

Tanzania's Coffee Sector: Constraints and Challenges in a Global Environment

Africa Region Working Paper Series No. 56

June 2003

Abstract

Coffee, Tanzania's largest export crop, contributes about \$115 to the country's earnings. About 95 percent of coffee is produced by some 400,000 smallholders on average plots of 1-2 hectares. Most do not use purchased inputs such as chemicals and fertilizer.

Before 1990 all coffee marketing (including input provision, transportation, and processing) was handled by the state coffee board and the cooperative unions. Modest reforms were implemented in 1990 affecting inputs, price announcements, and retention of dollar export earnings. More comprehensive reforms were introduced beginning in 1994/95, allowing private traders to purchase coffee directly from growers and process it in their own factories for the first time in more than 30 years. While producers' share of export prices increased, official statistics show no supply response. Coffee processing ca-

capacity, marketing efficiency, and investment in new plantings increased.

Several issues remain to be addressed. Taxes should be consolidated, lowered, and rationalized across all export crops and other exports and the tax code should be simplified. Licensing procedures need to be reexamined. Licenses should be suspended only in accordance with the Coffee Industry Act of 2001, and not in response to requests by the cooperative unions or the Ministry of Cooperatives. The coffee auction should be voluntary, substantially reducing the costs of vertically integrated exporters and enhancing cross-border trade. The Tanzanian Coffee Board should be responsible for disseminating price and other information and for monitoring the quality of auction coffee sales and other coffee statistics. The power of the board and the ministry ought to be substantially reduced and their respective roles clearly defined.

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Acknowledgments

This paper is part of a larger effort by the Africa Region in collaboration with the Economic Policy and Prospects Group to assess the performance and identify policy impediments of Tanzania's major export crops. The findings reflect fieldwork carried out during March 5-16 and November 5-16, 2001. The views expressed here are those of the author and should not be attributed to the World Bank. The author would like to thank Betty Dow, Donald Mitchell, and Stefan Ponte for comments and suggestions on earlier drafts and is grateful for valuable information obtained during interviews with Paul Bebbington, Nick Emanuel, Prem Kapoor, Ria Ketting, Zebadiah Moshi, Pius Peter Mushi, Leslie Omari, James Teri, and Gabriel Ulomi is greatly appreciated. The author would also like to thank the World Bank country office staff in Dar es Salaam, especially Ladisy Chengula, Gloria Sindano, and Ben Tarimo. Meta de Coquereaumont provided excellent editing.

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Coffee is Tanzania's largest export crop. It contributes approximately \$115 million to export earnings, and provides employment to some 400,000 families. It is often intercropped with food crops such as bananas and maize. About 95 percent of coffee is grown by smallholders on average holdings of 1–2 hectares, and 5 percent is grown on estates. Only a quarter of smallholders use purchased inputs.

Tanzania produces about 800,000 60-kilogram bags, or 0.7 percent of world output of 117 million bags. About two-thirds is mild arabica, and the rest is hard arabica and robusta. Arabicas are grown in the Arusha and Kilimanjaro regions of the North and the Mbeya and Ruvuma regions of the South. Robustas are produced in the lake zone — mainly the Kagera region. Mild arabicas are wet processed, while robustas are dry processed. Almost all of Tanzania's coffee production is exported, and all exported coffee must be marketed through the Moshi auction.

Before 1990 the Tanzania Marketing Board and the cooperative unions handled all coffee marketing (including input provision, transportation, and processing). Reforms introduced in 1990 affected inputs, price announcements, and dollar export earnings retention. More comprehensive reforms began in 1994/95 allowing private traders to purchase coffee directly from growers and process it in their own factories for the first time in more than 30 years. While producers' share of export prices increased, official statistics show no supply response. Coffee processing capacity, marketing efficiency, and investment in new plantings increased.

This paper examines the causes of the poor performance of the Tanzania coffee sector and evaluates policy reform initiatives and alternatives.

I. A BRIEF HISTORY OF THE COFFEE INDUSTRY IN TANZANIA

Coffee was introduced to Tanzania early in the 20th century as an estate crop, but eventually became a smallholder crop. The area planted to coffee expanded significantly during the 1970s and the 1980s when prices were favorable. Most of the expansion took place in the southern arabica zone (Mbozi and Mbinga regions), promoted by two EU-supported projects (World Bank 1994).

Financial Difficulties of the Cooperative Unions and Primary Societies

The history of the sector is closely linked to the cooperative movement. During the 1920s expatriate coffee growers formed a union to market their coffee (World Bank

1977). The first marketing cooperative of native cultivators was established in the Kilimanjaro area in 1932, primarily to promote coffee as a cash crop among peasant farmers. Subsequently, cooperatives grew in size and number, but they were confined to regions producing export crops. The primary societies are village- or multivillage-level associations of 100 to 1,000 members, which joined together to form cooperative unions (see box 1 for a description of a typical primary society). The Kilimanjaro Native Cooperative Union, for example, consists of 93 primary societies.

Following independence in 1961 the government expanded cooperatives into areas that had no cooperative experience, tradition, or even need. Most of the newly created cooperatives failed, as even a 1966 government-appointed committee acknowledged. Despite the failures the government-enforced cooperative movement continued to expand. During the same period the campaign to replace the traditional system of rural settlements with large villages (villagization), begun in 1963, was gaining momentum and by 1973 had been expanded to the entire countryside. Between 1973 and 1976 as many as 11 million people moved, either voluntarily or forcibly (Mapolu 1990). The leadership of the villages and the primary societies often had conflicting interests and mandates.

Before 1976 the primary societies handled coffee procurement, paid farmers, and delivered the coffee to the two cooperative union-owned processing factories, in Moshi (arabica) and Bukoba (robusta). The coffee was sold to exporters at the Moshi auction, operated by the Tanzania Coffee Board. (Before independence the coffee auction was run by brokers, the way that Kenya's Mombasa Tea Auction is being managed today.) In May 1976 the government abolished the primary societies, and the villages took over their crop functions. All cooperative unions were dissolved and all post-harvest functions were handed over to the villages or the Tanzania Coffee Board, renamed the Coffee Authority of Tanzania in 1977.

The new structure, which lasted eight years, performed no better, and in 1984 the government reinstated the cooperative unions and primary societies. Procurement, transportation, and processing functions were handed back to the unions and primary societies. However, they never became healthy financial entities. In 1991, responding to the major financial difficulties of the cooperative unions, the government passed the Cooperatives Act, which recognized the cooperatives as private institutions owned and managed by the members.

After 1984 producers would deliver coffee to primary societies and receive an initial payment based on the previously announced price. Coffee was then taken from the societies to a coffee curing factory by the state-controlled cooperative union. Following milling and grading, the coffee was delivered to the Tanzania Coffee Marketing

Board (the new name of the Coffee Authority of Tanzania), for purchase at auction by private exporters. The marketing board kept its legal monopoly in selling coffee and providing inputs for coffee production as well as its regulatory functions.

After coffee was sold at the auction and the Coffee Board deducted the fees, the revenue was sent to the cooperative unions, which deducted processing costs and input credits and sent the remaining amount to the primary societies. The primary societies, after making further deductions for their own costs, made the final payments to farmers to cover the difference between the initial payments and the auction realizations. It took at least a year for farmers to receive the second payment. Bevan and others (1993) reported that real producer prices fell an estimated 80 percent between 1964 and 1988, while real arabica and robusta prices declined by just 26 percent and 36 percent over the same period.

Although the multipayment system reduced the uncertainty for the growers, it introduced considerable price risk for the cooperative unions. If the first payment made to the coffee growers was higher than the auction realization plus other costs, the cooperative unions would operate at a loss. In the early 1990s most unions experienced huge losses and avoided bankruptcy only because of state intervention.

The pricing structure was not the only problem that the unions faced. The unions had no comparative advantage or even experience in many of the activities in which they engaged. Consider the performance of the Kilimanjaro Native Cooperative Union, the first union to be registered under the Co-operative Societies Ordinance of 1932 (KNCU, pp. 4-5):

Exports: Once the Department is fully fledged the Union should be able to sell a good part of its member's crop on its own. *Transportation:* KNCU inherited a fleet of 20 ageing lorries ... it was extremely difficult to keep any of them in the road ... through donor funding the Union acquired 28 new lorries With liberalization and stiff competition in the transport business KNCU has decided to keep a modest transport department ... *Farming:* The profitability of the Union's farms has not been satisfactory. Extra investment is however inevitable if the farms are to be more profitable and sustainable projects. The Union is ready to go into joint ventures with interested investors within and outside the country. *Ginning:* The cotton received can occupy the capacity of the ginnery for only a part of the year and the unit is just breaking even. *Coffee Tree Hotel:* ... the hotel facilities were run down ... Foreign and local investors on a joint venture running of the hotel are being sought. *Paddy Hulling:* It is hoped that with the envisaged expansion of irrigation the factory will operate at its optimum.

During the six seasons beginning in 1988/89 additional payments were made on only two occasions. Moreover, in the 1994/95 season producers received only 33 percent of the export price of arabica and 23 percent of robusta. In 1992 arabica averaged \$1.41 a

kilogram, its lowest level since 1973, and robusta averaged \$0.94 a kilogram, just one cent above its 1970 level. The poor performance of the unions along with the inflexibility of the pricing system and the low world prices made elimination of some layers in the marketing chain a necessity.

Nationalization of the Coffee Estates

Throughout this period Tanzanian coffee estates suffered severely, diminishing in number until by the late 1990s they accounted for only about 5 percent of production (table 1). In the late 1960s there were 172 coffee estates in Tanzania, with total area of 12,200 hectares, accounting for 10 percent of Tanzania's coffee area and almost a quarter of its coffee output. The estates ranged from 45 to 800 hectares, averaging 100 hectares. In October 1973, 62 estates were nationalized and the remainder were run by private individuals or companies cooperating through the Tanzania Coffee Growers Association.

According to Ponte (2001), coffee estates used to produce Tanzania's best coffee, with quality comparable to that of Kenya's — considered one of the world's best mild arabicas. A World Bank (1983, p. 22) study, which compared the performance of private- and union-owned estates, reached a similar conclusion almost two decades earlier:

Private estates have proven much more resourceful than their counterparts in the public sector in keeping both field and processing machinery running at a time when foreign exchange for chemicals, spares and new equipment has been unavailable ... [while] the nationalized and new public sector estates ... are characterized by poor maintenance and management, low and declining yields and lack of financial accountability.

Following nationalization of the estates both the quantity and quality of Tanzanian estate coffee suffered dramatically (box 2). The nationalized estates, which are owned and managed by primary societies, face major managerial difficulties and have very low yields. Many have been practically abandoned.

II. DEVELOPMENTS SINCE 1990

The first steps in restructuring the coffee sector were taken in 1990 when the Coffee Board, then controlling all coffee marketing, began to make more timely payments to the unions (within three weeks after coffee was sold at the auction) and delegated to unions the responsibility for paying primary societies and growers. More comprehensive reforms became part of the policy reform agenda under an International Development Association (IDA) credit operation and accompanying currency devaluation in 1992. The board became a marketing agent rather than a marketer, charging a fee of 1.6 percent of the auction sale. In the 1992/93 season the government stopped announcing

the amount of the advance payments made by the unions to the growers, leaving it to the unions to decide the advance and the total payment. In March 1992 chemical input markets were opened to private traders. A few months later exporters of coffee and other traditional crops were allowed to retain 10 percent of their export earnings in foreign currency, and soon thereafter, 100 percent.

More reforms came in August 1993, with a bill allowing private sector participation in marketing and processing coffee and further reducing the government's control on pricing. During the 1994/95 season private buyers, for the first time in 30 years, could purchase and process coffee in their own factories, effectively taking market share away from the cooperative unions.

The Coffee Board (again assuming its original name of Tanzania Coffee Board) had responsibility for grading, issuing permits, and operating the coffee auction through which all exported coffee had to pass (box 3). The Tanzania Coffee Association was established to resolve disputes between private traders and unions. (Table 2 presents a list of the principal institutions involved in the coffee sector as of 1994.)

What effect did the policy reforms that began in 1994 have on the prices received by growers, the supply response, input use, coffee quality, marketing, and processing?

Growers Receive Higher Share of Export Prices

A key impetus for the reforms in 1994 was the declining share of export prices received by coffee growers. The average producer's share of arabica export price in the nine seasons prior to the reforms was 60 percent; it rose to 73 percent in the five seasons following the reforms (table 3 and figure 1). The corresponding figures for robusta are 59 percent and 69 percent (figure 2). The differences are nearly the same between the five seasons before the reform and those after (from 65 percent to 73 percent for arabica and from 61 percent to 69 percent for robusta). Real producer prices have declined, however. For example, adjusting nominal coffee prices for inflation (domestic consumer price index) gives an average of 612 Tanzanian shillings (Tsh) a kilogram for the three-year period after 1996/97, which is close to the 640 Tsh a kilogram average for the three-year period after 1985/86. Real robusta prices for the same periods are 280 Tsh a kilogram and 214 Tsh a kilogram.

Using the producer prices reported in the 1998 and 1999 tax studies for the 1997/98 and 1998/99 seasons (1,242 and 1,000 Tsh a kilogram for arabica and 320 Tsh and 375 Tsh a kilogram for robusta) instead of the Coffee Board's report of 850 Tsh and 900 Tsh a kilogram for arabica and 300 Tsh a kilogram for robusta boosts the average export shares from 60 percent to 80 percent (arabica) and from 59 percent to 73 percent

(robusta), a more pronounced increase. These calculations point out the impact of such discrepancies in the data and the caution required in interpreting the impact of reforms.

Regardless of the prices used and the periods considered in the calculations, two facts should be noted. First, prior to reforms there were substantial delays before coffee growers received payment. Taking into account the interest forgone plus the losses to inflation, the real prices received by producers were much lower (table 3). Second, producers were paid by the unions, which frequently had to be bailed out by the government. Thus, the pricing regime was unsustainable, and in the absence of reform it is unlikely that producers would have continued to receive a 59-60 percent share.

