

Commodities, Diversification and Poverty Reduction

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1 Introduction

The problems of developing country dependence on a narrow range of commodity exports are well-established. Many poorer developing countries have continued to generate a substantial proportion of their total export revenues from one or a small number of basic food commodities. In addition to the problem of declining world market prices for basic food products typically exported from developing countries – coffee, cocoa, tea, sugar and bananas – commodity price shocks are also associated with dependence on commodities, as highlighted in a recent report by the IMF (International Monetary Fund 2003).

Defining a price shock as a decline in real prices of at least 10% from one year to another, the IMF calculates that 30 low-income developing countries suffered between them 204 shocks between 1981 and 2001, an average of one shock per country every three years (International Monetary Fund, 2003: 37). The average size of these shocks was just over 20%. For *other* developing countries, shocks were less frequent and smaller. Furthermore, the greater dependence of low-income countries on a small number of commodity exports in the generation of export earnings means that commodity price shocks translate much more directly into terms of trade shocks (defined as a 10% year-on-year decline in the terms of trade). Low-income countries were 13% more likely than other developing countries to experience a commodity price shock in the 1981-2001 period, but 60% more likely to experience a terms of trade shock.¹ These shocks not only tend to hit poor countries disproportionately, but also harm the poor in each country disproportionately.

Various mechanisms have been proposed or implemented for ameliorating the impact of price shocks, including producers agreements, insurance, futures, options and financing short-term compensatory measures. However, the longer term solution must be to reduce the exposure of poorer developing countries to shocks by diversifying their exports away from commodities. In the case of agricultural commodities, and in the context of the importance of agriculture and sustaining rural livelihoods in poorer developing countries, this means adding value to existing commodity exports (in other words, diversifying the same product) or promoting alternative products. The latter are often referred to as non-traditional agricultural exports, although there are products such as cloves, cashew nuts and ginger that have been exported for some considerable time that could also serve as diversification options (van der

¹ These figures are calculated from International Monetary Fund (2003), table 4.

Laan 1993: 199). These approaches are probably now more widely accepted as value-adding strategies than traditional forms of processing and preservation (canning, pickling, etc.).

Trends in developed country food markets towards product differentiation and healthy eating have generated additional demand for fresh produce, and prices for horticultural products have fallen much less than prices for basic commodities since the 1980s. In addition, the potential for differentiation of these products along the lines of place of origin, quality, environmental impact, fair trade, etc. seem to be high, and the increasing demand for ready-to-eat and ready-to-cook produce in advanced markets offers good opportunities for adding value that frequently do not run into problems with tariff escalation. For temperate fresh vegetables, in particular, demand for processed products appears to be rising much more rapidly than demand for the unprocessed product.²

While the dynamism of horticultural exports is undeniable, the poverty reduction impact of these exports is less clear. It is widely recognised that marketing channels for horticultural products are very different to those for agricultural commodities: while products are traded predominantly through arm's length market relations in the case of the latter, the marketing channels for the former are frequently characterised by "vertical coordination", or "value chain governance". A review of research on agroindustrialisation highlighted the common perception of vertical coordination across a wide range of theoretical approaches (Cook and Chaddad 2000), and the prevalence of these relationships have been recognised by policy makers.³

The analysis of inter-firm linkages in global trade that go beyond arm's-length market relationships, but maintain independence of ownership has been systematised by global value chain analysis. In approaching the issue of the value chain, it emphasises three key issues: the nature of the linkages between firms in value chains and their determinants; the role of lead firms within chains, and particularly global buyers, in defining the organisation and outputs of the chain; the case in which the costs of coordination can be reduced through codification of the knowledge required to sustain transactions. A forthcoming paper that sets out a framework for global value chain analysis highlights the importance of the competitive strategies of lead firms, codification of information flows and supplier competence in determining the nature of network relationships in value chains (Gereffi, Humphrey and Sturgeon forthcoming).

Given the clear importance of vertical coordination, or value chain governance, in horticulture, it is worth considering how this impacts upon poverty and development. First, does vertical coordination reduce levels of price volatility, or merely reproduce them? Second, to what extent do the vertically coordinated marketing channels typical of horticultural production for export to the advanced economies include or exclude small-scale producers and exporters, and how does this affect the overall poverty-reduction impact of the trade? This paper addresses these questions by examining how horticultural exports from Africa to the United Kingdom are organised, considering the reasons for value chain governance and the extent to which the outcomes achieved through vertical coordination could be obtained through the further development of grades, standards and certification. The

² Recent research on fresh vegetable exports from Kenya indicated that while unprocessed fresh vegetable exports grew at 3.7% per annum between 1995 and 1999, processed vegetable exports grew at 11.1% per annum (Humphrey, McCulloch and Ota 2004: 74).

