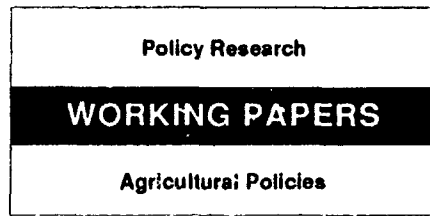


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How Private Enterprise Organized Agricultural Markets in Kenya

Steven M. Jaffee

Does the liberalization of African markets increase competition in a private market? Kenya's experience with horticultural exports calls into question the assumption that liberalizing Africa's markets will bring about competitive, decentralized private market structures — or that Africans will benefit from trade when it does expand.

Policy Research

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This paper — a product of the Agricultural Policies Division, Agriculture and Rural Development Department — is part of a larger effort in the Department to assess the division of responsibilities between the public sector and the private sector in the provision of agricultural services and in agricultural marketing activities. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Cicely Spooner, room N8-035, extension: 30464 (44 pages). January 1992.

Does liberalization of agricultural markets and an expanded role for the private sector result in a competitive market structure in Africa? Jaffee empirically investigates the organization and development of a dynamic African export-oriented sector — Kenya's horticultural exports — in which the private sector has long had a dominant role.

Jaffee highlights the sector's impressive pattern of growth over the past two decades and examines the (ownership) characteristics of participating private firms, the competitive pattern among those firms, and the institutional means by which they procure raw materials for processing and export.

He finds that despite the Kenyan government's direct investments in processing and trading activities and its application of regulations and targeted support measures to strengthen the role of Kenyan Africans in the horticultural trade, most of this trade remains controlled by foreign-owned companies or members of Kenya's small minority Asian and European communities.

Various foreign and local investments have incorporated Kenyan Africans (as shareholders, employees, or suppliers of raw materials), or have stimulated the suppliers to invest in horticultural production or trade — but the basic

patterns of ownership and control pose potential political problems, as the sector is now the fastest-growing component of Kenyan agriculture and trade. Concerns are growing about who is benefiting from this expanding trade.

Much of Kenya's horticultural trade is based on contracted or vertically integrated supply arrangements for raw materials, rather than open market ties between producers and processors/exporters. Open market procurement of raw materials would probably entail high transaction costs and risk, but the importance of integrated, contract-based links between producers and marketers calls into question the often-expressed assumption that liberalizing Africa's markets will produce competitive, decentralized private market structures.

Various forms of centralized private control may indeed be preferable to centralized public control, but Kenya's experience with horticultural exports suggests that when an African country such as Kenya privatizes agricultural processing and (export) marketing, the government must find a better way to monitor and control dominant firms, to get companies to involve smallholder farmers in raw material procurement operations, and to improve the farmers' bargaining position with centralized contracting firms.

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I. INTRODUCTION

1. Over the past two decades, many countries of SubSaharan Africa have experienced a stagnation or decline in their traditional agricultural exports.¹ Given that most African countries have remained dependent upon such agricultural exports for the bulk of their foreign exchange earnings, such poor trade performance has been a major component of and an important contributing factor to a wider economic crisis within the region.² This crisis has been evidenced by low or negative rates of economic growth, deepening debt-service problems, deteriorating physical infrastructure and public services, reduced food security, and rising unemployment.³

2. The reduced African earnings from agricultural exports can be partly attributed to adverse trends in international prices for several of the region's most important export crops. For example, over the 1978 to 1987 period, the average annual price changes for cotton, coffee, tobacco and tea were all negative, ranging from -2.4% (for cotton) to -6.8% (for coffee).⁴ However, unlike many developing countries of Asia and Latin America, most African countries have not been able to compensate for the declining world prices of 'traditional' primary commodities by either increasing export volumes of (and market shares for) these commodities,

¹ World Bank (1981, Tables 7 and 14), (1989, Tables 12 and 15).

² In 1985, eighteen countries of sub-Saharan Africa relied upon food and agricultural products for 60% or more of their merchandise export earnings. For some countries, this share exceeded 80% (World Bank (1987, Table 11).

³ For discussions of Africa's economic crisis, see Lofchie (1986), Ravenhill (1986), and the World Bank (1989, 1990).

⁴ World Bank (1990) Price Prospects for Primary Commodities. International Trade Division. International Economic Department. An analysis by Macbean and Nguyen (1987) indicates that the average annual price changes for these commodities as well as other major African agricultural exports (eg. sisal, bananas, and sugar) were all negative over the 1960 to 1981 period

increasing the value added content from these traditional commodities, or diversifying their agro-industrial export base.⁵

3. This absolute and relative decline of many African agricultural export sectors and the limited degree of export diversification in the region has led an increasing number of analysts to conclude that the region's poor performance has less to do with adverse international market conditions than with internal institutional failures. Specifically, Africa's poor export and wider agricultural performance has been attributed to various forms of government or bureaucratic failure, including misguided macroeconomic and price policies, excessive government interventions in factor and commodity markets, and mismanaged and inefficient state-owned or state-directed marketing organizations.⁶ Much of the recent social science research and literature on sub-Saharan Africa has been oriented toward documenting these and other dimensions of government failure.⁷

4. This analysis of misguided government policies and inefficient and inequitable institutional structures in African agriculture has led many researchers and donor agencies to

⁵ Over the 1966-80 period, the total volume of African agricultural exports declined by 17%, compared with a 23% increase for all developing countries. (Calculated from FAO Trade Yearbooks) Significant export volume reductions occurred for Africa's three most important export crops--coffee, cocoa, and cotton. Over the 1970-85 period, SSA experienced a decline in its world market shares for nearly all of its most important export crops (Svedberg (1991, p.552). The region's exports of coffee, cocoa, cotton, tobacco, tea, and timber products have a far lower value added content than those for Latin America and Asia (World Bank (1981, Table 17).

⁶ This conclusion has been reached by analysts on different points of the political spectrum and for different reasons. Those sharing this conclusion include: Ellis (1982), Hart (1982), Hyden (1983, 1990), and Williams (1985) from the left of the political spectrum and Bates (1981), de Wilde (1984), and Berg (1985) from the right of the political spectrum.

⁷ Examples include: Arhin, Hesp, and van der Laan (1985), Cleaver (1986), Nellis (1986), FAO (1986), Ghai and Smith (1987) and World Bank (1981, 1989, 1990).

recommend policy adjustments as well as the restructuring of agricultural marketing systems.⁸

With regard to the latter, emphasis has been placed on *expanding the role of the private sector* in the supply of inputs and product marketing services, *liberalizing commodity and input markets* to allow greater competition, and *placing greater reliance upon market forces* rather than administrative or political devices to direct production and trade decisions.

5. Beyond such abstractions, however, what are the actual forms that private enterprises are likely to take in the context of African agro-industry and agricultural trade? What types of firms will be able to take advantage of liberalized markets to compete against or replace parastatal marketing boards? Will the liberalized markets actually be competitive or will economies of scale, operating risks, rent-seeking activities and other factors lead to private monopolies replacing public monopolies? Will private enterprises coordinate production and marketing by relying upon open market purchases of crops or by involving themselves more closely in the production process? Despite the widespread advocacy of liberalization and privatization in Africa, empirical analysis of the organization of actual private marketing systems is lacking.⁹

6. This paper provides a preliminary empirical investigation of these issues, drawing upon evidence from Kenya. While parastatal marketing boards and other government crop development or marketing agencies have accounted for the bulk of Kenya's agricultural exports

⁸ Most discussion and empirical analysis has focused on macroeconomic and pricing issues. Over the past five years, however, there has been a growing consensus that price and macroeconomic policies are less important in influencing agricultural performance than previously thought and that the 'right' policies are unlikely to have the desired effects unless wider techno-organizational changes occur within African agriculture. Compare, for example, World Bank (1981) with World Bank (1989) and (1990).