Limited Supply Response

Although it is difficult to establish the impact of reforms on the supply response, a simple comparison of pre- and post-reform averages is informative. Given the small amount of domestic coffee consumption, auction sales can be considered to equal total output (table 4). The average output was 50,918 tons in the nine seasons before 1994 and 45,065 tons in the five seasons after 1994, a 13 percent decline. By this simple measure the impact of the reforms on production was disappointing. Disaggregating by coffee type, however, shows a different picture. Mild arabica production declined nearly 20 percent while hard arabicas and robustas increased by about 10 percent. While there are severe problems with the quality of the data, several measures point to the same conclusion: the supply response has not been large, and arabica production has most likely declined.

Winter-Nelson and Temu (2002) argue that looking at production figures alone may be quite misleading because of the short time since the reforms and the effects of the el Niño and la Niña years. As a better measure of supply response, they propose farmers' demand for planting material. They found that demand for seedlings increased from 0.5 million in 1996 to 13 million in 1999, most of it coming from newly rehabilitated estates. They also reported recurrent shortages of planting material. Although plantings may have gone to replacing old coffee trees rather than into new plantations, such an increase is nevertheless consistent with a future supply response.

Credit Provision Collapses, and Input Use Declines

Prior to the policy reforms, credit for inputs was integrated into coffee sales. The system, in a sense, functioned well because the unions (or the Coffee Board, in the period when the unions were dissolved), through their primary societies, were monopsony buyers, eliminating the prospect of grower default. However, as noted earlier, most unions had to be bailed out, so viewed from a marginal cost pricing point of view,

the input finance system was not sustainable despite its apparent high recovery rate. The reforms broke the link between inputs and coffee sales and, because of high default rates, credit for input use was available to only a few creditworthy (often large) farmers. The rest either received credit at a very high interest rates or received no credit at all. Consequently, input use declined.

According to the Farm Management Survey carried out by the Economic Research Bureau of the University of Dar es Salaam, only a quarter of coffee growers used purchased inputs after 1994. The survey attributed the low input use to the absence of credit. The survey also found that labor inputs were inadequate for both arabica and robusta and that control of pests and disease was poor. These findings applied primarily to small farmers, however, and much less to estates.

To reverse the decline in input use, the Coffee Board and the Coffee Association introduced the National Input Voucher Scheme, financed initially by the European Union using Stabex funds. The voucher scheme, established in 1996, is a forced savings mechanism. Coffee buyers put part of farmers' coffee income into a special fund, give the farmers vouchers, purchase inputs, and distribute them to the farmers in the next season in exchange for the vouchers. The vouchers are worth about 4 percent of the value of the coffee sold. During the second season of operation, the voucher scheme accounted for almost a fifth of inputs for coffee production. The system does not prevent farmers from trading vouchers or applying the inputs to other crops. Although received positively by the industry, there have been numerous reports of forged vouchers as well as trading at a discount for non-input uses (Government of Tanzania 2000, p. 244).

Two other issues related to input use also need to be considered in these calculations. First, during the 1970s and 1980s several donors provided chemicals at subsidized prices (World Bank 1994, p. 122), keeping the price of inputs low. Second, and more substantively, the decline in input use does not necessarily imply that the earlier level of use was optimal or that the current level is sub-optimal. In a recent analysis of input use Temu, Winter-Nelson, and Garcia (2001a) concluded that the combination of prices, costs, and yields observed in Tanzania since 1994 implied that farmers, on average, gained from the mix of lower output marketing margins (higher share of export prices) and reduced access to credit.

Quality Deterioration Slows

The overall quality of Tanzania's coffee has undoubtedly declined (World Bank 1994; Sheperd and Farolfi 1999; Ponte 2001). A breakdown of coffee production among the four major coffee qualities (high, medium, low, and poor) shows sharp declines in quality in 1972, 1984, and 1994 (table 5). The declines are associated with nationalization

of the coffee estates, reinstatement of the cooperative unions, and market liberalization. In all three cases quality partially recovered after a few seasons. The long-run trend nevertheless remains downward.

The deterioration in quality has both a long-term and a short-term component. Signs of long-term deterioration appeared as early as the late-1960s, and a World Bank (1983, p. 22) report observed almost 20 years ago:

There has also been an alarming deterioration in the quality of Tanzanian coffee, leading not only to a decline of as much as 20 percent in the prices offered for the crop, but endangering Tanzania's long-term competitive position in the export market which is already suffering from generally poor demand prospects and quota restrictions.

According to data compiled by Ponte (2001) in the three seasons before 1970, 16 percent of coffee production was graded high, 73 percent medium, 7 percent low, and 4 percent poor. In the three seasons before 1993 these share were 3 percent high, 76 percent medium, 15 percent low, and 6 percent poor. Thus, there had been a clear shift from high to low qualities well before the policy changes of the 1990s. The chief reasons for the declines appear to be nationalization of estates; aging coffee trees, some close to 100 years old (trees had not been replaced since the introduction of the crop); poor husbandry; rundown central pulperies, forcing farmers to do their own primary processing;¹ the spread of coffee berry disease after 1975 to all arabica growing areas of the country; and the failure to introduce new disease-resistant high-yielding varieties. Still, this was not a universal decline. A comparison of the nine seasons prior to reforms with the five seasons after the reforms shows an almost imperceptible decline in the share of high plus medium mild arabica, from 71.7 percent to 70.6 percent.

The short-term issues relate to reduced input use, inexperienced traders, and high competition because of overcapacity. Input use began to decline in 1992, when chemicals were supplied at market rather than subsidized prices. The impact of the buying practices of inexperienced traders was probably self-limiting as the new traders who entered the market after liberalization gained experience. Finally, high competition because of overcapacity is a market-determined outcome. New private entrants built their own processing factories because the unions blocked them from using their facilities or because the facilities were run down.

Many Coffee Estates Were Revived

Since the mid-1990s many private estates have undertaken extensive rehabilitation, including replanting. Some nationalized estates have been privatized. For example, about a third of the nationalized estates in the Kilimanjaro region have been privatized.

During interviews the main problem cited by private estate representatives was the shortage of labor. The future of the estates looks very promising. Even a government report (2000a, p. 6) acknowledged that the country's best coffee comes from private estates and a few progressive farmers.

New Marketing Channels Develop

Before 1994, 75 percent of coffee was marketed by cooperative unions, 19 percent by other government organizations, and 6 percent by private estates. Four seasons later the market shares were 67 percent by private buyers, 26 percent by cooperative unions, 7 percent by estates, and 1 percent by other governmental organizations (table 6 and figure 3).

Two-thirds of private buyers are vertically integrated exporters, companies that buy coffee from the growers, process it in their own factories, and export it themselves. Often, these exporters also buy coffee at the auction or from primary societies. During 1998 these firms accounted for 45 percent of coffee sold at the auction and 62 percent of exports. Even though the vertically integrated exporters own the coffee throughout the entire chain, selling it at the auction implies (at least technically) that they lose ownership of the coffee since any auction participant can outbid them. In practice, they typically repossess the coffee since they can only be outbid if they choose to since they can be both buyers and sellers.

Processing Capacity Increases Enormously

The processing capacity for coffee has increased enormously since 1994. Before 1988 there were only two union-owned coffee processing facilities, one in Moshi (Kilimanjaro region) processing arabica and one in Bukoba (Kagera region) processing robusta. The Moshi plant had a processing capacity of 8 tons an hour and the Bukoba plant, 12 tons. In 1988 two more arabica (also union-owned) processing factories were added, with a combined capacity of 14 tons an hour. Since 1993 at least 12 new factories have been built (table 7).

Coffee processing capacity in Tanzania now exceeds 72 tons an hour—40 tons an hour for arabica and 32 tons an hour for robusta. To put this capacity into perspective, Tanzania's total coffee output averaged 51,000 tons between 1980 and 1988 and 43,300 tons between 1993 and 1999, implying that coffee factories operate on average at about a quarter of installed capacity.

There are two reasons for this excess capacity. First, following the 1994 reforms, the unions were unwilling to let private traders use their facilities, so traders were forced to construct their own processing factories. Second, because most of the pre-1994

coffee processing facilities used old technology, they were inefficient and yielded lower quality coffee. Winter-Nelson and Temu (2002, p. 9) estimated, for example, that the new factories yielded 4 percent more processed coffee per unit of input while operating at a much lower cost. These improvements implied a cost reduction of Tsh 100 a kilogram of clean coffee, or about 10 percent of the 1996 producer price. Furthermore, because most vertically integrated exporters were processing coffee in their own facilities, they could do it faster, reducing storage costs and exposure risk. After liberalization more than a third of coffee was exported in the first three months of the season, compared with 15 percent before 1994.

The Research Structure Is Undergoing Restructuring

Until recently there was almost no coffee research. In fact the arabica varieties currently grown in Tanzania were developed earlier in the 20th century while the robusta varieties originated from selections made at the Coffee Research Station in Uganda. The state of coffee research in Tanzania is best summarized by the findings of a recent study (PricewaterhouseCoopers 2001, p. 1):

Some major constraints [of coffee research] are: limited access to disease resistant varieties for growers; poor performance of Tanzania's Coffee Research Organization—the constraint being the disorganized state of coffee research service, which is unable to deliver the research services required by the coffee industry; poor husbandry caused by weak and poor organized extension service; and wrong application of inputs caused by weak extension service ...tardiness in developing and issuing improved varieties ... unmotivated and poorly trained staff.

Responding to this poor state of coffee research, the Coffee Research Institute was established in 2001, which was modeled after the Tea Research Institute. The Coffee Institute is financed by a 0.75 percent levy on coffee sales collected by the Coffee Board.

III. CONSTRAINTS

Although many changes took place in the Tanzanian coffee sector during the 1990s, the reform process has not been totally successful or complete, and new problems have emerged. Among the key constraints are an overly complicated tax code with tax rates that are too high and in some cases regressive. Another is the excessive involvement of the state, which discourages and weakens the private sector. A third is the mandatory nature of the coffee auction, which ought to be reconsidered.

Taxation Is Too Complex and Rates Are Too High

Taxation of the coffee sector is too high and the tax code is too complicated. Government reports on the subject recently concluded that “the Government should con-

sider [plans] to reduce a number of taxes imposed on coffee” (2000a, p v) and “high taxation still continues to erode a significant portion of the gains made by the industry recently. If this trend is not reversed, it would discourage farmers, traders, and other actors involved in the coffee industry and ruin the development of the sector in general” (1999, p. 24).

In 1997/98 taxes totaled 195 Tsh a kilogram for arabica and 64 Tsh a kilogram for robusta (table 8), or 16 percent of prices received by producers for arabica and 20 percent for robusta. The shares were even higher for the 1998/99 growing season, at almost 19 percent for arabica and 23 percent for robusta. If the prices received by producers as reported in the government’s (2000a) tax report are used instead, taxes as a share of producer prices rise to 23 percent for 1997/98 and 21 percent for 1998/99 for arabica and to 21 percent and 28 percent for robusta. The taxes do not include payments withheld to finance the input voucher scheme.

The taxes reported in table 8 represent only output-related direct taxes. A more complete picture would include input-related taxes, other indirect taxes, and sector- and economy-wide distortions that affect the profitability of the sector. The effective rates of protection (negative values imply taxation) for the 1986–99 period indicate that while the outflow of resources from the sector due to direct taxation has declined, the outflow due to economy-wide macro and trade policies has increased (table 9). As a result, overall taxation of both arabica and robusta was higher during the 1994–99 period than during the 1986–89 and 1990–93 periods.

Because some taxation takes the form of flat fees, ² the effective tax rate increases when world prices decline. For instance, between 1997/98 and 1998/99 the producer price of arabica declined by 24 percent (from 1,242 Tsh a kilogram to 1,000 Tsh a kilogram), but the tax as a percentage of the producer price rose by more than 3 percentage points.³ The Tanzania Revenue Authority collects the full value-added tax at the time of the transaction, and then traders and exporters have to apply for refunds under various eligibility rules. Traders and exporters, however, indicated in interviews that on some occasions it could take as long as a year to receive the refunds—and sometimes they never got them (either because they gave up or because they failed to present all the necessary paperwork).

When coffee is sold at the auction, the fees and taxes are paid first, then the trader takes its profit margin and gives the remainder to the cooperative union or primary society, which takes out its fees, pays the local taxes, and then gives the remainder to the producer. Consequently, all interested parties including the Revenue Authority receive their portion based on the export or auction price. That means that producers may not always cover their expenses, so that in periods of low world (and hence export

or auction) prices, the growers are taxed for net income that they never earned—just at the time they need the money most. Thus, the conclusion that the supply response to policy reforms was limited seems consistent with the nature of the taxes.

Licensing Procedures Are Too Intrusive

One of the Coffee Board's responsibilities is to issue and suspend licenses and permits. Suspension is governed by various legislations. For example, the 2001 Coffee Industry Act states (emphasis added) that "the Board may *if the terms and conditions of licenses have not been complied with*, cancel, vary or suspend any license issued under the provisions of this Act" (p. 9). In practice, the board did not respect even its own regulations when it came to protecting the interests of the cooperative unions.

Tanzania's entire robusta output, worth \$15–\$20 million, is produced in the Kagera district. Following the 1994/95 reforms, a number of private traders entered the robusta market. During the 1998/99 season more than 10 private buyers were actively competing with the two cooperative unions, Karagwe District Cooperative Union and Kagera Cooperative Union.

The unions, whose financial status was shaky to begin with, entered the 2000/01 coffee season with major financial difficulties, in part because they had bought coffee from farmers and were holding it as world prices collapsed. The Karagwe Union had also invested a considerable sum in the Karagwe processing factory.⁴ To remain in business, the unions obtained a government-guaranteed loan from the Cooperative Rural Development Bank. To ensure that the loan would be repaid, the government instructed the Coffee Board, through the Ministry of Cooperatives, to revoke the buying licenses of the private traders without compensation or right to appeal, effectively handing a monopsony to the unions. The ban was supposed to be in place for the 2000/01 season only but was extended to the 2001/02 season. The extension coincided with the lowest level in 37 years for nominal robusta prices.

