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POLICY RESEARCH WORKING PAPER 1580

Indonesia's Cocoa Boom

Hands-Off Policy Encourages Smallholder Dynamism

Takamasa Akiyama
Akihiko Nishio

Indonesia's cocoa output, produced mainly by smallholders on the island of Sulawesi, increased a phenomenal 26 percent a year (average, compounded) between 1980 and 1994. The government's hands-off policy was an important factor in this rapid expansion of output.

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International Economics Department
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Summary findings

This case study of Sulawesi's cocoa market is a counterpoint to investigations of highly regulated markets — agricultural and otherwise. The Indonesian island's rapid expansion surprised the world cocoa market, especially because it came mostly from smallholders.

Akiyama and Nishio examined the smallholders' production and marketing systems and the government policies implemented for smallholders to identify any policy lessons that might be useful for other countries. They found:

- The following factors contributed to the rapid expansion: the availability of suitable land, low production costs, a highly competitive marketing system (a result of the government's hands-off policy or limited government interventions), relatively good transport infrastructure, favorable macroeconomic policies, and the smallholders' entrepreneurship.
- Until the recent imposition of a value-added tax, Indonesia's government left cocoa marketing and distribution freer of government interventions than many other commodities — in part because the Indonesian Cocoa Association recommended such nonintervention. Other commodities were affected by direct involvement of the National Logistics Agency, price controls, and exclusive trade licensing requirements.
- As a result of the competitive cocoa marketing system, the farmgate price of cocoa in Indonesia is about 90 percent of the f.o.b. price — a much higher share than cocoa produced in other countries and than other commodities produced in Indonesia. This relatively free marketing and distribution system must be maintained for cocoa to develop further.
- Some general government policies have benefited the cocoa subsector as well as others. Exchange rates have been kept competitive, for example, no export tax has been imposed, and it has been government policy to build basic infrastructure in the outer islands.

Several issues must be addressed for cocoa to be further developed: the quality of cocoa, the adding-up problem (export revenues not increasing in proportion to export quantities, because of the price-depressing effect of increased exports), the recently imposed value-added tax, the cocoa pod-borer, export marketing, research, retribution, local processing, environmental problems, and government interventions now being discussed for the cocoa sector.

Government and industry must also resist the natural temptation for current players to become more conservative, to protect their interests.

This paper — a joint product of the Commodity Policy and Analysis Unit, International Economics Department, and the Agriculture Operations Division, Country Department III, East Asia and Pacific — was presented at the conference, Building on Success: Maximizing the Gains from Deregulation, held in Jakarta, Indonesia, April 26–28, 1995. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Grace Ilogon, room N5-032, telephone 202-473-3732, fax 202-522-3564, Internet address gilogon@worldbank.org. March 1996. (44 pages)

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This paper was co-authored by Takamasa Akiyama, Coordinator, Commodity Policy and Analysis Unit, International Economics Department, and Akihiko Nishio, Senior Economist, Agriculture Operations Division, East Asia and Pacific Region, Country Department III. William Paterson, Senior Highway Engineer, Infrastructure Operations Division, East Asia and Pacific, Country Department III, conducted the analysis of transport costs. The paper was presented at the conference, "Building on Success: Maximizing the Gains from Deregulation," April 26–28, 1995, Jakarta, Indonesia.

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SUMMARY

Discussion of cocoa is offered as a counterpoint in a broader series of investigations of highly regulated markets, within and outside the agricultural sector.

Indonesia's cocoa production has increased at a phenomenal rate in recent years--at a compounded average rate of 26 percent p.a. for the period 1980-94. This rapid expansion surprised the world cocoa market, especially as the increase came mostly from smallholders. It would be useful and opportune to examine this subsector, to evaluate if there are policy lessons for other producing countries, as well as for other agricultural subsectors in Indonesia. This paper focuses on production and marketing systems of and government policies implemented for the smallholders, since this is the segment that underwent the largest expansion and is considered to be of the most interest to the World Bank and to other developing countries. In particular, the paper discusses the development of smallholder cocoa in Sulawesi.

The factors that contributed to the large expansion include availability of suitable land, low production cost, a highly competitive marketing system resulting from a "hands-off policy" or very limited direct government interventions, relatively good transport infrastructure, favorable macroeconomic policies, and the entrepreneurship of smallholders.

Lack of government interventions in marketing/distribution is a focus of the study, as the case of cocoa in this respect is markedly different from many other agricultural commodities in Indonesia. The Government of Indonesia (GOI) has left the marketing/distribution of the subsector relatively free of major government interventions (until the recent imposition of a value added tax), as compared with many other commodities which are affected by various government measures such as direct involvement by the National Logistics Agency (BULOG), price controls, and exclusive trade licensing requirements. Suggestions and advice provided by the Indonesian Cocoa Association (ASKINDO) appear to have contributed significantly to this policy. As a result of fierce competition in the marketing system, the share of cocoa farmgate price in f.o.b. price is one of the highest among Indonesia's major export commodities--around 90

percent in South Sulawesi. This is considerably higher than cocoa produced in other countries as well as other commodities produced in Indonesia. It is clear that, after comparing the marketing system of these commodities, cocoa smallholder producers have benefited greatly from the competitive marketing system.

Some GOI policies, not directed specifically to the cocoa subsector, have been instrumental. As part of GOI's program to promote non-oil exports, exchange rates have been kept competitive and no export tax has been imposed, greatly benefiting the export sector including cocoa. Furthermore, GOI's policies of building basic infrastructure in the Outer Islands have supported the cocoa subsector's growth.

In spite of the expansion of the subsector, there are several issues that need to be addressed to foster its further development. These include quality of cocoa, the adding-up problem (a situation wherein export revenue does not increase in proportion to export quantity, due to the price depressing effect of increased export quantity), the cocoa pod-borer, export marketing, research, retribution, local processing, and the environment. Maintaining the relatively free marketing/distribution regime is critically important for future development of the subsector, and the subsector's growth prospects can be enhanced by removing the import tariff on cocoa beans and finding alternative financial sources for retribution now charged in some regencies. The recently imposed value added tax on cocoa beans is worth examining, and various government interventions now being discussed (e.g., export ban on cocoa beans with more than 20 percent unfermented beans) should be carefully reconsidered.

As an industry matures, some of the existing players might be tempted to become more conservative, to protect their interests. There could be such a tendency in Indonesia's cocoa subsector as the above issues are addressed. The Central and Provincial Governments, as well as the industry, should be wary of such tendencies and exert efforts to keep the subsector competitive and free of government interventions.

Introduction

The expansion of Indonesia's cocoa production in recent years has been phenomenal; during the period 1980-1994, annual production increased at a compounded average rate of 26 percent p.a. from 10,284 tons to 271,127 tons. Indonesia is now the world's third largest cocoa producer after Côte d'Ivoire and Ghana. Exports of cocoa beans reached US$166 million in 1993, making it one of Indonesia's major agricultural exports. This rapid expansion took the world cocoa market by surprise. There are two notable features with this expansion: that the engine of this growth has been the smallholders, and that the farmers have come to enjoy a high proportion of returns from cocoa exports.

There are two intriguing questions which emanate from the recent subsector performance. First, what made this rapid, smallholder-based expansion possible, and are there any policy lessons for other cocoa-producing countries? Second, in the context of the Bank's ongoing work of advising GOI in further deregulating the Indonesian economy, are there policy lessons to be derived for other agricultural commodities, particularly with regard to marketing and distribution aspects, which for cocoa have been relatively free from government interventions, compared with many other agricultural commodities in Indonesia?

The objectives of this paper are: (a) to analyze the production, marketing and pricing systems for smallholder cocoa, with the focus on marketing/distribution; (b) to examine government policies that have affected the subsector; (c) to identify and evaluate issues presently faced by the subsector; and (d) to recommend policies that would foster further development of the subsector in the future.

I. Production, Marketing and Distribution Systems

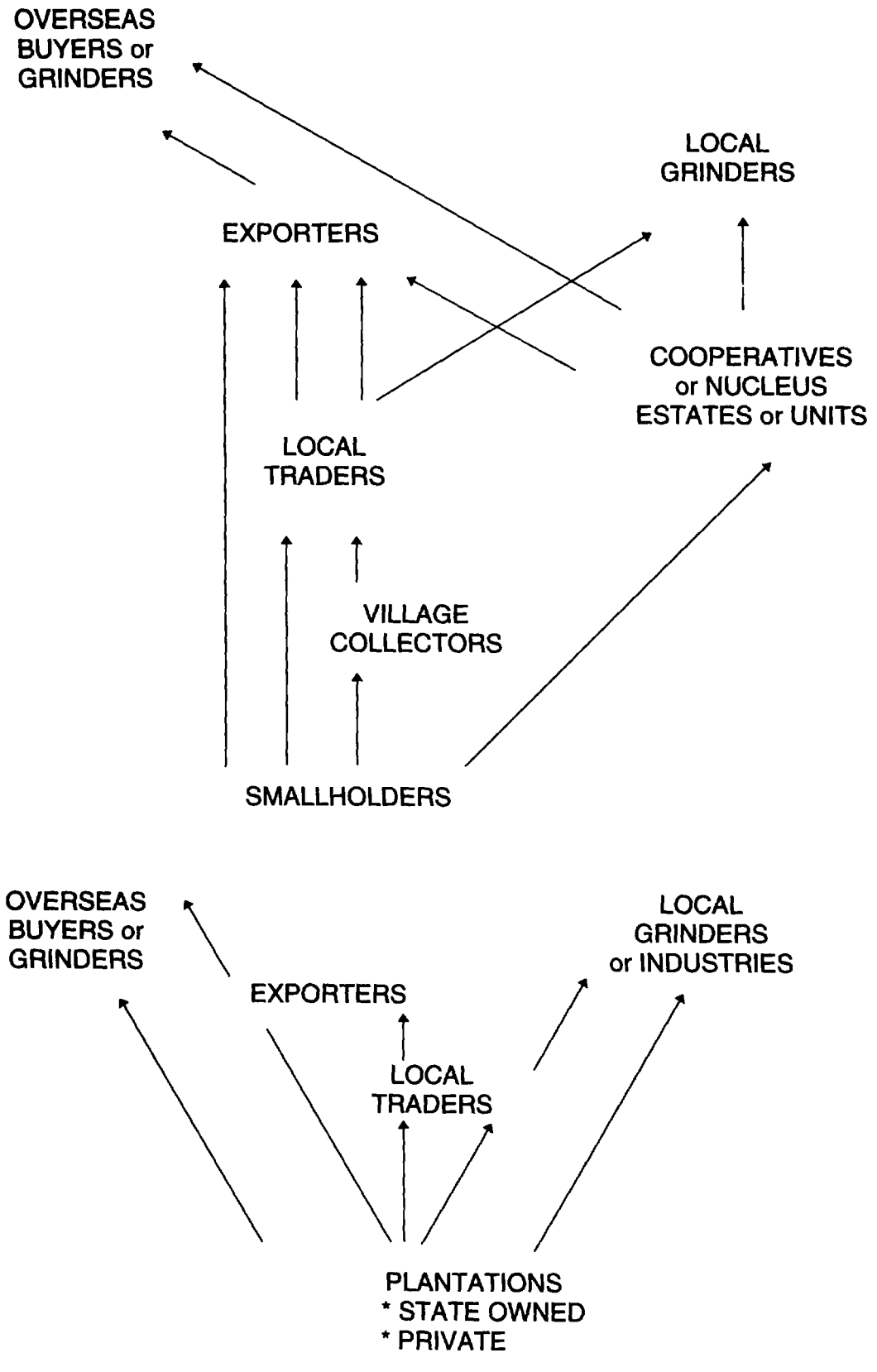
Indonesia's cocoa producers can be classified into three categories: smallholders, private estates, and government-owned estates (PTPs).[1] About 80 percent of the incremental production in the last 10 years came from the smallholders. As a result, their share in the total production increased from 10 percent in 1980 to 27 percent in 1985 and 72 percent in 1994. The flow of cocoa through the marketing channels is given as a flow-chart in Figure 1. Although PTPs are state-owned and hence their production and marketing are controlled by GOI, the smallholder's production and marketing systems are essentially free from government interventions. Most cocoa beans, approximately 80 percent in recent years, are exported and the rest are sold to local grinders or industries. There are substantial exports of cocoa products by these local grinders.