⁹ Lele (1988) attributes the abstract nature of the recommended institutional reforms and the absence of comparative performance assessments to the fact that little is known about private or 'non-state' marketing institutions in Africa. Several recently completed studies provide an initial empirical basis for analyzing issues related to the private sector and agricultural processing and marketing in Africa. These include: Watts et al. (1988), Marsden (1989), and Jaffee (1990).

over the past half-century, private enterprises-- both locally- and foreign-owned, have played important roles in certain sub-sectors.¹⁰ This study will focus on the organization of Kenya's horticultural export sub-sector as this has been dominated by private enterprises since the 1930s when horticultural products were first exported from Kenya on a regular basis. In contrast to most other components of Kenyan agriculture, the horticultural sub-sector (including fresh and processed fruit and vegetables and cut flowers) has never featured a parastatal marketing board with major trading or regulatory functions. The sub-sector is also one of the few components of Kenyan agriculture in which the government has allowed and even encouraged competition between and among private, cooperative, and parastatal enterprises, both in the domestic and export markets.

7. The balance of the paper comprises five sections. Section 2 provides a brief overview of the growth and development of Kenya's horticultural exports over the past quarter century. Section 3 examines the ownership and other characteristics of the private sector in Kenya's horticultural trade. Section 4 examines the extent and forms of competition in this sub-sector. Section 5 examines the wide range of institutional arrangements adopted by private firms to coordinate their own processing and marketing activities with the farm-level production of horticultural commodities and raw materials. This section draws upon insights from transaction cost economics to develop and test a series of hypotheses regarding crop producer - marketer institutional linkages for different crops. The final section draws conclusions from the study.

8. The data upon which the empirical analysis is based were obtained from field interviews with Kenyan producers, processors, and exporters in 1985 and 1986, from published and

¹⁰ On the history and significance of marketing boards in Kenya, see Heyer (1976) and Yoshida (1984).

unpublished official government statistics, and from the sales and crop procurement records of private Kenyan and foreign companies.¹¹

II. DEVELOPMENT AND GROWTH OF KENYAN HORTICULTURAL EXPORTS

9. Throughout the period of colonial rule in Kenya (1895 -1963), the production and trade of fresh and processed fruit and vegetables and of cut flowers remained greatly underdeveloped.¹² Prior to World War II, this horticultural sub-sector was characterized by an absence of modern marketing facilities and nation-wide marketing organizations, an absence of official grades and standards for fresh produce, and a virtual absence of research and advisory services. While small export trades in potatoes and in passion fruit juice were developed by private firms during the inter-war years, the bulk of fruit and vegetable production in Kenya was of very low quality and Kenya remained a net importer of fresh and processed fruit and vegetable products.

10. In the period between the war and Kenyan independence, the colony did begin to develop the scientific, infrastructural, and institutional basis to pursue a larger and more diversified horticultural export trade and to penetrate the expanding European market for fresh and processed horticultural products. Still, at independence such trade only amounted to U.K. L 1.2 million, or about 3% of the country's total agricultural exports. More than two-thirds of Kenya's

¹¹ Interviews were held with forty-four fruit and vegetable processors and fresh horticultural commodity exporters which together accounted for 97% of Kenya's horticultural exports during the mid-1980's. Information was obtained on the background, ownership, size, and commodity mix of the firms as well as their crop procurement and export sales arrangements. Surveys were also conducted of small, medium, and large-scale producers of major horticultural crops.

¹² The historical development of the Kenyan horticultural export sub-sector is examined in detail in Jaffee (1990).

horticultural exports were accounted for by a single product- canned pineapple--whose production in Kenya remained unprofitable for many years and for which Kenya's competitive position in international markets was very weak. Kenya's continued exports of this product depended upon government subsidies and protection for the participating firms.¹³ Small-scale exports of other processed fruit and vegetable products were also developed, although here again the participating firms experienced continued raw material supply problems and were not competitive due to high costs of intermediate inputs.

11. During this period, expatriate-owned private and cooperative enterprises pioneered a trade in high-quality, air-freighted fresh fruit, vegetables, and cut flowers during the European winter 'off-season'. However, this trade was constrained by the limited availability of air-cargo facilities out of Kenya and the limited investments in Kenya in irrigation facilities and marketing infrastructure (eg. storage units, refrigerated trucks). While the colonial government invested heavily during this period in production and processing facilities for such export crops as coffee, tea, and pyrethrum, public investments in the horticultural sub-sector were minimal.

12. Through much of the 1960s, Kenya's horticultural exports grew very moderately as processing companies continued to encounter raw material supply problems and as fresh produce exporters faced continued international transport bottlenecks. By the early 1970s, however, the sub-sector appeared poised for a major expansion as a result of several large-scale investments in production (eg. irrigation) and processing infrastructure, favorable international market conditions, and an expansion in the availability of air-freight facilities. Several of the major investments in processing facilities and in crop development entailed joint ventures between the

¹³ See Swainson (1980, p.157-59) and the case study on the pineapple canning industry in Jaffee (1991).

Kenyan government and multinational corporations. Government participation in such ventures provided the foreign partners with low cost access to land, with preferential and subsidized access to public services (eg. roads, rail cargo, electricity), and with reduced financial risks.

13. Since the early 1970s, the horticultural export sub-sector has developed into an important component of the Kenyan economy, providing a major and growing source of foreign exchange earnings as well as substantial employment and farm income opportunities. During a period in which Kenya's exports of many of its traditional commodities have stagnated or declined (eg. sisal, pyrethrum, cotton, meat products), or fluctuated considerably from year to year (coffee, maize), the aggregate volume and value of horticultural exports has increased substantially and virtually continuously.¹⁴ As Table 1 and the Appendix 1 graph indicate, there has been double-digit growth on an annual basis in horticultural exports since 1973. By 1988, horticultural exports were valued at approximately 100 million Kenyan Pounds (eg. U.S. \$105 million), representing 17% of the country's total agricultural exports. If current trends continue, horticultural products may surpass both coffee and tea during the 1990 to become Kenya's leading commodity export sub-sector.

¹⁴ The development of Kenya's traditional and non-traditional agricultural export sub-sectors is analyzed in Jaffee (1990).

Table 1: The Expansion of Kenya's Horticultural Exports, 1973-1988^a

Years	Volume (000 Tons)	Value (£K Million)
1973	27.4	3.6
1974	21.6	3.8
1975	34.4	8.4
1976	47.3	13.2
1977	67.8	18.8
1978	66.7	19.1
1979	66.3	21.2
1980	66.3	23.1
1981	69.6	27.2
1982	70.6	31.5
1983	83.0	43.3
1984	90.0	51.6
1985	87.1	57.3
1986	93.3	65.3
1987	93.4	81.9
1988	111.1	99.9
Average Annual Change 1973-88	11.6	28.0

a. Includes Standard International Trade Classification (SITC) categories 051 (except nuts), 053, 054 (except cassava and dried leguminous vegetables), 055, and 2927 (cut flowers). From 1980, categories 051 and 053 became 057 and 058.

Sources: Kenya Annual Trade Returns; Data from the Horticultural Crops Development Authority (HCDA)

14. The expansion of Kenya's horticultural exports has been based upon a wide range of individual commodities and provides the only significant case of agricultural export diversification in Kenya since World War II. In recent years, Kenya's horticultural trade has consisted of more than seventy-five different commodities/products from the following categories:

- (i) *canned fruit and vegetables* (including canned pineapple and french beans),
- (ii) *fruit and vegetable juices* (including pineapple, passion fruit, orange, and tomato juices),

- (iii) *fresh temperate, sub-tropical, and tropical fruits and vegetables* (including french beans, chillies, okra, mango, avocado, strawberry, pineapple, passion fruit, and many others),
- (iv) *cut flowers* (including carnations, roses, alstroemeria, chrysanthemums, statise, and others), and
- (v) *vegetable and flower seeds* (both hybrid and generic).