³ For example, a World Bank report on the modernisation of African agriculture suggests that "Supply chains represent an additional (or alternative) organizational form (to markets) for facilitating transactions and coordinating the activities of agro-food system participants...Supply chains are vertically structured and are typically led or managed by a particular company—normally a producer, wholesaler or retailer" (World Bank 2003: 5).

paper then considers how the configuration of global value chains (number and size of firms at different points in the chain and the way in which activities are distributed between these firms) and the governance of these chains affects the poverty reduction impact of involvement in export horticulture. In other words, how are barriers to entry (for both countries and producers of various types) into horticultural export production affected by vertical coordination and with what consequences for poverty reduction?

2 Vertical coordination in horticultural value chains

Trade in agricultural commodities can, by and large, be handled through arm's-length market relationships. The characteristics of agricultural commodities are well-known, and markets for these products have developed grading systems and standardised descriptors that facilitate the codification and transfer of information about relevant product characteristics. Even though the importance of exchanges and physical options has declined, these have been replaced by "virtual markets" that still work on the basis of spot transactions based upon product descriptors (Brousseau and Codron 1998: 7). Because the products are standardised, it is possible to mix together the output of various producers and processors in order to obtain large volumes, and this facilitates the entry of multiple producers. Coordination requirements are limited, and products can be grown, processed and marketed without a specific buyer being identified in advance.⁴ Conversely, the buyer accepts the condition of "producer anonymity" — lack of knowledge about the precise origins of the product — although the buyer may rely on specialised intermediaries to provide them with assurances about product quality, origin, etc. These intermediaries will also perform the functions of price-setting, information transfer, and inventory holding for smoothing supply and demand, as discussed by Spulber (1996).

The value chains for horticultural products are substantially different to this. In recent years, they have been characterised by increasing vertical coordination. Across Europe, sales of fresh fruit and vegetables have become increasingly concentrated in a small number of supermarket chains. Supermarkets account for 68% of fresh food sales in France, 72% in the Netherlands, and 80% in the UK (Cadilhon, Fearn, Hughes and Moustier 2003: 4), and their market shares have been rising. In the UK, increasing supermarket dominance has led to a decline in the share of greengrocers and retail markets in the retail shares of fresh fruit and vegetables from 45% in 1980 to 26% in 1991 and 15% in 1997 (Gray and Kleih 1997: 30; Fearn and Hughes 1998: 29). Supermarkets and retail chains in the UK account for over 80% of both sales and imports of fresh fruit and vegetables.

These UK retailers have switched from market-based supply to vertical coordination, working with ever small numbers of fruit and vegetable suppliers. Relationships with the suppliers have become much more complex, involving a high level of coordination of production schedules (planting, harvesting and delivery), customisation of products, collaboration over innovation and greater specifications and monitoring of production and post-harvest processing. This has led to concentration along the value chain. One estimate by a former supermarket employee was that a leading supermarket chain had reduced the number of its fruit and vegetables suppliers from 800 in 1987 to less than 80 in 2000 (Dolan and Humphrey forthcoming), while the managing director of one of the UK's largest horticultural importers described how one leading UK supermarket was aiming to work with just five suppliers of fruit and vegetables, who would be responsible for arranging the sourcing of all the product lines.

⁴ In recent years, there have been changes in the way that these products are traded, with increasing concentration at the processing stage, as discussed for the cases of cocoa by Fold (2002) and for coffee by Fitter and Kaplinsky (2001) and Ponte (2002). For an overview of changes in the way commodities are being produced and traded in Africa, see Gibbon (2003).

The organisation of the fresh vegetables trade between Kenya and United Kingdom has been described in Dolan *et al.* (Dolan, Humphrey and Harris-Pascal 1999) and in Dolan and Humphrey (2000). The larger UK supermarket chains work with a limited (and decreasing) number of UK importers. The leading importers are responsible for providing regular, year-round supply of particular product ranges, and they do this by working with large exporters in a range of developing countries. The exporters source from their own farms, large farms and, to some extent from contracted smallholders. Evidence from vegetable production in Kenya and Zimbabwe in the 1990s indicates a tightening of linkages in the value chain, with greater use of own-farm production by exporters and the development of some financial equity links between exporters and importers. Overall, linkages between exporters and importers are stronger and more durable than between importers and retailers. While the latter are frequently persistent, they are far from permanent and are affected by both assessments of value chain performance and the changing strategies of the retailers.

This greatly increased level of coordination is not the result of intrinsic characteristics possessed by horticultural products. Until the mid-1980s, products such as green beans, mushrooms and celery were traded through a series of arm's-length market relationships, and for wholesale markets still exist in Europe for imported fruit, vegetables and flowers. In the case of vegetables, traders in Kenya bought produce in wholesale markets or at the farm gate and exported it to the United Kingdom, where it was sold in wholesale markets. The shift is not confined to fresh fruit and vegetables. More recently there has been a shift from markets to vertical coordination in the flower industry,⁵ and even in traditional commodities such as tea and coffee increasing vertical coordination is evident.⁶