A. Production System

Cocoa plants were introduced to Java early in the 18th century, and by 1930 production was around 1,500 tons. Cocoa was mainly produced by plantations in East Java, owned by Dutch companies and consisted of fine or flavor cocoa, in contrast to bulk cocoa, which Europeans appreciated. From an early date these cocoa plantings were very seriously affected by the cocoa pod-borer (acrocercops cramerella). This pest was found in cocoa in East Java and, as a result, cocoa cultivation in the region was abandoned in 1936. The Dutch estates in West Java were not affected by this pest, but were effectively neglected during and after World War II, such that production remained marginal until the early 1980s. Although smallholder cocoa was produced in Maluku, Sulawesi and other islands, the total smallholder production was only 1,058 tons in 1980.

[1] In contrast to the smallholder sector, Government interventions in PTP's production and marketing practices are considered to be heavy. This appears to be a major reason for PTP's inefficiency.

FIGURE 1: MARKETING CHANNELS OF COCOA BEANS IN INDONESIA



Source: ASKINDO.

Following the high world cocoa prices in the late 1970s and early 1980s prompted by a sharp reduction in output from West Africa, the mid-1980s saw a phenomenal expansion in cocoa acreage and production by Indonesian smallholders, mostly in the island of Sulawesi. Total smallholder acreage expanded nearly 30-fold between 1980 and 1994; from 13,125 ha in 1980 to 389,946 ha in 1994, and total smallholder production increased from 1,058 tons to 196,235 tons during the same period (see Figure 2, and Annexes 1 and 2). This large production increase took place mainly in the island of Sulawesi, which accounted for 77 percent of total smallholder production in 1994. The provinces of South and Southeast Sulawesi are the major producers, supplying 40 percent and 28 percent of the total output, respectively, in 1994.

Ruf (1993a) of CIRAD cites the following factors that contributed to this phenomena:

(i) low cost of labor;

(ii) abundance of suitable land;

(iii) benefit of proximity to Malaysia;

(iv) highly competitive marketing network in Sulawesi;

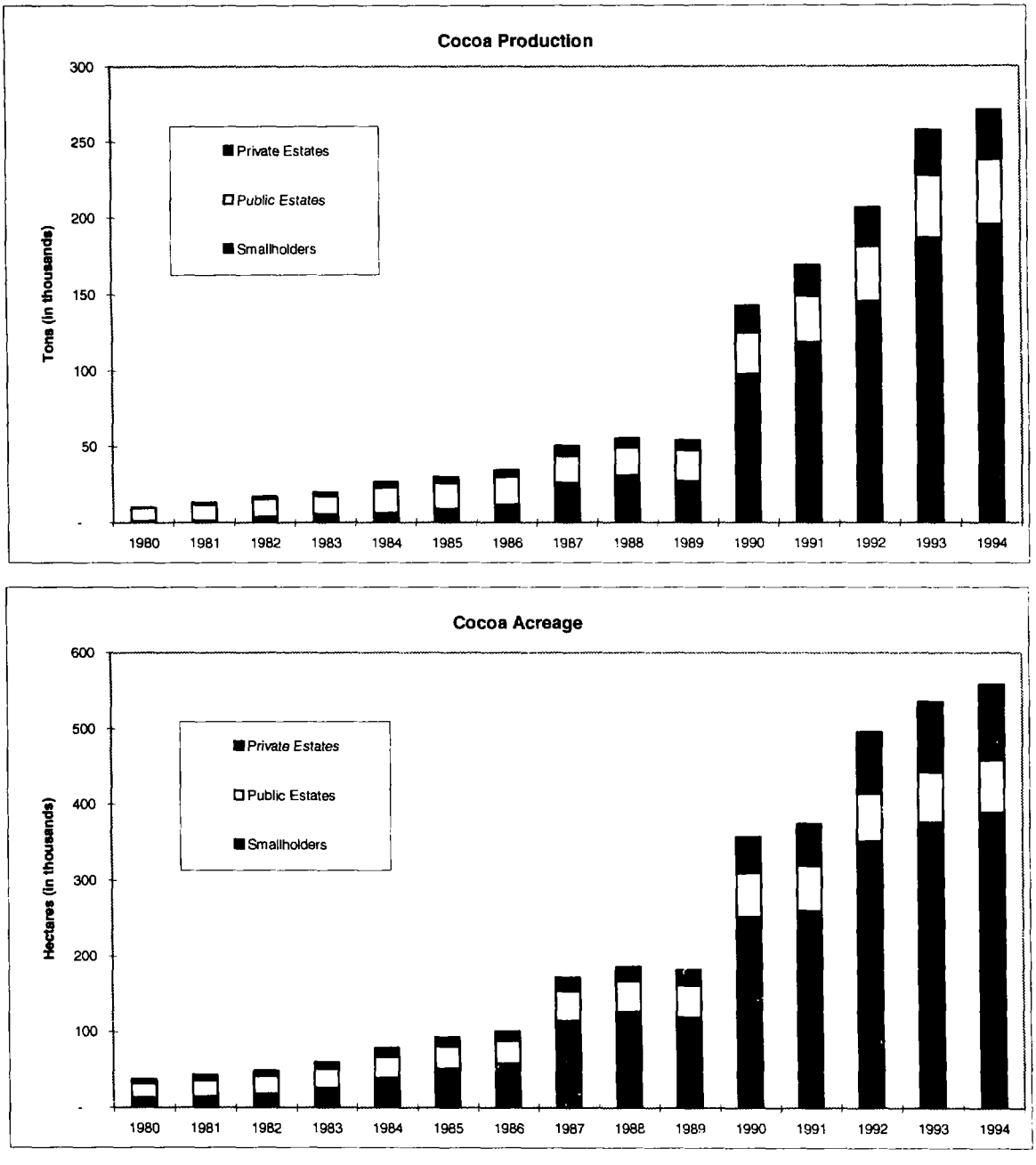
(v) aid policy for development in this sector, and

(vi) extensive coconut plantations ready to receive cocoa trees as intercrop.

Apart from the factors above, which are discussed in some detail below, there is another important factor that contributed to the smallholders' large production expansion: the entrepreneurial and innovative skills of the smallholders, many of whom are Bugis, a people with its origin in South Sulawesi. A large number of Bugis went to work in plantations in Sabah, Malaysia, in the late 1970s and 1980s, partly because of its proximity and the need for labor. While working in these plantations, they not only acquired the know-how to grow cocoa very efficiently,[2] but also acquired some capital.

[2] Plantations in Sabah have invested heavily in agronomic research and their yields are the highest in the world.

Figure 2: Cocoa Production and Acreage in Indonesia, 1980-1994



Sources: Directorate General of Estates and ASKINDO.
Note: The figures for 1980-1989, particularly in the latter years, appear to have been underestimated.
The figures for 1990-1994 were compiled on the basis of revised estimates for earlier years.
Figures for 1994 are preliminary.

The number of those who returned to Sulawesi and started cocoa farming is considered to be small. However, the dissemination of know-how and the remittance of capital from Sabah to Sulawesi are considered to have had a great impact on the expansion of cocoa production in Sulawesi. Also, the smallholders probably have benefited from the supply of seeds from PTPs and private plantations, which started expansion of cocoa production in the late 1970s and early 1980s, many of which were under the Government's estate crop projects. Initially, the smallholders planted cocoa in South Sulawesi, but later many moved to Southeast Sulawesi (except Pakue in Southeast Sulawesi where cocoa had been grown for a long time), where land was more abundant. (Population density is estimated to be 5/ha in Southeast Sulawesi, much lower than in South Sulawesi with 200/ha.) They often sold their farms and houses in South Sulawesi to invest in Southeast Sulawesi, where they tended to grow cocoa on a monocultural basis.[3]

Judging from the locations where smallholders expanded their production in Sulawesi, an important contributing factor has been relatively good transport infrastructure. For an export crop like cocoa, transport infrastructure is essential. In many areas where smallholder expansion took place, adequate roads or ports or both are available. Infrastructure investments by the Central and Provincial Governments, some through the Transmigration Programs, were also important factors which contributed to the cocoa expansion.

With innovative and efficient production methods, coupled with the low cost of labor as well as suitable climate and soil, the cost of production of Indonesian smallholders is one of the lowest in the world. This is one of the most important reasons why Indonesia's smallholders have been able to expand cocoa production at a very high rate in spite of declining world cocoa prices in the 1980s and early 1990s in U.S. dollar terms. Table 1 shows estimates of production costs as well as marketing costs and taxes in major cocoa producing countries, including Indonesia. As can be seen from Table 1,

[3] Older farms apparently tend to do more mixed culture. For instance, Jamal and Pomp (1993) reports that the majority of cocoa-producing smallholders surveyed in the regencies of Mamuju and Polewali in South Sulawesi were performing mixed culture.

Indonesian smallholders are estimated to have enjoyed the lowest cost on leaving the country, thanks to low production and marketing costs.

