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Returning to the Land: Prospects for Agricultural Exports and
Rural Development in Indonesia

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Master's Essay

University of Michigan Business School and
Center for South and Southeast Asian Studies

FACULTY COMMENTS

This paper studies the prospects for developing smallholder cash crop agriculture in Indonesia with a view to increasing returns to farmers. It is extensively researched, drawing on both historical material and current data, all of which are assembled into a comprehensive and convincing argument for more investment into higher-value crops and processing.

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Title

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Map of Indonesian Coffee Growing Regions

Returning to the Land: Prospects for Agricultural Exports and Rural Development in Indonesia

Abstract

This paper focuses on the prospects for developing Indonesia's cash crop sector, particularly in light of the financial crisis of the last two years. The transitional nature of rice as a primary crop has led to the need for crop diversification. Additionally, the increased value of cash crops on the world market with the weakened rupiah has created a boon for rural farmers and exporters of these crops. Many of these crops are early in their transitional stages, and thus are prime candidates for assistance as they have the potential for increased yields and productivity.

In light of these two issues ~ the need for diversification away from rice and the recent refocus on the agricultural sector ~ this paper will concentrate on cash crop development for export to Western developed countries (i.e. U.S. and Western Europe). In the short term, developed Western markets are the most viable targets for export due to the current recession of Japan and the general economic malaise of the Southeast Asian region. Thus, for the purpose of this study, the target crops should meet the following criteria: 1) dominated by smallholders, 2) growing demand by developed (Western) countries, and 3) have the potential to increase productivity i.e. are in early stages of agricultural transition.

In addition to identifying those crops which have potential to stimulate Indonesia's economy, it is also important to analyze how rural small-landholders can integrate with urbanizing communities to realize growth and equitable economic gain. There exists an opportunity to develop the rural agricultural population, but in order to create sustainable growth of this sector, policy alternatives should be considered carefully. This requires a close study of the value chain, from the producer to marketing the product to consumers. Currently, there are several intermediaries in the process of getting the coffee cherry to the coffeepot, for example, which may or may not have inefficiencies. Additionally, it will be helpful to review past government policies in both the rice sector and cash crop sector, both to provide a context for future development and to avoid past mistakes.

Finally, other models of rural agricultural development may serve as positive examples that could be transferable to Indonesia. In particular, this paper will explore the development of cocoa farming in Sulawesi, and coffee production in Kenya. These models identify policies and systems that helped to integrate the rural farming sector into the national, and ultimately, the world economy.

I. Introduction: Theoretical Framework for Thesis

The most distant history of Western involvement in Indonesia conjures up visions of opportunistic explorers, traveling long distances on European ships in search of the riches that these precious islands held. Valued as dearly as gold, the exotic spices grown on the Indonesian archipelago were the foundation for conquering and colonizing this part of the world.

Indonesia is now known not for its spice trade, which accounts for a mere 1% of export revenues, but rather for its low-wage labor, fast-growing economy, and corrupted government. Since Indonesia became an independent nation in 1945, the priorities of its leaders have turned to building a nation and an economy based on industrialization. Indonesia has been swept up in a path common to the fast-growing economies of Southeast Asia: import substitution, followed by export orientation, attracting foreign investment, utilizing a large, low-wage labor pool to fill up manufacturing plants, and finally a turn towards value-added, technology-driven manufacturing. Indonesia's comparative advantage in agriculture was not seen as the wave of the future, and was not the engine of growth.

This is not to say that the agriculture sector was completely ignored. On the contrary, President Suharto, who ruled the Indonesia from 1965-1998, allocated substantial resources to agricultural development, with a clear bias towards developing rice production. The government spent heavily on fertilizer subsidies, crop intensification programs and farmer training. The decision to focus so strongly on agriculture is probably best explained by Suharto's rural upbringing and his memory of how rice shortages destabilized Sukarno's (his predecessor) regime. Although farmers had no political voice to speak of, they did comparatively well in obtaining subsidized credit. Within a decade, 1974-1984, Indonesia moved from being the world's largest rice importer to self-sufficiency.

The thrust of Suharto's agricultural development was on the island of Java, considered the political and economic center of the nation. Indonesia is a unique nation in its geographical layout. Consisting of 7 major island groups, the population and environment varies widely across the archipelago. Java is the most densely populated and heavily farmed of the islands. On Java, the limits of arable land expansion were reached by 1930, after which increased productivity was due to intensification. On the other islands, the growth of labor-productivity was largely caused by increases in the land-labor ratio, which implies that producers on average expanded the area under their control. The outer islands are much less densely populated, and land availability makes it possible for farmers to increase acreage. Additionally, the other islands have traditionally grown cash crops as opposed to rice, a result of both the appropriateness of the land for these crops as well as government policy.