The Kagera district coffee licensing decision received national attention, with extensive press coverage. The *Guardian*, a national daily newspaper, offered the following recommendations after running a two-page story (November 3, 2001, pp. 6-7):

The government with its people at heart could do the following; one after the other or all of them at once: First, stop any deductions on the peasants' earnings and declare the credit to the Union a start-up fund to facilitate smooth running of the Union ... Alternatively, the government could as well call the facility a "bad debt" ... Second, allow now, private companies and individuals to enter Kagera Region and buy coffee at a price competitive with that in neighboring Burundi and Uganda. Third, let the government completely pull out of an NGO called Cooperative. By all purposes and intent, to facilitate does not mean to control. What the government is doing at present is to control co-ops through a set of multifari-

ous legislation and orders to a point of deciding where their produce must be sold and how much!

Suspending the licenses of private traders had important implications. First, producers received lower prices than in previous years, even after accounting for the decline in international prices, and they were not paid in cash immediately following coffee delivery. Second, as much as 30 percent of robusta coffee is believed to be exported unrecorded to neighboring countries, thus reducing the tax revenue and undoubtedly contributing to corruption. Traders from Uganda were said to offer as much as 180 Tsh a kilogram for robusta beans, and on the Burundian border the price was 145–160 Tsh a kilogram, much higher than the 80 Tsh a kilogram offered by the union. Third, the license suspension sent the wrong message to other regions and sectors. Cooperative unions handling other commodities have reportedly been demanding similar interventions and bailouts, and entrepreneurs are reluctant to move back into the sector, let alone expand their activities, in such an uncertain investment climate.

Uncertainties in the coffee sector were exacerbated by the “one license regulation” issued by the Coffee Board just three days before the official start of the 2002/03 coffee buying season in the Western coffee zone. The regulation limited applicants for private coffee buying, coffee processing, or green coffee export licenses to just one of these licenses, with an exception for the combination of private coffee buying and coffee processing license. Anyone holding a green export license who applied for the other two licenses would have their green export license suspended. Applications had to be submitted immediately, to be ready for the start of the coffee buying season. These regulations were clearly designed to help the cooperative unions increase their marketing share at the expense of private traders.

A licensing issue that has apparently received much less attention is the moratorium on new licenses for the construction of coffee curing factories. Ponte (2001, p. 34) notes that “the number of plants has remained the same in the last two years only because of a moratorium imposed by [the Tanzanian Coffee Board] on licensing new curing factories (apparently to save the cooperative and government ones from losing further market share).” Although there is enormous overcapacity, the private sector should be allowed to expand capacity if it chooses to do so. It is likely that the savings from moving coffee faster through the processing and marketing chain and the higher output of green coffee make such investment profitable.

A somewhat related issue is the prohibition against buying coffee in cherry form. Allowing coffee traders and coffee estates to purchase cherry coffee will enhance the use of central and modern primary processing facilities. The ban on the cherry coffee

trade forces small farmers to do their own primary processing (pulping) with antiquated equipment, lowering the quality of coffee.

The Coffee Auction Monopoly Is a Major Impediment

All coffee produced in Tanzania for export must be marketed through the Moshi coffee auction, a statutory body managed and run by the Coffee Board. The auction appears to be an efficient pricing mechanism, in the sense that realized prices move in accordance with the New York Board of Trade futures prices. Temu, Winter-Nelson, and Garcia (2001), in an econometric study on the pricing efficiency of the Moshi coffee auction, found a near unitary elasticity of transmission from the New York futures to auction prices.

However, the picture changes when the marketing cost-efficiency of the auction is taken into account. The mandatory nature of the auction increases marketing costs enormously. Owners of “captive coffee” have to store the coffee at board-certified warehouses, deliver samples to the auction, have a representative present at the auction to repossess the coffee, and go through extensive paperwork. The process can take as long as eight weeks. During that time the coffee owners incur storage costs, administrative expenses, forgone interest earnings (had the coffee been liquidated), and the risk of an adverse price movement.

Apart from efficiency gains, elimination of the requirement that all coffee go through the auction will enable coffee traders to market Tanzanian coffee through neighboring countries, especially Kenya and Uganda. Both countries enjoy considerable premia for their coffee (robusta and mild arabica, respectively), and given the small size of the Tanzanian crop such trade arrangements should benefit smallholders. Making the arguments in favor of regional trade integration even stronger is the fact that a substantial portion of Tanzanian robusta is already exported to Uganda. Ponte (2001, p. 26) also recommends integrating Tanzania’s robusta market with the neighboring Ugandan market, allowing cross-border trade, and integrating the mild arabica market with Kenya’s.

Making the auction mandatory is often defended on the grounds that it provides quality assurance, simplifies the collection and dissemination of statistics, and ensures a premium for Tanzanian coffee. However, none of these arguments appear to be supported by the facts. Coffee quality has been declining for the last 35 years, a decline that decelerated after the reforms. The quality of statistics is, at best, questionable (see next section). And Tanzanian coffee, apart from a few estates that market specialty coffee, does not command a premium compared to its neighbors.

Statistics Are Poor and Misleading

Because all coffee to be exported must go through the Moshi auction, coffee sales figures would be expected to be the same in all official publications or at least the ones that cite the Tanzanian Coffee Board as their source. That is far from the case, as shown in table 10 on coffee sales at the auction for the eight seasons beginning 1990/91. The data are from a text table in a Ministry of Agriculture and Cooperatives report on Tanzanian coffee sales, sales summary tables obtained from the Coffee Board in March 2001, and the U.S. Department of Agriculture's "Tropical Products: World Market and Trade."

The results are quite revealing and show the difficulties of drawing conclusions about the coffee sector from such data. Consider, for example, an attempt to assess whether average production has been higher or lower since 1994. The data in table 10 yield answers from a 10 percent decline (column 4) and an 8.4 percent decline (column 2) to a 0.7 percent reduction or no change (column 1) to a 2.8 percent increase (column 3). In other words, all three likely outcomes are present: decline, no change, and increase.

Similar disparities are found for export prices drawn from the 1997/98 coffee marketing report and the International Coffee Organization arabica price indicator, calculated as a July to June average (table 11). For 1994/95, for example, the coffee marketing report gives an average of \$3.50 a kilogram on page 31 and \$2.80 on page 33. And while the ICO indicator would be expected to be about 10 to 15 percent higher (reflecting transport and marketing costs from Tanzanian ports to North Europe and the United States), prices are exactly the same in 1992/93 whereas three seasons earlier the ICO indicator exceeded the report prices by 30 percent (page 31) and 65.5 percent (page 33).

The Coffee Board and Ministries Have Too Much Discretionary Power

Buying procedures, still tightly controlled by the Tanzanian Coffee Board, are a source of concern for traders. For quality control purposes (to ensure full maturity of the coffee beans), each year the board announces the date on which coffee buying should commence. The decision provokes disagreements between the board and traders. Coffee harvesting is an issue that should concern only the growers and the traders, not the bureaucracy.

Despite the reforms of the coffee industry in general and Coffee Board in particular, both the board and the two line ministries (Ministry of Agriculture and Food Secu-

riety and Ministry of Cooperatives) still have too much power. The latest Coffee Industry Act (2001), for example, stipulates:

The Board shall have the power to do anything which in the opinion of the Board is calculated to facilitate and enhance the proper exercise of the functions of the Board under this Act (p. 6). The Minister may give the Board directions of a general or specific character as to the exercise or performance by the Board of any of its functions under the Act, and the Board shall give effect to every such direction (p. 7). The changes being proposed take into account that the Board shall be a more powerful body in the regulation of the industry (p. 20).

Further increasing this power:

The Minister shall, upon recommendation of the Board of Directors, appoint the Director General who shall be the chief executive officer of the Board (p. 11). The Board shall consist of seven members ... The Chairman, who shall be appointed by the President The members shall be appointed by the Minister (p. 18).

Selection of the board managerial team and membership should rest primarily with the industry and not with the ministries.

IV. CONCLUDING REMARKS

Coffee is an important product for Tanzania, offering employment to more than 400,000 smallholders and contributing \$115 million to export earnings, making coffee the largest export earner. Financial difficulties of the unions and the sharp decline in coffee prices in 1992 left only one feasible solution: policy reforms. Although some changes were introduced as early as 1990, the full reform package was not introduced until 1994, when the private sector was allowed to market and process coffee. But the reform process has been neither entirely successful nor complete.

If the coffee sector is to reach its full potential, priority should be given to the following additional reforms:

- Taxes should be substantially reduced, the tax code should be simplified, and taxes should be consolidated, rationalized and made uniform across all exports (crops and merchandise). That will introduce a more equitable distribution of the tax burden and help to induce a supply response in the coffee sector.
- The Coffee Board's licensing procedures should be reexamined. Licenses should be suspended only in accordance with the Coffee Industry Act of 2001 and not in response to requests by the cooperative unions or the Ministry of Cooperatives. Licenses should be renewed automatically and subject to a modest fee to cover administrative costs and not treated as a tax tool. That will increase the efficiency of the sector and create a more predictable investment climate.

- The coffee auction should be voluntary. This will substantially reduce the costs of vertically integrated exporters and estates that have the capacity to market the coffee themselves. It will also enhance cross-border trade so that Tanzanian coffee growers can enjoy the robusta and mild arabica premia enjoyed by their counterparts in Uganda and Kenya.
- The Coffee Board should take full responsibility for collecting, monitoring, and improving the quality of all coffee statistics, especially on production, exports, and export prices, which are currently unacceptable. That will help the public sector take the proper policy actions and the private sector to make correct investment decisions.
- The power of the Coffee Board and the ministries must be substantially reduced and their respective roles clearly defined. Selection of the Coffee Board's managerial team should be the industry's job. This will increase the effectiveness of the decision making process, which ultimately should reflect the needs of the industry, not the wishes of various policy actors.

ENDNOTES

¹ Currently all primary coffee processing is done on farms with grower-owned equipment. Prior to independence most primary processing was done centrally at union-owned pulperies, and the processing previously yielded higher quality coffee. Following independence, most facilities deteriorated. An effort to revive them was undertaken in 1965 as part of an agricultural credit project (World Bank 1965). The attempt, however, was not successful, and eventually all primary processing moved to the farms, where it remains. At that time the quality issue was considered crucial because it represented the only means through which International Coffee Organization members could increase their export revenue — they could not expand production because of quotas.

² The flat fees usually refer to the cost of licenses. According to the 1999 tax report there were four regional and six Coffee Board licenses for the 1998/99 crop year. The regional licenses were buyer of green coffee, curing coffee, roasting, and export. The Coffee Board licenses were private buyer, green coffee buyer, coffee curing, coffee warehouse, coffee roasting, and foreign companies.

³ Taxation is not the only way of transferring resources out of the sector. Bribes are not uncommon. Consider the experience of the author of this report. During a field visit, the driver was stopped for speeding. According to the driver, excessive speeding could carry a six-month jail sentence or a Tsh 20,000 fine, but a Tsh 5,000 bribe settled the offence. In a second field trip, the driver (different driver in a different part of the country) was stopped apparently because one of the rear lights was not working. The “cost” of this offence was Tsh 10,000.

⁴ This is a classical case of large exposure without proper hedging. Recently, the International Task Force on Commodity Risk Management (2001) launched a price risk management training program for KNCU, one of the four initial test cases. The objective of these cases is to evaluate the feasibility of making price risk management instruments available to primary commodity producers in developing countries.

Box 1: The Primary Society of Mweka-Sungu

Primary societies in Tanzania serve both economic and social functions. The Primary Cooperative Society of Mweka-Sungu is one of the 93 members of the Kilimanjaro Native Cooperative Union (KNCU). The society serves the villages of Mweka and Sungu, where more than 3,000 families live. The villages are 20 kilometers north of Moshi, one of the two main towns in the Kilimanjaro region, in the main arabica coffee producing area in Tanzania.

The main cash crop in these two villages is coffee, often intercropped with bananas and maize. The society currently has 679 members; typically only one person from each family is a member of the society. Membership requires a one time fee of 1,535 Tsh. The main economic functions of the society include buying coffee and providing input supplies. The society also acts as a commercial enterprise. It owns a storage facility (with appropriate equipment such as weigh scales), one truck, one bus, and one tractor, which are leased for a fee.

The society has seven permanent staff: the secretary (a 42-year old man with 12 years of education and a very good command of English), the assistant secretary, two watchmen, and three drivers. In addition to the permanent staff, the society employs a number of seasonal workers at about 1,000 Tsh a day, roughly equivalent to 2 kilograms of coffee or 1 kilogram of meat (beef) at 2000/01 prices.

Members can (but are not obliged to) sell coffee to the society. During the 1999/00 season, the society purchased 85.5 tons of coffee. The typical farmer would deliver between 100 and 200 kilograms of coffee over a period of one month. At each delivery, of about 10 to 20 kilograms, the coffee would be examined, weighted, and recorded and the farmer would receive payment. Because all farmers produce similar quality, all coffee would be mixed. If a farmer delivers superior quality coffee, it is sometimes separated from the rest, and the farmer receives a higher price. When adequate quantities of coffee are collected, it is delivered to the KNCU storage facilities for processing.

The society also provides inputs on credit to creditworthy farmers. Creditworthiness is established by having two members of the society sign on behalf of the borrower. The scheme appears to have been successful. For a 2 acre coffee farm, the input (mainly chemicals) costs are about 17,000 Tsh. The inputs could be used for any purpose, but if applied solely to coffee, the 2 acres would yield about 240 kilograms.