Table 1: Comparison of Rural Wage, Cost of Production, and Cost on Leaving Country in Major Cocoa Producing Countries

	Côte d'Ivoire	Ghana	Nigeria	Cameroon	Malaysia		Indonesia	Brazil
					Pen.	Sabah		
aily Wage (US$)	3-3.5	1-1.5	1-2	3.5-4	4-6	3-4	1.5-2	1-1.5
roduction Cost (US$/kg)	0.66	0.48	0.50[d/]	0.83	0.7	1.3	0.3-0.8	1
larketing Cost (US$/kg)	0.50[a/]	0.47[c/]	0.25[e/]	0.61[f/]	0.25[g/]	0.25[g/]	0.11[h/]	0.20[i/]
axes and Levies (US$/kg)	-[b/]	-	0.05	0.06	-	-	-	0.30[j/]
ost on Leaving Country (US$/kg)	1.16	0.95[c/]	0.80	1.50	0.95-1.55[g/]	0.95-1.55[g/]	0.41-0.91[h/]	1.55

ote:
Official scale plus estimated operating cost of the Caisse de Stabilisation.
' Abolition of levies of 100.5 CFAF/kg in 1989.
Under the Marketing Board System, the State takes the whole of the difference between marketing costs and State price and producer price. It is difficult to determine the difference between marketing costs and State levy. It cannot be excluded even that the State would lose money if the Board's real operating costs exceed US$0.50/kg with the world price at US$1/kg at the end of 1989.
' Having averaged US$1.5/kg in 1988/89.
Estimate based on the study of Côte d'Ivoire activity.
Including the expenses of SODECAO, the extension services.
' According to estimates by F. Ruf (1990) in Sulawesi.
' According to estimates by F. Jarrige (1989).
Arbitrary value, taking account of the openness of the system, geographical concentration and the standard of living of traders.
This is 30.8 percent of the F.O.B. value, taken here to be equal to the world price, i.e. around US$1/kg at the end of 1989. Temporarily lower in December 1989.
ource: Francois Ruf (1993b).

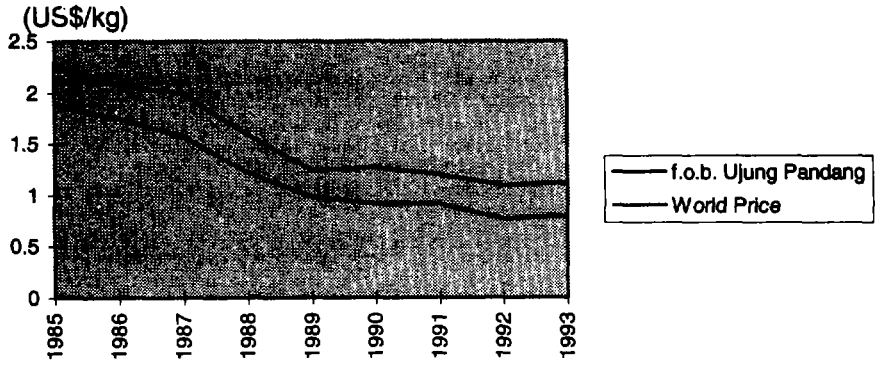
The impact of profitability of tree crops on their production is significant, and Akiyama and Trivedi (1987) analyzed this issue theoretically and empirically. In the case of Indonesia's smallholder cocoa subsector, a slowdown in the rate of area expansion in the last few years (See Figure 2 and Annex 2) is attributable, to a great extent, to declining real cocoa prices. (Farmgate cocoa prices in real terms in 1993 were less than half of the level that prevailed in the mid-1980s).

B. Marketing and Distribution System

In contrast to the marketing board system implemented in many African cocoa producing countries (see Varangis et al, 1990), Indonesia has a basically free marketing and pricing system. The free-market system, as Duncan and Jones (1993) discusses, is considerably more efficient than the marketing board system, such as those in Ghana and Côte d'Ivoire. Under the government-administered pricing system, there is little incentive for monopoly/monopsony marketing organizations to be efficient. Unless scrutiny is extremely tight, costs are likely to increase. This is because the administered pricing system tends to benefit particular groups within a country at the expense of farmers, and also because of the inherent difficulties in managing administered prices. Also, administered prices do not transmit market signals correctly and cause distortions in resource allocation.

Statistical analysis was undertaken to examine the relationship between f.o.b. prices at Ujung Pandang and world prices (ICCO Indicator Price). The results show, as illustrated in Figure 3, that the two price variables are very closely correlated (regression analysis showing $\bar{R}^2$ of 0.99 for the period 1985-1993, for the original prices as well as log of the prices), suggesting competitive pricing of cocoa in Ujung Pandang. The absolute difference between the two prices fluctuated between US$0.30 and US$0.40 per kilogram for the period.

Figure 3 : Movements of f.o.b. Ujung Pandang Prices and World Prices of Cocoa



Sources: Dinas Perkebunan South Sulawesi, World Bank (IECCP).

As shown in Figure 1, smallholders sell their cocoa either to village collectors (pengumpul), middlemen (pedagang), exporters, cooperatives, or estates--the first two being the most common. Collectors and middlemen do not need licenses or permits for their business. Most of the village collectors are themselves cocoa farmers, and collect cocoa from other cocoa farmers in the same village to sell to middlemen. Middlemen are generally merchants often engaged in other businesses, such as managing general retail shops in villages. They buy cocoa from farmers and collectors, arrange with transport operators to move the cocoa to major ports, and deliver it to exporters.

Competition among collectors and middlemen is considered to be fierce. Farmers often sell to several collectors, and change collectors depending on prices offered. Similarly, collectors often change the middlemen they sell to, and middlemen change exporters.

Virtually all cocoa produced in South and Southeast Sulawesi is exported from Ujung Pandang, the provincial capitol of South Sulawesi. There are about 100 exporters in Indonesia, of which 64 operate in Ujung Pandang. Out of these, 20 exporters supplied about 92 percent of total cocoa exports from Ujung Pandang in 1990. Almost all of them belong to ASKINDO, the Indonesian Cocoa Association.

The flow of money is the reverse of the physical flow of cocoa. Exporters usually provide credits to middlemen, who use cash to pay collectors and farmers.

Price information is made widely available. Information on prices in the New York Exchange is transmitted through CB radio by ASKINDO to all exporters, who in turn transmit them to middleman and collectors. The Provincial Government of South Sulawesi transmits the cocoa prices prevailing in Ujung Pandang via regular radio bulletins. Further, farmers have listened to BBC radio broadcasts (in the Indonesian language) of cocoa prices over the past decade.

A salient feature of the cocoa subsector in Indonesia is that farmers receive a very large proportion of the export revenue, compared with either cocoa produced in other countries (Table 2) or other commodities produced in Indonesia (Table 3). The farmers' share of f.o.b. prices has now reached around 90 percent in Sulawesi. This compares favorably with the average shares in other cocoa producing countries for the period 1980-1988; Ghana (63 percent), Cameroon (52 percent) and Côte d'Ivoire (50 percent). It should be noted that the shares were much higher in countries with a free-market system, such as Brazil (84 percent) and Nigeria (82 percent), than the countries with marketing boards.

Table 2: Comparison of Farmers' Share of f.o.b. Prices for Cocoa in Major Producing Countries

Country	Farmers' Share	Marketing Boards
Indonesia	89%	No
Brazil	84%	No
Nigeria	82%	No
Ghana	63%	Yes
Cameroon	52%	Yes
Côte d'Ivoire	50%	Yes

Note: Indonesia's figure based on January 1995 data in South Sulawesi. For all other countries, averages during the period 1980-1988 were used.

Farmers' share of export prices for cocoa is also higher than those for other agricultural commodities in Indonesia. In the province of South Sulawesi, the average farmers' share of the f.o.b. price for cocoa was 89 percent in January 1995 (see Table 3 and Annex 3), which was considerably higher than the shares for cashew nuts (78 percent), Arabica coffee beans (77 percent), and nutmeg (68 percent).[4] The only commodity which rivaled cocoa in this regard in South Sulawesi is Robusta coffee (92 percent), another deregulated commodity which is examined in a separate Bank study. It is worth noting that farmers' share of export prices for some commodities in certain areas are significantly lower, such as cassava in Lampung where farmers only received 18 percent of the f.o.b. price in 1988.

Table 3: Comparison of Farmers' Share of f.o.b. Prices for Selected Export Commodities from South Sulawesi in January 1995

Commodity	Farmer's Share
Cocoa beans	89%
Coffee beans (Robusta)	92%
Cashew Nuts	78%
Coffee beans (Arabica)	77%
Nutmeg	68%
Memo items:	
Cassava (Lampung, 1988)	18%[a/]
Cassava (East Java, 1988)	53%[a/]
Sugar (Indonesia, 1992/93)	47%[b/]
Copra (Central Sulawesi, 1995)	73%[c/]

Source: Dinas Perkebunan, South Sulawesi
Footnotes:
a/ Source: CASER (1992). Calculated as share of farmgate price for fresh cassava in export price for dried cassava. The margin therefore includes cost of drying.
b/ As share of wholesale price and accounting for processing fee.
c/ Estimated by Bank mission in February 1995, assuming weight loss of 10% through redrying by exporter.

[4] It should be noted that the figures in Table 3 are the average based on cocoa from a number of locations, some of which are several hundred miles from the export port of Ujung Pandang.

Three factors would explain this high farmers' share of export price for cocoa: low marketing and distribution margins resulting from intense competition among traders under a free trade regime; a relatively good transport infrastructure which has kept transportation costs low in the major producing areas; and lack of large government levies such as export taxes.

Low marketing/distribution margins have played the major role in ensuring high farmgate prices. It is argued that the low margin is a reflection of an efficient marketing/distribution regime, capitalizing on market forces particularly in terms of fostering competition among traders and enabling farmers to deal equally with traders.

As can be seen from Table 3, the gross marketing/distribution margin for cocoa, as residual of the farmers' share, was 11 percent of the f.o.b. price in South Sulawesi in January 1995. This is considerably lower than Arabica coffee (23 percent), cashew nuts (22 percent), and nutmeg (32 percent). It should be pointed out that the f.o.b. prices per kilogram of Arabica coffee and nutmeg at the time were higher than cocoa's by 3 times and 1.14 times respectively, suggesting that cocoa's relatively low gross marketing/distribution margin is not merely an arithmetical result of its high value per kilogram.

