VERTICAL COORDINATION IN THE FRUIT AND VEGETABLE SECTOR:
IMPLICATIONS FOR EXISTING MARKET INSTITUTIONS AND POLICY INSTRUMENTS

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Paris

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VERTICAL COORDINATION IN THE FRUIT AND VEGETABLE SECTOR: IMPLICATIONS FOR EXISTING MARKET INSTITUTIONS AND POLICY INSTRUMENTS

This study was undertaken within the general framework of the activities of the OECD Committee for Agriculture. It was written by a consultant, Prof. Margaret Loseby, from the Università della Tuscia, Italy, for the Agricultural Trade and Markets Division of the OECD Directorate for Food, Agriculture and Fisheries. It constitutes the synthesis of the discussions held at the seminar on “vertical coordination and institutional aspects of marketing systems in the fruit and vegetable sector” which took place on the occasion of the 23rd session of the Group on Fruit and Vegetables on 17-18 June 1996, as well as of work undertaken for preparing the seminar by the following consultants:

- Mr. Urbain Avermaete - Belgische Boerenbond - Belgium
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The final version of the study was submitted to the Committee for Agriculture which approved its derestricion on 11 April 1997 under the responsibility of the Secretary-General.

This document is issued as a consultant’s report. The opinions expressed and the arguments employed in it are the responsibility of the author and do not necessarily reflect the views of the governments of OECD Member countries.
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Summary

Three principal factors for change in market conditions in the fruit and vegetable sector can be distinguished:

− changes in the composition of final demand, with greater request for products incorporating services which facilitate, in particular, food preparation;
− changes in potential supply, brought about by developments in crop varieties, transport and storage, which have widened geographical and seasonal markets;
− the growing importance of large buyers, especially of modern retailing chains.

These changes are inducing operators to seek new forms of organisation - in particular, vertical coordination - stimulated by the need to reduce risks deriving from the high degree of perishability and the seasonality of production which characterise the sector.

All these factors influence the balance of market power and provoke continuous changes in the interface between operators; power, however, appears ultimately to reside with a few large buyers, usually modern retailing chains and large processing industries.

Policy for the sector in OECD countries has traditionally aimed to defend the market position of the grower, and has entailed varying degrees of interference with the market, implemented through legislation to promote vertical coordination.

Thus at present formal and informal arrangements for vertical coordination are to be found within the sector; the latter, based on "trust", are important but difficult to document; the former may be "market inspired" or "policy inspired", though these definitions are not mutually exclusive and there may be some overlap.

Formal arrangements include contracts, auctions, company links and inter-branch arrangements.

An important feature of contracts is the degree of control exercised by the buyer over the production process. The most controversial aspects of contracts in the fruit and vegetable sector are described in the paper.

Auctions, in particular, Dutch auctions, and company links are "market inspired". The latter exist both between private, non-cooperative companies as well as between cooperative organisations; frequently they involve links between companies operating in different geographical areas in order to guarantee seasonal complementary in supply. Cooperation is an important and useful form of organisation in the fruit and vegetable sector, but the economic privileges and burdens accorded by legislation to cooperative organisations vary between different countries, limiting or facilitating their competitive positions.

"Policy inspired" arrangements are described with examples from USA, New Zealand and the European Union. All these systems are currently under review: they are considered to be too rigid to confront the changing market situation. A policy problem common to all of them is how to guarantee a reasonable return to the grower, avoiding "free-rider" tactics, without direct interference for price and supply control.
In view of the changes under way, the continued significance of reference points for policy implementation is being called into question, in particular, (i) that of wholesale markets and auctions, now being by-passed by contract selling; (ii) that of officially available information on prices, since in private agreements, the importance of which is increasing, price information is not publicly available; (iii) that of officially recognised quality standards which do not necessarily correspond with standards required by large commercial buyers. Each of these questions is discussed in the paper.

There is a discussion of the implications of the changes in the balance of market power for the degree of concentration in the fruit and vegetable sector, the dynamism and flexibility of the sector and its service to consumers. It is suggested that governments should encourage development of the positive features of vertical coordination, in particular, sharing of risk and income; in this respect, competitively-oriented interprofessional organisations have a role to play; efficient procedures for ensuring respect for contracts, as well as attentive application of norms against unfair competition are also important fields of action for government.

Reviewing past experience and taking into consideration government undertakings to limit public support to the agricultural sector in general, the paper concludes that in future, policies should pay particular attention to ensuring that "destructive" competition in the sector be avoided, and that the dynamic contributions of small and medium farm and enterprises in the filière to the quality and flexibility of the system be safeguarded from manoeuvres which tend to transfer to them an undue share of market risk.
1. Introduction

In recent years, the organisation of the fruit and vegetable filière has been modified by profound changes which have taken place both in demand and supply. Higher income levels have favoured an increase in levels of consumption and permitted that of higher priced, higher quality products, especially of items incorporating services which facilitate food preparation in the home or in the restaurant. Technical innovation in varietal selection, methods of cultivation, storage, transport and processing, together with the aid of information technology, have enlarged geographical markets, extended seasonal supply and enabled a far wider assortment of fruits and vegetables to reach customers in industrialised countries than has ever previously been the case. At the same time, changes in life style have encouraged the development of modern retailing, which, after initial difficulties, is rapidly improving its expertise in dealing with the fresh fruit and vegetable sector and is absorbing an increasing share of this trade, thus adding to the already dominant position achieved as regards retail trade in the processed fruit and vegetable sector.

In order to cope with the evolving situation, operators have devised a wide variety of forms of vertical cooperation, i.e. operating links of greater or lesser intensity between agents fulfilling tasks at different phases in the production and marketing processes. Vertical cooperation, which includes both vertical integration and vertical coordination\(^1\) has emerged very often as a defence mechanism in the face of changes in the balance of market power, but its consequence is to create further changes in that balance, and thus a dynamic process is under way which must necessarily be taken into consideration in the formulation of policies which affect the fruit and vegetable sector, either directly or indirectly both at national and at international level.

Drawing on documents and discussions of the Seminar held on the occasion of the meeting of the Group on Fruit and Vegetables of the Working Party on Agricultural Policies and Markets, June 1996, this paper will describe the important changes which are taking place, and will seek to assess how these are affecting the roles of existing market institutions as well as their implications for the formulation of policies.

It will begin, in Section 2, with a brief overview of public policies for fruit and vegetables in OECD countries. In Section 3, the reasons inducing vertical coordination and the various forms of vertical coordination will be examined in greater detail. An assessment of the implications for existing market institutions and policy instruments will be presented in Section 4, where three main themes will be tackled: vertical coordination and competition policy; government involvement for efficient forms of vertical coordination; adaptation of market structures and reference points to deal with the evolving situation. General conclusions will be drawn in Section 5.

2. An overview of public policies for fruit and vegetables in OECD countries

An important policy objective in all OECD countries has been protection of the market position of the grower in order to ensure that he receives a reasonable return for his efforts and to protect him from having to bear an undue share of market risk.

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\(^1\) For definition of these terms, see Section 3.1
This goal has been pursued with different methods in different Member countries, but fundamentally, in all countries, it has involved interference with the free workings of the market, principally by one or more of the following types of measure:

- restrictions of marketable quantities—either by the imposition of direct physical restrictions or by imposing quality standards the effect of which has been to reduce the volume to be supplied to the market;

- imposition of a minimum price to be paid to growers, usually in conjunction with specified quality standards;

- restrictions on international trade in the form of import duties and/or import quotas in order to reduce the flow of low-priced produce from foreign sources, and therefore keep domestic prices higher;

- subsidies to exports, which could serve to reduce supply and raise price on the domestic market in addition to guaranteeing higher receipts to the exporter which may filter down to the grower. These, too, are related to specified quality standards.

The implementation of these policies in OECD Member countries has invariably entailed some form of vertical coordination, resulting, often, but not always, in the constitution of producers' organisations or the reinforcement of those already in existence. In the EU in particular, the establishment of producers' organisations became obligatory for channelling financial support under the Common Organisation of Markets.

The arrangements vary considerably between OECD Member countries as regards the amount of public funding engaged to support policy implementation and as regards the degree of coercion exerted on individual operators by producers' organisations. They will be described in more detail in Section 3.

The policies implemented appear to have brought benefits to the sector, though it is not always clear how these benefits have been distributed between the different categories operating in the sector. Other work under way in OECD has demonstrated that the impact of policies designed to improve farmers' incomes is often only a fraction of their costs because of transfer inefficiency.

Costs, on the other hand, have been borne by tax-payers and consumers, as well as by producers. An important distinguishing feature of the variety of policy instruments used is the distribution of costs between each of these groups, as will be seen in Section 3.