The society's income comes mainly from membership fees, a 35 Tsh service charge for each kilogram of coffee purchased, income from leasing the vehicles, and income from leasing a 100-hectare estate at the annual rate of 140 [Tsh?]hectare. Part of the society's profits during the 1999/00 season supported the local primary school lunch program. Finally, the following question was asked of some members of the society: "What would be one project that the World Bank could undertake which would change your livelihood in a significant way?" The response was a water supply project for both home use and irrigation of small plots.

Source: Author's interviews, March, 14, 2001 and June 25, 2002.

Box 2: The Kilimanjaro Coffee Estates

Coffee estates in Tanzania were established during the colonial period, some as early as the 1920s. Their land-ownership arrangements were freehold titles obtained from German settlers. Shortly after independence all freehold titles were converted into 99-year free of charge leases from the government. During the late 1960s coffee estates accounted for a fourth of the country's coffee output, and by many accounts they produced the country's best coffee, commanding a high premium in the world market. The success, however, was short-lived.

On October 23, 1973, the prime minister of Tanzania summoned all coffee estate owners of the Kilimanjaro district whose estates were greater than 50 acres and informed them that as of the next day their estates, including land, buildings, machinery, and bank accounts, would be purchased by the nearest primary societies (members of the Kilimanjaro Native Cooperative Union) at "full and fair compensation." Within the next six months, all estate owners (with one exception) had left their estates. Negotiations between the primary societies and the former estate owners on purchase price were drawn-out. The "negotiated" price turned out to be less than a third of the market value of the estates, and by the time compensation began (eight years later in six-month installments), inflation had halved the value of the sales price. The primary societies in charge of managing the estates borrowed funds from the treasury in order to compensate the former estate owners.

It is not clear why only the Kilimanjaro coffee estates were nationalized. It appears that this was to be the first step toward nationalization of all coffee estates, if the "Kilimanjaro-experiment" had a positive outcome. Production and yields of coffee declined rapidly and sharply, however. In less than a decade all but a few estates were abandoned, producing no coffee at all. Only one primary society managed to repay its debt to the treasury.

Shortly after the 1993/94 coffee sector reforms, the only former estate owner who was living in the area negotiated and subsequently obtained a 30-year lease for his former estate, which at the time was owned and "managed" by a primary society. Despite the fact that the estate was producing no coffee at all, within three years it was fully rehabilitated and soon achieving pre-1973 yields. Other investors followed suit — none of them original estate owners. About 20 coffee estates have been leased to new investors, all of which have been rehabilitated. The typical arrangement is a 30-year lease with the annual rental fee ranging from \$30 to \$150 per acre, adjusted for inflation. The rental fee depends on the condition of the estate as well as the time the lease was signed. Contracts signed recently fetched lower fees because of low coffee prices. One obstacle in leasing the rest of the abandoned estates has been the fact that they are owned by more than one primary society. There have been disagreements within management of the societies on the terms of the contracts and on how to share the revenue from the rental fee.

Some preliminary calculations indicate that, on average, each acre of rehabilitated estate creates the equivalent of two full time minimum wage jobs for unskilled workers (1,000 Tsh a day), while the annual direct transfer to the local economy ranges between \$500 and \$1,000 an acre. That includes wages, rents paid to primary societies, and purchase and repair of machinery, irrigation, transport equipment, and other expenses.

Source: Author's interviews, June 22, 2002.

Box 3: The Moshi Coffee Auction

The coffee auction meets every Thursday at 10:00 a.m. at the premises of the Tanzanian Coffee Board in Moshi in Northern Tanzania, where most of the arabica is produced. All exportable coffee must go through the auction. The Coffee Board, which administers the auction, distributes catalogs with information on suppliers, grades, warehouses, and volume of each lot prior to the session. If the grade of coffee cannot be determined, a sample is placed on the auction floor for visual inspection. All coffee is stored at Coffee Board-approved warehouses. The lot sizes vary considerably and can be as small as 200 kilograms or as large as 18,000 kilograms.

Coffee is traded in dollars, and prior to the session the Coffee Board sets a reserve price for each lot. The final bid must be greater than the reserve price for the transaction to be finalized. Although reserve prices are no longer announced in advance, the Coffee Board sets them in accordance with the New York nearby futures contract. In addition to the coffee that actually changes hands during the auction, there is the so-called “captive coffee,” coffee that the owners intend to export themselves. Only on rare occasions does captive coffee change ownership. Between 1996 and 1999 captive coffee accounted for about 50 percent of the coffee traded at the auction.

There are 24 assigned seats at the auction with at least half being occupied at each session. The auction is also open to observers. During the March 15, 2001 session, there were 14 buyers, 24 observers, and 3 members of the auction team present. Bids are presented orally until the highest bidder is found. The auctioneer declares the lot sold only if the highest bid exceeds the reserve price. Some traders who represent major coffee trading houses have instant communication with their headquarters at the time of the bidding (through cell phones.)

If the highest bid is less than the reserve price, the auctioneer records the bid as a “noted price” and later establishes an administered price, which is between the reserve price and the highest bid. The auctioneer then offers the lot to the highest bidder at the administered price. If the offer is not accepted, the lot is offered for sale in the next session.

Source: Author's interview, March, 15, 2001 and Tanzanian Coffee Board.

Table 1: Tanzania's Coffee Area, Production, and Yields, Selected Years

	AREA		PRODUCTION		YIELD
	HECTARES	PERCENT	TONS	PERCENT	KGS/HA
1972/73					
Northern	63,000	50	18,900	40	
Southern	16,000	13	5,400	11	300
Estates	12,200	10	11,200	24	338
Western	35,000	27	12,000	25	918
TOTAL	126,000	100	47,500	100	343
1981/82					377
Northern	53,000	42	23,521	46	
Southern	22,000	17	11,977	23	444
Estates	12,000	9	4,485	9	544
Western	40,000	32	10,991	22	374
TOTAL	127,000	100	50,974	100	257
1991/92					401
Northern	90,000	38	17,580	32	
Southern	66,000	28	14,600	27	195
Estates	12,200	5	2,440	4	221
Western	67,000	29	20,395	37	200
TOTAL	235,200	100	55,015	100	304

Source: World Bank (1994, p. 122, table 4.5) and author's calculations.

Table 2: Principal Institutions involved in the Tanzanian coffee sector

INSTITUTION	ENTITY	MAIN FUNCTIONS AND RESPONSIBILITIES
Ministry of Agriculture and Food Security	Government	Supervises the sector. Acts as liaison between the sector and the legislature and provides legal and policy guidelines.
Ministry of Cooperatives	Government	Oversees and regulates the cooperative unions. It provides policy guidance and operational framework that is geared towards restructuring cooperatives to operate on an independent, voluntary and economically viable basis and to develop into centers for providing and disseminating agricultural inputs, technology and information.
Tanzania Coffee Board	Statutory body	Established with the Policy Industry Bill of 1993, it replaced the Tanzanian Coffee Marketing Board. Advises the government on policies and strategies for the development of the coffee industry, regulates the industry, issues various licenses and permits, collects and disseminates statistics, and runs the coffee auction.
Primary Societies	Private sector	Village-level associations whose membership consists of farmers, often act as agents of coffee buyers (either private or union.) Engage in a number of other commercial and non-commercial activities.
Cooperative Unions	Private sector	Associations of primary societies, often buy, store, and process coffee in their own facilities (also engage in other activities.) Compete with private traders. As of 1991 are supposed to be private entities. The Kilimanjaro Native Cooperative Union was the first union to be registered under the Co-Operative Societies Ordinance of 1932.
Coffee Apex Organization	Private sector	Created in 1996, membership consists of all cooperative unions which are still involved in marketing and processing of coffee. Promotes the interests of its members.
Tanzania Coffee Research Institute	Non-profit organization	Established in 2001 and modeled after the Tea Research Institute. Financed by a levy collected by the Coffee Board.
Tanzania Coffee Growers Association	Private sector	Established in 1945, promotes the interests of large coffee farmers and estate producers.
Tanzania Coffee Association	Private sector	Established in 1996, mainly a forum for dispute resolution. Membership consists of licensed coffee traders, processors, cooperative unions, and exporters.

Source: Government of Tanzania (2000a) and author's interviews.

Table 3: Prices Received by coffee growers, 1985/86-1998/99

	EXCHANGE RATE (Tsh/\$)	EXPORT PRICE			PRODUCER PRICE ^b		
		CLEAN COFFEE		CHERRY ^a	NOMINAL	REAL (1995)	SHARE OF EXPORT PRICE
		(\$/kg)	(Tsh/kg)	(Tsh/kg)	(Tsh/kg)	(Tsh/kg)	(percent)
MILD ARABICAS							
1985/86 ^c	20	3.88	76	61	46	594	75
1986/87 ^c	52	3.00	157	125	61	595	48
1987/88 ^c	84	2.52	211	169	97	733	58
1988/89	121	2.43	294	235	90	516	38
1989/90	174	1.10	192	153	126	575	82
1990/91	204	1.49	303	243	155	520	64
1991/92 ^c	231	1.28	295	236	230	600	97
1992/93 ^c	450	1.38	621	497	231	494	46
1993/94	500	1.90	950	760	250	427	33
1994/95	550	2.80	1,540	1,232	1,100	1,412	89
1995/96	550	1.90	1,045	836	750	750	90
1996/97	600	2.80	1,680	1,344	800	661	60
1997/98	650	2.75	1,788	1,430	850	605	59
1998/99	700	2.42	1,694	1,355	900	568	66
ROBUSTAS AND HARD ARABICAS							
1985/86 ^c	20	2.83	55	28	18	237	66
1986/87 ^c	52	2.50	131	65	33	318	50
1987/88	84	1.80	151	75	38	284	50
1988/89	121	1.80	218	109	51	293	47
1989/90	174	0.84	147	73	55	251	75
1990/91	204	0.79	161	80	61	203	75
1991/92 ^c	231	0.73	168	84	70	183	83
1992/93 ^c	450	0.77	347	173	113	242	65
1993/94	500	1.60	800	400	90	154	23
1994/95	550	1.60	880	440	300	385	68
1995/96	550	1.25	688	344	250	250	73
1996/97	600	1.33	798	399	290	240	73
1997/98	650	1.35	878	439	300	214	68
1998/99	700	1.34	938	469	300	189	64

a. A factor of 0.80 was used to convert clean mild arabica into parchment equivalent and 0.50 to convert clean robusta into cherry equivalent.

b. Nominal prices were converted to real using annual averages of domestic CPI (1995=1).

c. Years when second payment was made.

Source: Government of Tanzania (2000a, Appendix 7, p. 33); original data from the Tanzania Coffee Board.

Table 4: Tanzanian Coffee Sales, 1980/81-1998/99 (tons)

YEAR	MILD ARA- BICA	HARD ARABICA/ ROBUSTA	SOLUBLE	TOTAL	TOTAL SALES (millions of \$)
1980/81	48,785	12,327	402	61,514	157
1981/82	53,164	4,495	540	58,199	151
1982/83	41,208	8,680	782	50,670	131
1983/84	39,010	12,215	670	51,895	148
1984/85	32,913	10,465	442	43,820	127
1985/86	36,802	11,827	420	49,049	173
1986/87	33,301	15,104	852	49,257	126
1987/88	28,301	15,570	501	44,372	103
1988/89	35,212	24,389	243	59,844	132
1989/90	43,810	12,413	369	56,592	76
1990/91	43,855	11,925	371	56,151	94
1991/92	36,131	14,809	368	51,308	55
1992/93	43,451	13,300	384	57,135	71
1993/94	25,709	8,443	400	34,552	63
1994/95	26,983	15,488	512	42,983	139
1995/96	40,345	11,959	450	52,754	120
1996/97	29,647	13,968	400	44,015	102
1997/98	21,207	16,795	520	38,522	76
1998/99	27,485	19,185	380	47,050	93

Source: Government of Tanzania (2000a, Appendix 5, p. 31); original data from Tanzania Coffee Board.

Table 5: Distribution of quality for mild Arabica, 1968/69-1999/2000 (percent)

YEAR	HIGH	MEDIUM	LOW	POOR	HIGH+MEDIUM	LOW+POOR
1968/69	16.0	74.9	6.4	2.7	90.9	9.1
1969/70	16.0	74.4	5.7	4.2	90.4	9.9
1970/71	15.0	70.2	9.0	5.8	85.2	14.8
1971/72	7.1	79.5	10.1	3.2	86.6	13.3
1972/73	11.2	72.6	12.4	3.9	83.8	16.3
1979/80	3.2	73.9	17.0	5.9	77.1	22.9
1980/81	1.2	64.4	25.9	8.5	65.6	34.4
1981/82	1.7	76.9	16.6	4.8	78.6	21.4
1982/83	0.8	75.8	17.5	5.9	76.6	23.4
1983/84	1.7	75.1	18.1	5.1	76.8	23.2
1984/85	1.0	72.4	21.9	4.7	73.4	26.6
1985/86	2.2	74.6	19.5	3.7	76.8	23.2
1986/87	1.7	67.8	28.6	2.0	69.5	30.6
1987/88	1.9	58.5	32.7	6.9	60.4	39.6
1988/89	2.5	73.7	19.0	4.8	76.2	23.8
1989/90	2.5	73.2	18.9	5.4	75.7	24.3
1990/91	4.6	72.9	16.1	6.4	77.5	22.5
1991/92	1.1	80.4	11.1	7.4	81.5	18.5
1992/93	1.5	76.5	18.1	3.9	78.0	22.0
1993/94	2.0	77.0	18.0	3.0	79.0	21.0
1994/95	2.5	79.0	15.0	3.5	81.5	18.5
1995/96	3.0	79.1	16.6	2.5	82.1	19.1
1997/98	0.6	59.5	29.9	10.0	60.1	39.9
1998/99	0.7	60.3	34.9	4.0	61.0	38.9
1999/2000	1.2	67.3	25.9	5.6	68.5	31.5
AVERAGES						
1968-72	13.1	74.3	8.7	4.0	87.4	12.7
1979-84	1.6	73.1	19.5	5.8	74.7	25.3
1985-93	2.2	69.6	23.7	4.6	71.7	28.3
1994-99	1.6	69.0	24.5	5.1	70.6	29.6

Note: The quality of Tanzanian coffee is defined over 17 classes. High quality includes classes 1-5; medium quality includes classes 6-10; low quality includes classes 11-13; and poor quality includes classes 14-17. Data are missing for 1973/74–1978/79 and for 1995/96.