The efficiency of the marketing/distribution regime for cocoa and its benefits to farmers become clearer when contrasted with the cases of other commodities, for which inefficiencies in marketing/distribution are well known. The case of **dried cassava** (gaplek) produced in and exported from Lampung in Sumatra is an example of monopsony/oligopsony situations and high transport cost, where the distribution margin was estimated to be as high as 82 percent of the f.o.b. price in 1988 (CASER, 1992). While the margin includes the cost of drying fresh cassava, it is much higher than in East Java (47 percent). In Lampung, the farmers in a given area can only sell to a very limited number (often only one) of large traders/processors, in many cases under practices of advance payment before harvest, and they are not even allowed to see the pricing process including rafaksi (price deduction based on starch content, impurities content, etc.) and weighing. Transport costs are also high (reported to be 35-40 percent of the marketing

margin), due to the bulkiness and perishability of cassava, and also to poor road infrastructure. **Sugar** is an example of heavy government intervention, where the farmgate price (and the ex-mill price) is fixed by the government, and all sugar produced by the mills is required to be sold to BULOG except in Sumatra and the Eastern Islands where 50 percent and 75 percent of the output, respectively, can be sold directly to the market. The farmer's estimated share of the wholesale price (since sugar is not exported) is only 47 percent (considering that on average 38 percent of the farmers' sugar output is kept by the mills as processing fee), but more importantly farmers in major cane production areas are obliged to grow cane by the government, although rice would generally give higher returns (by 28 percent according to one estimate). With **copra** in Central Sulawesi, farmers receive advance payments before harvest from traders and processors who have established long-term relationships with farmers (similar to the dried cassava case in Lampung). While the farmgate price is at 73 percent of the f.o.b. price, reflecting the implied interest rate, it is still substantially higher than dried cassava in Lampung, partly since its value per kilogram is much higher (by 8-9 times in 1994). As mentioned earlier, **coffee** presents an interesting case. After dismantling the export quota system in 1989, gross marketing margins have been reduced from 30-40 percent to 8 percent, through increased competition. The above comparison of marketing systems for different commodities is summarized in Table 4 below.

Table 4 : Comparison of Marketing Systems for Selected Commodities in Indonesia

Commodity	Selling Options for Farmers	Availability of Price Information for Farmers	Government Interventions	Gross Marketing Margins/b
Cocoa (S. Sulawesi) (case of free market)	Can choose among a large number of collectors, who in turn sell to different middlemen.	Price information readily available. Local prices broadcast locally. World prices broadcast by BBC Indonesian service and by ASKINDO.	Retribution charges in certain regencies and 10 percent import tariff. VAT of 10 percent has been imposed since April 1995.	11% (50% in SE Sulawesi in 1980, before cocoa boom)
Robusta Coffee (S. Sulawesi) (case of free market)	Can choose among a large number of collectors, who in turn sell to different middlemen. During the export quota period beans eventually sold only to exporters with quota.	Price information readily available. Local prices broadcast locally. World prices broadcast by BBC Indonesian service and by AEKI.	De facto ban on export of low-grade coffee. (Export quota existed between 1981 and 1989.) VAT of 10 percent has been imposed since April 1995.	8% (30-40% in 1989, just when export quota was being dismantled)
Dried Cassava (Lampung) (case of monopsony/ oligopsony and high transport cost)	In many areas, a small number of (often only one) large buyer/processors exist (oligopsony/ monopsony). Price basically determined by the buyer.	Very little price information available. The processes of price deduction (rafaksi) based on starch content, etc., and weighing are often kept confidential.	Export quota for the European market.	82% (reflects price deduction, cost of drying, high transport cost)
Sugar (Indonesia) (case of heavy government intervention)	Can sell only to the nearest mill in TRI/a areas, at a price fixed by GOI. Farmers not receiving TRI credit can sell to anyone at any price (mostly in upland areas in E. Java).	Farmgate (provenue) price fixed by GOI, and announced annually at the beginning of next year's cane planting season.	Heavy interventions. Farmers in TRI areas obliged to plant sugar cane (i.e. cannot plant other crops with higher returns, namely rice). and to sell to mills at fixed prices. Mills in Java must sell all the sugar to BULOG at fixed prices. BULOG is also the sole importer of sugar, and conducts market operations to keep prices at certain levels.	53% (including 38% of the farmers' sugar output kept by the mills as processing fee)
Copra (C. Sulawesi) (case of long-term farmer/buyer relationships based on credit advance)	Most copra sold to one trader/processor, who provides advance to the farmer before harvest. The rest is sold to spot markets.	Little price information available.	Retribution charges in all regencies of the province.	27% (reflects cost of re-drying, implicit interest on advance payment)

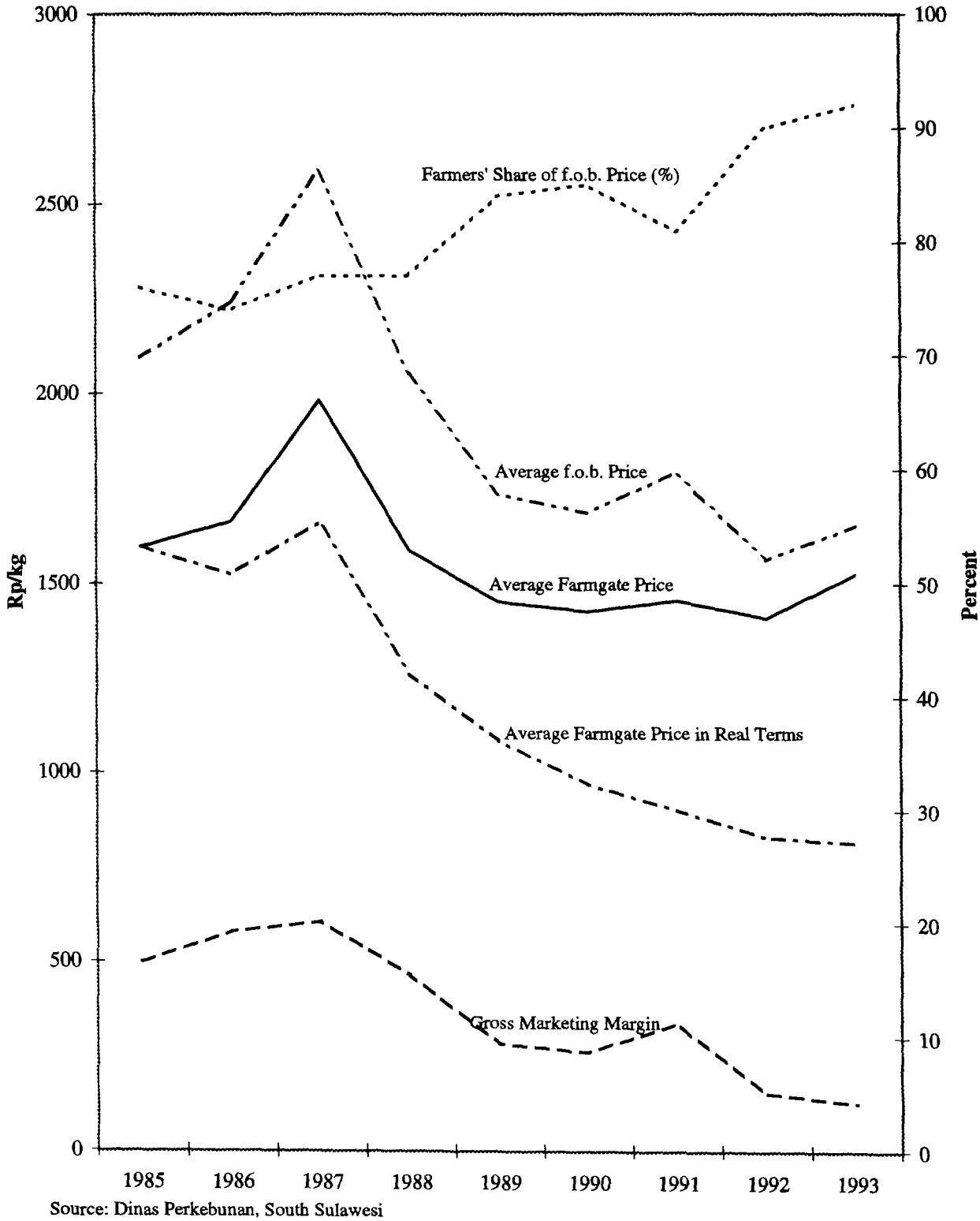
Notes: /a Smallholder Cane Intensification Program, started in 1975.
/b Derived from Table 3 above.

Further, it can be argued that the efficiency of the marketing/distribution regime for cocoa has improved markedly over time. Ruf (1993c) reports the case of the village of Lapai in Southeast Sulawesi, where middlemen's margins were reduced from 50-100 percent of producer prices to 4-10 percent during the period 1980-85, and margins between producer prices and New York c.i.f. prices declined substantially on trend between 1980 and 1991. In South Sulawesi, there is statistical evidence that the gross marketing margins have been reduced in recent years, i.e., the steady increase of the average farmers' share of f.o.b. prices for the province as a whole, from 76 percent in 1985 to 92 percent in 1993 (see Figure 4).

There are two important points to be made about the fall in gross marketing margins in recent years. First, much of this margin reduction took place when real farmgate prices were falling steeply (see Figure 4): the average farmgate price for South Sulawesi in 1993, in real terms, was roughly half the level attained in 1987. This implies that the margin in absolute terms has fallen even more steeply than that in percentage terms.

Second, most of the fall in gross marketing margins can be attributed to squeezing of trading margins, not to reduction in trucking costs from production areas to Ujung Pandang. According to an analysis of changes in transport costs from three major cocoa producing areas in South Sulawesi (Mamuju, Luwu and Sidrap), based on the Road User Cost Model, total vehicle operating costs were estimated to have declined by 3.7 to 11.4 percent in real terms between 1990 and 1992. During the same period, gross marketing margins were reduced at a much higher rate, by 41 to 84 percent in real terms in these areas. See Annex 3 for future details.

Figure 4: Farmers' Share of Cocoa Export Prices on Average for South Sulawesi, 1985-93



Source: Dinas Perkebunan, South Sulawesi

A Bank mission was able to confirm, during a visit to Sub-district Ladongi, Kolaka Regency, in January 1995, that marketing/distribution margins accruing to cocoa collectors, middlemen and exporters are indeed small, and that farmers are clearly receiving a very high proportion of f.o.b. prices. Based on the estimate given in Table 5, the gross marketing margin accruing between the farmgate in Ladongi and Ujung Pandang in that area was 13 percent of the f.o.b. price, and about 10 percent when the direct transport cost from Ladongi to Ujung Pandang is netted out. The estimated gross margin is slightly higher in Ladongi than the average for South Sulawesi; one possible explanation might be the fact that cocoa production started earlier in South Sulawesi and hence competition for cocoa beans is keener there.