In future, on account of restrictive budgetary policies in OECD countries, and also because of international obligations undertaken in the context of the Uruguay Round Agreement, less support from public funds and less protection through trade barriers is to be expected for agriculture as a whole. The assistance enjoyed by the fruit and vegetable sector has traditionally been at a much lower level than that received by the majority of other sectors of farm production, and the change might therefore be expected to affect it less.

It seems important to remember, however, that the effects of previous policies in the fruit and vegetable sector have been felt in the context of strong support to the agricultural sector as a whole; considering the, albeit imperfect, mobility of factors of production within the agro-food sector, the outcome of fruit and vegetable policy cannot be considered to be independent of the effects of policy in other agro-food sectors. Thus, if changes in policy lower the profitability of cereal cultivation, for
example, it may become profitable for a farmer to transfer suitable land, formerly under cereals, to the production of vegetables, possibly unbalancing the market for the vegetable selected.

It is essential, therefore, that public financing remaining to the fruit and vegetable sector should be utilised in the most efficient manner, and one of the objectives of this work is to identify the most appropriate methods of support to the sector in light of the changing economic and organisational framework.

3. Vertical coordination: recent developments

3.1 Definitions of vertical coordination

Vertical cooperation is a term often used to refer to two different categories of vertical organisation: vertical integration and vertical coordination.

Henderson (1994) provides a useful description of vertical coordination as "a continuum, limited at one end by spot market transactions and at the other, by vertical integration". Moreover "movement along the continuum from the spot transaction extreme reflects increasing degrees of control by a principal in the vertical chain over upstream and/or downstream agents".

In contrast, vertical integration is defined as "the consolidation of two or more vertically arrayed stages under the management of a single firm." (Henderson, ibid.)

3.2 Conditions which stimulate vertical coordination in the fruit and vegetable sector.

As has already been pointed out, social, economic and technical factors have radically changed conditions of supply and demand in the fruit and vegetable sector, inducing important changes in the organisation of the filière.

There seems to be widespread agreement that the single factor most influential in contributing to these changes has been the growth in the share of retail trade in fruit and vegetables, both fresh and processed, which passes through the modern retailing sector².

As yet, the dimensions of this phenomenon differ quite widely from one member country to another, as can be seen from Table 1: for example, modern retailing accounts for a much higher percentage of fruit and vegetable sales in northern European countries than in southern ones. Nevertheless, the rate of growth of its share appears to indicate that the gap will soon narrow and thus the consequences for the organisation of the filière are likely to intensify.

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² i.e. supermarkets, hypermarkets, discount stores and self service outlets
Figure 1. The market share of the modern retailing sector in the distribution of fruit, vegetables and potatoes in several EU countries

Source: OECD.

The modern retailing sector is extremely exigent in the demands it makes upon its suppliers and its requirements, especially for fresh produce, are more closely defined than was previously the case for operators in traditional retailing, in terms of quality, degree of maturity, delivery dates and times and of market services such as packing and sales promotion.
Table 1. *Marketing channels for fresh fruit and vegetables*

<table>
<thead>
<tr>
<th>FRESH FRUIT</th>
<th>Italy</th>
<th>France</th>
<th>Germany</th>
<th>UK*</th>
<th>Spain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super/HyperMkts</td>
<td>18,3</td>
<td>60</td>
<td>47,5</td>
<td>50</td>
<td>38</td>
</tr>
<tr>
<td>SelfService</td>
<td>2,1</td>
<td>6</td>
<td>3,5</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Markets</td>
<td>46,5</td>
<td>24</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>Greengrocers</td>
<td>31,3</td>
<td>9</td>
<td>5,5</td>
<td>23</td>
<td>38</td>
</tr>
<tr>
<td>Others</td>
<td>1,8</td>
<td>1</td>
<td>6,5</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>Discounters</td>
<td>n.a.</td>
<td>n.a.</td>
<td>27</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Note: * data available only jointly for fruit+vegetables

<table>
<thead>
<tr>
<th>FRESH VEGETABLES</th>
<th>Italy</th>
<th>France</th>
<th>Germany*</th>
<th>UK*</th>
<th>Spain*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super/HyperMkts</td>
<td>18,5</td>
<td>56</td>
<td>46,8</td>
<td>50</td>
<td>28,9</td>
</tr>
<tr>
<td>SelfService</td>
<td>1,8</td>
<td>4</td>
<td>1,3</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Markets</td>
<td>46,9</td>
<td>29</td>
<td>15,9</td>
<td>12</td>
<td>9,1</td>
</tr>
<tr>
<td>Greengrocers</td>
<td>31,1</td>
<td>10</td>
<td>3,8</td>
<td>23</td>
<td>55,1</td>
</tr>
<tr>
<td>Others</td>
<td>1,7</td>
<td>1</td>
<td>9,9</td>
<td>15</td>
<td>6,9</td>
</tr>
<tr>
<td>Discounters</td>
<td>n.a.</td>
<td>n.a.</td>
<td>22,3</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Note:*data available only jointly for fresh fruit+vegetables

N.B.: data for Italy and Germany are % in Volume, for France, UK are % in Value; for Spain: data for fresh fruit are % in value, data for fresh fruit and vegetables are % in volume

Sources:

**Italy:** ISMEA, Filiera Ortofrutta, 1994; data for 1993.

**France:** Nomisma "Osservatorio sul mercato ortofrutticolo - Rapporto annuale 1995"; data for 1994.


A second important factor operating for change in the filière are the current developments in the composition of the demand for fruit and vegetables by the processing industry. This includes processing for domestic consumption as well as that for catering, a sector which is absorbing an ever greater share of food consumption.
Processing firms seek to enhance their market share principally by product innovation and quality differentiation. To be successful, they must be able to count on a reliable supply of raw product endowed with characteristics suitable for the industrial process to which it is destined. The quality of the finished product depends crucially on the quality of the basic inputs. Often, their procurement policy must deal not only with ensuring a sufficient quantity, but, perhaps even more problematic, with the task of ensuring an adequate and precisely timed variety in supplies.

The greater specificity in terms of product quality and delivery times of a large and growing share of market demand puts pressure on operators at all stages of the marketing channel. This is intensified by two particular characteristics of the sector:

- the perishability of fruit and vegetables makes it obligatory to complete certain operations within a precise and often very short time span. In fact, age in transit (i.e. between harvest and final end-use, processing or retail sale) becomes a factor of product differentiation, influencing the value and the very saleability of the load; for example, even a slight deviation from a planned delivery timetable can result, at the best, in the loss of credibility of the operator responsible in the eyes of the buyer, and at the worst, in rejection of the load at destination. Thus the risk for the seller is extremely high.

- seasonality in production creates temporary, calendar-specific quasi-monopolies for individual production zones. This feature, on the other hand, adds to risk undertaken by the buyer and can contribute to increasing the market power of the grower or supplier, especially when dealing with products of specific quality required for processing.

Thus conditions are conducive to coordination and advantages can be gained from it at all levels in the filière: cultivators, processors and retailers as well as wholesalers and intermediaries including traders, brokers, packers and transporters.

The objectives usually pursued through vertical coordination by each category of operator are summarised in Table 2. A common aim is to reduce the degree of risk to which each type of operator is specifically subject, e.g. by ensuring a market outlet for suppliers and by ensuring appropriate and timely supplies for purchasers, and thus, for each of these categories, rendering less hazardous the financial investment required for keeping pace with technological and market changes.
Table 2. Objectives sought by market operators through vertical coordination in the fruit and vegetable sector

<table>
<thead>
<tr>
<th>Objective</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security of outlet</td>
<td></td>
</tr>
<tr>
<td>· Fresh perishable produce</td>
<td>Growers</td>
</tr>
<tr>
<td>· Fresh perishable produce</td>
<td>Intermediaries</td>
</tr>
<tr>
<td>· Strong competition</td>
<td>Processors</td>
</tr>
<tr>
<td>Security of supply</td>
<td></td>
</tr>
<tr>
<td>· Predictable flow of correct quality raw material</td>
<td>Processors</td>
</tr>
<tr>
<td>· Year round supply, wide assortment</td>
<td>Modern retailers</td>
</tr>
<tr>
<td>Reduced investment risk</td>
<td></td>
</tr>
<tr>
<td>· New crop, new variety</td>
<td>Growers</td>
</tr>
<tr>
<td>· Equipment for packaging, preparing, transporting, storing</td>
<td>Intermediaries</td>
</tr>
<tr>
<td>· Plant etc. for production and for innovation</td>
<td>Processors</td>
</tr>
</tbody>
</table>

Considering that the number of buyers at retail and processing level is shrinking, and consequently the volumes required by those remaining are increasing, intermediaries look to vertical coordination upstream, particularly with growers, as a means of reducing the number of exchange relationships to procure the necessary bulk and thus the cost of their operations.