Source: Ponte (2002).

Table 6: Market shares in coffee trade in Northern Tanzania, 1993/94-1997/98 (percent)

	1993/94	1994/95	1995/96	1996/97	1997/98
Vertically integrated exporters ^a	0	12	33	57	45
Other private coffee buyers	0	1	8	12	22
Cooperatives	75	58	44	22	26
Estates	6	8	4	6	7
Other governmental organizations	19	21	11	2	1

a. Firms with their own processing facilities; other private coffee buyers outsource processing.

Source: Tanzania Coffee Board.

Table 7: Coffee processing capacity, parchment and cherry, selected years

FACTORY LOCATION	YEAR BUILT	OWNERSHIP	CAPACITY (tons/hour)
MILD ARABICAS			
Moshi	1935	Union	8.0
Mbinga	1988	Union/Coffee Board	6.0
Mbosi	1988	Union/Coffee Board	8.0
Moshi	1995	Private	8.0
Moshi	1995	Private	8.0
Moshi	1996	Private	2.0
ROBUSTAS AND HARD ARABICAS			
Bukoba	1935	Union	12.0
Kemondo	1993	Private	1.8
Kemondo	1995	Private	3.0
Kemondo	1995	Private	3.0
Bukoba	1995	Private	1.3
Karagwe	1995	Private	0.8
Karagwe	1996	Union	3.0
Bukoba	1998	Private	2.0
Karagwe	1999	Private	2.0
Karagwe	1999	Private	3.0

Source: Government of Tanzania (2000a) and author's interviews.

Table 8: Composition of taxes on coffee, 1997/98 and 1998/99

	TSH/KG		SHARE OF PRODUCER PRICE	
	1997/98	1998/99	1997/98	1998/99
ARABICA				
EXPORT PRICE	2,148	2,410	na	na
AUCTION PRICE	2,041	1,879	na	na
PRODUCER PRICE	1,242	1,000	na	na
District produce cess	52.57	61.67	4.23	6.17
Education fund	8.83	11.00	0.71	1.10
District development levy	na	1.67	na	0.17
Village levies	12.08	12.00	0.97	1.20
Regional buying license	0.93	0.93	0.07	0.09
Sum of Local Taxes	74.41	87.27	5.99	8.73
Coffee Board buying license (\$ 2,000)	3.25	3.25	0.26	0.33
Export license (\$ 2,000)	0.81	3.25	0.07	0.33
Coffee Board fee (1.5 percent auction price)	24.49	28.19	1.97	2.82
Auction fee (0.32 percent auction price)	5.22	6.01	0.42	0.60
Stamp duty (1.2 percent export price)	19.59	22.54	1.58	2.25
Withholding tax (2 percent export price)	32.65	37.58	2.63	3.76
Export duty (2 percent export price)	34.37	na	2.77	na
Sum of central taxes	120.38	100.82	9.69	10.08
Total arabica tax^a	194.79	188.09	15.68	18.81
ROBUSTA				
EXPORT PRICE	923	1,230	na	na
AUCTION PRICE	877	994	na	na
PRODUCER PRICE	320	375	na	na
District produce cess	5.50	8.00	1.72	2.13
Education fund	15.00	15.00	4.69	4.00
District development levy	5.00	5.00	1.56	1.33
Village levies	na	0.25	na	0.07
Regional buying license	0.25	na	0.08	na
Sum of local taxes	25.75	28.25	8.05	7.53
Coffee Board buying license (\$ 2,000)	3.25	3.25	1.02	0.87
Export license (\$ 2,000)	0.81	3.25	0.25	0.87
Coffee board fee (1.5 percent auction price)	7.23	14.91	2.26	3.98
Auction fee (0.32 percent auction price)	1.54	3.18	0.48	0.85
Stamp duty (1.2 percent of export price)	5.79	11.93	1.81	3.18
Withholding tax (2 percent export price)	9.65	19.88	3.02	5.30
Export duty (2 percent export price)	10.15	na	3.17	na
Sum of central taxes	38.42	56.40	12.01	15.04
Total robusta tax^a	64.17	84.65	20.05	22.57

Na is not applicable.

a. Total taxes do not include a number of special taxes and levies applied to the coffee estates.

Source: Government of Tanzania (1998 and 1999) and author's calculations.

Table 9: Direct and indirect rates of protection, 1986-99 (percent)

YEAR	ARABICA			ROBUSTA		
	DIRECT	INDIRECT	TOTAL	DIRECT	INDIRECT	TOTAL
1986-89	-51.9	12.0	-47.1	-59.0	8.0	-52.0
1990-93	-36.9	-9.0	-45.9	-49.0	-8.0	-56.0
1994-99	-41.5	-19.9	-61.4	-54.0	-17.0	-71.0

Note: Minus sign indicates taxation.

Source: Government of Tanzania (2000b, p. 73, table 2.12).

Table 10: Tanzanian coffee sale comparisons from different sources, volumes, 1990/91-1997/98

YEAR	TONS			PERCENTAGE OVER USDA			
	p. 11	p. 26	Tanzania Coffee Board	U.S. Department of Agriculture (USDA)	p. 11	p. 26	Tanzania Coffee Board
1990/91	56,868	54,695	41,648	44,500	28	23	-6
1991/92	51,996	47,981	40,296	46,200	13	4	-13
1992/93	35,752	57,225	45,070	56,040	-36	2	-20
1993/94	43,782	34,051	33,989	57,360	-24	-41	-41
1994/95	53,604	43,615	36,137	48,480	11	-10	-25
1995/96	45,373	52,520	46,984	52,020	-13	1	-10
1996/97	39,522	43,617	46,828	45,900	-14	-5	2
1997/98	48,550	38,002	35,529	37,440	30	2	-5
AVERAGES							
1990-94	47,100	48,488	40,251	51,025	-8	-5	-21
1994-98	46,762	44,439	41,370	45,960	2	-3	-10

Source: p. 11, Government of Tanzania (2000a, p. 11, table 8); p. 26, Government of Tanzania (2000a, p. 26, table in Appendix 1); Tanzania Coffee Board (2001); and USDA, "Tropical Products: World Market and Trade" (<http://www.fas.usda.gov/http/>).

Table 11: Arabica export price comparisons from different sources, 1985/86-19998/99

YEAR	US dollars a kilogram			Percentage difference		
	p. 31	p. 33	International Coffee Organization ^a	p.31/p.33	p. 31 / International Coffee Organization	p. 33 / International Coffee Organization
1985/86	3.75	3.88	4.07	-3.4	8.5	4.9
1986/87	2.67	3.00	3.11	-11.0	16.5	3.7
1987/88	2.59	2.52	2.77	2.8	6.9	9.9
1988/89	2.56	2.43	3.07	5.3	19.9	26.3
1989/90	1.40	1.10	1.82	27.3	30.0	65.5
1990/91	1.81	1.49	1.98	21.5	9.4	32.9
1991/92	1.08	1.28	1.62	-15.6	50.0	26.6
1992/93	1.38	1.38	1.38	0.0	0.0	0.0
1993/94	1.90	1.90	1.97	0.0	3.7	3.7
1994/95	3.50	2.80	4.07	25.0	16.3	45.4
1995/96	2.50	1.90	2.80	31.6	12.0	47.4
1996/97	2.80	2.80	3.54	0.0	26.4	26.4
1997/98	2.46	2.75	3.68	-10.5	33.8	33.8
1998/99	2.42	2.42	2.46	0.0	1.7	1.7

a. Averaged between July and June to coincide with the Tanzania arabica crop cycle.

Source: p. 31, Government of Tanzania (2000a, p. 31); p. 33, Government of Tanzania (2000a, p. 33);

Figure 1: Producer Share of Arabica fob Price

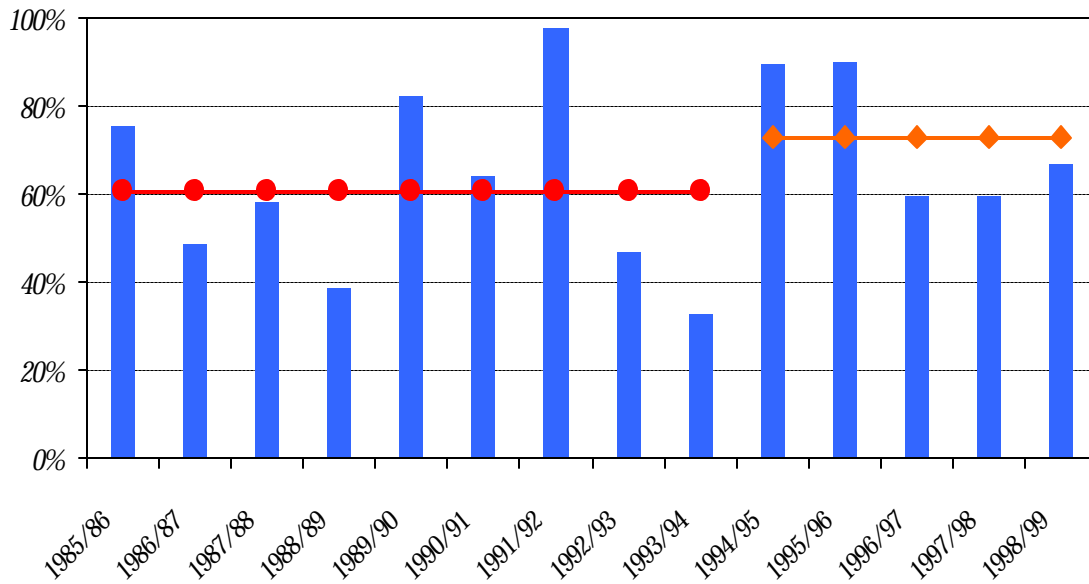


Figure 2: Producer Share of Robusta fob Price

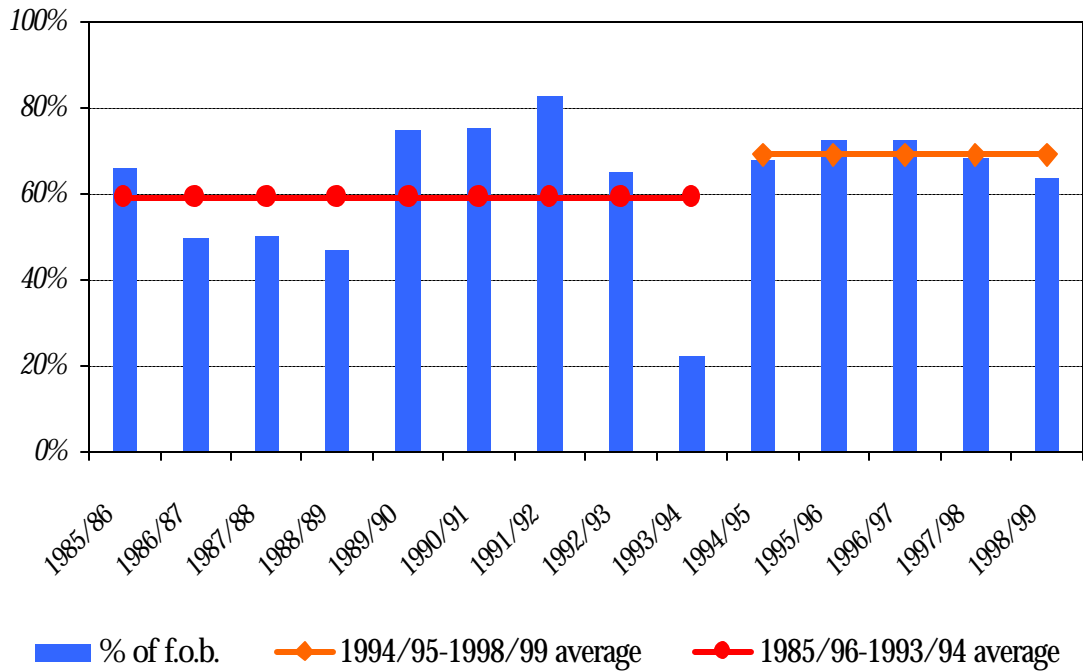
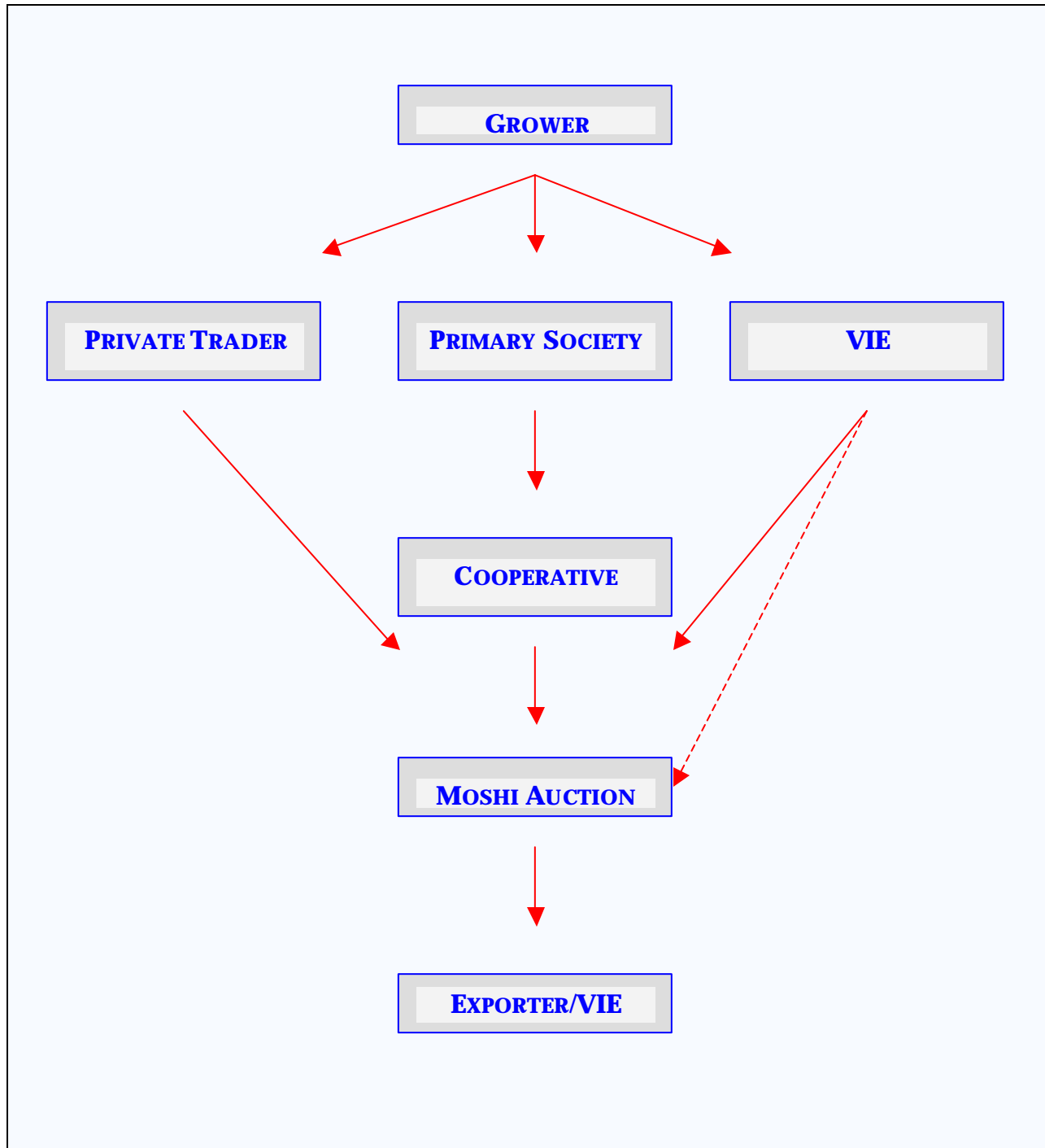