The growth of other sectors of the economy, such as oil and manufacturing for export, has naturally led to a relative decline in the contribution of agriculture to GDP. Specifically, rice's contribution to the agriculture sector has declined in the past three decades, from 37% in 1968 to less than 25% throughout the 1990s. It appears that intensification programs and the "green revolution" have been fully expended and led to diminishing returns of rice production. Production per hectare has been leveling off since 1982, implying the need for crop diversification to increase employment, income, and economic growth of the rural economy.

The impetus for this paper is drawn not only from the need for crop diversification in the rural sector, but also from the recent financial crisis in Asia that has hit Indonesia particularly hard, and resulted in a drastic depreciation of its currency. The exchange rate dropped from 2100 rupiah per dollar in April 1997 to an all time low of 11,000 rupiah per dollar in March of 1998. In the midst of this downturn, farming has been one of the only sectors to see economic gain. The rupiah's fall has made dollar-based exports of agricultural produce more valuable, in rupiah, than before. Exports have brought in badly needed foreign

exchange, and have also been a boon to the rural farmers who dominate the agricultural sector. Recently, several individuals have recognized this need to "return to the land:"

"Agriculture, mining, and commodities are basic strengths of these countries," says Indonesian economist Thie Wie at Lipi, the Indonesian Institute of Sciences. "These strengths will remain for a long time. We have to use this crisis to remind us to look again at our fundamentals." (Far Eastern Economic Review, 1/29/98)

Suharto, at the 1997 National Competition for Agricultural Intensification commented, "In facing the current economic and monetary upheavals, the agricultural sector has become one of our mainstays because it does not need imported raw materials." (Jakarta Post, 1/20/98)

In light of these two issues -- the need for diversification away from rice and the recent refocus on the agricultural sector -- this paper will concentrate on cash crop development for export to Western developed countries (i.e. U.S. and Western Europe). In the short term, developed Western markets are the most viable targets for export due to the current recession of Japan and the general economic malaise of the Southeast Asian region. Thus, for the purpose of this study, the target crops should meet the following criteria: 1) dominated by smallholders, 2) growing demand by developed (Western) countries, and 3) have the potential to increase productivity i.e. are in early stages of agricultural transition.

In addition to identifying those crops which have potential to stimulate Indonesia's economy, it is also important to analyze how rural small-landholders can integrate with urbanizing communities to realize growth and equitable economic gain. There exists an opportunity to develop the rural agricultural population, but in order to create sustainable growth of this sector, policy alternatives should be considered carefully. This requires a close study of the value chain, from the producer to marketing the product to consumers. Currently, there are several intermediaries in the process of getting the coffee cherry to the coffeepot, for example, which may or may not have inefficiencies. Additionally, it will be helpful to review past government policies in both the rice sector and cash crop sector, both to provide a context for future development and to avoid past mistakes.

Finally, other models of rural agricultural development may serve as positive examples that could be transferable to Indonesia. In particular, this paper will explore the development of cocoa farming in Sulawesi, and coffee production in Kenya. These models identify policies and systems that helped to integrate the rural farming sector into the national, and ultimately, the world economy.

Structure of paper

First, this paper will review Indonesia's government policy in agriculture since 1965, a crucial turning point in Indonesia's history marked by the succession of President Suharto. This section will explain the transition of rice production and recent policy towards cash crops. The next section of the paper will examine the role of the smallholder farmer in Indonesia, and the movement of agricultural versus urban labor in Indonesia since 1965. This section will also review the theory surrounding the historical development of the agricultural sector. Third, the cash crops of coffee and spices will be examined to identify their potential for export growth and smallholder development. Coffee production in Kenya will be discussed as an ideal model for smallholder specialty coffee production, and cocoa production in Sulawesi will serve as a second model of smallholder success. Based on the research and predictions of these four sections, the paper will conclude with policy recommendations for sustainable development of smallholder cash crops in Indonesia.

II. Government Policy

A. Agricultural Policy in Indonesia after 1965

Agriculture was a central focus of New Order development strategies and priorities. The New Order was the name given to the government under President Suharto, who succeeded President Sukarno in the aftermath of an attempted communist coup in 1965. Indonesia's nutritional level was among the lowest in Asia when Suharto officially took power in 1967, and the average supply of calories was less than 80% of basic requirements. The first priority was to develop food crops (crops primarily for domestic consumption), and there was less focus on cash crops (crops primarily for export).