Vertical coordination, moreover, is one way, if not always completely successful, of affronting the important and costly problem of opportunistic behaviour.

Altogether, vertical coordination can be viewed as a means of sharing risks to which the sector as a whole is subject. In some forms, it has also been used as a means of sharing income from the end-product amongst the many agents who have contributed to the process.

It seems likely that forms of vertical coordination will continue to develop further in the future and become even more widespread. The conditions which so far have proved conducive to vertical coordination are likely to continue to be relevant and to intensify. It remains to be seen, however, whether forms of vertical coordination appropriate to the changing conditions of markets can be devised and operated; the alternatives may be more rigid forms of organisation such as vertical integration or stronger state control.

3.3 Formal and informal arrangements for vertical coordination

In attempting to classify the great variety of vertical arrangements in the organisation of the fruit and vegetable sector, a first useful distinction can be made between formal and informal arrangements.

By their very nature, informal arrangements are difficult to document, but nonetheless important. They are, obviously, based on reciprocal advantages to the participants, to be enjoyed in a shorter or a longer time period, and agreements are enforced by trust rather than by litigation. This type of arrangement, which predominated until very recently when, for a variety of reasons shortly to be examined, it was superceded in part by more formal methods, is still extremely widespread, particularly in the fresh produce sector. Interpersonal relationships between individual operators often play a crucial role in establishing informal agreements.
The arrangements are particularly important in the diffusion of market information within the filière. Through informal agreements, for example, intermediaries, (traders and wholesalers) furnish services to retailers by arranging in advance special in-store offers of specific fresh fruit and vegetable items.

In the tomato sector, several examples are found of arrangements for passing information, both market and technical, with one instance in particular of an initiative taken by an important producer of tomato seed to create an informative network to all downstream producers.

The rest of the paper will deal with more formal arrangements for vertical coordination, but before passing on to this topic it appears necessary to reiterate the importance of the informal aspects of the filière, particularly in the fresh fruit and vegetable sector, and particularly in the major European producing countries. The arrangements, moreover, go beyond the confines of national boundaries.

### 3.4. Structures and instruments for channelling formal vertical coordination

Formal arrangements for vertical coordination may be relatively simple, as are contracts, or they may involve more complex forms of industrial organisation. In both these categories, the form which emerges may derive from policy decisions, or, alternatively, it may be called into being in reaction to market forces.

#### 3.4.1 Contracts

Contracts are stipulated at different levels in the fruit and vegetable filière. For the cultivator, contracts are usually drawn up either with processors or with modern retailing chains. Processors, in their turn, stipulate contracts with operators in the modern retailing sectors, especially where so-called private label products are concerned\(^3\). In certain lines of production contracts also run between first and second stage processors. Modern retailers stipulate contracts with wholesalers (brokers or traders) of fresh produce and finally, importers (brokers or traders) may stipulate contracts with foreign suppliers. The pairing of horizontal levels in the filière indicated in this list is at times extended to involve further upstream or downstream operators.

A first distinction between the many types of contracts prevalent in the sector is that between "policy inspired" contracts, foreseen within legislation specific to the sector (such as, for example, those related to EU provisions for subsidised processing) and those, "market inspired" stipulated between parties under general contract law. The latter, evidently, can be more easily substituted by informal agreements if these offer advantages in terms of cost or avoiding public investigation. In fact, these types of contract exist side by side at certain phases of the filière, as is the case, for example, in the supply of fresh produce to supermarket chains.

A second criterion for classification of contracts is that relating to the intensity of the constraints incorporated. Thus, as regards in particular contracts stipulated with growers, a distinction can be made between:

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\(^3\) by private label is intended production for sale under a commercial brand name reserved exclusively for retailing in the sales outlets of the firm which commissioned the production
− traditional contracts which define the classic commercial requisites for a transaction: price, or 
criteria for determining price; quantity; quality characteristics and delivery date;

− contracts incorporating control over production methods: to the undertakings included in the 
traditional type of contract are added norms concerning production procedures to be 
respected by the supplier; the buyer has the right to check that these are being followed and 
to refuse delivery if they are ignored;

− contracts with conferral of inputs: in addition to the conditions foreseen in the first two, the 
third type of contract the buyer assumes the right to supply some of the productive inputs 
(e.g. seed, operations requiring particular skills).

The second and third type of contract almost invariably apply in transactions between cultivator 
and processor, in order to ensure the conferral of a product of quality precisely suited to the processing 
technique for which it is required. They are also coming into use increasingly for the commercialisation of 
fresh produce. In particular, modern retailing chains, highly sensitive to the image of "healthiness" of 
their assortment of fresh produce, seek guarantees through closer coordination with suppliers in this way, 
especially for lines of organic produce.

Considering the inter-dependence of characteristics of product quality on varietal selection and 
on techniques of cultivation, it is clear that in the third type of contract, with conferral of inputs, the choice 
of seed variety and its complementary phyto pharmaceutical products becomes crucial to the outcome of 
the coordinated activity. This type of contract can provide a link which runs the whole length of the 
filière, from seed producer to final sales point.

As regards contracts stipulated in the EU in connection with market management through 
support to the processing sector where minimum producer prices have to be respected, regulations permit, 
rather than require this type of coordination between operators.

A prime function of contracts is to reduce risks involved in transactions by clearly setting out the 
obligations and the rights of the contracting parties. As regards the fruit and vegetable sector, agreement 
must be reached in two main areas - payment and enforcement procedures; a further two areas are to be 
considered in the case contracts of types 2 and 3, i.e. monitoring the technical aspects of production and 
methods of ascertaining the quality and quantity of deliveries.

Table 3 lists the most crucial aspects of contracts, grouped into these four main areas.

As regards payment, it is obvious that the price agreed between buyer and seller for the transfer 
of ownership is important. Sometimes this is specified, as for example, in contracts for tomatoes for 
processing in Italy, which follow the requirements of the EU Regulation 426/86. In other cases, it is linked 
with prices current on reference markets. Reference is made, for example, to prices on wholesale markets 
in Italy for purchases of fresh fruit and vegetables by large domestic supermarket chains.
Table 3. **Crucial aspects of contracts and informal agreements in the fruit and vegetable sector**

<table>
<thead>
<tr>
<th>Payments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- price or reference markets for price</td>
</tr>
<tr>
<td>- differentials for quality</td>
</tr>
<tr>
<td>- timing of payment &amp; interest rates for delays</td>
</tr>
<tr>
<td>- who pays for what i.e. seed; seed transport; product transport; containers for transport and</td>
</tr>
<tr>
<td>storage; storage facilities; costs of establishing and administering agreements and contracts</td>
</tr>
<tr>
<td>- guarantee of ability to pay</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical aspects of production:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- decisions on type of seed</td>
</tr>
<tr>
<td>- decisions on location of production</td>
</tr>
<tr>
<td>- decisions on methods of cultivation</td>
</tr>
<tr>
<td>- provisions for inspection of growing crop</td>
</tr>
<tr>
<td>- decision on whether and when to harvest</td>
</tr>
<tr>
<td>- execution of harvesting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ascertainment of quality and quantity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- agreement on disciplinaire</td>
</tr>
<tr>
<td>- provision for on-field inspection</td>
</tr>
<tr>
<td>- provision for laboratory analyses</td>
</tr>
<tr>
<td>- regulation of waiting times for unloading (quality effect)</td>
</tr>
<tr>
<td>- systems for assessing and documenting quality at farm gate and at factory gate/storage centre</td>
</tr>
<tr>
<td>- systems for documenting volumes at farm gate and at factory gate/storage centre</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Penalties and arbitration procedures</th>
</tr>
</thead>
</table>

Another important aspect is the timing of payments; this is particularly crucial in periods when, or countries where, interest rates are high and delays in payment can create expensive problems of liquidity for the seller. The record of modern retailing in this respect is not always laudable, although practises differ between individual chains. Clearly, the lack of an effective and rapid legal procedure for the collection of debts can create a situation in which the buyer can make unfair use of his market power. This type of problem is affronted by the Perishable Agricultural Commodities Act in the United States which imposes certain conditions of payment on purchasers of fresh produce; in Italy it is affronted indirectly but effectively by inclusion in contracts drawn up under interbranch agreements of the guarantee of ability to pay by the purchaser.