These tendencies are driven by three factors. First, increasing concentration in both retail and processing has created the conditions for increased buyer power and allow them to reduce the unit cost of coordination by spreading its over larger volumes. Second, in the 1990s large retailers (including supermarkets) regarded fresh produce (fruit and vegetables) as a strategic area, as it was one of the few product lines (in addition to meat and wine) that could persuade consumers to shift from one supermarket chain to another. They developed competitive strategies based upon product differentiation, quality, and year-round availability. Product differentiation has included claims about "credence" characteristics (such as place of origin, health benefits, and social and environmental impact),⁷ increased processing (ready-to-eat, ready-to-cook, new product combinations), changes in packaging, and the introduction of new products and varieties. Third, UK retailers had to respond to an increasingly complex regulatory environment related to food safety, particularly pesticide residues and conditions for post-harvest processing, as well as environmental and labour standards. The UK Food Safety Act placed the onus on retailers to assure consumers that food products were safe for consumption. The EU also increased the complexity of the regulatory environment, introducing Directive 91/414/EEC for the authorization, use, and control of plant protection products, Directive 90/642/EEC that stipulates that EU Member States implement a program to monitor pesticide residues in fresh produce and other foodstuffs, and a 1993 initiative to harmonising maximum pesticide residue levels (MRLs) on food sold in the EU (Chan and King 2000). The latter reduce the acceptable levels of many pesticides to the minimum

⁵ One leading UK flower importer predicted that direct importer flowers from developing country producers would arise from 25% in 2000 to 70% by 2008. For a discussion of the factors driving vertical coordination in the flower sector, see Hughes (2000).

⁶ Another example of increasing value chain governance (or vertical coordination) not accompanied by any radical transformation of intrinsic product characteristics would be the shift from spot markets to contracts in the US pork industry (Lawrence, Rhodes, Grimes and Hayenga 1997).

⁷ For a discussion of credence goods in the food industry and their impact on value chain governance, see Reardon *et al.* (2001).

detectable limit. Finally, UK retailers have been subject to increasing pressure from NGOs and consumer groups over labour standards and environmental impact. In some cases, these activities have been supported by the UK government, as with the development of the Ethical Trade Initiative (ETI).⁸

These challenges have placed new requirements for the governance of horticultural value chains. Buyers have become more concerned with the specifications of both products and processes further back along the value chain in a number of different ways. These include:

1. Quality, based upon the processes for growing, processing and handling of the product. Physical inspection is not considered adequate for assuring quality, and so process controls have to be specified.
2. Safety, based upon process controls, particularly with regard to pesticide residues and chemical use. These, too, require specifications of processes, monitoring and enforcement.
3. Conformance with labour and environmental standards in production and processing.
4. Traceability. Problems with regard to items 1 and 2 require traceability in order to isolate further defective produce and to help identify and rectify failing processes.
5. Authenticity, in relation to credence claims such as origin, organic produce, etc.
6. Guaranteed supply in order to avoid stockouts (empty shelves).
7. Coordination of quantities and timing of delivery. While stockouts are to be avoided at all costs, this has to be combined with low stocks in order to reduce inventory costs and wastage, and increase shelf life. The challenges to manage the trade-off between speed of flow through the supply chain and continuous availability of product.
8. Product differentiation and innovation as a means of adding value and margins to products (margins are much higher on processed products), providing customers with increased choice of products, product combinations and levels of food preparation.

Arm's-length market relationships and spot purchasing cannot deliver these services. Many analyses of agribusiness discuss the ways in which vertical coordination can help to meet these challenges (as discussed in Cook and Chaddad 2000). Nevertheless, global value chain analysis has highlighted the importance of codification and standards in securing conformance with widely-agreed parameters without the need for direct coordination of suppliers by buyers. The first five of the above eight challenges could, in principle, be addressed through certification, labelling schemes and codes of conduct. Global buyers have an incentive to use such gains as much as possible. Vertical coordination involves significant costs and inflexibilities for buyers, and the development of schemes that provide credible guarantees of conformance with product standards and process specifications not only opens up a greater range of potential suppliers, but also tends to shift the costs of compliance from the buyer to the seller. If the buyer imposes its own, specific requirements, then it often bears the cost of monitoring and enforcement. If broader standards are available (organic certification, certification of compliance with pesticide use, labour standards, etc.) then it is often the producer that has to pay for inspection and certification, and particularly if market concentration is higher at the buyer level than the supplier level.

Certification systems codify standards in particular fields and specify how conformance with these standards is to be verified and made public, and also how failure is to be sanctioned. When new standards are imposed upon value chains, particularly if they arise from external pressures (from governments or NGOs, for example), the initial response of buyers may be to develop their own control systems to ensure compliance along the value chain. If suppliers are unable to meet these requirements from their own resources, buyers may provide

⁸ The ETI Base Code, formulated in September 1998, is available at the ETI website, <http://www.ethicaltrade.org/>. All of the leading UK food retailers are included in the ETI's membership.