15. The development of Kenya's horticultural trade has not been even across commodities. In the pineapple canning and cut flower industries, trade has expanded enormously, placing the country among the five leading exporters world-wide. Significant expansions of trade and market shares have also been achieved for several fresh fruit and vegetables, especially french beans, strawberries, and a wide range of so-called 'Asian' vegetables (eg. chillies, okra, karela). However, for a range of other fresh and processed products, Kenya has either not maintained former levels of trade or has achieved only moderate trade increases, despite a rapid expansion in West European and Middle Eastern import demand.

16. Although growth has been uneven, the recent development of the sub-sector has led to a wider spread of the benefits from trade due to a considerable broadening of participation in production and (some) marketing activities. For much of the period through to the early 1970s, export-oriented production was dominated by medium-to-large-scale farmers based in centralized locations, although a few individual projects involving government participation did attempt to organize raw material supplies from smallholder farmers.¹⁵ However, with the diversification of trade over the past decade and with increased competition amongst exporters, large numbers of smallholders, some located in relatively remote and undeveloped regions have been

¹⁵ See Jaffee (1991) for several cases in Kenyan agro-industry where attempts were made to incorporate smallholder outgrowers.

encouraged to produce for the export market. By the mid-1980s, some 35,000 smallholders were producing specialty horticultural crops for processing or for export in fresh form.

III. THE CHARACTERISTICS OF THE PRIVATE SECTOR

17. In the period prior to World War II, much of Africa's external trade in primary agricultural commodities was handled by European trading companies operating with the support and protection of metropolitan and colonial governments.¹⁶ In some countries, a foreign business class (such as the Lebanese in West Africa and Indians and Arabs in East Africa) also played an important role in this trade and in domestic agricultural marketing. With the development of marketing boards and other parastatal organizations during the war and post-war years, the relative importance of such European and resident Asian/Arab trading companies diminished in many African countries.

18. A major concern of many African governments up to the present is that the liberalization of agricultural markets will result in the dominance of foreign companies or particular ethnic groups in agricultural trade, which they perceive as economically and politically undesirable.¹⁷ In Kenya, this outlook has led to a policy of 'Kenyanization' (eg. Africanization) of many sectors of the economy, including elements of the horticultural export trade. This policy has been pursued through various means including restrictive licensing arrangements, restricted access and

¹⁶ See Bauer (1954) and van der Laan (1987) for West Africa and Martin (1973) and Swainson (1980) for East Africa.

¹⁷ See Abbott (1987); Berg (1987); and Schatz (1987).

targeted programs for production and other credit, direct government investments, and laws restricting the hiring of non-Kenyans.¹⁸

19. Despite direct government investments in certain production, processing, and trading activities, and the application of regulations and positive support measures to increase the 'Kenyanization' of horticultural trade, this trade has remained largely controlled by foreign-owned companies or members of Kenya's small minority Asian and European communities. This is clearly evident from Table 2 below which provides a breakdown of the trade shares for different types of firms.

Table 2: Shares of Kenya's Horticultural Export Trade by Firm Ownership, 1985-86 (percentages)

Firm Ownership	Fresh Fruit + Vegetables ^a	Cut Flowers ^b	Processed Fruit + Vegetables ^c	Combined ^d
Foreign-owned (MNCs) ^e	0	58	91	54
Private-Locally Owned	97	38	9	43
Of which:				
Kenyan Asian	81	0	7	30
Kenyan European	9	35	2	10
Kenyan African	7	3	0	3
Local Cooperative	0	1	0	1
Kenyan Parastatal ¹	3	3	0	2
Total	100	100	100	100

a. Export Volumes for 1985.

b. Export Values 1985/86 season.

c. Export Values for 1986.

d. Estimated for the export value for 1986.

e. Includes joint ventures with majority foreign ownership and management control.

Source: Author's Field Research

¹⁸ See Swainson (1980) and Schluter (1984).

20. Until quite recently, the government has restricted the trade of fresh fruit and vegetables only to companies having 50 or more local ownership.¹⁹ Since the mid-1970s, the government has also tried several measures to encourage Kenyan African participation in this trade. These have included: (1) pressures on Asian-owned firms to take on African partners, (2) government promotion of African-owned exporters in overseas trade fairs, and (3) preferential access for African-owned firms to the air-freight facilities of Kenya Airways.

21. While many Kenyan African-owned firms have indeed entered this trade, the trade remains dominated by firms owned by Kenyan Asians, with firms owned or managed by Kenyan Africans accounting for only a 10 share.²⁰ Most of the leading Asian-owned firms are family companies or partnerships. Each of these firms had considerable experience in fruit and vegetable production and/or trade in the domestic market before entering the export trade. Most have their own wholesale and/or retail establishments and their own farms; some also have complementary interests in freight forwarding and transport. Some of the leading exporters benefit from having relatives in Europe with whom they conduct a significant proportion of their trade. These operating features significantly reduce the risks and transaction costs which such firms face in conducting their horticultural marketing activities.

22. The high failure rate for African-owned exporters and the limited growth of active African firms can be associated with the following:

¹⁹ In 1988, Del Monte-owned Kenya Cannery was issued a license to export fresh pineapples. With Kenya Cannery diverting part of its estate production to the fresh market rather than exclusively to its factory, Kenya's fresh pineapple exports increased from 925 tons to 16,745 tons between 1987 and 1988.

²⁰ The Kenyan 'Asian' population comprises a large number of individual sub-communities with differences in religion, language, and place of origin. Gujarati-speaking Hindus from India are the largest group but this group is itself divided into several distinct communities. There are also several communities of Gujarati-speaking Moslems and Punjabi-speaking Moslems, Hindus, and Sikhs. Kenya's Arab communities are also considered part of the country's 'Asian' population.

- (i) *most of the African entrepreneurs entering this field had no prior experience in horticultural trade or in international marketing per se. They have instead relied upon 'learning by doing', a strategy which is very risky in the field of horticultural marketing where information, contacts, and trader reputations are key components of competitive advantage and disadvantage*²¹,
- (ii) *most such entrepreneurs have maintained diverse business or other professional interests which have little or no relation to horticultural marketing, yet which have tended to consume most of their attention and resources. During the mid-1980s, several prominent government officials owned and managed horticultural export companies*²², and
- (iii) *most of these African-owned firms have sought to operate only on a small-scale or part-time basis, trading in a single or narrow range of commodities. Such operational patterns have made these firms less attractive to overseas buyers, to air carriers providing air-freight services, and to medium-to-large-scale growers looking for secure market outlets for their production.*

23. Through the mid-1980s, the bulk of Kenya's cut flower exports were accounted for by foreign-owned companies or firms owned and managed by Europeans who have taken up Kenyan citizenship. This is largely due to the lack of an official Kenyan system of floricultural research and extension and a lack of local knowledge regarding European floricultural product demand and marketing channels. Although several African-owned companies have developed successful production and trading operations for flowers, these have mostly remained very small scale. Kenyan government efforts to promote the Kenyanization of the industry have been more limited in the case of cut flowers than that of the fresh produce trade. They have involved some direct investments by the parastatal Agricultural Development Corporation in cut flower production and

²¹ This contradicts Marsden's (1990) contention that "modern African entrepreneurs tend to set up business in fields with which they are familiar, either through family upbringing or work experience. They avoid great leaps in the dark". (p.12)

²² Among those civil servants who owned or were partners in horticultural export companies during the mid-1980's were the Minister and Assistant Minister of Agriculture, the Minister of Lands and Settlement, and the Chairman and General Manager of the Horticultural Crops Development Authority.