Finally, as regards payments, it is opportune that there be specification as to who pays for what as regards inputs (seed and transport of seed); transport (packaging for goods in transport, the cost of the journey); storage (facilities and packaging); the cost of establishing and administering contracts.
As regards the technical aspects of production, the items listed in Table 3 will assume greater or lesser importance according to the individual product under consideration.

The precise location of production, i.e. the choice between one field and a nearby one in the same neighbourhood can make a great difference to quality for some items (high quality peas and beans for processing, for example). The choice of geographical area will affect the harvest season and is important, together with the date of planting, in contracts involving prolonged supply of large quantities of generic product, as in the example of PRIM'CO, the French cooperative which supplies 50 per cent of carrots taken up by supermarkets in France.

Decisions on methods of cultivation must be linked to decisions as to who pays for what, whilst provisions for inspection of the growing crop must be clear.

Perhaps the most delicate and difficult of the technical questions is that concerning the decision on whether and when to harvest. When to harvest, as regards quality of final product, is, to a large extent, a technical decision but whether to harvest may depend on the state of the market: if, for reasons unforeseeable at the time of stipulation, the market situation becomes unfavourable, it may become advisable to abandon the crop. In a non-contract situation, the consequences would have been economically disastrous for the grower; foreseeing the high risk, he might have avoided planting. Instead, when conditions for compensation for the grower are stipulated in a contract, the buyer assumes at least a part of the risk.

As regards the ascertainment of quality and quantity, a disciplinaire will often be specified and provide for on-field inspection and laboratory analyses.

For some products (e.g. peas and beans for processing, pears for retailing), the process of transport may alter not only quality but also volumes and weights. Thus it is important to establish systems for assessing and documenting these parameters both at farm gate and at factory gate or other point of destination.

For other products (e.g. tomatoes for processing) it has been necessary to regulate maximum waiting times for unloading at factory gate, considering that a brief calendar of harvesting tends to create congestion for unloading and the good at a desirable stage of ripeness is highly perishable.

Finally, penalties and arbitration procedures must be considered. The logical consequence of a well-defined contract would be to render recourse to these procedures unnecessary. The skills and efforts required during the whole production process, essential for monitoring respect for contractual arrangements should be effective in eliminating the upsurgence of conflictuality.

In effect, few cases of litigation or other forms of contestation about respect for contracts have been noted. This is a positive sign, but on the other hand, it could conceal exercise of market power which prevents offended parties from open contestation on account of the lack of alternative market outlets, the high cost of legal action and delays foreseen in the implementation of a favourable sentence.

The aspects of commercial relationships covered by contracts are also covered by informal agreements. If stipulation of contracts is not obligatory and the legal enforcement of contracts is not assured, informal agreements may well be preferred, since costs of administration will be lower and a greater degree of confidentiality is guaranteed, also with respect to enquiries for fiscal purposes or for the application of competition policy.
Leaving aside their legal standing, therefore, the major advantage of transaction by contract appears to be that of clarifying commercial obligations and relationships between the contracting parties. This transparency appears to be an essential condition for coping with transactions covering large volumes of produce, or transactions involving particularly complex or innovative technology.

Precise information on the extent of cultivation under contract is not readily available, but it is held to be widespread, especially for supplies to the processing industry. In the Netherlands it is estimated that, excluding onions and tomatoes, 48 per cent of the 40 400 ha. of open field cultivation of horticultural products is cultivated under contract for processing. In Turkey, where production for urban or export markets is a more recent development, already 60 000 (8.5 per cent) of a total of 709 000 ha. is cultivated under contract.

3.4.2 "Market-inspired" formal arrangements for vertical coordination

A distinction has already been made (Section 3.3) between formal arrangements which are derived from general contract and company law ("market inspired") and those derived from regulations for implementing public policy in the agro-food sector as a whole or specifically in the fruit and vegetable sector ("policy inspired").

It should be noted, however, that the distinction is not so clear cut. As we shall see in the next section, several arrangements which derive from public policy have, in the past, drawn their origins from initiatives taken in reaction to perceived market forces, independently of public policy, which only at a later date lent its support to them for further development.

In the same way, "market inspired" forms of organisation for vertical coordination, which inevitably involve links between independent companies, are strongly influenced by national policies, valid for all sectors, towards industry, cooperation and foreign direct investment.

As is well known, cooperation is a very common form of industrial organisation in the fruit and vegetable sector.

Cooperation has been a particularly suitable form of organisation in the fruit and vegetable sector in Europe, especially at producer level, since it permits the concentration of what would be otherwise an extremely fragmented supply. In doing so, it provides a form of protection for small growers in the face of market turbulence, guides their production choices and techniques and adds to their market power. These important functions are sometimes rewarded by financial privileges which vary from country to country, as do the sometimes burdensome economic obligations and organisational restrictions imposed by cooperative legislation.

One of the earliest forms of cooperative arrangements for vertical coordination in the fruit and vegetable sector is the auction system that has been in existence in the Netherlands for more than a century and has contributed greatly to establishing the country as a major actor in the sector. Prices achieved at auctions have served as an important point of reference internationally.

The auctions are run by growers on a voluntary cooperative basis, and each grower is committed to selling his entire production through the auction. Although market conditions are not imposed on non-members, there is an implied effect because of the importance of the auctions as a source of price information.
The number of auctions has diminished notably in recent years (from 137 in 1957 to 22 in 1993), but they remain an important outlet for domestic growers having dealt with 93 per cent of greenhouse vegetables, 76 per cent of fruit and 53 per cent of outdoor vegetables in that country in 1994.

Nevertheless, the shortcomings of the system in the evolving market situation are becoming obvious: daily price-making results in uncertainty, especially for suppliers of modern retailers who must deal in large quantities; it makes planning of special promotional offers extremely difficult; and it is almost impossible to obtain quantities with specified standards sufficiently large for modern retailing chains.

Thus the traditional auction system is being modified and sales by the clock are being complemented, if not superceded, by mediation services within the auction structure. Significant of the changes taking place is the merger, as recently as October 1996, of 9 auctions, and the revision of name and strategy of the important marketing co-operative VTN which has absorbed the Central Bureau of Dutch Auctions (CBT) and accounts now for about 70 per cent of the Dutch fruit and vegetable market.

Reference to a common ideological basis probably facilitates vertical and horizontal links between cooperatives, both at national and at international level. In fact, several examples are found of vertical links and horizontal links between cooperative organisations, both at national and at international level.

In Spain, for example, the ANECOOP, the leading trader in fruit and vegetables, is a cooperative which has expanded on an international scale in order to be able to supply its buyers with certain products throughout the whole year; it has acquired a determining proportion of shares of cooperatives operating in key producing and consuming areas.

In France, the cooperative PRIM'CO, part of the cooperative holding AGRALCO, coordinates producers in Portugal, Spain and in southern, northern, eastern and western areas of France, in order to be able to offer a year-round supply of carrots, potatoes and salad of high quality to its customers in the modern retailing sector and in the catering industry. It works in collaboration with another cooperative firm in the group, SOLECO, to supply products of the fourth range. It has more than doubled its revenue and the volumes sold in the last seven years. SOLECO has withstood a period of rapid concentration which reduced the number of operators producing fourth range from 68 in 1990 to 10 at present; it currently accounts for 37 per cent of sales in the modern retailing sector in France.

Privately-owned, non-cooperative companies may also indulge in similar forms of vertical coordination, through share-holding links, stopping short of complete vertical integration through direct investment in vertically related activities. The latter, of course, has become more widespread and often takes the form of foreign direct investment in grower capacity in geographical areas able to furnish seasonally complementary supplies.

3.4.3 "Policy inspired" formal arrangements for vertical coordination

The present section will briefly describe three systems for marketing fruit and vegetables in OECD countries which clearly reflect official national policy attitudes towards the problems of the sector; the different experiences each serve to demonstrate the conflictual relationships which can arise between market forces and policy aims and instruments.
a) Mandated marketing programmes in the United States

Various types of mandated marketing programmes are applied in the United States, all of which are intended to promote more efficient and equitable marketing, expand demand and aid growers in maintaining or enhancing their levels of real income. They include federal as well as state marketing orders, state marketing commissions and promotional check-offs.

These programmes differ in scope, but have, nonetheless, several important features in common: they are commodity specific; voluntary in the sense that initiatives for establishing a programme stem from the commodity growers themselves; self-governing; self-financing, in that all firms producing and, in some cases, handling the commodity in the region encompassed by the programme, are obliged to contribute to costs on the basis of the volume of sales. Once approved, however, the programmes are mandatory and the legal framework prevents operators from opting out or assuming a "free-rider" position.