Figure 3: Post-1994 Coffee Marketing Structure in Tanzania



Note: The numbers in parentheses are approximate marketing shares for the 1997/98 season. Dashed arrow indicates the least cost path of “captive coffee”.

APPENDIX A 1: THE WORLD COFFEE MARKET

Most tropical countries produce coffee. Latin America accounts for 60 percent of global output, followed by Asia (24 percent), and Africa (16 percent). Coffee production grew by 2.0 percent during the 1970s and by 1.6 percent during the 1980s. In the early 1990s output was around 100 million bags with virtually no growth, but during the last four seasons global coffee output has averaged 113 million bags.

Almost half of world output is accounted for by the three dominant producers: Brazil (28 percent), Colombia, and Vietnam (10 percent each). Other significant producers are Indonesia and Mexico (6 percent each) and India (4 percent; table A1). More than 80 percent of coffee is traded internationally and consumed mainly by high-income countries. In some years it is the second most traded commodity after crude oil, generating about \$15 billion in export revenue (evaluated at 1997-98 average prices and volumes). The United States accounts for about 18 percent of global consumption, followed by Germany (9 percent), Japan (6 percent), and France and Italy (5 percent each). Five significant producers consume a substantial portion of their coffee output: Brazil and Ethiopia (30 percent each), Indonesia (23 percent), Mexico (19 percent), and Colombia (11 percent).

There are two types of coffee, arabica and robusta. Arabica, which accounts for two-thirds of total output, is grown at high altitudes in Latin America and northeastern Africa. It has more aroma and less caffeine than robusta. Robusta, which has a much stronger taste than arabica, is grown in humid areas at low altitudes in Asia and western and southern Sub-Saharan Africa. Arabica typically commands a premium over robusta, but the price differential exhibits considerable variability. A bivariate time series error-correction model that examined the comovement of arabica and robusta prices using monthly data from January 1983 to September 2001 found extremely low comovement, almost as if arabica and robusta coffee were two different commodities. In the 1990s, for example, the price differential fluctuated between 13 percent in October 1995 and 156 percent in August 1997 (figures A1 and A2).

Coffee prices are among the most volatile of commodity prices. During the 1990s arabica prices ranged from \$1.17 a kilogram in August 1992 and \$5.89 a kilogram in May 1997 (table 1). Robusta prices ranged from \$0.82 a kilogram in June 1992 to \$4.03 a kilogram in September 1994 (table 2). The price volatility stems in part from weather conditions in Brazil, which typically experiences a frost every five to six years and occasionally suffers severe droughts. While short-selling and -buying by hedge funds are sometimes cited as a reason for the high volatility of coffee prices, this activity probably contributes only to short-term price volatility. Highly liquid coffee futures contracts,

where the hedge fund activity takes place, are traded at the New York Board of Trade (NYBOT) for arabica and at the London International Financial Futures and Options Exchange (LIFFE) for robusta. Less liquid contracts are traded at the São Paulo Commodity Exchange (Brazil), the Singapore Commodity Exchange, and the Bangalore Commodity Exchange (India.)

Coffee prices have declined considerably since 1998 (figure A1). In January 2002 robusta dropped to \$0.50 a kilogram (the lowest nominal level since the \$0.49 a kilogram of May 1965 and 86 percent below its high of four years earlier), while in October 2001 arabica averaged \$1.24 a kilogram, a nine-year low and 76 percent below its high of four years earlier. The main factor behind the price collapse has been oversupply, primarily a reflection of major producer's concerted efforts to increase output and to a lesser extent weak currencies of the main producing countries. Brazil, the dominant arabica producer, has averaged a record output of 33 million bags during the last four seasons. Vietnam has emerged as the dominant robusta producer and has overtaken Colombia as the world's second largest coffee producer and exporter. With the increasing share's of Vietnam and Brazil the concentration index of coffee production increased to 0.14 in 2000 (from 0.11 in 1970), which is somewhat surprising, given that output almost doubled during that period. The concentration index, also known as the Herfindahl index, is defined as the squared sum of production shares of all countries. A value of unity indicates that a single country accounts for the entire production. Values close to zero indicate that a large number of countries have equal shares.

Brazil's expanded production is effectively displacing Central America arabica producers while Vietnam's expanded production is displacing African robusta producers. Asian robusta producers such as India, Indonesia, and Thailand have maintained or even increased their market shares. Africa's coffee output has remained about constant at 20 million bags for the past 30 years, and Africa's share of the global coffee market has declined from 33 percent in 1970 to 18 percent in 2000 (table A4).

The technology of coffee production has changed significantly in the past 30 years, but not all countries have shared equally in the changes. Average yields in Asia are double those in Sub-Saharan Africa, and yields in Latin America are 60 percent higher. Annual yield growth during the 1990s was 2.6 percent in Asia, 1.7 percent in Latin America, and 1.1 percent in Sub-Saharan Africa, according to Food and Agriculture Organization data.

A Liberal International Policy Environment Replaced Interventions

The coffee market has been subject to considerable national and international interventions. Akiyama (2001) reports that only 15 of the world's 51 coffee producing

countries had private marketing systems in 1985. Twenty-five countries sold coffee through state-owned enterprises, including marketing boards and stabilization funds, and another 11 countries had mixed state and private sector marketing bodies. Today, with a few exceptions (notably Colombia), the coffee sectors of most countries have been reformed to allow private sector marketing.

Most aspects of coffee marketing and trade, especially in Sub-Saharan Africa, were handled by government-controlled agencies, which typically resulted in heavy taxation of the sector. Although the reasons behind the tax policies varied, among the main ones were low price elasticity of short-run supply, implying minimal impact of taxation on supply; less social and political resistance to taxation for cash crops than for food crops; relative simplicity of tax collection, facilitated by the single marketing channel; and support for the government budget and balance of payments through foreign exchange earnings.

In addition to country-specific objectives, domestic coffee policies (and subsequent reform efforts) were influenced by a sequence of coffee agreements administered by the International Coffee Organization, created in 1962 to stabilize coffee prices using export quotas. The agreements kept coffee prices higher than they otherwise would have been (Gilbert 1994). That calls into question why consuming countries would engage in such a deal. According to Bates (1997) the United States, a powerful International Coffee Organization member, was willing to accept high coffee prices as a means of increasing the income of Central American coffee producing countries, hoping that this would reduce the spread of communism. Western European countries viewed high coffee prices as a way to provide aid to their former colonies.

Most coffee producing countries (accounting for 90 percent of global output) and almost all developed country coffee consuming countries were members of the International Coffee Organization. To satisfy their quota obligations, governments of coffee producers bought stocks using part of their tax revenues. The last coffee agreement was effective from September 1980 to July 1989, after which the system was abandoned.

Following the collapse of the agreement, several coffee producers including Brazil and Colombia (but not Vietnam and Mexico) formed the Association of Coffee Producing Countries (ACPC). The ACPC “by seeking a balance between world supply and demand ... aims to stabilize coffee prices at levels that are fair and remunerative to producers and yet consistent with increasing consumption.” During 2000 and 2001 the ACPC worked to persuade coffee producing countries to retain part of their exports in order to reverse the decline in coffee prices that started in 2000. But coffee prices collapsed, and the ACPC was dissolved in February 2002.

There are a number of reasons for ACPC's inability to reverse the price trend. First, there was no effective mechanism to control coffee exports apart from the good will of members. Second, not all coffee producing countries were members of the ACPC and hence not all were bound by its decisions. Third, market forces react to the level of stocks and not to who is holding the stocks or to where the stocks are located. Last, even in the event of a successful export retention scheme, the stocks (unless destroyed) will eventually find their way to the market and hence depress prices.

Many coffee producing countries undertook reforms during the 1990s, by removing or redefining the role of state agencies (for a review of reforms in India, Togo, and Uganda, see Akiyama 2001). Uganda, for example, undertook sweeping reforms in 1990. High taxes, overvalued exchange rate, inefficiencies of the Coffee Board, political instability, and the price decline of 1989 made reforms the only viable alternative. By many accounts, reforms have had a positive impact. Producer prices rose from 40–50 percent of export prices to 70–80 percent. The supply response has been considerable, and many entrepreneurs have entered the market. Regulation, quality control, and promotion issues were assigned to the newly established Uganda Coffee Development Authority. In addition to increased output, Uganda regained its reputation as a reliable robusta producer, consequently commanding a premium for its exports. Some African producers still control several aspects of coffee marketing (Ethiopia, Kenya) while others are in the process of reform (Côte d'Ivoire, Tanzania), but their individual production is not large enough to affect the world market significantly.

Poor Prospects in the Long Term

Given the ACPC's inability to put a floor under coffee prices and in the absence of any new international initiative or distorting domestic policies by dominant producers, the outlook for the coffee market depends entirely on supply and demand. Neither the supply nor the demand outlook favors a significant recovery in coffee prices.

Vietnam's emergence as a major robusta producer is likely to influence robusta prices for many years. In 1980 Vietnam produced 140,000 bags of coffee—less than 0.2 percent of world production. In 2001, it exceeded 13.3 million bags—more than 11.4 percent of world production. Vietnam is a low-cost producer, and its coffee trees are very young and have yet to reach maximum yields (Renaud 2002). Brazil has been able to maintain unprecedented output levels, averaging more than 33 million bags during the last four seasons, depressing arabica prices. Extensive mechanization of coffee harvesting has substantially reduced labor costs, and better varieties with higher yields have been developed and adopted. Shifting production north, away from frost-prone areas of the south, has reduced the likelihood of weather-related supply disruptions. And extensive use of irrigation has stabilized and sustained yields. Both Vietnam and

Brazil appear to be efficient producers, and so are unlikely to reduce coffee production. Any production cutbacks to restore the balance are likely to come from the high-cost African and Central American producers.

The long-term demand outlook is not very promising either. Per capita coffee consumption in high-income countries, where three-quarters of coffee is consumed, has remained virtually unchanged during the past decade, implying a near-zero income elasticity for coffee. Using annual data for 1968-86, Akiyama and Varangis (1990) estimated an income elasticity for coffee of 0.60. Using this elasticity and a projected income growth of 3.5 percent for the high-income countries implies annual growth in coffee consumption of 1.5 percent during the current decade. The consumption patterns of the 1990s make such an outlook seem optimistic, however.

According to recent International Coffee Organization calculations, per capita coffee consumption has declined from 5.8 kilograms a year in 1993 to 5.5 kilograms in 1999 in Western Europe and from 4.5 kilograms a year to 4.2 kilograms in the United States (table A5). The current average per capita coffee consumption of 4.2 kilograms is the same as the 1910-20 average. Per capita coffee consumption in the United States peaked at about 8 kilograms after World War II, declined to 6.5 kilograms during the 1960s, before returning to its 1910-20 average (Pan-American Coffee Bureau 1970).

Coffee faces fierce competition from the soft drink industry, as does tea. In 1970 annual per capita consumption of soft drinks in the United States was 86 liters; in 1999 it exceeded 200 liters, according to U.S. Department of Agriculture data. And with the exception of a few coffee producers, low-income countries that have high income growth potential and high income elasticities for food do not consume much coffee. Efforts to penetrate new markets (China and Russia, for example) have only recently begun. Even if such efforts succeed, that success is likely to come at the expense of tea consumption, which is often produced by the same countries that produce coffee. Note that the tea industry has also engaged in efforts to increase tea consumption.