assistance, although only if these suppliers are important to the buyer. This "creation of supply incompetence through changing requirements" is particularly likely to happen when a new standard defines an output (for example, no use of child labour, or absence of excessive pesticide residues) rather than a process for achieving that output. Over time, buyers may cooperate to establish common standards that can be codified into a standard. The Eurep GAP (Good Agricultural Practice) standard is an example of a broad-ranging standard based upon certification of practices relating to crop production, with particular emphasis on use of pesticide and chemicals and good environmental practice with regard to land development and use, as well as some specifications of labour practices. It refers to practices at the point of production, but it was developed by Eurep, an association of European fresh produce retailers and importers in response to external regulatory pressures.⁹ Such standards may also be sponsored by producers as an attempt to add value to product from particular geographical origins, as with the Kenya Flower Council certification scheme for flower production, which is concerned with issues similar to those addressed by Eurep (environmental impact, pesticides, labour standards, etc.).¹⁰

Just who defines these standards can have important consequences for value chain structures and also the distribution of benefits along the value chain, as standards have some of the properties of brands. Duguid (2003) describes how retailers and producers fought over brand identities in the drinks industry in the 19th-century because control of the brand identity gave power. While a brand identified with a distributor (for example, Gilbey's port) allows the distributor to source its product from various different producers and exporters, and may enable it to reduce the margins further back along the value chain (Duguid 2003: 19), a product brand would oblige the distributors to buy from the branded producers irrespective of the retail outlet. Struggles over brands clearly take place today, with the increasing importance of own-brand products in retailing, and in the development of competing standards. Producer/processor standards (for example the Kenya Flower Council standard) compete with standards developed by importers or by retailers, including private, company-specific standards in the food industry.

In theory, credible and cost-effective standards might be developed to cover many of the product and process attributes desired by buyers, leaving buyers free to buy produce in spot markets. These products will be supplied with assurances about quality, origin, labour environmental standards, etc. based on proofs of certification attached to the products. The Forestry Stewardship Council certification scheme that links timber products to forests managed in an environmentally sustainable manner would be an example of how certification relaxes requirements for vertical coordination and traceability. As long as the certificate guarantees conformance with the relevant product attributes, precise origin and trajectory through the value chain are not an issue. Recently, there have been various proposals for IT-based traceability systems that would provide buyers with lot-based information about origin and processing.¹¹

In spite of this, there are still strong reasons for value chain governance, as indicated in items 6-8 of the list above. In the first place, developing close links with suppliers is a means of

⁹ The Eurep GAP framework sets out a series of requirements, focusing particularly on pesticides, chemical use, fertilisers and traceability, as well as labour standards. It emphasises record-keeping and provides for independent verification by approved bodies. For more information about Eurep, see <http://www.eurep.org>.

¹⁰ See <http://www.kenyaflowers.co.ke/index.html>, for more details on the certification scheme. For an extensive overview of recent developments in codes, labels, standards and certification see Nadvi and Wältring (2002).

¹¹ One Internet-based system has been developed by TraceNet (Montigaud, Naouri and El Hadad 2001), and traceability options in the fish industry are discussed by Børresen (2003).

guaranteeing access to available supplies. While retailers are extremely unlikely to have exclusive contracts with producers, the larger retailers look to guarantee supply by being an important customer, if not the largest, and frequently specifying that exporters must not also supply their largest competitors. In those cases where importers supply more than one of the leading UK food retailers (which is occurring increasingly because of consolidation in the import sector) supply chains are often kept completely separate to avoid competition for scarce produce.

Second, value chain coordination is needed to coordinate planting, harvesting and delivery. This is particularly important in fresh vegetables, where growing seasons are short and product life is extremely limited. It is less important for fruit, which can be kept in storage for longer periods. Demand for fruit and vegetables is also extremely volatile, depending on factors such as the weather. Leading exporters will coordinate planting and harvesting schedules on a weekly or daily basis with their major customers. Clearly, it is impossible to match supply and demand exactly. Shortages in supply may be remedied by use of alternative sources (including informal trading produce between exporters), while excess supply can be sold through wholesale markets or by means of in-store promotions. The costs of both and the risks of the former can be reduced by close coordination of production and supply with anticipated demand.

Third, certification cannot address the issue of increasing product differentiation and the coordination of innovation activities that lies behind it. Innovation involves both marketing and retailing strategy, on the one hand, and product and process development on the other. Developing new products can involve technical innovation in crop growing and processing as well as marketing and promotional work. This requires coordinated activity along the value chain. This innovation may even extend to standards themselves, with private (or company-specific) standards being developed as a means of increasing value. While widely-accepted standards certainly reduce the costs of coordination, these gains which derived from creating "order" compete with the potential gains from innovation, which decrease codifiability and increase coordination requirements (David 1995: 18-19).

Finally, given the growing complexity of processes along the chain, it becomes increasingly difficult to write complete contracts. Given the unpredictability of the horticulture business in terms of supply, demand and innovation, the overall effectiveness of the value chain depends upon a series of non-contractible performance requirements, including responses to unforeseen circumstances. Whether this is viewed in terms of development of mutual trust or the establishment of compliance with lead firms requirements through power asymmetries (possibly compensated by relatively high prices or predictability of demand), it is made possible by repeat transactions and some degree of investment in value chain relationships.