Federal marketing orders, as well as many state marketing orders, cover three broad categories of legal provisions: quality control, quantity control and market-facilitating activities such as production and market research, market information and market promotion. Frequently, however, marketing orders omit reference to quantity control and at present there are no orders in force which utilise market allocation programmes, reserve pools or producer quotas; only five contain flow-to-market provisions, and these were all approved before 1961.

The reason for the aversion to quantity restrictions appears to stem from discontent on the part of shippers, unwilling to limit the volumes of weekly shipments and claiming that if they have a market for their product they should be allowed to sell it. These considerations, including the question of how fairly to distribute and supervise quantity controls, have been more influential than any potential protest of damage to consumers resulting from unduly enhanced producer prices due to quantity controls.

Recently, state marketing commissions have been considered more desirable than marketing orders (state and federal), since they display greater administrative flexibility and autonomy. They have superceded some state marketing orders. They are, however, used exclusively for research, promotion and generic advertising, and cannot include volume or quality controls. Specific legislation must be passed at state level for the introduction of a new Commission.

Check-offs, too, usually refer to programmes of generic advertising, promotion and research and growers are obliged to make financial contributions for these purposes. Voluntary check-offs are permitted, but generally unsuccessful, so that check-offs are generally implemented by legislation, which may be either at federal or at state level.

b) New Zealand: the Marketing Boards and the Horticultural Export Authority

The position of the New Zealand fruit and vegetable sectors is unusual amongst OECD countries: the geo-climatic conditions for production are favourable, but the dimension of the domestic market, in a country with only about 3.6 million inhabitants, is very small, so that the only possibility for future development of the sector lies in the export market.

As regards exports, the sector has a climatic advantage in that, being in the Southern hemisphere, it is in a position to complement supplies from the Northern hemisphere, to the extent that out-of-season storage for the latter is unfeasible. This advantage, however, is being eroded as the production capacity of other Southern hemisphere producers increases and storage techniques in Northern countries improve. The
great distance from the prosperous markets of USA and Europe, moreover, brings a disadvantage in terms of transport costs.

A variety of solutions to these problems has been implemented at different periods in time. They include market solutions found by individual firms, by voluntary associations and by pack house groups, as well as systems based on specific legislation ranging from export licensing carried out by the Horticultural Export Authority to the "single desk" position of the two renowned Marketing Boards - the New Zealand Kiwifruit Marketing Board (NZKMB) and the New Zealand Apple and Pear Marketing Board (NZAPMB).

All of these three institutions are self-financing and run with the participation of representatives of growers and other categories of operator.

The Horticulture Export Authority Act enables horticultural products to be prescribed under the Act and for a product group, representing both growers and exporters of that product, to be recognised by the Horticulture Export Authority. The New Zealand Government will, at the request of both growers and exporters of a horticultural product, permit the establishment of a product specific group (i.e. a "recognised product group") for the purpose of maintaining an export marketing strategy. The Horticulture Export Authority licenses exporters of each prescribed product in accordance with the export marketing strategy for each prescribed product.

The two Marketing Boards, on the other hand, have exclusive control over exports of their respective products, which together accounted for 64 per cent of all fruit and vegetable exports in the twelve months ending 30th June 1996. The NZKMB is the sole exporter, whilst the NZAPMB, in addition to its own export activity, can grant export licences to firms which apply and meet criteria set out in recognised guidelines.

The "single desk" status was awarded to the New Zealand Kiwifruit Marketing Board when it was established in 1988 to cope with growers export problems after other solutions had failed. An examination of these problems helps to understand why the need was felt to establish an export monopoly. Initially, the Kiwifruit Export Promotion Committee (1970) had used voluntary levies to coordinate promotional activities and develop grading systems, storage and packing methods. Discontent, especially about the activities of "free-riders" led to the introduction of the Kiwifruit Marketing Regulations (1977) which established the New Zealand Kiwifruit Authority, whose mandate was to ensure the orderly exporting of kiwifruit. This, in addition to industry promotion and development, involved the licensing of individual exporters. The Authority was funded by compulsory levies on growers and exporters, and exercised control through its power to grant licences. Falling world markets, combined with criticisms of the licensed exporters who tended to compete against each other provoked the replacement of the system in 1988 by the New Zealand Kiwifruit Marketing Board with monopoly power over exports to all markets except Australia.

Both Marketing Boards are well known for their strong and successful marketing policies, based on quality standardisation, product differentiation and services to buyers, particularly to bulk buyers for modern retailing.

The monopoly position of both Boards has given rise to considerable debate about the efficiency of their services to growers, buyers and consumers. One consequence of the debate has been to ensure provisions for regular review of their activities.
In defence of the monopoly position some of the most compelling arguments are that the large scale of their operations enables them to negotiate strongly with providers of transport and cold storage, and thus cut costs on these items which are very expensive, considering the geographic position of the country; that returns to growers compare very well with those received by growers in other Southern hemisphere countries with different marketing arrangements (Chile); and that on a global level, they are not particularly large - in 1993 the average value of sales (domestic produce and imports) of the top ten produce marketing companies in Europe was US$1 517 million whilst the global revenue of NZAPMB in 1996 was approximately US$350 million and that of NZKMB, about US$390 million.

Despite the admirable performance of the Marketing Boards, however, this system of marketing, as the others already examined, is meeting difficulties as the nature of demand changes. Major buyers, which the Boards supply, wish to minimise the number of sellers with whom they deal. At the same time, they require a year round supply of a variety of produce, jointly supplied. It appears that large-scale private international companies are better structured than the Marketing Boards to deal with these requirements, and the Boards are reconsidering their options.

c) Interprofessional arrangements in the European Union

Interprofessional arrangements (agreements and organisations) constitute important institutional vehicles for vertical coordination in the Member countries of the European Union.

Interprofessional agreements are foreseen in the European Union Regulations for the organisation of the common market and the erogation of aid for processing a range of products, including tomatoes, peaches, pears, plums, citrus, frozen and prepared vegetables. When processing aid is paid in these sectors, agreements are necessarily adopted by all producer member countries. Outside these sectors, however, similar interprofessional agreements are stipulated for certain products destined for processing.

In Italy, for example, a specific national law (Law 88/88) governs both categories of agreement. The stated objectives of the Law may be summarised as those of giving agricultural producers certain price guarantees related to quality characteristics and of ensuring the availability of raw materials to industry of appropriate quality over a programmed timetable for delivery. The agreements are stipulated between representatives of Unions of agricultural producers, of industrial processors, of cooperatives, in the presence of representatives from the Ministries of Industry and Agriculture. They are drawn up at national level for potatoes and tomatoes and at the relevant Regional level for other products (e.g. Reggio Emilia for peaches, Sicily for citrus, Lombardy and Lazio for peas). Within this framework, specific contracts between processing firms and agricultural producers (usually associations) are drawn up. Nevertheless, the latent conflictuality of interests between growers and processors frequently prevails over the consensual aspects and leads to delays in reaching an agreement which frequently render it useless as an aid to farmers' decisions on acreage to be planted, dictated as they are by the season.

The French experience of interprofessional agreement in the vegetable processing industry demonstrates the potential and the limitations of the system. The system was formalised in the Law of 1964 "defining principles and procedures for the contract-based regime in agriculture". This provided for a centrally negotiated collective agreement for the sector as a whole, for which the Joint Trade Organisation was responsible, with clear provisions for implementing it at the local level. The aims were to "realise value" and to share out the "composite quasi-rent".

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4 also known as inter-branch or inter-trade
During the 1960s and 1970s, aided by favourable market conditions, the system was very successful in achieving these ends, curbing uncertainty and disruptive competition. It did so, however, by setting price and thus restricting competition. Problems began to arise, however, in the 1980s with increasing concentration and internationalisation in the processing industry, the prospect of the Single European Market and developments in the frozen food industry which left French producers, with fixed raw material prices, in a weak competitive position as compared with, for example, their Belgian competitors. Moreover, in 1990, application of EU law on competition no longer allowed the Joint Trade Organisation to set prices.

At the present time, buyer power seems to have tipped in favour of the processor. In fact, the degree of concentration is very high - only three firms account for 85 per cent of the production. The considerable financial and human resources of the three major producers appears favourable to innovation and risk taking, but in fact, competition is strong from international competitors and the market can be unpredictable. Thus, with small margin for mistakes, the industry uses the advantages offered to it by an abundant supply from the agricultural sector.

The problem remains as to how the current situation can best be managed: agreements stipulated often have to be reviewed in the light of emerging market situations, and there is need for dynamic flexibility and coordination based on trust.