These results provide an interesting contrast with the findings of Bennett and Hasan (1993), which was also based on a field visit in the Kolaka Regency in mid-1992. The gross margin between the farmgate and export prices was higher then, ranging between 23 percent and 26 percent of the f.o.b. price. The difference between the two sets of figures may be partly a result of variations in the structure of the marketing chain: the earlier report documents a longer marketing chain than the one found during the Bank mission. At the time of the Bennett/Hasan study, exporters in Ujung Pandang were relying heavily on a chain of local traders to have cocoa delivered to Ujung Pandang, since these exporters had just started to establish their representative offices in the Kolaka Regency. It is likely that margins have been squeezed through intensifying competition among traders, as it appears to be happening in South Sulawesi.

Table 5 : Estimated Marketing and Distribution Margins for Cocoa: the Case of Sub-district Ladongi, Southeast Sulawesi in January 1995

Item	Cost/Margin (Rp/kg)
farmgate price	2,250
cost to collectors of collecting cocoa and delivering to middlemen	20
net margin for collectors	30 a/
cost to middlemen of trucking cocoa from Ladongi to exporters in Ujung Pandang (including loading, bean bags)	42
assorted levies on transport from Ladongi to exporters in Ujung Pandang (retribution of Rp. 23/kg charged by the Kolaka Regency, village tax of Rp. 15/kg)	38
net margin for middlemen	40 a/
operational costs for exporters (sorting, redrying, stocking, etc.) b/	85-140
net margin for exporters	25-80 a/
export price (f.o.b. Ujung Pandang)	2,585

Source: Bank staff estimates, based on interviews.
a/ Imputed residuals.
b/ According to Ruf (1993a).

Low cost of transporting cocoa from production areas to ports of export is a major contribution made to the cocoa subsector by GOI through investment in roads. This is a big comparative advantage Indonesia enjoys over other major cocoa producing countries such as Ghana and Nigeria. One of the main reasons why Côte d'Ivoire and Malaysia were able to expand their cocoa production rapidly in the 1980s was good road infrastructure. In Sulawesi, cocoa production has expanded mostly in

areas with good road and/or sealane (e.g. Pakue area in Southeast Sulawesi) access to Ujung Pandang. Lack of good road access and the resulting high transport cost have prevented expansion of cocoa production in areas with poor road access, such as the southwest corner of Southeast Sulawesi. In South Sulawesi, the cost of transporting cocoa from the major producing areas to Ujung Pandang was estimated to range from Rp. 30 to 120/kg, which amounted to only 1.4 - 4.6 percent of the f.o.b. price in January 1995, although this is partly a result of cocoa's high value per kilogram (about 2.5 times higher than copra for example). In the Southeast Sulawesi case study presented above, the transport cost amounted to 3.2 percent of the f.o.b. price.

II. Government Policies

There have been very limited government policies or actions aimed specifically at helping and developing smallholder cocoa. However, macroeconomic policies, especially the competitive exchange rate policy coupled with relatively low inflation, are considered to have had a beneficial effect on export commodities, including cocoa. Also, GOI's investments in rural infrastructure in the Outer Islands, including those under the Transmigration Program, contributed to the expansion of smallholder cocoa.

As described above, GOI has left the marketing and distribution of cocoa relatively free of government interventions, until the imposition since April 1, 1995 of a value added tax (VAT). (See more on this in the "Value Added Tax" section below). There are no marketing boards, direct involvement of BULOG in marketing or import, price controls, export quotas or exclusive trade licensing requirements that affect a wide range of agricultural commodities in Indonesia.[5] This has contributed to efficient marketing systems for cocoa, with low marketing costs as described earlier. The only existing government intervention concerning cocoa, apart from the VAT, are the "retribution" charges levied by local governments in some areas, for instance in the province of Central Sulawesi,[6] and an import tariff on cocoa beans of 10 percent. The absence of export taxes is a contrast to the policies followed in Cameroon, Ghana and Côte d'Ivoire in the 1980s. Because these West African countries had a limited tax base, the governments had to rely on export taxes for their revenues. ASKINDO has contributed to the maintenance of the relatively free marketing and distribution system, by providing GOI with suggestions and advice on cocoa policy.

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[5] The most extreme example of such government interventions would be the case of sugar, where marketing, import and production are controlled by GOI.

[6] In the regencies of Donggala, Toli-Toli and Banggai, retribution of Rp. 15/kg, Rp. 25/kg and Rp. 4-10/kg are charged respectively on cocoa transport. These are daily rates, meaning the stated rate will be levied for one day if cocoa passes through any number of check points that day.

One of the most effective policies GOI has undertaken which helped the cocoa subsector, as well as other export subsectors, is its competitive exchange rate policy (see Annex 4). This compares with the situation in Francophone African countries, including Côte d'Ivoire and Cameroon, where the exchange rate was overvalued in the late 1980s and the early 1990s . As Schiff and Valdez (1992) argues, such an overvalued currency is equivalent to imposing a tax on export commodities. As shown in Annex 4, Indonesia's currency in real terms through the 1980s was much more competitive than that of Malaysia, Côte d'Ivoire and Cameroon[7] due mainly to Indonesia's real devaluation in 1986. This is a result of Indonesia's competitive exchange rate policy, as well as prudent macroeconomic policies which kept inflation low. Such policies kept Indonesia's production of cocoa competitive, and as for the same world cocoa prices in nominal U.S. dollar terms, Indonesian real producer prices have been considerably higher than in many other major producing countries.

Another GOI policy which helped the subsector was provision of infrastructure in the Outer Islands. Essential infrastructure such as roads and schools were built in some rural areas of South and Southeast Sulawesi, sometimes under GOI's Transmigration Program, which greatly helped the expansion of the cocoa area.

GOI's extension services provided some support to the smallholders. During the first half of the 1980s, smallholders benefited to some extent indirectly from extension services financed by the Central and Provincial Governments, for instance under PRPTE--a tree crop rehabilitation program--which were aimed for PTPs and private estates. Cocoa seeds were supplied by PTPs and some large private plantations to smallholders. These programs were at the beginning financed by Provincial Governments, notably that of South Sulawesi, followed by those of Irian Jaya, Southeast Sulawesi, Central Sulawesi, and East Kalimantan (see Indranada, 1993).

Although the Central Government provided loans through state-owned banks under a scheme called PBSN (National Large Plantation Development) in late 1989

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[7] Francophone African countries had devalued their currency, the CFA franc, in early 1994 by 50%. This should increase export sector's competitiveness in these countries. However, it is too early to analyze the impact of the devaluation because limited information on inflation and taxes, after the devaluation, is available for these countries. It should be noted that a large real devaluation in the mid-1980s stopped the declining trend of cocoa production in Ghana, which was in force since the early 1970s.

and early 1990, under which interest was subsidized, this mostly benefited PTPs and private plantations. To help development of smallholder tree crops, the Ministry of Agriculture launched a program in 1990 known as P2WK (Plantation Development in Special Areas). Under this program, GOI provided small grants to smallholders in designated "special areas," in the form of reimbursement of land preparation and planting cost, and provision of seedlings. The "special areas" were defined as areas where existing government services are difficult to reach.

P2WK started in fiscal year 1990/91 and covered a number of tree crops. Out of the total area covered by the program of 205,296 ha for the period 1990/91-1993/94, 62,767 ha was cocoa. While cocoa covered more acreage than any other crops, this amounted to only 5 percent of total smallholder acreage on average during 1990/91-1993/94 (see Table 5). Mainly because of a large expansion in smallholder cocoa, this program was reduced drastically from FY94/95.

Although P2WK had the effect of expanding smallholder cocoa areas, it was criticized for opening remote areas where transport infrastructure was not adequate. Also, because of rather poor quality of soil and/or non-suitability of climate, productivity under P2WK is generally low and cocoa produced is considered to be poor.

Table 5 : P2WK Cocoa Program: FY90/91-FY93/94 (hectares)

Province	FY90/91	FY91/92	FY92/93	FY93/94	Total
D.I. Aceh	1,513	1,080	1,000	510	4,103
North Sumatra	10	1,196	950	500	2,646
West Sumatra	796	377	563	0	1,736
Bengkulu	465	585	252	250	1,552
Lampung	549	908	1,000	300	2,757
West Java	488	500	1,219	787	2,994
Central Java	2,100	335	165	200	2,800
D.I. Yogyakarta	3,500	610	860	0	4,970
East Java	400	750	518	771	2,439
West Kalimantan	0	160	497	125	782
East Kalimantan	1,048	500	607	1,259	3,414
Central Kalimantan	500	500	500	500	2,000
South Kalimantan	420	347	500	200	1,467
North Sulawesi	500	783	1,059	375	2,717
Central Sulawesi	450	800	1,012	563	2,825
Southeast Sulawesi	1,958	1,180	1,940	1,250	6,328
W. Nusa Tenggara	400	200	350	350	1,300
East Nusa Tenggara	700	671	1,621	1,000	3,992
Maluku	0	0	300	0	300
Irian Jaya	4,250	2.750	3,065	1,580	11,645
TOTAL	20,037	14,232	17,978	10,520	62,767

Source: Indranada, 1993.

III. Issues

As discussed in the previous two sections, Indonesia's cocoa subsector expanded very rapidly during the last ten years. However, the subsector faces several issues that need to be addressed in order for it to maintain healthy growth.

The issues examined here are quality, the adding-up problem, the value added tax, risk of pest damage (by the cocoa pod-borer), export marketing, research, retribution, local processing and the environment.

A. Quality

Quality of Indonesia's cocoa, especially that produced by smallholders, is an issue considered to be important by ASKINDO and GOI. A large portion of cocoa produced by smallholders is unfermented or partially fermented cocoa[8]--fermented for 1-2 days instead of the 5 days needed to achieve the high-quality typical of cocoa from Ghana and some other countries.[9] Although there is a certain market for unfermented and partially fermented cocoa, it sells at a discount to fully-fermented cocoa, and there appears to be a concern that the discount would become larger when Indonesia's production of unfermented and partially fermented cocoa increases substantially in the near future.

In the early 1980s, Indonesia's unfermented and partially fermented cocoa was appreciated by certain cocoa processors and chocolate manufacturers in the United States, as production of such cocoa declined in the Dominican Republic. Because it takes less time for farmers to process and because it was easy for the Indonesian exporters to

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[8] Much of the world's cocoa is traded commercially on contract terms with standards of "Good Fermented" (up to 5 percent unfermented/slaty and 5 percent of other defects permitted) or "Fair Fermented" (up to 10 percent of each defect permitted). Sulawesi cocoa often has levels of unfermented/slaty beans in excess of 10 percent. Most West African cocoa has zero levels of unfermented beans on these same commercial contracts.