In these circumstances, global value chain analysis suggests that buyers reduce the costs of vertical coordination by developing modular value chain structures. This means, first, increasing the level of codification of information transfer along the chain; second, working with a small number of suppliers; third, changing the value chain configuration so that the points at which products cross enterprise boundaries have lower information complexity; and fourth, increasing reliance on competent suppliers that require less monitoring.¹² These are the tendencies seen in the development of "category management" by UK supermarkets.

¹² The issue of information complexity and the creation of "pinch points", where this complexity is reduced, has been discussed extensively in the context of the modularity of design systems in the computer industry by Baldwin and Clark (2000). In computer design, as in value chains, the greater the extent to which interdependencies can be contained within particular stages of the process and within the span of decision-making of a particular group of firm, the less complex the coordination between the different stages.

3 Vertical coordination, access and exclusion

What are the consequences of these forms of value chain governance and the value chain configurations that are developed to make them possible for the extent to which horticultural value chains have the potential to reduce poverty in developing countries? This question can be considered in three ways:

1. How do they affect the ability of low-income countries to enter horticultural value chains?
2. What types of enterprises participate in these chains, and what are the employment and income effects?
3. To the extent that vertically coordinated chains appear increasingly to marginalise small producers, what impact does this have on the contribution of export horticulture to poverty reduction?

3.1 Low income countries and non-traditional agricultural exports

The coordination and logistics requirements of horticultural products are particularly demanding for the transport and communications infrastructure, as well as for services related to compliance with sanitary and phytosanitary (SPS) regulations, labour and environmental standards. To what extent can low-income countries meet the challenges? Is there any evidence that low-income countries are not able to gain access to these value chains?

Data on imports of two categories of fresh vegetables (HS 0708 and HS 0709)¹³ to the European Union for the period 1988-2001 does not show any such problem, as can be seen in Table 1. The low-income country share of European Union imports of peas and beans is almost 80%, due in some part to the importance of ACP preferences. Most of the larger exporters to the EU enjoyed ACP preferences in this period (Stevens and Kennan 2000). Low-income countries accounted for a much smaller share of the "other vegetables" category, although their share of the EU market increased between the end of the 1980s and the end of the 1990s. The market shares of low income countries for these products were similar to those for coffee and tea, as can be seen in the table.

Table 1: Share of low-income countries in EU imports of selected agricultural products from developing countries, 1988-90 and 1999-2001 (%)^a

	1988-1990	1999-2001
HS 0708, peas and beans	78.1	78.9
HS 0709, other fresh vegetables	22.4	33.2
HS 0901, coffee	24.5	32.1
HS 0902, tea	73.0	68.6

Source: Eurostat (1998; 2002).

Note: a. Total imports from developing countries and imports from low-income countries for each product exclude countries with less than 0.1% of developing country imports. Excludes Eastern Europe and the Former Soviet Union.

The growth in volume, value and price for imports into the EU of selected fruit and vegetable products is compared with those for coffee and tea in Table 2. The table shows clearly the strong volume growth in the 1990s for fresh vegetables and for table grapes, and the decline in import volumes for coffee, tea and bananas in the same period. Nevertheless, the picture is not simply one of the importance of traditional agricultural exports and strong

¹³ Combined nomenclature, 0708 (leguminous vegetables, shelled or unshelled, fresh or chilled) combined nomenclature, 0709 (other vegetables, fresh or chilled (excl. potatoes, tomatoes, etc.)), includes artichokes, asparagus, celery, mushrooms, peppers, etc.).

performance of horticultural products. Firstly, the rates of growth in import volumes for oranges and apples are similar to those for coffee, tea and bananas. Secondly, changes in prices over the period differ little between the nine product categories in the table. The figures in the table should be treated with caution, as the data only provide a comparison over an 11-year period, and because price indices are particularly sensitive to the starting period chosen. Even though the start and end periods have been calculated on the basis of three-year averages in order to avoid possible distortions from fluctuations in a single year, the limited scope of the available data makes it impossible to analyse longer trends. However, the figures establish that there is no evidence for believing that strong volume growth in some horticultural products is also accompanied by more favourable price trends than for agricultural commodities. The increase in the value of fresh vegetable imports into the EU is predominantly driven by increasing volume, not increasing price.

Table 2: Value, volume and price of selected food imports into the EU from developing countries, 1999-2001 (Index, 1988-90=100)^a

Product	Volume (tons)	Price (Ecus per ton)	Value (Ecus, 000s)
HS 0708, peas and beans	269.1	131.7	354.5
HS, 0709, "other vegetables" ^b	301.8	121.0	365.1
HS, 0901, coffee	90.1	96.7	87.1
HS, 0902, tea	82.1	128.2	105.3
HS, 0803, bananas	96.9	115.1	111.5
HS, 0805, all citrus	121.6	122.2	148.6
HS 080510, oranges (fresh or dried)	104.0	116.0	120.7
HS 080610, fresh grapes	305.2	120. The 9	369.1
HS 080810, fresh apples	72.8	136.0	99.1

Source Eurostat (1998; 2002).