pressures on foreign companies to limit the size of their expatriate staff and to provide training to Kenyans.²³

24. In contrast with fresh produce, Kenyan exports of processed fruit and vegetable products have been dominated by a limited number of majority foreign-owned companies. Over the past two decades, one firm, a subsidiary of Del Monte, has accounted for 80 or more of such exports. The only other processing firms which have been oriented primarily to export markets have also featured the involvement of a foreign company, either in a joint venture with a Kenyan parastatal or private company or within the framework of a management and marketing contract with a local firm. All such operations have been linked into the global production and marketing operations of major multinational corporations. The Kenyan government has sought to increase 'Kenyan control' in this industry by entering into joint ventures with foreign partners. However, such local control has generally been illusionary as the local partners have typically been 'sleeping partners' (eg. equity holders without influence), while most fundamental production, marketing, and financial decisions have been made by the foreign partners and their overseas parent companies.²⁴

25. In contrast, the vast majority of locally-owned fruit and vegetable processing companies have focused on serving the Kenyan domestic market, a strategy made profitable due to strong tariff and non-tariff barriers on imports of competing products into the country. Such firms did

²³ The Agricultural Development Corporation has had its core activities in areas of 'strategic' importance in agriculture, such as seed production and cattle breeding. The ADC was forced by the government to purchase an existing flower farm, ostensibly to encourage increased Kenyan involvement in the industry. Another relevant factor may have been that the prominent government officials who owned the farm were losing considerable sums of money.

²⁴ This pattern also exists in other industries in Kenya. See Langdon (1981) and Gachuki (1982).

service the neighboring markets of Tanzania and Uganda under the tariff umbrella of the East African Community. However, with the dissolution of the EAC in 1977 and the subsequent political and/or economic crises in these neighboring countries, such exports declined substantially. Most such locally-owned firms have not been cost or quality competitive in international markets.

26. Taking the three sub-sector segments together, we estimate that in 1986, foreign-owned companies accounted for more than one-half of the value of Kenya's horticultural trade while firms owned by Kenyan Asians and Europeans accounted for another 39. Firms owned by Africans or having Africans in senior management positions accounted for just 6 of trade.

27. This pattern of development has both positive and negative aspects. On the positive side, without the technical skills and marketing expertise and links of foreign companies, Kenya's horticultural trade, especially that for cut flowers and processed fruit and vegetables, would have been considerably lower. A few foreign investments have had a demonstration effect, encouraging local entrepreneurs to make similar investments in production and post-harvest facilities. On the negative side, such an ownership pattern poses potential political problems as this sector is now one of the fastest growing components of the Kenyan economy and concerns about the distribution of benefits from this trade have grown (eg. Republic of Kenya (1982, 1985)). The government has experienced problems in monitoring and regulating the pricing and financial practices of firms which are trading with subsidiaries or associated firms overseas.²⁵ From a long-term development perspective, this structure of trade has also served to provide

²⁵ See cases in Kaplinsky (1979), Gachuki (1982), and Jaffee (1990).

relatively little experience for Kenyan Africans in the international marketing of Kenya's horticultural crops, experience which could be potentially applied to other agro-industrial areas.

IV. COMPETITION IN PRIVATE AGRICULTURAL MARKETS

28. A wide range of factors influence the competitive structure of markets and the forms which competition amongst private firms take. Such factors include:

- (i) *technical factors* such as economies of scale, the technical sophistication and specialization of production and marketing functions, and the level of development of transport and communications infrastructure,
- (ii) *institutional factors* such as government licensing and regulatory policies and effectiveness of legal systems, and
- (iii) *social, cultural, and historical factors* which condition attitudes toward competition and shape the ways in which economic entities cooperate and compete.

29. The existing literature provides evidence that foodcrop markets in Africa which feature a predominant role for the private sector are generally competitive at the wholesale and retail levels despite weaknesses in transport and information infrastructure, in formal financial institutions, and in the enforcement of law.²⁶ However, there appear to be different expectations regarding the organization of markets for agricultural exports and processed products. Here, significant economies of scale in the use of processing or marketing facilities, strong technical, financial, and managerial barriers to entry, and the oligopolistic structure of world markets may be expected to result in higher levels of concentration.²⁷

²⁶ See, for example, Jones, W. (1980) and Jones, D. (1982).

²⁷ See, for example, Schatz (1987), van der Laan (1987,1990), and Lele (1988).

30. The competitive patterns within the Kenyan horticultural sub-sector are varied. In the early years (mid-1950s to mid-1960s) of Kenya's exports in fresh fruit and vegetables, trade was dominated by three firms who were also the leading fresh produce domestic wholesalers at the time. These firms competed against one another in procuring the available high-quality produce, in obtaining allocations of the limited air-freight space, and in servicing local institutions and the local high-income residential districts. One of these firms, Kenya Horticultural Exporters Ltd. (KHE), acquired a dominant position in the trade, by providing improved buying services (eg. credit, input supply, seasonal planning, timely payment) to the major medium-to-large-scale producers and by developing several effective marketing channels to distribute its produce in the United Kingdom . By the late 1960s, KHE accounted for more than one-half of Kenya's total fresh produce exports.

31. During the 1970s, there occurred a large increase in the number of fresh produce exporters with some farmers integrating forward into trade and with some firms entering the trade from other lines of business. By 1978, there were eighty licensed exporters in part due to government implementation of a very liberal licensing scheme. With Kenya's export trade in other agricultural commodities being controlled by parastatal monopoly marketing boards or multinational corporations, the fresh produce trade provided one of the few areas where local private firms could enter into export trading. By the 1980s, there were over one hundred licensed exporters, many buying and selling the same commodities. Such widespread entry into the trade led a series of foreign advisors to the Kenyan government to warn against the 'fragmentation' of the trade and its potential adverse effects (see below). Such advisors

recommended that the government intervene to centralize the trade into one or very few companies.²⁸

32. Widespread entry into the export trade has undermined attempts to pre-plan the allocation of available air-freight space among exporters and has prevented the country from developing effective brand name promotion for its commodity lines. However, the entry of some one hundred firms in the trade masks the fact that a limited number of firms still account for a dominant share of trade (see Table 3). The bulk of the new entrants into the trade have served as little more than a part-time, small-scale competitive fringe whose participation in the industry has normally lasted for only one or two seasons.

Table 3: Concentration of Kenya's Fresh Fruit and Vegetable Exports (Percentage Shares of Export Volumes)

	1970 ^a	1979 ^b	1981 ^b	1985 ^b
Largest 3 Firms	75	44	55	49
Largest 6 Firms	83	65	79	67
Largest 9 Firms	90	74	89	82

a. Based on Winters et al. (1969) and Field Interviews

b. Calculated from file data of the Horticultural Crops Development Authority.

Source: Author's Field Research

33. Competition in the fresh produce trade has taken several forms. The first of these is competition in the procurement of crops. This competition has generated benefits for both smallholder and larger farmers by increasing prices paid to farmers and leading marketing firms

²⁸ Among those advocating the centralization of trade were Winters et al. (1969), Proctor (1976), Adelstal (1979), and Hormann and Will (1987), representing British and German technical assistance and that of the International Trade Center.

to set up buying operations in new locations so as to diversify their sources of supply. Some firms have sought to escape from this competition by integrating backward into farm production. Second, competition for the available air-freight space on commercial air carriers has increased, leading to last-minute off-loads of produce and an upward bidding of air-freight charges, especially during the peak export months of December to February.²⁹ This has increased the risks faced by traders and provided an entry barrier for new, small-scale exporters. Third, there has been increased competition in foreign markets with many firms sending the same products to the same markets, frequently using the same agents. This pattern has allowed foreign buyers and agents to play off one Kenyan exporter against another. The challenge faced by Kenya is to combine competition in the procurement of crops within the country with a more effective coordination of export sales operations to improve exporter bargaining power overseas.