A paper published jointly by the Inter-American Development Bank, the U.S. Agency for International Development, and the World Bank (IADB/USAID/ World Bank 2002, p. 2) identifies several factors that are likely to further influence coffee processing and consumption patterns. First, roasters are able to work with lower level of stocks. Second, new technology enables them to remove the harsh taste of natural arabicas and robustas, achieving the same level of quality with lower quality beans. Third, roasters have been more flexible in their ability to make short-term switches between coffee types, implying that the premia of certain types of coffee cannot be retained for long. Finally, a small segment of the market has emerged that focuses on product differentiation, such as organic, gourmet, and shade coffee. The implication of all this is

that the demand outlook is likely to be different for different coffee producers. Specifically, if any expansion in coffee demand takes place, it is likely to be at the two ends of the spectrum: lower quality beans (reflecting improved technology) and specialty coffees (reflecting expansion to niche markets).

To summarize, with the aggressive production prospects of major Asian producers, especially Vietnam; with Brazil's expansion, considerable efficiency gains, and reduced likelihood of frosts; and with weak demand prospects due to low income elasticity and strong competition from soft drinks, the outlook for the coffee market is poor. While prices are expected to recover from their current lows when the downward adjustment of supply takes place, prices are unlikely to reach the highs experienced during the boom years of the late 1970s or the mid-1990s (figures A3 and A4).

Table A 1: Coffee Production, 1970-2000 (thousands of 60 kilogram bags)

	<i>1970</i>	<i>1980</i>	<i>1990</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
PRODUCTION							
Brazil	11,000	17,687	24,414	23,500	35,600	30,800	32,600
Colombia	8,450	12,073	14,083	12,043	10,868	9,512	12,000
Vietnam	122	140	1,200	7,000	7,500	11,100	11,167
Indonesia	3,085	5,365	7,250	7,000	6,950	7,170	7,300
Mexico	3,088	3,862	4,550	4,950	5,010	6,000	5,800
India	1,914	1,977	2,970	3,850	4,415	4,870	4,900
Guatemala	2,109	2,702	3,282	4,200	4,300	4,364	4,494
Côte d'Ivoire	4,660	4,160	4,769	4,080	2,217	5,700	4,333
Ethiopia	2,833	3,264	3,500	3,833	3,867	3,833	3,767
Uganda	3,358	2,253	2,700	3,032	3,640	3,200	3,200
Honduras	545	1,262	1,685	2,905	1,494	3,067	2,668
Peru	1,114	1,170	1,850	1,820	1,980	2,416	2,495
Costa Rica	1,220	2,140	2,565	2,455	2,459	2,650	2,400
El Salvador	2,054	2,940	2,405	2,040	1,860	2,612	2,112
Papua New Guinea	458	913	1,000	1,076	1,350	1,386	1,200
Thailand	10	201	900	1,293	916	1,338	1,200
Kenya	972	1,568	1,502	1,028	1,148	1,679	1,121
Cameroon	1,550	1,860	1,365	889	1,334	1,300	1,100
Ecuador	1,201	1,517	1,850	1,230	1,322	1,209	1,100
Nicaragua	648	971	454	1,083	1,131	1,304	1,100
World	64,161	80,482	101,050	97,485	108,740	114,004	115,053

Source: Food and Agriculture Organization and International Coffee Organization.

Table A 2: Arabica prices, 1960-2002 (US dollars a kilogram)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL ^a	
													NOMINAL	REAL
1960	0.94	0.95	0.93	0.93	0.92	0.91	0.92	0.93	0.92	0.92	0.91	0.90	0.92	3.99
1961	0.91	0.92	0.91	0.90	0.89	0.89	0.89	0.89	0.89	0.89	0.88	0.88	0.90	3.80
1962	0.88	0.88	0.86	0.85	0.83	0.80	0.81	0.82	0.83	0.81	0.81	0.82	0.83	3.47
1963	0.83	0.80	0.81	0.81	0.80	0.80	0.81	0.80	0.80	0.80	0.81	0.80	0.81	3.41
1964	0.93	0.94	1.04	1.00	1.02	1.01	1.02	1.05	1.04	1.04	1.03	1.01	1.01	4.22
1965	1.01	1.04	0.99	0.97	0.96	0.98	0.98	1.00	1.00	1.01	1.03	1.03	1.00	4.16
1966	1.01	0.97	0.95	0.95	0.95	0.92	0.92	0.92	0.90	0.89	0.89	0.87	0.93	3.71
1967	0.85	0.84	0.82	0.85	0.89	0.91	0.90	0.88	0.86	0.85	0.87	0.85	0.86	3.42
1968	0.87	0.87	0.88	0.89	0.88	0.89	0.88	0.87	0.85	0.85	0.85	0.83	0.87	3.46
1969	0.83	0.84	0.83	0.81	0.81	0.80	0.78	0.81	0.90	1.04	1.02	1.05	0.88	3.33
1970	1.14	1.15	1.17	1.20	1.22	1.21	1.21	1.18	1.16	1.12	1.03	0.98	1.15	4.09
1971	1.00	0.98	1.01	0.99	1.02	1.00	0.99	1.01	0.96	0.94	0.97	1.02	0.99	3.36
1972	0.99	1.00	1.02	1.01	1.04	1.07	1.24	1.20	1.17	1.18	1.19	1.22	1.10	3.42
1973	1.28	1.45	1.42	1.29	1.42	1.41	1.36	1.33	1.33	1.38	1.39	1.42	1.37	3.68
1974	1.53	1.65	1.58	1.55	1.57	1.59	1.52	1.38	1.20	1.25	1.31	1.30	1.45	3.19
1975	1.23	1.18	1.10	1.05	1.12	1.23	1.45	1.84	1.78	1.77	1.71	1.84	1.44	2.85
1976	2.05	2.19	2.20	2.70	2.99	3.30	3.03	3.38	3.51	3.82	4.03	4.57	3.15	6.16
1977	4.83	5.41	6.71	7.00	6.29	5.78	4.85	4.40	4.18	3.77	4.35	4.47	5.17	9.35
1978	4.55	4.36	3.86	3.94	3.74	3.71	2.95	3.05	3.42	3.40	3.22	2.89	3.57	5.59
1979	2.83	2.71	2.87	3.06	3.30	4.26	4.49	4.35	4.57	4.62	4.56	4.28	3.82	5.53
1980	3.81	3.71	4.12	4.05	4.23	4.05	3.52	3.10	2.86	2.84	2.60	2.72	3.47	4.40
1981	2.89	2.85	2.86	2.89	2.83	2.51	2.67	2.78	2.80	3.02	3.18	3.13	2.87	3.64
1982	3.18	3.40	3.22	3.12	3.03	3.10	2.94	2.93	3.00	3.10	3.05	2.97	3.09	4.04
1983	2.87	2.80	2.76	2.75	2.83	2.81	2.83	2.86	2.92	3.10	3.19	3.23	2.91	3.91
1984	3.17	3.22	3.27	3.31	3.31	3.25	3.18	3.21	3.14	3.02	3.09	3.10	3.19	4.38
1985	3.21	3.18	3.26	3.12	3.15	3.13	2.98	2.94	2.94	3.10	3.43	4.34	3.23	4.48
1986	5.24	5.03	5.28	4.98	4.66	3.90	3.80	3.83	4.40	3.92	3.45	3.00	4.29	5.18
1987	2.72	2.66	2.29	2.37	2.59	2.32	2.20	2.25	2.44	2.63	2.79	2.80	2.51	2.76
1988	2.82	3.05	3.01	3.01	3.06	3.17	3.13	2.92	3.04	2.95	2.98	3.25	3.03	3.14
1989	3.36	3.09	3.10	3.17	3.10	2.76	1.94	1.73	1.73	1.51	1.56	1.60	2.39	2.48

Continued next page

TABLE A2 (continued)

ARABICA PRICES, 1960-2002 (US DOLLARS A KILOGRAM)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
													NOMINAL	REAL
1990	1.68	1.85	2.09	2.09	2.05	1.97	1.91	2.08	2.10	2.02	1.87	1.97	1.97	1.97
1991	1.89	1.97	2.06	2.03	1.94	1.89	1.84	1.80	1.92	1.76	1.72	1.66	1.87	1.84
1992	1.62	1.51	1.55	1.45	1.34	1.30	1.28	1.17	1.17	1.36	1.48	1.70	1.41	1.33
1993	1.53	1.49	1.40	1.28	1.37	1.38	1.58	1.70	1.78	1.69	1.73	1.79	1.56	1.46
1994	1.74	1.85	1.92	2.00	2.69	3.16	4.83	4.42	4.89	4.45	4.03	3.72	3.31	2.99
1995	3.81	3.74	3.96	3.84	3.77	3.41	3.21	3.38	2.96	2.81	2.76	2.34	3.33	2.85
1996	2.44	2.74	2.66	2.72	2.85	2.77	2.70	2.78	2.62	2.74	2.74	2.58	2.69	2.42
1997	2.93	3.71	4.29	4.56	5.89	4.89	4.20	4.21	4.19	3.70	3.53	3.91	4.17	4.03
1998	3.92	3.93	3.48	3.31	3.04	2.75	2.59	2.72	2.47	2.42	2.57	2.59	2.98	2.99
1999	2.49	2.33	2.32	2.25	2.45	2.36	2.09	2.01	1.86	2.08	2.50	2.74	2.29	2.31
2000	2.45	2.28	2.22	2.09	2.08	1.91	1.93	1.70	1.67	1.69	1.58	1.46	1.92	1.97
2001	1.45	1.48	1.47	1.46	1.53	1.41	1.29	1.32	1.28	1.24	1.30	1.25	1.37	1.43
2002	1.28	1.30	1.42	1.44	1.35	1.29	1.25	1.20	1.34	1.45	1.54	1.42	1.36	1.41

a. Deflated by manufacturing unit value (1990 = 1.0).

Source: The World Bank *Commodity Price Data*.

Table A 3: Monthly Robusta Prices, 1960-2002 (US dollars a kilogram)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	C
1960	0.70	0.69	0.69	0.68	0.69	0.70	0.69	0.70	0.70	0.71
1961	0.68	0.68	0.67	0.66	0.66	0.67	0.67	0.67	0.67	0.67
1962	0.67	0.67	0.67	0.67	0.67	0.67	0.68	0.68	0.69	0.69
1963	0.65	0.61	0.62	0.62	0.61	0.61	0.62	0.61	0.62	0.63
1964	0.70	0.72	0.78	0.82	0.83	0.85	0.82	0.82	0.79	0.77
1965	0.63	0.64	0.58	0.55	0.49	0.61	0.72	0.79	0.78	0.81
1966	0.80	0.76	0.74	0.76	0.77	0.74	0.73	0.72	0.70	0.72
1967	0.71	0.73	0.73	0.75	0.77	0.78	0.74	0.72	0.72	0.73
1968	0.76	0.76	0.75	0.75	0.76	0.76	0.75	0.75	0.75	0.74
1969	0.71	0.71	0.69	0.66	0.65	0.68	0.69	0.72	0.76	0.85
1970	0.86	0.85	0.87	0.91	0.94	0.93	0.94	0.94	0.94	0.94
1971	0.93	0.93	0.94	0.94	0.94	0.93	0.93	0.93	0.92	0.92
1972	0.93	0.93	0.95	0.96	0.96	0.96	1.04	1.04	1.03	1.04
1973	1.05	1.09	1.11	1.08	1.07	1.08	1.06	1.04	1.10	1.15
1974	1.23	1.33	1.38	1.41	1.42	1.36	1.30	1.23	1.19	1.21
1975	1.20	1.15	1.09	1.08	1.05	1.09	1.29	1.70	1.68	1.61
1976	1.74	1.82	1.82	2.38	2.68	2.87	2.78	2.92	3.02	3.35
1977	4.77	5.43	6.75	6.88	5.94	4.94	4.33	4.48	4.44	3.83
1978	3.90	3.85	3.48	3.19	3.00	3.33	2.79	2.83	3.24	3.31
1979	2.94	2.92	2.98	3.13	3.26	4.16	4.32	4.01	4.23	4.06
1980	3.57	3.55	3.72	3.65	3.88	3.76	3.28	2.95	2.76	2.72
1981	2.63	2.49	2.47	2.45	2.35	1.86	1.94	1.98	1.97	2.17
1982	2.31	2.52	2.47	2.35	2.28	2.24	2.17	2.25	2.41	2.59
1983	2.75	2.68	2.67	2.67	2.72	2.65	2.65	2.65	2.69	2.87
1984	2.93	3.00	3.04	3.03	3.23	3.17	3.04	3.10	3.12	2.98
1985	2.77	2.70	2.71	2.70	2.67	2.65	2.34	2.35	2.29	2.45
1986	3.75	3.57	3.72	3.47	3.14	2.76	2.78	2.98	3.61	3.28
1987	2.50	2.43	2.16	2.23	2.33	2.16	2.04	2.08	2.19	2.28
1988	2.25	2.27	2.18	2.12	2.07	2.06	1.88	1.80	1.98	2.07
1989	2.23	2.12	2.08	2.01	2.01	1.85	1.44	1.31	1.32	1.18

Continued next page.

TABLE A3 (continued)**ROBUSTA PRICES, 1960-2002 (US DOLLARS A KILOGRAM)**

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	C
1990	1.09	1.10	1.23	1.23	1.18	1.12	1.10	1.19	1.23	1.24
1991	1.16	1.14	1.13	1.12	1.04	1.00	1.00	0.99	1.03	1.01
1992	1.08	0.94	0.94	0.91	0.83	0.82	0.86	0.86	0.90	0.97
1993	1.03	1.04	1.01	0.99	1.02	1.03	1.09	1.29	1.38	1.30
1994	1.31	1.34	1.43	1.58	2.09	2.48	3.62	3.59	4.03	3.74
1995	2.90	2.97	3.22	3.19	3.11	2.84	2.64	2.87	2.54	2.49
1996	1.98	2.14	2.00	2.00	2.01	1.90	1.71	1.75	1.64	1.61
1997	1.48	1.66	1.77	1.71	2.06	1.96	1.76	1.64	1.66	1.64
1998	1.84	1.84	1.81	1.96	2.00	1.82	1.70	1.75	1.76	1.77
1999	1.81	1.75	1.62	1.53	1.50	1.45	1.36	1.39	1.31	1.29
2000	1.17	1.08	1.02	0.98	0.98	0.94	0.90	0.84	0.86	0.80
2001	0.71	0.70	0.67	0.63	0.65	0.64	0.60	0.57	0.54	0.51
2002	0.50	0.54	0.64	0.65	0.62	0.63	0.63	0.61	0.71	0.73

a. Deflated by manufacturing unit value (1990 = 1.0).