Notes: a. Includes the Americas (excluding the USA and Canada), Africa, the Middle East (excluding Israel), South Asia and East Asia (excluding Japan).

b. See note 13 for definition.

The problem of exclusion can also be addressed in relation to the timing of entry into global markets. Here, the issue is not whether low-income countries as a whole can export horticultural products, but rather the increasing sophistication of the market, which may favour early entrants, such as Kenya, over late entrants. These barriers arise in relation both to the regulatory environment and the infrastructure required for export competitiveness. On the first issue, increasing regulatory requirements imposed by both governments and the private sector place new demands on government for standards infrastructures that can establish compliance by exporters.¹⁴ On the second issue, the increasing complexity of global value chains places demands on the transport infrastructure and also the supporting infrastructure of business services that sustain complex supply systems.

These tendencies are seen clearly in the case of horticulture, and in particular for fresh vegetables. The level of complexity of the industry has increased considerably. Buyers in northern Europe, in particular, have sought more differentiated and more processed products, delivered to more stringent timetables and complying with increasingly complex regulatory standards. Whereas the early entrants, such as Kenya, were able to build up the required infrastructure incrementally, accompanying the transformation of the retail sector in Europe over two decades, the resulting requirements are now a condition of access for new entrants.

¹⁴ For a discussion of the challenges of compliance for developing countries and how to assess them, see World Bank (2002).

The barriers to entry in the late 1990s for a country such as Uganda are much higher than for Kenya in the 1970s and 1980s. Does this make it difficult for latecomer countries to begin exporting to European markets?

The evidence over the short time period for which detailed EU data is available is not conclusive. Comparing the countries exporting vegetables to the EU in 1988-90 period with those exporting in 1999-2001, only two countries moved from taking less than 0.1% of in the earlier period to more than 1% in the later. Ghana as a substantial new entry, accounting for 4.3% HS 0709 imports in 1999-2001, making it the sixth largest exporter of this product category to the EU (excluding countries in eastern Western Europe and the former Soviet Union), whereas it did not feature in the top 20 in 1988-90. The only other new entrant to take more than 1% of the market was Gambia, for HS 0708. Conversely, the only countries accounting for more than 1% of the market in the earlier period fell to under 0.0% in the late period were Cameroon, Rwanda (HS 0708) and Martinique (HS 0709).

In part, the seriousness of potential barriers to entry will depend upon the extent to which new entrants exporting is based on FDI or partnerships with experienced exporters (for example, by investments by Kenyan firms in neighbouring countries) or European importers seeking new locations from which to source produce. Global value chain analysis would suggest that in certain circumstances global buyers will seek out new sources of supply, developing local suppliers as appropriate, animated this without owning local farms. This is most likely to happen when certain products are in short supply, possibly at certain types of year. The "window of opportunity" for new entrant countries may arise when new products are being developed for which supply capabilities are weak.

3.2 Enterprise size and competences

What types of firms are best able to take advantage of the export opportunities offered by horticultural value chains? Overall, current trends in horticultural value chains appear to favour larger exporters and large producers, as has been demonstrated in the cases of Kenya and Zimbabwe by Dolan *et al.* (1999).

The increasing importance of post-harvest storage, processing and transport appears to favour large exporters over small, and there is clear evidence of concentration in export horticulture, particularly in fresh vegetables, in Kenya, as discussed by Dolan *et al.* In part, this is driven by the new competences required for processing and for maintaining continuity of supply. There are also economies of scale and specialist competences required in the area of compliance with standards, which also favour large exporters. Finally, there has been some forward integration by exporters into the freight business, which also favours firms which have the scale and financial resources to expand their operations forwards and backwards along the value chain:

"By the end of the 1990s, the demands for capital and technical capacity had led to the exclusion of many small exporters who were unable to meet supermarket requirements. This exclusion was clearly evident in all the major African fresh fruit and vegetable exporting countries, but was particularly significant in Kenya, where the top seven firms controlled over 75% of all exports by the end of the 1990s. Those small and medium-size firms that remained in the trade were largely dependent on arms-length marketing relationships, exporting bulk produce to wholesale markets in Europe and the UK" (Dolan and Humphrey forthcoming).

The same forces have also tended to lead to concentration in agricultural production and the marginalisation smallholders from horticultural value chains. In the course of the 1990s, large exporters bought land, relying to a greater extent than in the past on their own farms for supplies. In part, this was in order to guarantee continuity of supply, as well as to increase

their ability to innovate. The more that exporters are expected to innovate with the products, varieties and methods, as well as introducing process controls, the more they will take direct control of at least parts of agricultural production. Where small producers are incorporated into value chains, this is usually in the form of outgrower schemes. It is only through direct supervision accompanied by training and inputs that performance with buyer requirements can be guaranteed. It may be the case, for example, that certain sensitive tasks such as pesticide application are performed by the exporters' own agents in order to ensure control of operations critical for compliance with EU regulations.