Among the food crops given special developmental assistance, rice was primary. Rice was more than a staple in Indonesia; it dominated the political economy of the country. The price and availability of rice had an important bearing on political stability of Suharto's regime. Rice shortages were part of the general economic malaise that contributed to the fall of Sukarno. The meaning of rice in Indonesia goes beyond its status as the nation's principal staple. Most Indonesian's eat it at every meal; in fact, many feel they have not actually eaten a meal if rice is not part of it. An example that demonstrates the population's commitment to rice consumption occurred in 1963, by which time several attempts at rice self-sufficiency had failed. Sukarno launched a personal campaign to urge the population to eat maize and other foods in place of rice, but the public outcry was so great that the idea was dropped.

Additionally, rice plays an important economic role, since it is the main product of the villages of Java. It is the livelihood for a large part of the rural population, which constitutes 65% of the total population. This points to the favoritism that Javanese farmers have received over those in the outer islands. Suharto's government favored the development of Java; the most modern cities and productive farmers are on Java and dominated by the Javanese. Java is the center of business and government, and perceived by those in power as the core of the nation. This perception has caused grievances among the outer islands' inhabitants, as resources are continuously poured into Jakarta. This situation persisted throughout Suharto's rule.

Suharto took action on achieving rice self-sufficiency within months of his takeover of the presidency. The government provided several input subsidies for fertilizer, pesticides, and irrigation, which helped to increase yields and production. Farmers were given easy credit terms, and were assisted with programs such as "mass guidance," which were meant to help farmers implement new technologies and rice varieties developed in the neighboring countries of Philippines, Thailand, and Malaysia. The government invested heavily in rural infrastructure, such as irrigation canals, water supply, bridges, roads, and major highways. Other programs for primary schools, health centers, markets, and reforestation were also established. By 1978, programs to build up the local infrastructure amounted to 12% of the national development budget, a positive repercussion of the importance of rice to political stability. By 1984, production of rice exceeded domestic consumption for the first time.

Events in the international environment also assisted the growth of rice production. Of the new technologies mentioned above, new rice hybrids developed in the Philippines had the largest impact, since they had the potential of increasing the traditional yields of irrigated land in tropical Asia many times over. This hybrid was the beginning of what became known as the "green revolution." In addition to this, the oil crisis of the early 1970s increased the price of Indonesia's crude oil by 200% in international markets. This new oil money helped to fund the above improvements, and gave top policymakers freedom to attack the rice problem. They also used this opportunity to solidify their control of nearly every aspect of rice production, and in doing so protect the reputation of the regime, which was vulnerable to public outcry and student demonstrations if rice was not available at a fair price.

BULOG

The institution that probably had the biggest impact on rice production was Bulog, an acronym for Badan Urusan Logistik (National Logistics Agency). When it was created in 1967, it had the responsibility of purchasing rice for the provisioning of the armed forces, the civil service, and state corporation employees. The agency reported directly to the president, and was given monopoly control over prices and production of rice. Now, its control has been expanded to other basic commodities, including wheat, wheat and rice flour, poultry, peanuts, mungbeans, garlic, soybeans, sugar, onion, shallots, and leeks. Bulog assisted rice production by setting price floors and ceilings, thus maintaining the stability of the price of rice. As price floors were raised and other subsidies continued, national production went up, and by the 1980s, Indonesia became self-sufficient in rice.

Bulog is considered by some the most powerful food agency in Asia. Its success is partly attributed to the people in the organization; the second head of the agency, Bustanil Arifin, is credited with turning Bulog into a competent organization and putting the public need ahead of personal and bureaucratic interest. Bulog was also staffed with the most educated, elite, well-trained, and well-paid employees of the state corporate sector, who were given maximum benefits and modern facilities in which to do their work. In addition to human resources, Bulog's success can be attributed to favorable terms of credit, with which it could purchase imported rice from the government at subsidized costs (in the earlier years, before self-sufficiency). Bulog's power grew as it set up a reliable information system to disperse information about prices and production around the country, built warehouses to successfully control rice storage, and implemented price supports to protect price stability.