Source: The World Bank *Commodity Price Data*.

Table A 4: Coffee Output of Major African Producers, 1970-2000

YEAR	CAMEROON	CONGO, DEM RE- PUBLIC	CÔTE D'IVOIRE	ETHIOPIA ^a	KENYA ^a	TANZANIA ^a	UGANDA	TOTAL AFRICA ^b
THOUSAND BAGS								
1970	1,550	1,160	4,660	2,833	927	769	3,358	21,583
1980	1,860	1,483	4,160	3,264	1,568	797	2,253	19,355
1990	1,683	1,693	4,769	3,500	1,732	890	2,146	20,904
1991	1,918	1,383	3,315	3,500	1,440	770	2,454	19,726
1992	1,270	1,540	2,089	3,600	1,422	934	1,839	17,401
1993	1,140	1,502	2,316	3,000	1,252	956	2,409	16,769
1994	1,229	1,472	2,466	3,450	1,332	808	3,306	17,914
1995	663	1,099	2,900	3,800	1,810	867	4,200	18,797
1996	1,432	794	5,333	3,800	1,138	765	4,297	20,676
1997	889	800	4,080	3,833	1,028	624	3,032	19,683
1998	1,334	650	2,217	3,867	1,148	739	3,640	20,597
1990	1,300	1,042	5,700	3,833	1,679	837	3,200	21,883
2000	1,100	1,000	4,333	3,767	1,121	900	3,200	20,917
SHARE OF AFRICAN TOTAL (percent)								
1970	7.2	5.4	21.6	13.1	4.3	3.6	15.6	100.0
1980	9.6	7.7	21.5	16.9	8.1	4.1	11.6	100.0
1990	8.1	8.1	22.8	16.7	8.3	4.3	10.3	100.0
1991	9.7	7.0	16.8	17.7	7.3	3.9	12.4	100.0
1992	7.3	8.9	12.0	20.7	8.2	5.4	10.6	100.0
1993	6.8	9.0	13.8	17.9	7.5	5.7	14.4	100.0
1994	6.9	8.2	13.8	19.3	7.4	4.5	18.5	100.0
1995	3.5	5.8	15.4	20.2	9.6	4.6	22.3	100.0
1996	6.9	3.8	25.8	18.4	5.5	3.7	20.8	100.0
1997	4.5	4.1	20.7	19.5	5.2	3.2	15.4	100.0
1998	6.5	3.2	10.8	18.8	5.6	3.6	17.7	100.0
1990	5.9	4.8	26.0	17.5	7.7	3.8	14.6	100.0
2000	5.3	4.8	20.7	18.0	5.4	4.3	15.3	100.0

Note: Years refer to marketing years and begins October 1, except Tanzania where it begins July 1.

a. Predominately arabica producers. The rest are predominately robusta produces.

b. Includes other minor coffee producers.

Source: United States Department of Agriculture and Food and Agriculture Organization.

**Table A 5: Per Capita Coffee Consumption of Major Consumers, 1993-99
(kilograms a year)**

	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>
United States	4.50	4.01	3.98	4.10	4.00	4.14	4.24
Germany	7.93	7.53	7.37	7.16	7.22	7.01	7.46
Japan	2.83	2.92	2.98	2.83	2.90	2.91	3.01
France	5.73	5.30	5.48	5.69	5.68	5.39	5.52
Italy	5.18	5.00	4.86	4.95	5.08	5.16	5.16
Spain	4.19	4.28	4.21	4.49	4.63	4.68	5.15
United Kingdom	2.61	2.71	2.25	2.43	2.46	2.62	2.30
<i>EU average</i>	<i>5.76</i>	<i>5.57</i>	<i>5.33</i>	<i>5.57</i>	<i>5.56</i>	<i>5.51</i>	<i>5.52</i>
Average	4.88	4.64	4.51	4.64	4.59	4.62	4.69

Source: International Coffee Organization and Food and Agriculture Organization. International Coffee Organization.

Figure A 1: Monthly Coffee Prices (US\$/kg)

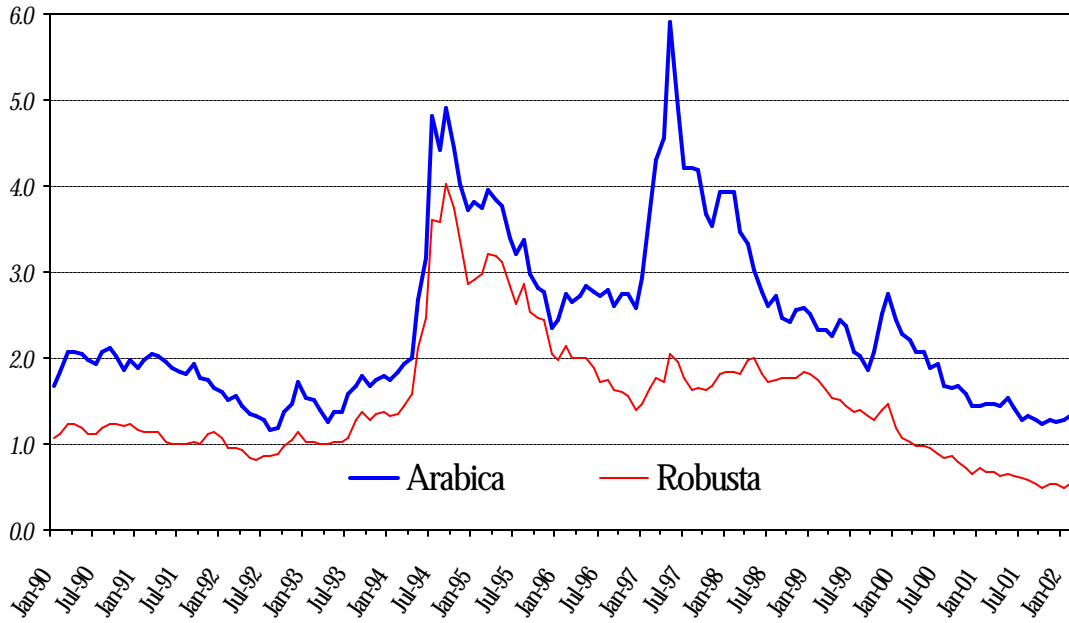


Figure A 2: Arabica Premium (percent)

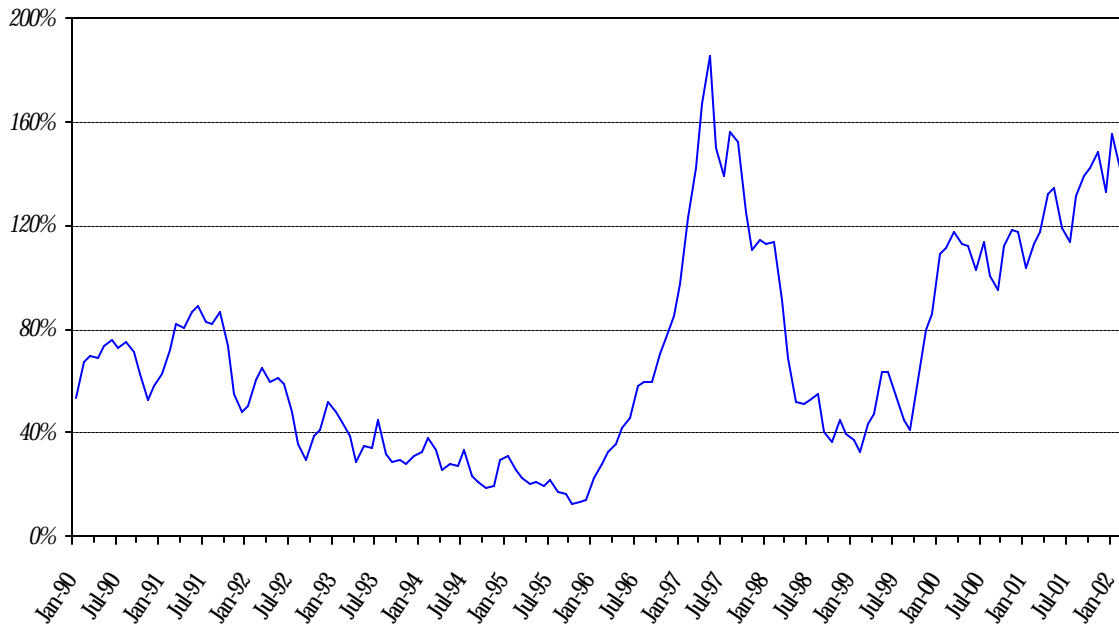


Figure A 3: Arabica Coffee Prices (US\$ / kg)

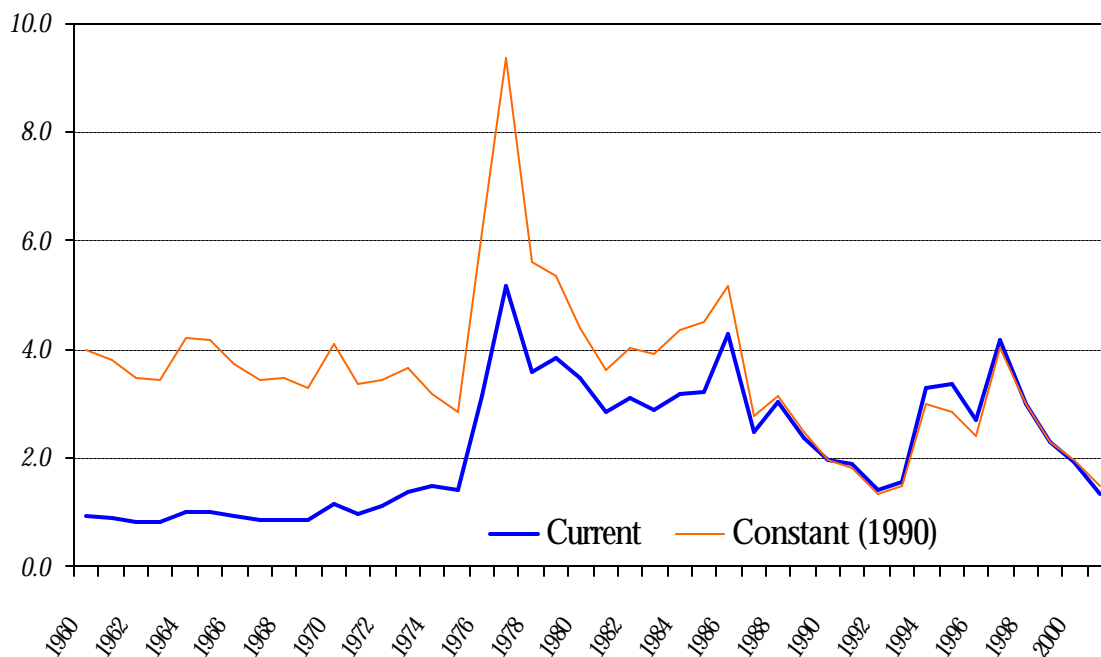
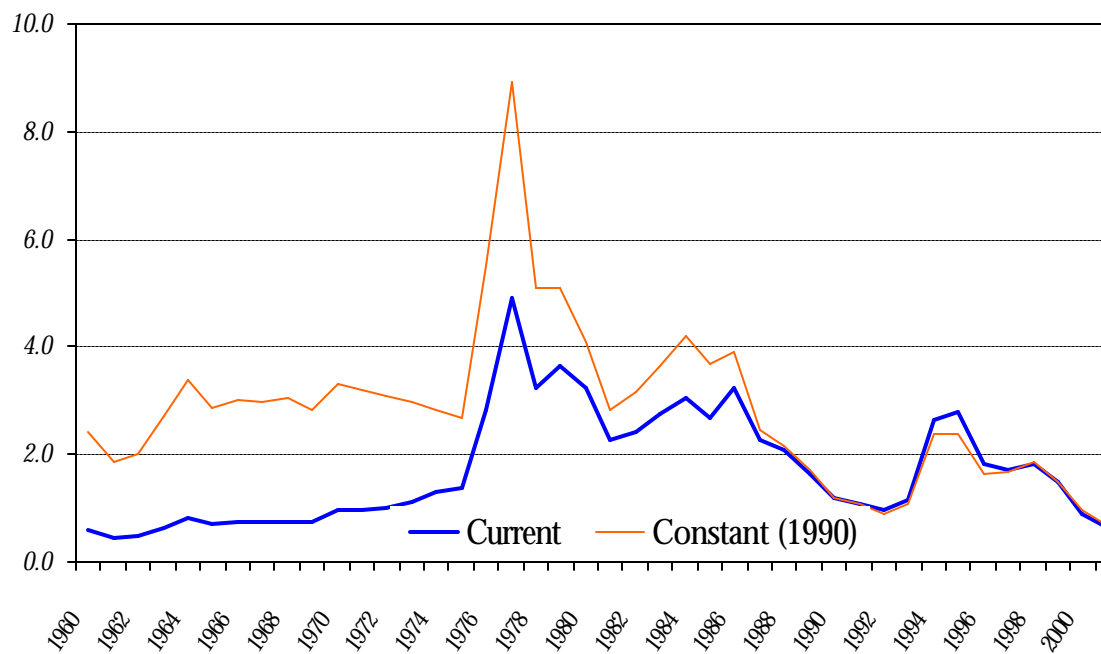


Figure A 4: Robusta Coffee Prices (US\$ / kg)



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