In addition to agreements, there are interprofessional organisations which provide more permanent structures for working out interprofessional agreements and coordination.

Within the European Union, the situation as regards interprofessional organisations differs considerably between Member countries. The reorganisation of the common market for fruit and vegetables, details of which are still being worked out, foresees a strengthened role for them.

At present they are well-established in the Netherlands, where their legal status dates back to a law of 1950, and of 1975 in France. In both these countries, they were initially self-financing. In the United Kingdom, they are represented in the fruit and vegetable sector by the Processed Growers Research Organisation, the Fresh Fruit and Vegetable Information Bureau and the Potato Marketing Board. In Spain, experience of interprofessional organisations is limited, since the law instituting them was passed as recently as December 1994. The need for them is felt particularly in the citrus sector, owing to adverse conditions on export markets.

The structures and characteristics of the interprofessional organisations clearly differ from country to country.

In the Netherlands, for example, the well-known Productschappen are legal organisations which group, by filière, representatives of cultivators, paid workers, cooperatives and processors. They are financed by parafiscal taxes, and their decisions have application over the whole district for which they are competent. Participating in the Economic and Social Council, they constitute the most important organisation for government consultation in matters concerning the agro-food sector. Their field of operation includes: (i) regulation of the market as regards quality standards, production, marketing and vigilance on conditions governing competition; (ii) market information; (iii) financing product promotion and research; (iv) matters regarding training, public relations, health, environment and working conditions.

In France, the law of 1975, which draws on experience accumulated under the "Grain Office" of the 1930s, foresees two main categories of interprofessional organisation, the "Office de produit" of public character, and private organisations. The Office de produit for the fruit and vegetable sector is
ONIFLHOR. Organisations representing all levels of the filière participate in its activities. The Director is nominated by the Minister of Agriculture and the Ministry is responsible for its administration.

Private interprofessional organisations are divided by product group; by law, only one organisation per product group can be recognised in each geographical area and to obtain recognition it must include the principal organisations of cultivators, processors and market operators. Local organisations are grouped at national level into INTERFEL for fresh vegetables and ANIFELT for other types of product. Measures decided by the local organisations are applied obligatorily to all operators in the area, regardless of whether or not they are members of the organisation. Price, however, can no longer be included and the measures refer principally to technical aspects of cultivation and marketing.

In contrast, in Germany, there has traditionally been some resistance to interprofessional organisations on the grounds that their activities could limit competition and interfere with the free movement of goods (Commission of the European Communities, SEC(90), 562 final). There are two operating in the fruit and vegetable sector, of national dimensions and covering all products in the sector. Each is constituted as a limited company, where 55 per cent of the shares are managed by cultivators' organisations, and the remainder by processors'. The CMA mainly deals with sales promotion and quality control, whilst the ZMP operates in the field of market transparency and information. Both receive financing from the ABSATZFOND, a bank established in 1969 for promotion of food products and controlled by a Management Committee where the professional categories of the filière are represented, together with consumer organisations, officials from different Ministries and political parties. The bank is financed by parafiscal taxes levied on the processing industry.

d) The conflict between policy instruments and market forces

The marketing systems just described represent responses to the common basic problem of how to maintain a reasonable level of price on horticultural markets in a way acceptable both to operators and to the general public.

Price, of course, can be sustained both by increasing demand and by limiting supply. The first method, an increase in demand, can be brought about by sales promotion and attention to required quality characteristics, instruments which appear so far to have created little or no controversy in the fruit and vegetable sector. It is in attempts to implement the second method, control of supply, where problems have arisen - on the part of public opinion in the EU, shocked by and incomprehending towards the destruction of intervention stocks; -and on the part of operators in the USA who do not wish to be limited in their individual market strategies and claim the right to supply quantities for which they have found a market, unfettered by restrictions.

Present day policy attitudes frown on price fixing, and in Europe it is forbidden by competition policy; but without price fixing and/or quantity controls the "free-rider" element steps in, as individual firms cut prices to enlarge their market share at the expense of other operators. In the EU currently there appears to be no solution to the free-rider problem; in the USA it can be overcome by forms of market regulation made mandatory at the request of the growers themselves, who are also required to finance the associated administrative expenses; in New Zealand, the problem is affronted, at least in export markets, by conferring monopoly powers to the product Boards for apples, pears and kiwifruit, whose activities are guided by representatives of growers and other operators, and are subject to frequent review.
4. Implications for existing market institutions and policy instruments

4.1 General considerations

It is clear from the previous section that the change in the nature of demand for fruit and vegetables is changing the traditional itineraries of commercial flows, with which policy has previously been designed to cope.

This circumstance, together with stronger competition from emerging producers in the southern hemisphere and the re-orientation of policy towards the agricultural sector as a whole, with greater attention to budget constraints, raises a series of questions concerning the future of public policy towards the sector and which are of concern, also, in identifying measures suitable for the transitional phase of adjustment to fulfilment of obligations assumed under the Uruguay Round Agreement. Amongst these, the most salient appear to be:

- how should structures and reference points on which previous policies were based be considered in the future, in particular, what is the future role of wholesale markets and auctions; how reliable are officially accepted price information systems; should officially accepted quality standards be revised and should they be made voluntary?

- is vertical coordination leading to concentrations of market power incompatible with fair competition?

- which forms of vertical coordination are most efficient? In particular, is there still a role for government and for inter- professional organisations?

4.2 The role of traditional reference structures for policy implementation

As has already been seen, policy in the fruit and vegetable sector has traditionally been based on interference with market mechanisms when these resulted in unacceptably poor terms for growers. The warning signal which triggered intervention was low market price, as indicated on reference markets, usually, in the EU, large wholesale markets or auctions. Prices considered were, of necessity, those applying to produce meeting specified quality standards and thus internationally recognised quality standards played an important role, both for direct market support for the sector as in the European Union, and as regards restrictions imposed in international trade, as applied in many OECD countries.

4.2.1 The role of wholesale markets

The growing importance of contract trading to the processing industry and in the supply system for fresh produce to the modern retailing sector causes by-passing of wholesale markets, with a consequent decline, in percentage or in absolute terms, in the volumes passing through these markets. The decline is expected to continue: an authoritative survey estimates a further decline in volumes of 25 per cent in the next ten years in United Kingdom (Susan Shaw, 1994).

Nevertheless, the volume of trade passing through wholesale markets varies greatly between OECD countries: in Italy, it is estimated at 40 per cent of the volume of production; in Turkey, a recent study has shown that 35 per cent of horticultural production is sold by producers through wholesale markets, the remainder going, in part, through off-market brokers (50 per cent) or by direct sales to
retailers (15 per cent) ; whereas in the United States, it is estimated that wholesale (terminal) markets handle only about 25 to 30 per cent of total national volume. The situation appears to be different in some eastern European and some developing countries, where structures in the food chain are rapidly changing and the wholesale markets play a major role in supply and in the transparency of fruit and vegetable markets, as they have done previously in western European and other OECD countries.

Wholesale markets, however, appear to play a complementary role to the system of supply to modern retailing: they are a source of supplementary supply for buyers and traders, particularly for small batches and for exotic products; and an alternative outlet for traders when a lot is rejected by retailing chains. They are, on the other hand, frequently an important source of supply for traditional retailers and for the catering industry, both of which require produce ready for immediate consumption, or with shorter shelf-life requirements.

Meanwhile, some wholesale markets are re-organising, and investing in premises updated to meet the requirements of latest developments in transport, handling, storage, packing, information technology and trading.

There is, moreover, a trend towards basing transactions on descriptive standards, avoiding the cumbersome process of submitting produce to visual inspection as has been traditional, and utilising procedures previously more familiar on commodity exchanges.

The traditional role of wholesale markets, as a physical location for the concentration of produce, where operators could deal in competitive conditions, and thus redistribute produce as required, appears to be waning. Nevertheless, in contrast with what is usually the case in private contract dealing, price information can be gathered on these markets and presumably, if activity is extended to selling through the markets on descriptive standards, price information on these types of transactions will also be available. The question as to how the funds necessary for updating the physical structures will be raised is important, since it will almost certainly prove difficult to promote operator participation. To the extent that wholesale markets continue to contribute to price transparency, there may be a case for some limited public funding.