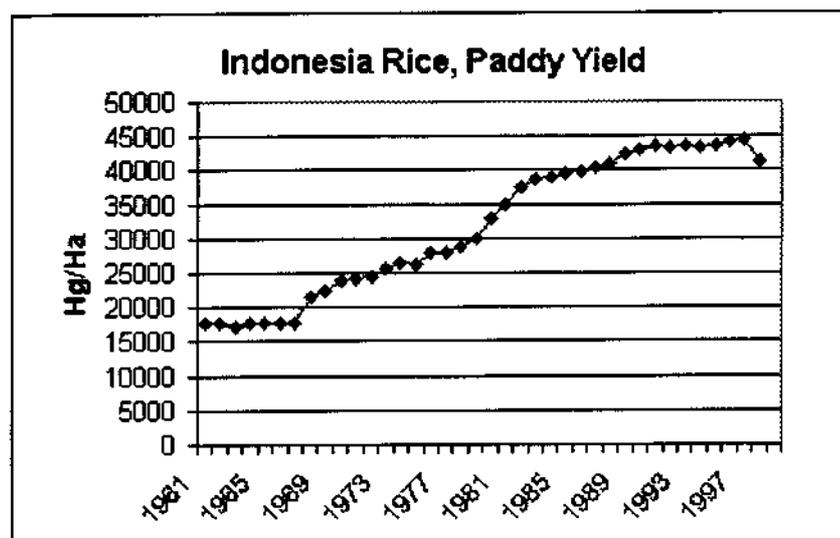
Bulog has come under criticism, however, beginning with its entry into the sugar industry. The government set the price that cane farmers were to be paid at harvest; Bulog bought the cane, contracted with government-owned mills to process it, and managed its trade. Farmers complained that prices were too low, and consumers, that prices were too high. By 1987, the World Bank criticized the entire management of the industry. As was also true in the wheat flour industry (which was also under attack by the World Bank), sugar millers were receiving unusually high profit margins, upwards of 25%. (Bresnan, 1993)

Bulog was given considerable favoritism and never held accountable for its management of substantial government funds and massive quantities of goods. It appears that as long as Bulog was able to successfully manage rice, Suharto left the agency alone. This led to widespread corruption, financial mismanagement, inefficiencies, and pricing that underpaid farmers and overcharged consumers. Since then, the World Bank has urged Bulog to pare back its monopoly control over commodities, criticizing it for regulations which distort prices and business opportunities, thereby increasing costs and causing losses in efficiency as resources become attracted to protected activities.

The recent currency crisis in Asia may be the final straw for Bulog. Indonesia has received economic aid from the IMF, which gives the IMF and World Bank leverage to pressure Indonesia to dismantle monopolies such as Bulog. In response to this pressure, the government of Indonesia has stated that it plans to remove the Bulog monopoly, allowing consumers to buy commodities at market prices. (Jakarta Post, 8/21/97) However, the Indonesian government has vacillated on this declaration, since the destabilizing effects of the currency crisis and severe drought conditions (brought about by El Nino) have driven up prices of basic food commodities that Bulog typically regulates. Bulog is surely a drain on government fiscal resources, but keeping it alive to stabilize prices may be necessary in the short term to maintain domestic peace.

Transition in Rice Production

Due to the above factors, including a massive government assistance program and the introduction of new higher yielding varieties, an agricultural transition has occurred in rice production since 1965. From 1965 to 1988, there were significant gains in yields of rice, but from this point onward, gains in productivity have been slow. The following graph depicts this transition:



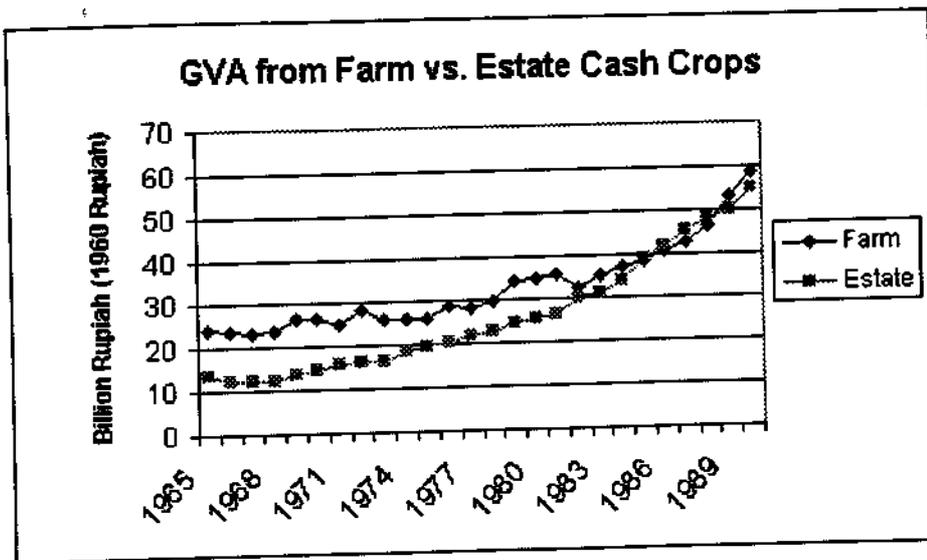
Source: FAO Statistical Database

According to Drake (1993), increases in production in agriculture are a result of two factors, 1) the extension of land under cultivation and 2) improvement in land productivity. The agricultural transition begins as the principal source of increase in production shifts from extension of land to improvement in productivity per hectare. It continues through the period of a dramatic increase in productivity due to new grain varieties and heavy application of fertilizers and pesticides and stabilizes when diminishing returns in yield per hectare are experienced.

