tendency for prices to fall, hence a spiral of generally high production leading to low prices, and so on. This has resulted in the creation of surplus stocks, especially given the fact that mobility is difficult once established in farming. In the longer term, the remaining producers must have low production costs. Consequently, the often criticised increase in the average size of production units is difficult to halt, except where processing and/or direct sales of products are possible. The low prices of agricultural products are therefore the cause of two trends that are largely disparaged, while their determining factors are frequently poorly analysed: ‘productivism’ and the need for income support.

Criticism is often levelled at the negative externalities of farming, in terms of the environment and quality, etc. The blame is repeatedly placed, whether explicitly or implicitly, (a) on the choices made by farmers themselves, (b) on pressure from the upstream and agri-supply sectors, especially the agrochemicals industry, and (c) on technical progress and consequently on the general orientation of Research and Development. It is thus often forgotten that the evolution of systems, their trends and their technical choices have also been heavily influenced by downstream pressure, especially as regards prices, standardisation and composition, etc. (table 1).

2. The economic position of agricultural systems in the agri-food chain

Farmers, who have become simply suppliers of low-cost raw materials, have seen their share of the agri-food chain shrink, while the downstream sectors of processing, marketing and retail (PMR) have grown. Consequently the composition of foodstuffs has radically

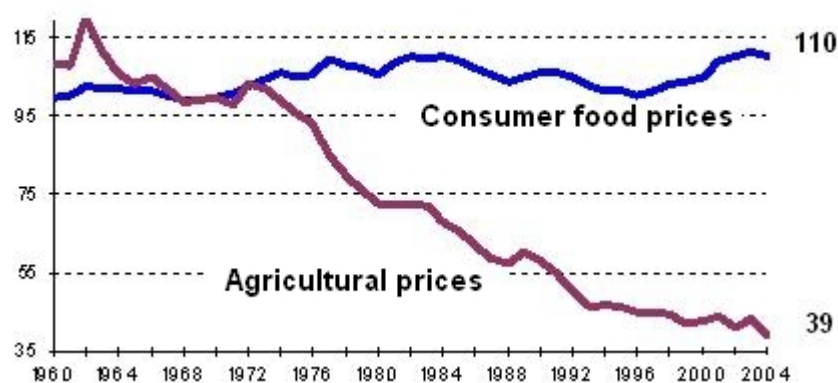
changed: they are increasingly processed and the share of pre-prepared, ready-to-eat or cook products has considerably grown, along with consumption outside the home.

2.1 Agricultural prices and food prices

While the prices of agricultural products have fallen on a constant currency basis, those of foodstuffs have slightly risen or have remained practically stable (excluding inflation) (figure 1). The evaluation of food prices is certainly approximate because it integrates both long-term trends in product prices and changes in the composition of the 'household shopping basket', but the two phenomena are difficult to dissociate. If we divide total consumer food spending into two major categories – (1) the value of agricultural products sold by farmers and (2) all spending linked to the processing and marketing of products, including transport, packaging and marketing and advertising costs – there is clearly a reduction in the share of the former in final household consumption (figure 2). The percentage of food spending returning to the farming sector in the United States has been constantly falling over the last few decades (USDA-ERS, 2002). The same applies to France: the share of agricultural products in overall household food spending now represents only a low proportion due to changes in the composition of foodstuffs and the fall in agricultural prices.

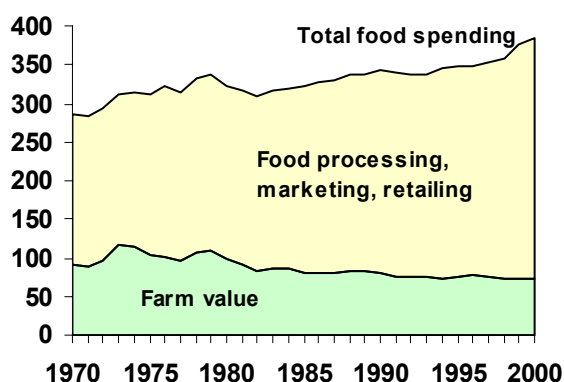
The expansion of the PMR sector can also be linked to general changes in lifestyles: the growing proportion of women working away from home, the demand for easy-to-prepare meals, etc. The average daily time spent preparing meals at home has considerably dropped. In other words, jobs in the agri-food industry and retail have replaced on-farm processing/marketing work and domestic meal preparation work.

Figure 1. The evolution of agricultural prices and food prices over the last 40 years (1970 = 100; index 100 in constant currency)



Source: APCA 2005. Data from APCA (Permanent Assembly of the Chambers of Agriculture) calculated from INSEE data (National Institute for Statistics and Economic Studies)

Figure 2. Distribution of food spending between farm products and PMR over the last 30 years in the USA (in billions of constant dollars) (USDA-ERS, 2002).



2.2 Effects on the environment and health

The consequences of this evolution are often insufficiently acknowledged. In terms of environmental and health effects, farmers, technical progress and policies often bear the brunt of accusations. Comparatively, until recently, the downstream sector was very rarely called into question, especially by the media and the general public,. However, it can have a significant impact in this field. Transport, for example, which has increased at all stages of the chain with the search for low-cost raw materials throughout the world and the internationalisation of retail, has strong impacts in terms of energy and the environment, as does the increase in packaging and advertising.

With regard to the quality of processed food products, the addition of less costly ingredients (such as salt, sugar, fat, thickening agents, sweeteners, texturing agents flavourings and emulsifiers, etc.), which partly replace the original raw materials, has a significant impact on the characteristics of their composition, their taste and especially their nutritional balance. Processed food products on the market often contain too much salt, simple sugar and fat, which improve their taste while reducing their cost, but which also contribute to various dietary problems, along with the increase in obesity. Another important impact of the PMR sector is the pressure it exerts, firstly to purchase low-cost supplies, and secondly to gain market share almost everywhere in the world.