4.2.2 Price formation and transparency

Several systems are used for establishing price levels in contracts. The first, and most obvious, is by direct bargaining between the parties, based on their own perceptions of supply and demand. A second method is that of using as a guide, subject to agreed differentials, the prices established on reference markets. A third method is that of using prices established in inter-professional agreements, where by law, they are common knowledge; in this case, however, revenue leakage along the filière, due to the allocation of service-related expenses such as transport and containers may reduce the price effectively received by the producer. A further method is that of linking price to production costs and income per hectare: this is suitable when dealing with standardised, well-known products. Opportunity costs of production are also considered in some interprofessional agreements, where prices of vegetables for processing are based on prices for crops which would otherwise substitute them in production, notably cereals. Finally, for new products, price is usually based on prices of substitute crops, plus a premium to encourage growers to adopt the innovation.

As regards prices of fruit and vegetables for processing, the disturbing influence of changes in the form of competition is well illustrated by the French experience after 1990, when interpretation of competition policy resulted in the abandonment of the system of fixed uniform prices previously in
operation. Although both growers and processors would benefit from the security offered by a fixed contract price, in fact, the conditions of acute oligopolistic competition in the sector have been such that it has not been possible to maintain firm undertakings on price.

Indeed, in these and other circumstances, price may not be fixed at all: growers are remunerated later on the basis of market performance. This system is not new, but has been used traditionally both by private traders and by organisations run by producers, both statutorily controlled and otherwise.

Whichever of the methods is used, however, there may be reason to believe that arbitrage could contribute to price uniformity, with differentials being established on the basis of market considerations, related especially to quality and shelf life. This is because traders fulfilling contracts are often closely associated with wholesale markets, and through informal links, have a close knowledge of the skills and capacities of the cultivators and other operators using the markets; they themselves tend to use wholesale markets, when necessary, to integrate volumes for contract sales.

A reasonable working hypothesis would seem to be that prices are led by contractual transactions, and that prices in other types of transactions fall into place as a consequence. But the utility of such a hypothesis is undermined for two reasons: in the first place, the same supermarket chain, dealing with several suppliers for the same range of products, often agrees different price levels with different suppliers for seemingly identical products. Secondly, given the high degree of perishability, prices on markets secondary to contract markets are determined by supply and demand on a daily basis and can be extremely variable.

Traditionally, wholesale markets, especially those at producer level in producing countries, and auctions have been considered reliable sources of information on prices for fresh fruit and vegetables. At present, as in the past, they are the main readily available sources. There is usually no obligation to reveal to the general public the prices agreed in transactions concluded by private contract or in transactions between linked companies.

Vertical coordination, therefore, has dimmed the level of price transparency in fruit and vegetable markets.

The lack of price transparency clearly creates opportunities that can be exploited by operators with privileged access to market information or with particularly strong market power. It can lead to situations in which competitive conditions in the market are undermined.

4.2.3 Does vertical coordination necessitate revision of current official quality standards?

The primary objective of legally recognised standards for fruit and vegetables is that of encouraging higher quality production, but in addition, they serve several other purposes.

In the first place, they represent one way of facilitating transactions and reducing their costs. In the United States, for example, federal or state quality standards are used in specifying transactions, and in the event of dissatisfaction on the part of the buyer as regards the quality of the load he receives, a USDA inspector can be called in and, for a fee, will judge whether or not standards have been met; in case they have not been met, the buyer has the right to reject the load.

Secondly, quality standards play an important role in policy implementation: prices referred to for the implementation of market support or for determining import duties are always linked to certain quality specifications.
Thirdly, the enforcement of certain quality standards can, in some circumstances, be an effective measure for limiting the volume of a particular crop which can be sent to market, and thus a useful tool, at least in the short-run, in an attempt to maintain price in the face of over-abundant supply, as in the United States under mandatory marketing orders.

Nevertheless, the suitability of official quality standards currently accepted internationally has recently been called into question. These standards are commercial quality standards, aimed at facilitating trade and refer principally to appearance rather than to organoleptic characteristics. Quality standards set by modern retailing chains and by processing firms are much more detailed and stringent than those agreed internationally by OECD Member countries.

If quality standards are to be maintained for implementing aspects of public policy in the sector, it may be necessary to revise the internationally accepted norms. Nevertheless, the choice of criteria on which to base a prospective revision appears problematic.

Quality characteristics in horticultural production rely heavily on the choice of variety, and property rights over commercial varieties of seed frequently are in the hands of private companies. This means that specification of quality norms could, in effect, result in the conferment of strong market power to such firms.

But in addition, two further problems arise in connection with a more rigid specification of quality norms. In the first place, consumer choice would be more limited: high quality standards, associated with high costs of production and commercialisation can limit potential consumption, particularly amongst consumers in low-income groups. Secondly, by discouraging plurality in commercially grown varieties, bio-diversity can be lost, with inestimable damage for future generations.

On the other hand, considering private transactions rather than instruments of public policy, other methods of quality guarantee are likely to become ever more widespread: brand names have become quite familiar for some products, and help in promoting sales; EU quality certification (denomination of protected origin and protected geographical indication) is being applied to fruit and vegetables; and packers especially are looking towards ISO certification of process for quality assurance.

4.3 Vertical coordination and the balance of market power

Previous sections have described forms of vertical coordination which have emerged spontaneously in response to market forces and others which have been induced by public policy. The cases described do not, on the whole, appear to have led to forms of unfair competition, but rather to the constitution of "countervailing power", with the purpose of sharing risks and rewards.

Instead, in all Member countries of the OECD modern retailing chains exercise considerable market power, and it seems legitimate to question their effects on competitive conditions in the fruit and vegetable sector, as well, perhaps, as in other sectors of industry.

The share of modern retailing in fruit and vegetables differs considerably between OECD Member countries, but where it is more limited, it is growing. Moreover, as modern retailing firms do take over a larger share of sales, rivalry between them increases, leading to strong competition for consumer loyalty, based on both on price and on services offered. The consequences are important both for the processing industry and for the fresh produce sector, which must bear the brunt of the search for lower costs on the part of the chains.
One particular aspect of cost cutting in the fresh produce sector is that of transferring to upstream operators the considerable risks associated with this category of wares.

Large international enterprises, vertically integrated, occupy important segments of the market in the fresh produce sector, particularly for some tropical products.

On the other hand, an important role is played by relatively small, independent firms, operating at different levels in the filière, such as packers, traders and brokers. These operators, are highly skilled and possess the necessary flexibility to match appropriate supplies to specific demand requirements. Because of their size, however, they are not in a strong position to assume market risks. Nevertheless, the balance of market power appears to be forcing risk on to the level of these intermediaries, particularly to the traders.

The character of the fruit and vegetable sector, especially the fresh produce sector, is such that it is by no means clear that large scale industrial organisation could furnish and coordinate the technical and market skills necessary for ensuring supply of the wide assortment of types, varieties and qualities such as is at present available on the markets of several OECD countries. This will be lost if the inter-firm rivalry in modern retailing continues to put excessive pressure on its suppliers.

As regards consumers, the benefits of the modern retailing system in the supply of fruit and vegetables are evident, especially in those countries where climatic conditions limit the scope of domestic horticulture. The assortment now offered has never previously been equalled. In producer countries, also, the calendar of supplies has been lengthened, providing a wider choice of product throughout the year. Nevertheless, despite rivalry between firms, the advantages to consumers are not necessarily reflected in lower retail prices as compared with other forms of retailing.

In summary, operators in the fruit and vegetables filière are seeking forms of vertical coordination suitable for coping with the all-pervading market power of the modern retailing sector. Assistance to the sector in this search would be a valid objective for public policy. It could be achieved by closer scrutiny of the modern retailing sector, and possibly by stricter regulation of it in the light of competition policy.

4.4 Which forms of vertical coordination are most efficient?

As has been seen, each of the "policy-inspired" systems examined is currently facing difficulties which arise from turbulence in the market.

The difficulties of "market-inspired" forms of coordination are less evident: there is usually no requirement to publish such information and it would become general knowledge only if difficulties exploded to the level of litigation. It would, however, be unwise to assume that difficulties do not exist.

In these circumstances, the thorny question arises as to which forms of vertical coordination should be encouraged by governments. Clearly, there is no univocal answer: systems of vertical coordination must take into consideration the specific characteristics of the product, the number of operators at each level in the filière, the structure and the geographical location of demand.

It may be useful to approach the problem from a negative point of view, considering which attitudes should be avoided. Systems of vertical coordination which have been successful in certain periods have become obsolete as circumstances change. This suggests that excessive rigidity in policy attitudes should be avoided, leaving operators relatively free to adapt to changing circumstances.
On the other hand, policy should encourage the development of organisational forms which can achieve the benefits of a fair distribution of risks and income within the filière which vertical coordination can potentially confer.

In fact, the benefits of economies of scale which can be achieved by uniting numerous operators in inter-professional organisations continue to be valid, especially as regards technical information, product standardisation, cost of market services, costs of transactions and sales promotion.