34. Patterns of competition in Kenya's cut flower industry have been quite different than in its fresh produce trade. Kenya's initial cut flower exports in the 1950s and 1960s were undertaken by a few small nursery operations run by European settlers. These nurseries shared technical information, although their crop specialities differed. The entire structure of Kenya's nascent cut flower industry was transformed in the late 1960s and early 1970s by a large-scale investment by one of Europe's largest flower producing and trading companies.³⁰ The firm was given highly favorable investment terms by the Kenyan government, including a low-cost lease of a 15,000

²⁹ The Kenyan government has set official air-freight rates for fresh horticultural commodities being transported to various European and Middle Eastern destination. However, due to the excess demand for freight space during the peak export months, some exporters offer side-payments or other inducements to the air carriers to guarantee freight space.

³⁰ The investment was by the Danish firm Dansk Chrysanthemum Kultur (DCK), then the world's largest producer of chrysanthemum cuttings and an active producer and trader of other types of flowers. The Danish government provided a cash grant for the project, equivalent to one-third of its establishment costs.

acre estate, exclusive growing and trading rights for several types of flowers over an eight-year period, and important financial incentives. This firm (and its descendents) would dominate the Kenyan industry through to the early 1980s.³¹

35. During the 1980s, several additional firms have entered the industry. Many such firms were direct spin-offs from the original foreign investment as that company's expatriate and local experts have formed their own flower production and/or trading companies. Other flower producers/exporters emerged nearby to the original foreign investment project after observing its apparent success. Nevertheless, direct competition in Kenya's cut flower industry has been limited due to different lines of crop specialization amongst firms and different market outlets.

36. In the fruit and vegetable processing industry, the number of firms has increased slightly over the past quarter century. By the mid-1980s, there were about fifteen such firms, although only six firms employed fifty people or more. The export-oriented firms do not compete against one another since they have entirely different product lines and serve different markets. Several such firms have faced competition from the local fresh produce market when procuring crops for processing. In a number of cases, such competition has resulted in severe shortages of raw materials for the processors and low rates of factory capacity utilization. Other firms have countered this competition by integrating backward into farm-level production or by contracting outgrowers (see below). For those processors which have focused on the Kenyan domestic market, there has been competition for raw material supplies as well as for market share. The

³¹ In 1976, the major Danish shareholder in the DCK project suddenly withdrew his investment, allegedly to purchase a shipyard in his native country. The DCK farms were first passed into Kenyan ownership before Brooke Bond acquired the company's major assets and continued flower production and trade using many of the same personnel.

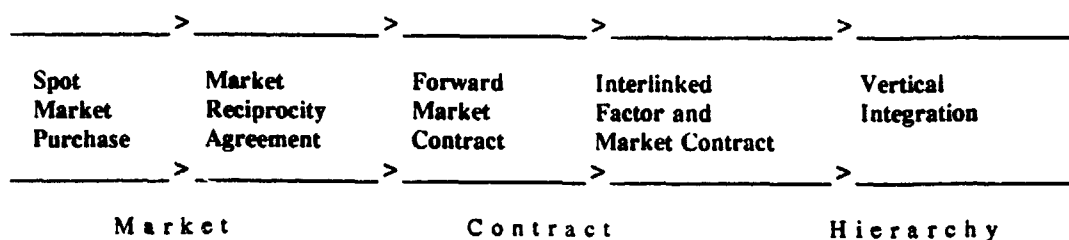
latter has taken both the form of copying each others product lines and production differentiation through quality improvement and brand name promotion.

V. PRIVATE FIRMS AND THE ORGANIZATION OF CROP PROCUREMENT

37. To efficiently carry out their processing operations or to meet their marketing requirements, the private firms participating in Kenya's horticultural export sub-sector must procure commodities or raw materials which match their needs in terms of quantity, quality, and timing. In developing their crop procurement strategies, such firms will normally consider the following implications of alternative institutional arrangements:

- (i) the levels of production and transaction costs incurred,
- (ii) the levels and distribution of production, political, and other risks, and
- (iii) their ability to effectively control the available supplies.

38. There is a continuum of institutional arrangements available to a firm for crop procurement:



39. On one end of the spectrum are *spot market purchases*. Here the processor or exporter purchases his requirements from the market at a particular time at market prices. The firm may

buy from farmers, local merchants, or truckers. In such an institutional framework, the processor or exporter will play absolutely no role in the production process itself.

40. On the other end of the spectrum is the *vertical integration* of production and subsequent processing and marketing activities. Here the marketing firm develops its own farm and flows of information and resources for production are internalized within the firm.

41. In between these two extremes are various intermediate arrangements. For example, there may be *market reciprocity agreements*.³² These are informal, yet highly personalized repeat trading ties in which some degree of loyalty is built up between the exporter and a certain sub-set of growers. Still, produce is exchanged at the current market price and the exporter is not involved in the production process.

42. Two types of intermediate contractual arrangements are indicated. Firstly, crop procurement can be made via *forward market contracts* which feature formal commitments to buy and sell specified quantities and qualities of produce at particular times. Prices may be agreed to in advance or at the time of actual exchange. A more intensive arrangement combines these forward purchase and sale commitments with buyer promises to provide specified production inputs and technical advice on credit and farmer agreement to follow the buyer's instructions regarding production. Such *interlinked factor and market contracts* are frequently referred to as contract farming.

43. Along the continuum from spot market purchases toward vertical integration, the relationship between the exporter/processor and the crop producer changes in several fundamental ways. For example,

³² As an example, see Geertz (1978) on exchange relations in the 'bazaar' economy.

- (i) decisions regarding production and sales become *more centralized* in the hands of the exporter or processor,
- (ii) the relationship between producer and buyer becomes *more formalized*,
- (iii) the terms of exchange become more extended *into the future*, and
- (iv) *the role of market prices in coordinating production and marketing is reduced* and progressively supplemented by operating rules and direct supervision.

44. What institutional arrangements for crop procurement would one expect to find in the Kenyan horticultural export sub-sector? Horticultural crops have certain technical and production characteristics which might render spot market purchases costly or highly risky for exporters and/or processors. For example, most horticultural crops are highly perishable in their raw form. This forces growers to identify immediate sales outlets. They cannot store the crop waiting for improved prices. They risk quality losses whenever there is multiple handling of the crop or gaps in post-harvest operations.

45. Secondly, horticultural crops exhibit wide variation in their quality from unit to unit due to the many different botanical varieties grown and the important influence of production and post-harvest practices and environmental conditions. This poses severe problems in effectively matching the quality supplied with that demanded by an exporter or processor when transactions occur through the spot market. Thirdly, many horticultural crops must be harvested and delivered on a carefully scheduled basis in order to maintain high and stable inputs into processing facilities or to take advantage of market window opportunities in the fresh produce trade. However, spot market procurement arrangements are unlikely to match supply and demand for raw materials over time.

46. Among different horticultural crops there are considerable differences in their degree of perishability, in the economic significance of quality variability, in the specificity of crop delivery schedules, and of other technical and production characteristics. Also, recognizing that spot market purchases may be an unsuitable procurement mode still does not guide us to the actual arrangements which firms might adopt.