One of the advantages of the increasing complexity of these relationships, from the point of view of the exporters that managed to remain in the business, is the increasing interdependence of importers and exporters. In horticulture, importers and exporters normally work on the basis of bilaterally exclusive marketing relationships (an exporter will only supply one importer in any given country, and the importer will only work with one exporter from that country), and there is some evidence of financial and ownership linkages both forward and backwards along the chain. Some developing country exporters have created their own import businesses in major markets in Europe, while some importers have provided exporters with financial support. These contractual arrangements limit some of the risks of opportunism.

While the links between importer/exporters and their large retail customers in Europe rarely involve financial or ownership ties, they do tend to endure for a number of years. Formal contracts appear to be rare in the industry, but commitments are made for 12-month periods and frequently renewed. When supply relationships are ended, this happens at the end of the 12-month period, although the notice of the ending the contract may be much less. The annual commitments indicate likely volumes over the year and are then adjusted on a monthly, weekly or even daily basis. In some cases, buyers make commitments to source a certain percentage of their supplies from particular importers, which spreads the risk among all importers. Similarly, some (but by no means all) supermarkets work on the basis of setting the buying price as a percentage of the shelf price, which means that the risks of price fluctuations are shared between retailer and the supply chain. Alternatively, retailers buy at a fixed price, which pushes both the risks and rewards onto the supplier.

The switch from spot markets to annual purchasing arrangements tends to lead to greater price stability for suppliers, as a predictable and stable price is one way of ensuring continuity of supply. This is seen in smallholder production, as well for large suppliers. A recent report on organic agriculture in Latin America noted the prevalence of contracts and observed that one of the advantages of organic production stated by small producers was price predictability and stability:

"The thematic study concluded that marketing of organic products through farmer organizations that established direct contacts with buyers was key to obtaining better prices. Long-term contracts were preferable, because they provided a safe market and more stable prices" (IFAD 2002: 6).

Such stability is particularly likely to arise when buyers are involved in the process of developing organic capabilities among smallholders, and this in turn is most likely to happen when there is a shortage of supply of organic produce. In recent years, this has been the case, particularly in sectors such as cocoa. However, the advantages of short-run predictability of volumes and prices has to be weighed against the risks of dependence and possible loss of entire contracts. These can arise not only because of poor performance, the because of changes in customer strategy.¹⁵

¹⁵ For example, one leading Kenyan vegetable exporter lost 20 percent of its export market when a large customer ended its contract shortly after auditing the supplier and giving it

Parallel with the process of exporter concentration, there appears to have been some reduction in the use of smallholders for production. The level of smallholders supply had been higher in Kenya than in and in other locations. Dolan *et al.* (1999: 29) estimated that in the late 1990s large exporters in Kenya sourced 18% of their output from smallholders, most of whom were organised into outgrower schemes. This compared to only 6% for large exporters in Zimbabwe. Interviews with the same Kenyan exporters in 2001 indicated that none were expanding smallholders supply and some were reducing it. While it is possible to organise smallholders in outgrower schemes in ways that can guarantee traceability, as well as consistency of both quality and supply, this is expensive and possibly only justifiable commercially when large exporters have restricted access to land. In terms of production alone, smallholders can compete successfully with large firms, as there are few economies of scale in the growing of horticultural crops. Nevertheless, the costs of ensuring compliance, and the difficulties of convincing export customers that this compliance can really be achieved, are tending to undermine sourcing from smallholders.

3.3 Tendencies in horticultural production and their implications for poverty reduction

If there is a tendency for smallholders to be excluded from horticultural value chains, what impact does this have on the poverty-reduction effect of the industry? Generally speaking, smallholder production is seen as good for poverty reduction, and development agencies frequently make this a policy priority. However, this view is open to question. In particular, if the alternative to the integration of small farmers into export-oriented agricultural production is not exclusion, but rather an increasing role for large farms in this production, what would be the impact on poverty?

A qualitative study of migrant families working in the agro industrial production of tomatoes in Mexico found that the incomes gained by migrant workers had a substantial and positive impact on households in the regions of origin (Barron and Rello 2000). Through migrating to the tomato-growing regions for periods of 3-6 months longer, workers could earn money to sustain their households, and this would not have been possible if they had looked for local work. The work prevented permanent migration from their regions of origin. However, the authors suggest that the incomes earned were not sufficient to provide for investment in assets and an increase in the productivity and viability of work on their regions of origin. While the study does compare the incomes of migrant workers derived from export horticulture with what they might earned by working on their own farms, it does not provide a comparison of the poverty reduction effect of different export farming systems.

This latter comparison was the objective of a quantitative study of households in Kenya. It was designed to study whether or not the decline of smallholder horticultural production had negative effects on both employment and the incomes of poor households. With regard to employment, the study examined the relative labour intensities of production in the smallholder and large farm sectors and then compared the impact of switching production between the two sectors with the impact of two other important tendencies in export horticulture: continuing strong growth in export volumes and values, and the shift towards products requiring significantly increased processing (Humphrey *et al.* 2004).¹⁶ The findings of the study were:

an excellent rating. The decision was the result of the strategic shift towards concentration of the supply base and arose not from the supplier's performance, but from a redefinition of the range of products to be supplied by the importer working with that supplier.