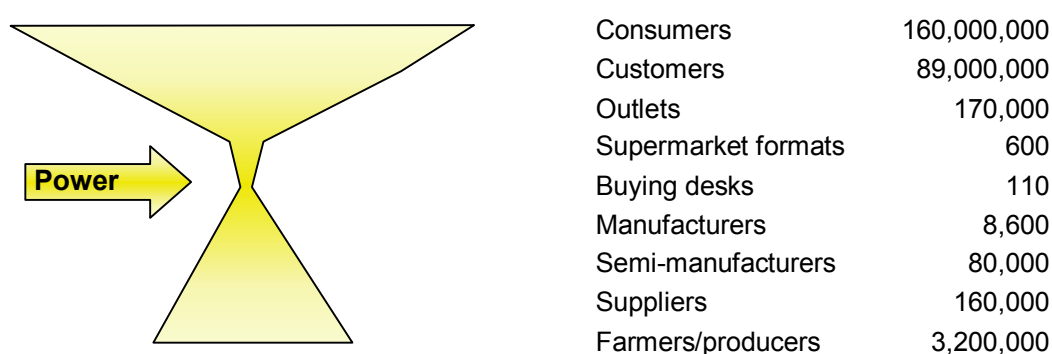
3. Power and dynamics of change in the agri-food chain

The agri-food chain has become increasingly complex and lengthy, with a highly heterogeneous structure: it is made up of stakeholders whose economic size and number at each level are very unequal. Grievink (2003) depicted this using an hourglass, which

provides an informative illustration of the situation in Europe (figure 3). At the top are consumers, who are very numerous but heterogeneous. At the bottom, farmers are fragmented and usually of modest economic size. The central group of stakeholders, at the level of the narrow neck, is incomparable in size and economic power: it comprises the major buying desks of the retail groups. They have significant power because a growing number of upstream stakeholders and firms have to use them as an intermediary in order to put their products on the market. As the large-scale retail sector has become highly concentrated, several large buying desks are becoming an increasingly obligatory stopping point for product marketing. They also impose on their suppliers certain conditions, standards and technical demands that must be met (known as 'private standards'), which may lead to some of them being excluded. This may concern FPIs that have to pay 'slotting fees' in order for their goods to be referenced in supermarkets, and also producers in order to meet technical standards.

The large-scale retail sector also has a considerable influence on consumers, the natural environment and more broadly speaking models of socio-economic development that are directed towards the progression of purchased consumption and the 'commodification' of a growing number of goods.

Figure 3. An illustration of the agri-food chain in six European countries with the number of stakeholders at each level (Grievink, 2003).



Conclusion

There is high demand for a change in the agricultural production model. However, the frequent criticism of the current model sometimes appears rather short-sighted, as by focusing on farming and its upstream sector, it often ignores the significant influence of the downstream sector. Consequently, questions about environmental sustainability, food quality and the impact on Southern countries often seem too exclusively addressed to farming and

ag suppliers, while underestimating the dependency of farming on its downstream sector, the role of large-scale retail – which imposes prices, standards and technical specifications – and the importance of the downstream sector in terms of poor nutritional balance and pollution.

There are many threats weighing on the future of the planet, including environmental and social threats. Farming could play an important role in contributing to greater sustainability of human activities and their impacts. But it must therefore have the necessary means to achieve this and, in particular, the agri-food chain must do more to enhance the value of agricultural production.

Nowadays indeed, agricultural production is often decried and depreciated according to two aspects. Firstly, much criticism addresses the agricultural sector because of pollution, farm concentration, product quality, and animal welfare, to name but a few examples. Agriculture as well as the agro-supply industry are held responsible for these flaws. However, this criticism does not take into account the main drivers behind these aspects, and it tends to depict farming in the past as something much better than it really was. Secondly, the prices of agricultural products are often low. They appear all the lower when they are compared to the prices of products created downstream from the raw products.

Now, in order to grant agriculture a future and particularly, in order to guarantee new farmers the possibility of founding farms, it seems necessary that society sees agriculture in a better light and that farmers be able to live off of agriculture through better paid and appreciated products. This double necessity of image enhancement and value is also important when developing countries are under consideration. There is indeed a paradox between the numerous demands asked of agriculture and the ongoing decrease in the number of farms and farmers in developed countries such as in France. It might be useful to ask ourselves if a continued decrease of the share agriculture represents in the gross national product is still and will always remain a sign of a modern economy, even if such a question is provocative.

References

- Bonny, S., 1998. Prospects for Western Agriculture During a Period of Crisis, Changing Demand, and Scientific Progress: A Case Study of France. *Technol. Soc.* 20(2), 113-130.
- Grievink, J.W., 2003. The changing face of the global food supply chain. In: OECD Conference, Changing Dimensions of the Food Economy: Exploring the Policy Issues. The Hague, 6-7/02/2003. webdomino1.oecd.org/comnet/agr/foodeco.nsf
- Moreira, M.B., 2004. Globalization: the end of the social contract in agriculture? 6th IFSA European Symposium. Vila Real, Portugal, April 3-8. <http://home.utad.pt/~des/ifsa/>
- USDA-ERS. 2002. Briefing room: food marketing and price spreads. USDA-ERS (US Dept of Agriculture, Economic Research Service). www.ers.usda.gov/Briefing/FoodPriceSpreads/trends/