A. Application of Transaction Cost Economics

47. Within economics, there is a growing body of literature, falling under the heading of *transaction cost economics*, which seeks to account for varying patterns of organization.³³ While primarily developed for and applied to the study of organizational patterns in large-scale industries, elements of transaction cost economics can be applied to concerns about the organization of crop procurement systems by agricultural traders or processors.³⁴

48. This literature focuses on the organization of transactions or, more broadly, exchange relationships. It demonstrates that there does not exist any single institutional structure which is superior to all others on efficiency grounds. Rather, different institutional arrangements are shown to have particular advantages and disadvantages, with their relative suitability depending upon the actual operating conditions surrounding the trading relationship. In defining the operating conditions, emphasis is given in the literature to two main elements: 1) the extent to

³³ In contrast with traditional microeconomic analysis where institutions are exogenously determined, transaction cost economics, together with other branches of the so-called "New Institutional Economics", seeks to explain the origins or current existence of institutions, to account for the particular forms which they have taken, and to examine the efficiency and distributional properties of alternative institutional forms. The major elements and propositions of transaction cost economics are provided in Williamson (1975, 1985), Langlois (1986), and Bromley (1989).

³⁴ John (1980) and Reve (1980) apply transaction cost concepts to the study of industrial marketing channels. See Bardhan (1989) for applications of elements of transaction cost economics to the study of agrarian institutions in developing countries.

which the required investments in *productive assets are specialized* for a particular product or trading relationship, and 2) the overall *degree of uncertainty* surrounding the exchange relationship.

49. For any particular production and trading operation, individuals may undertake either generalized or specialized investments. Certain types of plant, equipment, materials, and knowledge have potentially generalized use across a broad range of products or trades. Other assets are highly specialized for a particular product or trade outlet and have little or no alternative use or value outside of this product or trading area. Examples of asset-specificity in agriculture include crops with extended gestation periods or production cycles (such as fruit trees), large-scale specialized processing and post-harvest facilities, and use of highly specialized production inputs and technical knowledge.

50. In any particular trading context, the degree of uncertainty may vary-- uncertainty regarding the availability of supplies or market outlets, the quality of the products on offer, the timing of supply and demand, the trading terms being offered, possible political interventions, and so on. Such uncertainties tend to be more pronounced in agriculture than in industry because of the important influence of changing weather conditions and the wider geographical dispersion of primary producers and intermediate users.

51. In the theoretical literature of transaction cost economics, it is proposed that spot market exchange, long-term contracts, and vertical integration will each be efficient modes of organization, defined in terms of economizing on a combination of production and transaction costs, under different degrees of asset-specificity and uncertainty. The table below summarizes the hypothesized relationships.

Table 4: Operating Conditions and Appropriate Institutional Arrangement

		ASSET SPECIFICITY		
		High	Medium	Low
U N C E R T A I N T Y	High	Vertical Integration	Vertical Integration	Long-term Contract
	Medium	Vertical Integration	Long-term Contract	Long-term Contract or Spot Market
	Low	Vertical Integration	Long-term Contract	Spot Market

52. The literature contends that under conditions of high asset-specificity, the most efficient mode of organization is the vertical integration of the two adjacent stages of production or marketing. The firm investing in specialized assets, particularly those which are durable and involve large sunk costs, will be highly vulnerable to opportunistic bargaining on the part of suppliers or buyers since they will know that this investor has little or no alternative use for such assets and thus must come to terms unless it is in a monopolistic or monopsonistic position. Vertical integration is also viewed as an effective means of countering high levels of operational uncertainty, since a central management gains control over the different stages and direct supervision can be introduced.

53. On the other hand, when asset specificity is moderate to low, other institutional arrangements are viewed as more suitable than vertical integration since they tend to provide greater flexibility of action, have lower 'start-up' costs, and do not incur the heavy overhead costs associated with integrating separate operations. Long-term contracts enable buyers and

sellers to counter market uncertainties by offering mutual assurances and by supplementing price signals with other informational devices related to the quantity, quality, and timing of expected deliveries and purchasing requirements. Where both asset-specificity and uncertainty are low, spot market arrangements may be most efficient as this gives the participants greatest flexibility of action and immediate signals about performance. It is generally easier (and less costly) to negotiate an adjustment in price levels than to agree upon and implement changes in trading rules or lines of command.

54. In order to operationalize the insights of transaction cost economics for the purpose of developing and testing hypotheses regarding the organization of crop procurement systems, we have developed proxy indicators for both asset-specificity and uncertainty for which quantitative or qualitative measures can be obtained in Kenyan horticulture. These proxy indicators and the rating system employed for our empirical analysis are as follows:

Asset Specificity:

- (i) *the length of the crop production cycle* or gestation period between the initial planting of the crop and the first commercial harvest. A production cycle of six months or less will be rated as 'short', one of 6-12 months will be rated 'medium', while one of 12+ months will be rated 'long'.
- (ii) *the scope for scale economies* in processing and post harvest operations. In this case, qualitative assessments of 'low', 'medium', and 'high' are based upon the minimum efficient scale for the most restrictive processing activity, the needs for post-harvest treatments (eg. cleaning and waxing), and the advantages of cold storage.
- (iii) *the degree of specialization of material production inputs and technical knowledge*. A 'high' rating signifies that important inputs or cultivating techniques are used exclusively for the particular crop in Kenya. A 'medium' rating indicates that important inputs (and techniques) have few alternative applications in Kenyan agriculture. A 'low' rating indicates a general applicability of material inputs and technical knowledge used.

Uncertainty:

- (i) *the degree or rate of commodity/raw material perishability.* A 'high' rating signifies that the crop maintains its quality before deterioration (under appropriate storage conditions) for less than one week. A 'medium' rating is assigned for crops maintaining their quality for 1 to 3 weeks, while a 'low' rating is assigned for crops maintaining their quality for more than three weeks after harvest.
- (ii) *the degree of specificity in the commodity/raw material quality required.* A 'high' rating indicates that quality must meet exacting (high) standards. A 'medium' rating indicates that quality standards are set within a specified range, while a 'low' rating indicates that quality standards are not tightly defined and simply minimum permissible standards are set.
- (iii) *the degree of specificity in the timing of harvests and crop deliveries.* A 'high' rating indicates that harvests and deliveries must be timed to meet daily or two-day processing/marketing requirements. A 'medium' rating indicates that harvests and deliveries must be timed for bi-weekly to weekly procurement requirements, while a 'low' rating indicates that more flexible harvesting and delivery patterns are acceptable to the processor/exporter.

B. Crop Procurement Arrangements for Processed Fruit and Vegetables

55. The table below rates the most important processed fruit and vegetables in Kenya according to the above technical and market factors and indicates the expected mode for organizing the link between exporter/processors and farm producers of the crop. As there is no *a priori* way of weighting the different proxy variables, we take a crude average of the ratings for the three variables under each heading when making predictions about institutional arrangements.

56. The procurement and canning of pineapples exhibits the property of high asset-specificity with the crop itself having an extended production cycle and with there being major economies of scale in post-harvest and processing operations. As defined above, the degree of uncertainty associated with pineapple procurement is likely to be moderate, although the raw material quality

requirements for an internationally competitive industry will be very exacting. With high asset-specificity and moderate uncertainty, we expect a vertically-integrated system (see Table 4).

Table 5: Asset Specificity, Uncertainty, and Horticultural Crops for Processing

	ASSET SPECIFICITY			UNCERTAINTY			Expected Mode of Coordination
	Production Cycle	Scale Econ.	Inputs Specif.	Perish-ability	Qual. Specif.	Timing Specif.	
Pineapple (Canning)	Long	High	Med.	Low	High	Med.	Vert. Int.
French beans (Canning)	Short	Med.	Low	Med.	High	Med.	L-T Ctr.*
Carrots (Dehydration)	Med.	High	Low	Low	Med.	Med.	L-T Ctr.*
Passion Fruit (Juice)	Med.	Med.	Med.	Low	Low	Low	L-T Ctr.*
Orange (Juice)	Long	Med.	Low	Low	Med.	Low	L-T Ctr.*

* Forward market contract or interlined factor and market contract.