¹⁶ Qualitative work on working conditions and livelihoods in export horticulture was carried out in parallel to this quantitative study by Dolan and Sutherland (2002).

1. Smallholder horticulture production was no more labour-intensive than large-scale farming, even though it is frequently assumed to be so.
2. The continuing growth in exports of fresh vegetables, running at over 5% per year in the period 1996-2001, was likely to create substantial new employment.
3. Within this overall growth, output of highly processed fresh horticultural produce was growing at 11.2% per annum, compared to 3.7% for less prepared produce. As the former was significantly more labour-intensive than the latter, this was generating increased numbers of jobs (Humphrey *et al.* 2004: 74).
4. Overall, even if one **did** assume that smallholder production was substantially more labour-intensive than large-scale farming, only about 1600 new jobs would be created by increasing the smallholder share of export production from roughly 20% to 30%. This compares with 11,000 jobs created over five years by export growth and a further 3000 jobs that would be created over five years if the shift towards more highly processed products continued.

It follows that on with respect to employment there would be few if any benefits arising from promotion of smallholder horticulture.

With regard to incomes, there is no doubt that horticultural production is poverty reducing overall. McCulloch and Ota (2002) analysed the incomes of both urban and rural individuals and households in Kenya. They found that (predominantly female) workers in packhouses in urban areas earned higher incomes than they would be expected to earn in other occupations. Similarly, households with members working in export horticulture in rural areas were less poor than comparable households not engaged in export horticulture.

From the point of view of smallholder production and poverty, however, the critical question is whether smallholder production would be more likely to raise rural households out of poverty than other forms of horticultural production. After constructing a model of household income determination on the basis of an analysis of incomes in 181 households in rural areas, they simulated the impact of the movement of household from non-horticulture smallholder production to three alternative forms of smallholder production: smallholder, large contract farm, and exporter's own farm. Their findings are that:

"In rural areas switching non-horticultural smallholders to be any of the other three categories of household substantially reduces the very high levels of poverty among such households. Interestingly, however, the impact on poverty both at the individual and household level is broadly similar regardless of the category to which the non-horticultural household switches. It would appear that any involvement in horticulture in rural areas appears to reduce poverty and that anti-poverty policy should not have a strong preference towards any particular form of engagement with the sector" (McCulloch and Ota 2002: 27-28).

On the basis of this study, the increasing importance of vertical coordination and its clear implication for productive structures in developing countries should not, by itself, raise concerns about poverty reduction. However, there may be other motives for promoting smallholder production, and further work would be needed to check the validity of these findings for other sectors and other countries.

4 Conclusions

It has been argued that diversification strategies aimed at shifting agricultural production in low-income countries from agricultural commodities into the non-traditional agricultural exports, and into horticulture in particular, are associated with changes in value chain structures from ones characterised by arm's-length market relationships to ones characterised

by vertical coordination, or value chain governance. This arises not from the intrinsic characteristics of the products themselves, but because of increasing concerns by buyers with quality, reliability of supply, credence characteristics, traceability and conformance with increasingly complex regulatory requirements. To some extent, similar trends can be seen in traditional agricultural crops, such as tea and coffee, where product differentiation, origin and social and environmental impact are issues in, at least, certain niche markets for these products sectors. Conversely, it has been argued that some of these requirements can also be achieved through the development of public and private standards.

Where value chain governance does exist, it tends to favour larger producers and exporters and to involve smaller producers in outgrower schemes rather than as independent producers. Production, processing and logistics become much more sophisticated. Overall, there is no evidence that this prevents low income countries from participating in production with these characteristics.

Vertical coordination changes the nature of the volatility facing producers. In the short-term, it reduces volatility both in terms of quantity and also, frequently, in terms of price. In the longer term, the dependence of producers on one or a small number of buyers may lead to problems if buyers switch sourcing.

Overall, it has been argued that export horticulture favours large firms and marginalises smallholders. This does not appear to undermine the poverty-reducing effective export horticulture. Qualitative and quantitative studies indicate that large-scale farming reduces poverty in both urban and rural areas.

The increasing importance of vertical coordination agricultural supply systems does have some implications for agricultural development strategies. In particular:

- Diversification strategies need to be aware of the key actors that make decisions within global value chains. These will vary according to different value chain configurations. They may be retailers, international processors, vertically-integrated transnational producers/distributors, or developing country exporters. Furthermore, different key decisions may be made by different agents along the chain. For example, large exporters may decide on new investments, while retailers will take initiatives on social and environmental standards.
- Given that value chain linkages differ not only according to product, but also according to the competitive strategies adopted by different agents within value chains, a correct diagnosis of value chain linkages is critical for export promotion strategies. They should be reflected in sectoral analyses and also in programmes for trade capacity building that are concerned with increasing the capabilities of developing countries to export into global markets.
- Given the complexity of value chain linkages, export promotion and diversification may need to be based on partnerships along the value chain. These partnerships might also involve importing country governments, who may have more leverage over importers and retailers than developing country governments. This certainly seems to have been the case with regard to labour and environmental standards.

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