[9] Fermentation is necessary to ensure the development of full chocolate flavor. It is not as essential if the beans are only to be used for extraction of cocoa butter. However, unless the extraction method is such that it can extract unusually high levels of butter, processing of unfermented cocoa is not expected to be profitable.

export to the United States to replace cocoa from the Dominican Republic, Indonesia increased its supply of unfermented and partially fermented cocoa. A cocoa dealer in partnership with a chocolate manufacturer in the United States built a processing factory, in large part, to process Indonesia's unfermented and partially fermented cocoa, mainly for the purpose of extracting cocoa butter. This has enabled the United States to absorb a large quantity of Indonesian cocoa. Recent discounts of unfermented and partially fermented cocoa against fully fermented cocoa of West Africa is about US$100/ton, which is about 7 percent of the value. Some in Indonesia seem to expect the discount to increase in the future with the increase in Indonesia's production.

An idea which appears to be gaining support in Indonesia is to pass a regulation which would prohibit exports of cocoa that contains more than 20 percent unfermented cocoa. This compares with the current situation where cocoa with any percentage of unfermented beans can be exported. Although some consider this proposed regulation to be cosmetic, because they believe that most cocoa exported by Indonesia at present contains less than 20 percent unfermented beans, there are others who believe that much of the cocoa exported from Sulawesi contains well over 20 percent of unfermented beans. Anyway, there are a few problems with the proposed regulation. Firstly, there is no specific world market for cocoa which contains 20 percent or more unfermented beans, while there are markets for fermented and for unfermented beans. Thus, it might be difficult to sell cocoa which contains 20 percent unfermented beans at any price premium. Secondly, it is questionable whether an efficient quality-control system can be established to reliably evaluate the percentage of unfermented beans in any lot. Thirdly, it would be much more efficient to let the market mechanism work, to encourage farmers who are already producing fermented beans. Although ASKINDO has been carrying out campaigns to produce more fermented cocoa, little reliable and concrete information is passed to farmers on the price premiums of fermented beans. Judging from the behavior of smallholder cocoa farmers in Indonesia, if enough information is given and when the price differential widens in the future, they are likely to produce more fermented cocoa without government regulations. The proposed regulation could confuse farmers and some exporters. It should be noted that the fundamental quality problem for Indonesia is

uncertain quality, rather than low quality grades (see Bennett et al 1993). Uncertain quality is most efficiently addressed through market mechanisms, namely development of buyer-seller relationships, rather than through regulatory controls.

Another idea for quality improvement which seems to be seriously considered is the "rayonisasi" concept, i.e., formation of partnership between farmers and exporters by assigning specific exporters to operate in certain geographic areas. The negative impact of this policy, if implemented, will be significant. The existing competitive marketing/distribution regime would be undermined, and the share of farmgate prices in export prices is likely to fall (cf. cases of cassava and copra in Table 4), which could result in decline of both quantity and quality of the cocoa produced.

At the moment, there are sufficient buyers of adequate quantities of the partially fermented and unfermented Sulawesi cocoa. However, there also appear to be an increasing number of buyers who are showing interest in fully fermented Sulawesi cocoa - a type of cocoa which is currently produced in a few specific, limited localities in various parts of Sulawesi. Obviously such cocoa would have to be exported at a premium price, and the majority of that premium would need to be passed back to the farmers, to encourage them to produce increased quantities of fully fermented cocoa and to reward them for their extra efforts. When significant buyers of fermented cocoa show a sustained demand at a premium price, then it is highly likely that exporters, middlemen and farmers will respond to satisfy that demand by making sales/purchases at premium prices at every stage in the marketing chain. This process will be assisted if there is transparency, so that farmers know the expected premium for fully fermented cocoa.

One way of achieving transparency is to encourage the warehouse receipt system. (See below in the section "Export Marketing"). The warehouse receipt system is an efficient and transparent system to obtain substantial quantities of better quality cocoa with clear price differentials. This should contribute, through market mechanism, to quality improvement of Sulawesi smallholder cocoa. Local radio broadcasts of prices of fermented cocoa should also be effective.

B. Adding-up Problem

GOI is concerned that Indonesia's rapidly increasing cocoa production will depress world cocoa prices, which would be detrimental to the welfare of Indonesian cocoa producers. Furthermore, because lower world cocoa prices would hurt other cocoa producing countries, other producing countries are concerned about the future of Indonesia's cocoa production

The adding-up problem, i.e., the phenomenon where incremental production of a commodity by a country or a group of countries results in an increase in export revenue proportionally less than the volume (see Akiyama and Larson, 1994), could become an important issue for Indonesia in the near future.

GOI might be tempted to impose an export tax to keep the future increase of Indonesian cocoa production low.[10] However, given that the expansion of cocoa production will increase employment in rural areas and farmers' income and that the country's welfare changes only a little, GOI should not consider imposing the export tax. Also, export tax often leads to other problems such as smuggling and corruption. Further, it should be noted that other policies such as production or export quotas would have even more detrimental effects on the subsector than the export tax.

[10] Theoretically, as discussed above, the country's welfare (the sum of cocoa farmers' producer surplus and government's tax revenues from cocoa) is maximized in the short- to medium-term by imposing an export tax at the optimal level, although the long-term effect is uncertain. However, Akiyama and Larson (1994) show that the difference in welfare between the optimal export tax and zero tax cases is very small. Further, it should be noted that the producer surplus and export revenue from cocoa are maximized when the export tax is zero, and that there is difficulty in eliminating or reducing the tax when conditions warrant them. Although it may sound somewhat paradoxical, existing large producers may support the export tax, due to the fear they might have that the size of price decline caused by incremental production could be larger than the size of reduction in producer price caused by the export tax. However, a simple economic analysis shows that existing producers will definitely lose by the imposition of the export tax, unless the revenue from the tax is channeled back to them.

C. Value Added Tax

Beginning April 1, 1995, a value added tax (VAT) of 10 percent has been imposed on selected agricultural commodities, including cocoa, coffee, rubber and tea. Although not much information was available on the past collection of VAT and current plans to implement the new VAT policy as this paper was being prepared, there are advantages and disadvantages to this new development which merit examination.

The advantage would be that the base for VAT would be broadened. This would be consistent with the fiscal objective of building a tax base which is broadly spread across sectors and features relatively low rates.

The disadvantages would include the following. First, if the policy of providing rebates on exports is maintained, imposing VAT on these commodities might not be efficient from a tax collection point of view, due to the fact that collections would have to be rebated anyway. As stated earlier, about 80 percent of cocoa beans are exported (with most of the remainder also exported as intermediate goods), implying that VAT on most of Indonesia's cocoa would be rebated. VAT for large amounts of rubber and coffee exports would also need to be rebated; they were first and third in exported value among non-timber agricultural commodities in fiscal 1993/94, accounting for US$1 billion and 0.4 billion, respectively. The net incremental VAT revenue would therefore be small, in comparison with the added cost of administering the new policy. It might make more sense, from the standpoint of tax collection efficiency, to raise tax revenue from other sources than through VAT on commodities that are mainly exported.

Second, if such an added burden on VAT administration makes immediate rebating difficult, payment of the VAT up front would add financial costs to exporters. If the wait for rebating is long, the new VAT would have an effect similar to an export tax, which is probably neither an objective nor an intention of the new policy.

Third, the new policy could reduce incomes of smallholders who produce over 70 percent of cocoa. This would happen particularly when exporters incur added financial cost as described above, and pass on such cost to smallholders. Smallholders also produce about 80 percent of rubber and 90 percent of coffee. Small-

scale agriculture, due to its lack of records and financial fragility, is one sector where implementation of VAT has been difficult in other countries (Shoup, 1988).

D. Cocoa Pod-Borer

The main reason for the decline or stagnancy in Indonesia's cocoa subsector in the early 20th century was the cocoa pod-borer--an insect pest that reduces yield drastically. Detrimental impact of the cocoa pod-borer could be extremely serious as no fundamental control measure is available, except eradication of affected cocoa trees. Application of certain chemicals has some effects. However, this is very expensive and needs to be done in a wide area for maximum effects, and its effectiveness is uncertain. Further, control measures need to be taken at the same time with the cooperation of every cocoa farmer in the area. Regular application of chemicals to reduce the damage could increase the production cost substantially--some estimate production cost could rise by about 30 percent.

Currently, the cocoa pod-borer is found in some parts of Central Sulawesi, Maluku, and Kalimantan, but it has the possibility of spreading to major producing areas. GOI and ASKINDO are aware of this problem, and have been undertaking research to devise better control methods. At present, it is not clear if or when the pod-borer will spread more widely. As it can potentially destroy the subsector, it is of utmost importance to identify means to combat this pest. ASKINDO is planning to use biorationals on a pilot basis, but stronger GOI support would be needed for research, extension and mobilization of the smallholders. (See more on this below under "Research").

E. Export Marketing

At present, there seems to be sufficient competition among exporters, judging from the number of exporters and the farmgate prices' share in export prices. However, some exporters appear to oppose a recent proposal by a large foreign cocoa

brokerage house to open a warehouse, and plans by several firms to introduce a warehouse receipt system. Furthermore, not all exporters seem to be interested in improving the quality of Sulawesi cocoa, but instead in retaining the status quo.

The planned warehouse operations by one of the world's biggest cocoa brokerage firms is an attempt by the firm to obtain good quality cocoa from many exporters. Any exporter, under this system, can deliver cocoa to a warehouse in Ujung Pandang, have the quality checked, and receive receipts which can be used as collateral against loans. The loan is provided by banks and warehouse operators. This has the advantages of increased liquidity and increased transparency of price differentials depending on quality. The warehouse receipt systems considered by other firms would have the same effects.

The reasons why some exporters apparently oppose the warehouse operations seem to be: (i) loss of the advantage that the large exporters believe they have in providing finance to middlemen and collectors; and (ii) loss of extra profits some existing exporters seem to make by sorting cocoa by grades and selling sorted good quality cocoa with premium, as they would be less able to do this with increased transparency in price differentials. Despite such possible opposition, GOI should encourage operations of the warehouse receipt system.

A measure which could foster development of small operators is a legal brokerage system which can handle risk management instruments. This might also facilitate development of forward contracts, which at present might not be familiar to small operators or not accessible to them due to lack of credit standings. At present, there are no regulations governing brokerage houses which can handle risk management instruments such as futures and options. This makes it difficult for small exporters and middlemen to undertake these activities, while large exporters carry out these activities through overseas brokers. This is an issue that the Ministry of Trade is considering at present.

F. Research

Agronomic research in cocoa is undertaken by the Coffee and Cocoa Research Institute in Jember, East Java, while economic and marketing studies on cocoa are carried out at the Agribusiness Studies and Development Center in Jakarta. The funding of the research comes from the PTPs, Ministry of Agriculture (Agency for Agricultural Research and Development), and money raised by the Research Institute through selling planting materials.

One of the problems is that these research institutes have only limited contact with ASKINDO. This makes it difficult for the research institutes to tackle issues such as quality improvement and the adding-up problem. The administrative structure of the research institutes would need to be examined, so they would undertake research more relevant to the market situations.