Source: Based on Author's Field Research

57. In the case of french beans for canning, asset-specificity does not appear to be a problem, yet the uncertainty surrounding effective crop procurement is expected to be moderate to high. Some form of long-term contractual link between the processor and french bean producers is thus expected. For the other crops listed in the table, there is a moderate degree of asset-specificity associated with crop production and processing, while there is expected to be a low-to-moderate degree of uncertainty. Here again, some form of long-term contractual link is expected to govern crop procurement operations. Hence, one would not expect spot market

purchases or similar arrangements to be the primary mode for procuring any of these crops for processing.

58. Before examining the actual crop procurement arrangements for Kenya's fruit and vegetable processors, it is important to note that real institutional structures are not strictly determined or caused by the techno-economic factors emphasized by transaction cost economics. Institutional patterns in particular countries and industries are also shaped by historical and political factors as well as characteristics of the participating firms and farmers. In this article, limitations of space do not enable us to provide full coverage of the evolution of institutional arrangements in Kenyan horticulture and the broad set of factors shaping such processes.

59. Table 6 below denotes the actual institutional arrangements for the procurement of these crops during the mid-1980s. The only exception is that of carrots for which the indicated institutional arrangements are for 1980, the last year that the major vegetable dehydration factory was in continuous operation.

*Table 6: Crop Procurement Arrangements for Export-oriented Processing
(Percentage Share of Raw Material Volume, 1985/86)*

Crop	Spot Market	Market Recipr.	Frwd. Mkt. Contract	Interlinked Contract	Vertical Integ.
Pineapple	0	0	0	5	95
French beans	5	0	0	95	0
Carrots *	0	0	0	95	5
Passion Fruit	60	0	20	20	0
Orange	80	0	20	0	0

* For 1980.

Source: Author's Field Survey

60. As expected, the canning of pineapple features a strong degree of vertical integration between raw material production and subsequent processing functions. The major firm, a subsidiary of a multinational corporation, has a large (20,000 acre) plantation and a large processing facility on a contiguous site. This industry was not always organized as such. In the 1950s and 1960s, raw material supplies for several competing factories came from several hundred small and larger outgrowers. However, supplies from these sources remained very unreliable in terms of both quantity and quality due to shortages of planting materials, the locations (eg. high altitude) of many of the outgrower farms, and farmer inclinations to direct the better quality fruit to the higher priced fresh produce market. Following the entry of the multinational firm into the industry in the mid-1960s, the firm was given a monopoly on processing and developed, with government assistance, a large-scale plantation. This mode of crop procurement proved to be more efficient and more in line with the company's past experience in other countries. Since 1974, over 90 percent of the factory's raw material in-take has been from the company-owned estates.

61. The procurement of french beans for canning is presently based on a highly-intensive contract farming scheme involving nearly 20,000 smallholder farmers.³⁵ This is consistent with our expectations based on techno-economic considerations. The processing company, a joint venture between a local firm and a major European food manufacturer/distributor, controls entry into the scheme, the size of individual plantings, the timing of all cultural practices, input supplies, product quality, and post-harvest operations. This scheme was developed in the early 1980s, following upon a series of failed ventures to procure beans for canning from centralized

³⁵ See Jaffee (1987) for a detail case study of this sub-sector.

factory estates or large-farm outgrowers. The careful husbandry practices required to produce a high-quality french bean rendered large farm production unviable due to problems of labor recruitment and supervision. The European joint venture partner brought with it to Kenya prior experience in organizing and managing a contract farming scheme for french beans (in Morocco).

62. The procurement of carrots for dehydration also featured a contract farming scheme with smallholders, numbering about 3000 during the peak years of operation.³⁶ This scheme was initially developed just after independence by agencies of the Kenyan government in order to provide supplemental incomes for smallholders being settled in a major land transfer and settlement program (The 'Million Acres' Scheme) and in order to establish effective administrative control over the settlement areas. The project later expanded to include other crops and to involve the processing company developing its own nucleus estates. While there is a large local market for carrots, the firm required a variety of carrot which is not preferred in the fresh market. The firm provided seeds and technical assistance and controlled the timing of plantings and harvests.

63. The actual institutional arrangements for passion fruit and orange procurement (in the mid-1980s) deviate from expectations as laid out above. In the case of passion fruit, the major firm, a joint venture between a foreign company and a Kenyan parastatal, did implement a contract farming scheme in several parts of the country between the mid-1960s and the late 1970s. However, by the latter period, the firm came under increasingly intensive competition from the fresh produce trade and from other processors to obtain the available supplies. The

³⁶ Ibid.

result was a collapse of the firm's contractual ties and its need to resort to spot market purchases for the bulk of its raw material requirements. With such supplies being inadequate, the firm sought (in the early 1980s) to develop its own nucleus estate. However, this investment was vetoed by the Kenyan government, out of concern that the existing growers would subsequently lack sufficient outlets for their crop. To compensate, the processor has entered into seasonal contracts with several large-scale producers, providing them with inputs and technical assistance.

64. The main producers of orange juice for export have been primarily product-diversified, locally-owned companies. They have rarely entered into any forward purchasing arrangements in which prices were pre-specified or inputs and credit were provided. Their preference is to buy raw materials in bulk at cheap prices during the periods of local market gluts and then to store such supplies in a semi-processed state. No special varieties are required and the only quality stipulation is that the delivered fruit be mature and disease-free. As in the case of passion fruit, forward market arrangements have been made with a limited number of large-scale growers who have sought market assurances.

C. Procurement Arrangements for Fresh Horticultural Commodities

65. Table 7 rates six fresh fruit, vegetables, and cut flowers according to the same technical and market criteria used above to predict international patterns in the procurement of raw materials for processing.

66. From the point of view of risk and coordination problems in crop procurement (and production), the most difficult crops would appear to be chrysanthemums (grown for cuttings) and strawberries. Each features moderate levels of asset-specificity, but high levels of

uncertainty due to their rapid perishability and exact timing requirements. It is expected that each will feature vertically integrated production and marketing operations.

Table 7: Asset Specificity, Uncertainty, and Fresh Horticultural Commodities

	ASSET SPECIFICITY			UNCERTAINTY			Expected Mode of Coordination
	Production Cycle	Scale Econ.	Inputs Specif.	Perish-ability	Qual. Specif.	Timing Specif.	
Carnation	Short	Med.	Med.	High	Med.	Med.	L-T Ctr.
Chrysanthemum	Short	Med.	High	High	High	High	Vert. Intr.
Mango	Long	Med.	Low	Med.	Med.	Med.	L-T Ctr.
Strawberry	Med.	Low	High	High	Med.	High	Vert. Intr.
French beans	Short	Low	Low	Med.	Med.	Med.	L-T/Spot
Chillies	Med.	Low	Low	Med.	Med.	Med.	L-T/Spot

Source: Based on Author's Field Research

67. Mango and carnation production and procurement each feature moderate levels of both asset-specificity and uncertainty. Some form of long-term contractual link between producers and exporters is therefore expected. The two vegetables listed in the table, french beans and chillies, feature low levels of asset-specificity and a moderate degree of uncertainty associated with crop procurement. Under such circumstances, either long-term contractual ties or more market-like arrangements could provide an efficient link between producers and exporters.

68. Table 8 denotes the actual institutional arrangements prevailing during the mid-1980s in Kenya for the respective crops.