If, however, these organisations are to be sponsored by governments, they must be run efficiently and be able to compete with similar aggregations of operators organised through the private sector. They may, therefore be encouraged, to be self funding, aided, perhaps, by appropriate credit facilities over a limited time period and to extend the scale of their operations appropriately to the markets for their products. By developing their competitive capacity, they should be able to counteract and reduce the "free-rider" problem; this would be an alternative to conferring, by legislation, powers of coercion to the organisations over non-member operators.

But just as importantly, governments should give support both to market and to policy inspired forms of vertical coordination by providing an adequate legislative and judicial system which guarantees a rapid and informed method of resolving controversies that may arise between contracting parties.

It may also be necessary to support arrangements for vertical coordination against the "free-rider" problem by appropriate interpretation of norms on unfair competition.

5. Conclusions

Systems of vertical coordination in the fruit and vegetable sector have derived, in part, from initiatives taken by operators in reaction to market signals, and in part, they have been the results of public policy towards the sector.

These systems differ considerably between OECD Member countries since they have evolved from differing conditions of resource endowment and of socio-economic frameworks. As regards policy inspired systems, there are very strong variations concerning the degree of public intervention in the free working of the market, and in the extent of public financial support. In the countries considered in this report, the "policy inspired" institutions for vertical coordination are self-financing. In addition to the mechanisms already described for self financing in the United States and New Zealand, the European Union as a whole has adopted the system of parafiscal taxation for interprofessional organisations mentioned earlier in reference to the Dutch Productschappen.

Nevertheless, in the future, as a result of limitations in national budgets, on the one hand, and of the Uruguay Round Agreement on the other, these systems will, in common, have to cope with less sector-specific public financial support as well as with a more liberal system of international trade. These same changes will apply to other sectors of agricultural production where the ratio of public support to the value of production is considerably higher and, on account of mobility of factors of production between different lines of agricultural production, they will affect the opportunity costs of horticultural production as compared with other types of cultivation.

Thus the question of identifying the type of government policy which can facilitate an efficient and equitable adjustment to the evolving market and policy conditions becomes ever more urgent. It
would seem important, therefore, that attention be paid to fostering the correct environment in which “policy-inspired” institutions, as well as “market inspired” ones, can flourish.

One major factor conditioning operators' conduct within the filière is the strong market power of the modern retailing sector. Its purchasing strategy, together with that of the horticultural processing industry, which it also influences, is causing trade flows to bypass traditional channels such as wholesale markets and auctions, and is reducing price transparency. This, together with the endemic instability of agricultural prices in general and of horticultural prices in particular, leads to a situation of uncertainty in which dealers with large financial resources and/or with privileged access to market information may be able to reap considerable advantages. Moreover, the market power of the modern retailing sector may lead to a reduction in free competition because of potential agreements on prices.

The position of small and medium sized enterprises, including farms and other operators in the filière, which provide such an important contribution in guaranteeing correct quality and appropriate flexibility in responding to market demand, is endangered. They are extremely vulnerable from the financial point of view and can easily be damaged by delays in payment which, in some countries, are usual practice on the part of modern retailing chains. As a result, there is a risk that vertical coordination will be replaced by vertical integration, a form of market structure which in this sector, might well lead to a reduction in quality and the range of choice available to the final consumer.

In the past, an effective means of bringing greater stability to horticultural markets was considered to be that of intervention to regulate prices. Experience has shown, however, that although this type of policy can bring benefits to operators at several levels in the filière, it can also bring unacceptable consequences in the form of high cost of implementation, overproduction and public antagonism. Within the EU, moreover, agreements on horticultural prices are not considered to conform with competition laws and interprofessional agreements do not allow them.

At present, the most appropriate type of intervention for reducing market turbulence appears to be that which would, firstly, mitigate the market power of the large buyers - modern retail chains and the processing industry; and secondly, ensure a more equitable division of market risk between the different actors in the filière. An appropriate application of competition policy could clearly play a key role in achieving both objectives.

As regards the first, a lead has already been taken in France to regulate price strategy of retail chains to avoid sales at prices below costs of production. As yet it is too early to analyse the consequences.

Solutions for achieving the second objective are more evasive. Lessons could certainly be taken from the system adopted in France before 1990 for the regulation of contracts between growers and the processing industry. It worked well at the time, although evolving market conditions, which included a higher degree of concentration in the processing industry and more intensive competition at international level, rendered it unsustainable; its abandonment left growers, in particular, but also processors, in a less favourable situation.

One useful line of action at the present time would be to introduce more stringent measures to reduce risks deriving from delay in payments.
The experience of the fruit and vegetable sector provides an interesting example of how coordination between operators is "an essential element in the dynamic efficiency of a productive system" but which, as in other economic sectors, presents problems of ensuring compliance.

The distinction between coordination for efficiency and collusion to restrict competition, however, appears to be presenting some problems of juridical interpretation, not only in the fruit and vegetable sector, as the example from France has indicated, but also in other food sectors.

Vertical coordination in the fruit and vegetable sector clearly relies on the presence of organisational forms and institutional regulations of a certain kind, which display varying degrees of rigidity. But "the rigidity through which institutions impart stability may turn out later to be a cause of institutional failure when technologies change or there are shifts in the composition of demand." (S.Deakin and F. Wilkinson, 1995). Of this phenomenon we have seen numerous examples in the fruit and vegetable sector, particularly in the way in which market conditions have forced changes in institutional systems regulating coordination between operators in USA, in New Zealand and in Europe.

Indeed, a search is clearly underway for new organisational and institutional forms, capable of safeguarding the interests of smaller and medium sized enterprises, and thus conserving the know-how, dynamism and flexibility which they contribute. There appears to be widespread consensus that greater significance should be accorded to means of coordination which regulate market power by placing limits on "destructive competition". In the past, such means for limiting competition have been seen as detrimental to efficiency and economic welfare. In the present context, they may, instead, provide important means of fostering "trust" between contracting agents and hence enhancing overall economic welfare" (S.Deakin and F.Wilkinson, op.cit.)

Finally, it has to be noted that the issue of vertical coordination (and integration) is not unique to the fruit and vegetable sector. For example, in the United States, production contracts are used to coordinate an increasing amount of commerce in agriculture. Once confined primarily to poultry and processed vegetables, production contracts today help coordinate a growing proposition of hog production and food and feed grain transactions. For example, coordination activities in the pork production industry are growing rapidly in North Carolina where industry growth exceeded 20 per cent annually during the first half of the 1990s, primarily due to the highly coordinated, megasized producers through horizontal expansion of contract production. Changes in vertical coordination are also evident in grain-based industries. Pasta demand has brought notable changes in the milling of flour and the production of pasta in Arizona and in the Upper Midwest: thus, almost all of Arizona’s durum wheat is now grown under contract. As can be seen from Table 4, by 1990, almost all the output of broilers, turkeys, processed vegetables, citrus and potatoes in the United States was coordinated either through production contracts or through integrated ownership. And contract production as well as vertical integration have grown significantly between 1970 and 1990 in the potato, fresh vegetable and some fresh fruit industries.

5 c.f. the decision of the Italian Anti-trust authority concerning the operation of the Consortia responsible for the production of EU certified Parmigiano Reggiano and Grana Padano cheeses, Prov. no. 4352. Bulletin of the Authority, 11th November 1996.
Table 4. **Farm production coordinated by contract production and vertical integration in the United States**

(perm cent)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Contract production</th>
<th>Vertical integration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livestock:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broilers</td>
<td>92</td>
<td>92</td>
<td>7</td>
</tr>
<tr>
<td>Turkeys</td>
<td>60</td>
<td>65</td>
<td>12</td>
</tr>
<tr>
<td>Hogs¹</td>
<td>1</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Sheep/lamb</td>
<td>7</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td>Field crops:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food grains</td>
<td>2</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Feed grains</td>
<td>1</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Speciality crops:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processed vegetables</td>
<td>85</td>
<td>88</td>
<td>10</td>
</tr>
<tr>
<td>Fresh vegetables</td>
<td>21</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>Potatoes</td>
<td>45</td>
<td>55</td>
<td>25</td>
</tr>
<tr>
<td>Citrus</td>
<td>84</td>
<td>70</td>
<td>9</td>
</tr>
<tr>
<td>Other fruit &amp; nuts</td>
<td>20</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>Total farm output</td>
<td>28.2</td>
<td>30.5</td>
<td>5.3</td>
</tr>
</tbody>
</table>

1) Combines contracts entered into before production begins and contracts entered into after production begins.

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