Also, there are criticisms that the research institutions have been undertaking research more relevant to big estates as they are partly financed by PTPs. Judging from the recent developments of the subsector, it is evident that the smallholders have been the engine of growth. They could benefit greatly from better infrastructure, comprehensive extension services and research.

A topic that these research institutes need to tackle as a matter of priority is the cocoa pod-borer. The recommendation by the institutes was for eradication of affected cocoa trees. This was opposed strongly not only by smallholders but also by private estates, which resulted in a non-cooperative attitude of the growers toward the research institutes. Appropriate research on controlling the pest is desperately needed, but if eradication is the only solution, it would not be a task to be handled only by the research institutes. Involvement of Governments, especially the Provincial ones, might be necessary.

G. Retribution

A levy on a commodity, imposed at any point in the marketing/exporting chain, will eventually be passed on to farmers through lower farmgate prices. The Central Government has not imposed such a levy on cocoa, and there are no such charges in most of the cocoa producing areas at the local regency level. However, in some regencies retribution is charged, and charges also exist at the lower (village) level in some cases. In the case of Ladongi described above, the total amount of regional charges is roughly equal to the trucking cost. In general, retribution and other trade charges distort market price signals, effectively raise average production cost, squeeze producers' profit and reduce Indonesia's comparative advantage in the world market.

For cocoa, retribution amounts to a relatively small portion of export prices. However, retribution carries a nuisance value which discourages traders, and it opens opportunities for various rent-seeking activities by those enforcing payment. Hence, retribution and other trade charges on cocoa should be eliminated, and alternative financial sources for Local Governments should be sought.

H. Local Processing

There appears to be a strong interest within the cocoa industry towards local processing of intermediate cocoa products such as cocoa butter, cake, powder, and liquor. However, in order to process cocoa to produce desirable quality cocoa products, beans of certain quality from overseas sources are needed for blending, on which an import tariff of 10 percent is imposed. Although 10 percent may seem small, the impact of the duty is likely to be high enough to make imports almost prohibitive, given the apparent small margin of the processors. Elimination of the import duty would be an important step towards enhancement of cocoa processing in Indonesia.

If appropriate standards of hygiene and technology are followed, local processing should increase value-added for a certain tonnage. Because Indonesian cocoa

is traded at a discount to West African cocoa, and because its butter is hard, cocoa processing in Indonesia could be more profitable than in West Africa. However, it should be noted that more local processing might not alleviate downward pressure on prices of cocoa beans exported, unless local processing increases cocoa consumption in Indonesia. This is because most of processed cocoa is exported and increased local processing will result in reduced import demand for beans--the substitution effect. It should also be noted that processing facilities are very capital-intensive and actually create limited employment. Subsidies to promote local processing may have been discussed, but they are unlikely to realize justifiable benefits for the reasons mentioned above.

I. Environment

Although accurate land use information for cocoa producing areas is not available, it is clear that much of the cocoa fields in Sulawesi were created by opening up forests. It is apparent that in most such cases, forest boundaries and land use plans were not consulted. Loss of forest areas, depending on the type of forests, carries the risks of erosion, reduction of watershed areas and loss of biodiversity.

It is not easy to mitigate such risks. The difficulty of alleviating deforestation, due to institutional constraints, lack of land use information and other reasons, is documented in the Bank's reports on the environment in Indonesia (1990 and 1994). However, the above environmental risks deserve close attention, given the rapid growth of cocoa growing areas.

There appear to be at least two steps that would help address the above risks. The first would be to direct expansion of cocoa areas towards relatively degraded or underutilized land, instead of forest land. Seven percent of Sulawesi's land was classified as grassland, which was higher than Sumatra and Kalimantan with 4 percent each (Whitten, Mustafa and Henderson, 1987). Further, it was estimated, based on 1986 data, that about 25 percent of South Sulawesi's land (15,712 ha) and 21 percent of Southeast Sulawesi's land (7,628 ha) can be classified as underutilized or poorly managed, as they consist of grassland and bush/scrub (Regional Physical Planning

Program for Transmigration or RePPProT, 1990). It is certain that these degraded or underutilized lands have expanded since the time when the above data were collected. While it may not be suitable to plant cocoa on very degraded lands (e.g., those with alang-alang or Impereta cylindrica), there should be great scope to use relatively degraded lands (e.g., scrubs on logged-over forests) productively and provide vegetative cover, through cocoa planting. New rural roads could be designed to encourage cocoa farming in such relatively degraded areas, rather than forested areas. The estate crop extension officers at the provinces (Dinas Perkebunan Rakyat) should take the initiative in guiding the farmers and disseminating the technology needed to plant cocoa on such lands.

The second would be to identify and demarcate the most vulnerable forest areas which are both vulnerable (since they are lying just outside major existing and growing cocoa producing areas) and valuable (for watershed, biodiversity or other reasons). The Provincial and Local Governments, together with the local people, would be best suited to conduct this task, and the Ministry of Forestry staff should surely be involved. Efforts should be made to keep cocoa expansion out of protection and conservation forests.

In the longer term, the Spatial Plans now being prepared by the Provincial and Local Governments should clearly identify and demarcate the environmentally fragile or valuable areas that need to be protected in the respective regencies. Economic incentives to discourage farmers from opening up forest land should also be devised.

IV. Conclusion and Prospects

The rapid expansion of Indonesia's cocoa production in the last 10 years was mainly due to large production increases by the smallholders in South and Southeast Sulawesi. While the climate and soil in Sulawesi as well as the entrepreneurial attitude of the smallholders were vital for this development, the relative lack of government interventions in marketing/distribution (especially until the recent imposition of VAT), prudent macroeconomic policies and provision of good infrastructure were also very important. The relative lack of government interventions deserves special attention, since the resulting marketing/distribution regime for cocoa is markedly different from that of many other agricultural commodities in Indonesia where government interventions exist in various forms. ASKINDO's advice and suggestions have contributed to this. The benefits to cocoa farmers are clear. Maintaining this marketing/distribution policy for cocoa is critically important for future development of the cocoa subsector, and the subsector's growth prospects can be enhanced by removing the import tariff on cocoa beans and finding alternative financial sources for retribution now charged in some regencies. Further, the various interventions currently under discussion should be carefully reconsidered.

Increased cocoa production has resulted in increased exports, and cocoa is now one of Indonesia's main export commodities. This has also created employment and increased income in rural areas, and thus contributed to development of rural areas in Sulawesi. Judging from new plantings underway and maturing of recently planted trees. the expansionary trend of the last ten years is likely to continue for at least the next 5 years. However, there are several issues which should be addressed by the subsector in order to maintain its healthy growth.

One of GOI's main concerns is the negative effect on prices of rapidly increasing production. It is well-known that as the world market share of a country increases, the country will face the adding-up problem. However, in the case of Indonesia, the problem is not likely to become serious for a long time. Even in the event the problem does become serious, GOI should not impose measures, such as an export

tax, to discourage cocoa production because the negative effects of such measures are likely to far outweigh the benefits, especially in the long run.

Another major concern of GOI is quality improvement. The most effective means of improving quality is to provide incentives to producers through price differentials, for instance through the warehouse receipt system as it would make the price differentials more transparent. Instruments now under discussion, namely the export ban on low-grade cocoa and "rayonisasi," are likely to be ineffective in terms of improving quality. Further, these instruments could undermine the market forces which have fueled the growth of cocoa.

Some exporters' concern with regard to the warehouse receipts system and to proposed actions to improve quality through transparency in price differentials might be coming from the intention to protect their existing interests. Often an industry benefits from a free market while it is expanding, but once it matures, the industry's players tend to become conservative to protect gained interests. It is imperative to keep the subsector free of government interventions if it is to maintain its vigor and growth. If any problems need to be addressed, market incentives should be used to the maximum extent possible.

The cocoa pod-borer is an extremely serious problem and, if it spreads out of control, it could decimate the subsector. The problem is difficult to solve, especially in the smallholder sector. At this stage, as a necessary first step, a comprehensive survey to determine the extent of infestation needs to be undertaken. This is an area where Government's involvement, both at the central and regional levels, could be beneficial.

Although the World Bank expects world cocoa prices to increase for the next 10 years (See World Bank 1995), the pace of Indonesia's cocoa production growth in the future could slow down substantially. Apart from the cocoa pod-borer problem, the major problem is lack of additional land with suitable soil and climate, and good transport access. Probably, the most important policy considerations in maintaining adequate growth of the subsector are, apart from implementation of effective measures to combat the cocoa pod-borer, provision of transport infrastructure and extension services in suitable areas, as well as keeping the subsector free of government interventions.

Annex 1: Production of Cocoa by Region and Type, 1980-1994
(in tons)

	Sulawesi			Java			Others			Total			
	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	All Types
1980	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,058	8,410	816	10,284
1981	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,437	10,429	1,271	13,137
1982	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	3,787	11,464	2,009	17,260
1983	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	5,401	11,738	2,501	19,640
1984	2,656	-	215	14	10,290	1,106	3,559	6,271	2,391	6,229	16,561	3,712	26,502
1985	4,567	-	220	9	12,172	1,161	4,421	4,389	2,908	8,997	16,561	4,289	29,847
1986	6,425	-	561	23	9,160	1,090	5,313	9,128	2,837	11,761	18,288	4,488	34,537
1987	17,610	-	588	73	8,939	1,356	8,158	8,719	4,756	25,841	17,658	6,700	50,199
1988	21,751	-	534	34	9,826	1,088	8,889	8,719	4,589	30,674	18,545	6,211	55,430
1989	17,181	-	566	85	10,520	1,293	9,926	9,580	4,730	27,192	20,100	6,589	53,881
1990	79,212	-	935	206	12,241	2,831	18,060	14,775	14,147	97,478	27,016	17,913	142,407
1991	96,004	-	1,099	226	14,116	2,957	22,180	16,495	16,162	118,410	30,611	20,218	169,239
1992	114,159	61	1,290	776	14,113	3,786	30,628	21,819	20,515	145,563	35,993	25,591	207,147
1993	144,635	75	1,340	1,916	17,146	3,918	40,978	23,417	24,534	187,529	40,638	29,792	257,959
1994 \a	151,185	75	1,381	1,994	16,942	4,210	43,056	25,105	27,179	196,235	42,122	32,770	271,127

Sources: Directorate General of Estates; ASKINDO.
Footnote: \a Preliminary data.
Note: n.a. = not available.