**Table 8: Crop Procurement Arrangements for Fresh Horticultural Exports
(Percentage Share of Commodity Volume, 1986)**

Crop	Spot Market	Market Recipr.	Frwd. Mkt. Contract	Interlinked Contract	Vertical Integ.
Carnation	0	5	0	0	95
Chrysanthemum	0	0	0	0	100
Mango	35	40	20	0	5
Strawberry	10	0	90	0	0
French beans	20	20	30	20	10
Asian Vegetables	30	20	20	20	10
All Crops (Value)	20	14	17	12	37

Source: Author's Field Research)

69. The table indicates a far greater diversity of institutional arrangements than found in the fruit and vegetable processing industry. For carnations, vertical integration is unexpectedly the dominant coordinating mode. This reflects the pre-eminence of one major foreign-owned company which has the largest carnation farm in the world operating in Kenya. This company has built up a team of expatriate technical and post-harvest experts and has benefitted from complementarities with its other agricultural interests in Kenya, particularly in the supply of production inputs. Smaller producers of carnations have generally been linked to exporters via informal, on-going market ties.

70. As expected, the production and marketing operations for chrysanthemum cuttings are vertically-integrated. The company which is undertaking this operation has developed a highly capital-, labor-, and management-intensive system to produce and isolate some 163 varieties of the flower. Altogether, some 90 percent of Kenya's cut flower industry is based on

vertically-integrated operations, owing to the limited dispersion of floricultural knowledge in the country, problems in obtaining planting materials and other inputs, and logistical problems associated with the collection and handling of highly perishable cut flowers.

71. Mango and strawberry do not fit the expected institutional patterns. In the case of mango, much of the production is undertaken by smallholder farmers in a remote location along the Kenyan coast. Exporters have little access or even contact with this area and have preferred to utilize local merchants, acting as commission agents, to buy the crop at short-term market prices. Mango is not a major commodity for any of the leading exporters, so there has been little interest in direct involvement in or support of production. Due to the influence of climatic changes, the yielding pattern of mangos at the Kenyan coast is very uneven, limiting the scope for producers to fulfill long-term contracts with buyers.

72. For strawberries, the leading producer did integrate forward into trade for several years, but experienced continuous transport bottlenecks since it sought air-freight space only during Kenya's peak export months of December to February. The firm has withdrawn from direct trade, relying upon existing larger exporters to manage the headaches of logistics, transport, and overseas sales. Seasonal purchase and supply contracts have been entered into with such companies.

73. French beans and Asian vegetables (including chillies, okra, karela, and other traditional South Asian vegetables) exhibit very diverse institutional patterns linking producers and exporters. Among the larger exporters, the common practice is to have long-term contractual arrangements with a limited number of large-scale growers and then supplement these supplies with spot market or similar purchases from smallholders. The risks associated with changes in

market conditions or the availability of air-freight space are thus borne by such smallholders. Small and part-time exporters, who lack storage facilities and have limited financial resources and technical skills, tend to obtain most supplies via spot market purchases. While their purchases are uneven, these smaller firms have very low overhead costs and are thus able to offer larger cash payments than the more established firms. This feature has undermined several contract farming schemes which the larger firms have attempted to develop with smallholders.

74. The bottom line in Table 8 provides a rough estimate of shares of different institutional arrangements in the total value of Kenya's fresh horticultural trade. It indicates that more than 1/3 of the trade involves vertically-integrated operations and about one-half of the trade features some form of tightly controlled procurement system. Only about 1/3 of the trade features crop procurement based on spot or similar market purchases.

75. This analysis has demonstrated the potential to operationalize the major propositions of transaction cost economics to study the development of alternative institutional arrangements in agricultural marketing and agro-industry. In this area, additional work remains in both specifying and quantifying the relevant independent and dependant variables. As noted earlier, researchers should be cautious about ascribing a causal relationship between transaction cost factors and the observed institutional structures. As in the Kenyan horticultural case, there may be other factors, including historical and political factors, which play important roles in the actual development and evolution of institutions. The proper approach is to incorporate considerations of asset-specificity, uncertainty, and agency into historical analyses of institutional development patterns in particular agricultural trade or agro-industrial settings.

VI. CONCLUSIONS

76. Amongst African governments and international financial institutions there is strong interest in the scope for and potential benefits of agricultural market liberalization and expanding the role of the private sector in agricultural trade. This paper has shown that sub-sectors featuring widespread entry and a dominant role for the private sector can indeed develop in a very dynamic fashion. Nevertheless, the experience of Kenyan horticulture indicates that the quest for institutional reform must look beyond the tapping of nascent private entrepreneurship to consider the nature of potentially successful private enterprises in the African trading context and the ways in which such firms can organize both their crop procurement and trading operations. Such patterns will have strong implications both for efficiency and for the distribution of benefits from expanded trade.

77. Even with market liberalization, the technical characteristics of many crops, their production, and their processing may lead to centralized procurement and marketing arrangements. It is not only in horticulture, but also for a wide range of other exportable crops and agro-industries in developing countries (including sugar, tea, oilseeds, dairy, tobacco,) where scale economies, quality heterogeneity, commodity/raw material perishability, lengthy production cycles, and so on may render open market arrangements hazardous for both producers and processors/traders and, depending upon market size, limit the number of scale efficient processing plants to only one or very few. Hence, market liberalization may simply involve a shift from centralized public control to some form of centralized private control.

78. The latter may indeed be preferable, although improved means will have to be developed for governments to regulate foreign investment flows, to monitor and regulate dominant firms,

and to improve the bargaining position of farmers vis-a-vis centralized contracting organizations. Any trend toward expanded contractual or integrated ties between producers and private marketing enterprises may also require changes in the traditional means of organizing agricultural research, extension, and input supply, perhaps in the direction of joint public/private activities or the transfer of some functions over to the private firms.

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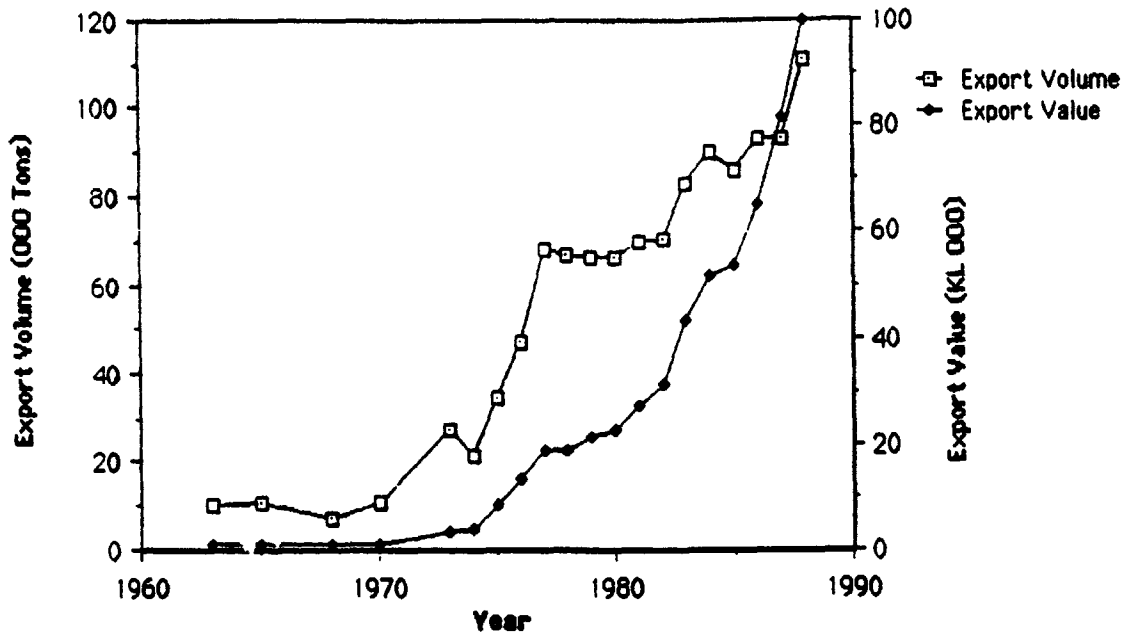
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APPENDIX 1

Graph 1: Growth of Kenyan Horticultural Exports



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