Annex 2: Acreage of Cocoa Production by Region and Type, 1980-1994
(in hectares)

	Sulawesi			Java			Others			Total			
	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	Small-holders	Public Estates	Private Estates	All Types
1980	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	13,125	18,636	5,321	37,082
1981	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	14,869	20,678	7,422	42,969
1982	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	18,000	23,308	7,121	48,429
1983	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	25,858	25,132	8,938	59,928
1984	18,355	-	1,038	214	17,665	2,407	20,648	10,002	8,190	39,217	27,667	11,635	78,519
1985	26,999	-	944	140	18,658	3,106	24,626	10,540	7,784	51,765	29,198	11,834	92,797
1986	31,394	-	1,040	224	19,171	2,679	26,966	10,823	8,736	58,584	29,994	12,455	101,033
1987	66,695	-	850	1,031	22,734	3,691	47,196	15,657	13,972	114,922	38,391	18,513	171,826
1988	72,952	-	723	1,173	24,633	3,595	52,816	15,660	14,615	126,941	40,293	18,933	186,167
1989	62,847	-	748	1,408	26,162	3,829	55,384	15,671	15,963	119,639	41,833	20,540	182,012
1990	143,330	250	2,255	8,294	27,414	7,660	100,613	30,246	37,738	252,237	57,910	47,653	357,800
1991	147,869	263	4,821	8,627	27,943	7,719	103,720	31,167	42,765	260,216	59,373	55,305	374,894
1992	193,194	1,595	5,754	21,568	31,969	10,508	137,149	28,873	65,396	351,911	62,437	81,658	496,006
1993	201,263	1,906	6,937	22,829	32,409	11,652	152,814	31,210	74,535	376,906	65,525	93,124	535,555
1994 \a	203,399	1,906	6,888	26,317	34,804	12,065	160,230	31,841	80,552	389,946	68,551	99,505	558,002

Sources: Directorate General of Estates; ASKINDO.
Footnote: \a Preliminary data.
Note: n.a. = not available.

Annex 3

Role of Transport Cost in Determining Cocoa Farmgate Prices

As mentioned earlier, availability of good transport infrastructure has played a critical role in smallholder cocoa development, as can be seen from the fact that most major producing areas in Sulawesi have good road or sealane access to Ujung Pandang. In order to better understand the role which improved transport played in the recent reduction of gross marketing margins, an attempt was made in this study to assess the extent to which farmgate prices are determined by transport cost, based on data collected in South Sulawesi for its major production areas.

The data show that the variation in transport cost, based on differences in both distance and road quality, plays a part in determining farmgate prices as shown in the attached table and figure. For instance, the difference in distance is reflected in the farmgate price differential between Sidrap and Luwu regencies, situated along the same road going northeast from Ujung Pandang but whose respective major towns, Sidenreng and Palopo, are 157 km and 234 km away from Ujung Pandang by road, respectively (see Map of Sulawesi). Farmgate prices in Sidrap have been generally higher than in Luwu, with the difference ranging between 2 percent in 1993 and 20 percent in 1990 (see attached figure and table). However, transport cost appears to be only one of numerous factors that determine farmgate prices. For instance, according to the Road User Cost Model, the trucking cost (using the total estimated vehicle operation cost for 12-ton trucks) for the longer Palopo-Ujung Pandang route was estimated to be Rp. 16.2/kg in 1990, as compared with Rp. 11.0/kg for Sidenreng-Ujung Pandang. During this year, the average farmgate prices for the two regencies concerned were Rp. 1,255/kg and Rp. 1,500/kg respectively, meaning that the transport cost differential accounted for only 2 percent of the farmgate price differential. There seem to be other forces that determine farmgate prices, such as the degree of traders' competition for beans, the farmers' bargaining power, the efficiency of bean collection and the access to main roads from producing areas.

The difference in road quality also has some influence on farmgate price differential. This can be examined by analyzing farmgate prices in the regency of Mamuju, whose central town by the same name is 402 km away from Ujung Pandang by road, including 142m of very poor road between the towns of Majene and Mamuju (its weighted average International Roughness Index being 10.1 m/km in 1993, compared with 3.7 m/km for the rest of the way to Ujung Pandang). The cost of transporting cocoa on this poor road is higher than the cost for transporting on good roads, by as much as 100 percent according to an exporter. This has kept farmgate prices in Mamuju generally below the levels of Luwu and Sidrap (see attached figure). However, the transport cost differences account for a relatively small part of the farmgate price differential, also in this case. The trucking cost for the Mamuju-Ujung Pandang route was estimated, also using the Road User Cost Model, to be Rp. 30.8/kg in 1990, when the average farmgate price for Mamuju was Rp. 1,225/kg. In other words, transport cost differential explained about half of the farmgate price differential between Mamuju and Sidrap.

Cocoa Farmgate Prices, for Selected Regencies in South Sulawesi

YEAR	Average Farmgate Prices (Rp/kg) By Regency			FOB Price Ujung Pandang (Rp/kg)
	Luwu	Mamuju	Sidrap	
1985	1,575 (75%)	1,525 (73%)	1,625 (78%)	2,094
1986	1,561 (70%)	1,550 (69%)	1,750 (78%)	2,241
1987	1,835 (71%)	1,800 (70%)	2,100 (43%)	2,587
1988	1,472 (72%)	1,425 (69%)	1,700 (83%)	2,051
1989	1,361 (78%)	1,325 (76%)	1,500 (86%)	1,735
1990	1,255 (74%)	1,225 (73%)	1,500 (89%)	1,687
1991	1,504 (84%)	1,370 (76%)	1,500 (84%)	1,794
1992	1,492 (95%)	1,394 (89%)	1,454 (93%)	1,563
1993	1,504 (91%)	1,510 (91%)	1,529 (92%)	1,654

Source: Dinas Perkebunan, South Sulawesi

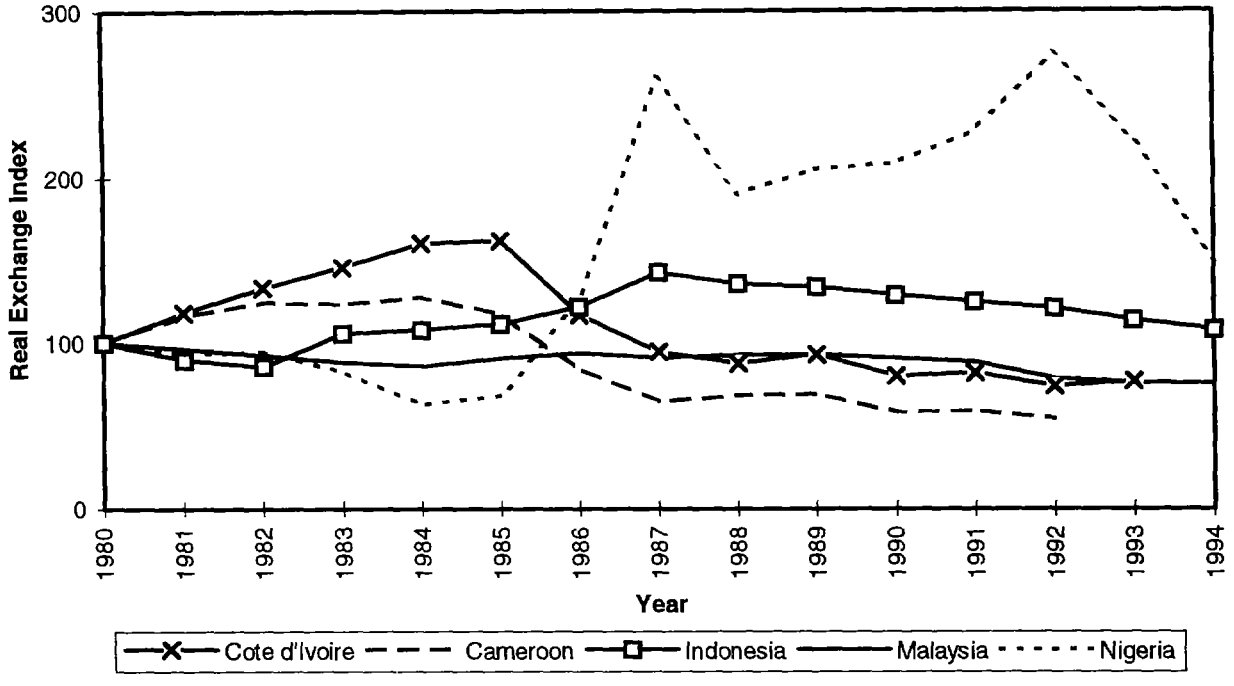
Annex 4

Comparison of Real Exchange Rate Policies in Major Cocoa Producing Countries

The attached table and figure show the exchange rate indices of major cocoa exporting countries adjusted by inflation, with 1980 as the base year. The indices are calculated by netting out CPI percentage change from the exchange rate percentage change.[11] These indices give good estimates of what one U.S. dollar has been worth in these countries since 1980. For example, the figure of 1.29 in 1990 for Indonesia implies that one U.S. dollar in terms of purchasing power in 1990 was worth 1.29 times more as it was in 1980. On the other hand, one U.S. dollar in 1990 in Côte d'Ivoire was worth US$0.80 in 1980 terms. The higher the index, the more competitive a country is in production of exported commodities. The indices in the table show that Indonesia's export sector has been much more competitive than other producing countries such as Malaysia, Côte d'Ivoire, and Cameroon in the last 10 years, due mainly to the devaluation in the mid-1980s.

[11] The formula used is $ERI=(ER_t/ER_B)*(CPI_B/CPI_t)$
where ER_t = Exchange rate in year t; CPI_B = Consumer price index in year t
ER_B = Exchange rate in the base year; CPI_t = Consumer price index in the base year

Real Exchange Index Movements in Major Cocoa Production Countries



Note: Ghana was omitted due to a very large variation.
Source: IECCP.

Real Exchange Index Movements in Major Cocoa Production Countries

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Côte d'Ivoire	1.00	1.18	1.33	1.46	1.60	1.62	1.17	0.95	0.88	0.93	0.80	0.82	0.74	0.77	n.a.
Cameroon	1.00	1.16	1.24	1.24	1.27	1.17	0.84	0.65	0.68	0.69	0.58	0.59	0.54	n.a.	n.a.
Ghana	1.00	0.46	0.38	0.54	1.59	2.17	2.86	3.53	3.54	3.77	3.32	3.17	3.42	4.07	4.77
Indonesia	1.00	0.90	0.86	1.06	1.08	1.11	1.22	1.43	1.35	1.34	1.29	1.25	1.21	1.14	1.08
Malaysia	1.00	0.96	0.92	0.89	0.86	0.91	0.94	0.91	0.93	0.93	0.91	0.88	0.78	0.76	0.75
Nigeria	1.00	0.94	0.95	0.83	0.63	0.68	1.26	2.60	1.90	2.05	2.08	2.27	2.74	2.23	1.50

Note: n.a. = not available.
Source: IECCP.

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