Due to the government policy implemented by Suharto, the green revolution, and the revenue generated through oil exports, the production of rice has experienced this transition. This means that rice can no longer be treated as a prime commodity to increase employment, income and economic growth of the rural economy. Alternative crops need to be identified and resources allocated to their production if the agricultural sector is to generate employment, income, and economic growth of rural areas.

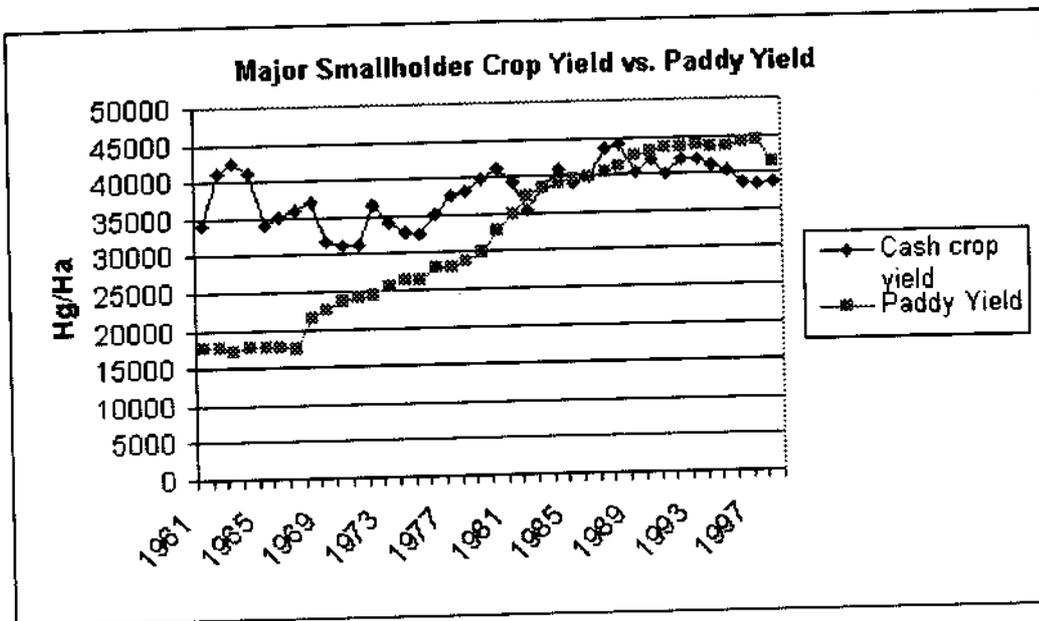
B. Cash Crops

Cash crops have been a part of Indonesia's economy for most of its history. The resource-rich nation has attracted foreign involvement, and securing the spice trade was the underlying purpose of Dutch colonization of Indonesia at the end of the 17th century. Furthermore, smallholders have been the dominant producers of these crops, particularly outside the island of Java. The following graph shows the gross value added (GVA) from farm cash crops as opposed to estate crops, GVA being production multiplied by price. Price has been adjusted for transport and trade margins in order to reflect producer price.



Source: *Agricultural Growth in Indonesia Since 1880*

Although cash crop production has increased, it probably has not fared as well as it could have due to the government's focus on food crop production, particularly rice (during Replita I, 1968-1973, "food policy was rice policy" (Bresnan, Mears, and Moelijono, 1981)). Especially for the smallholder sector, crop performance was poor, due to neglect, discrimination in favor of plantations, and inappropriate policies. This resulted in slow output growth and virtually stagnant yields. The following graph shows the yields of main smallholder agricultural export crops (cinnamon, coffee, natural rubber, pepper, nutmeg, vanilla, and tobacco) versus rice:



Source: *FAO Statistical Database*

The yields of cash crops experienced slow or no growth a result of technologically stagnant farming techniques and lack of fertilizer. Estates, which received government subsidies (especially state-owned plantations) have had higher yields and have commanded a higher price due to higher quality produce. Still, both estate and smallholder yields remain low by international standards, a consequence of Suharto's neglect of cash crops throughout the 1960s, 70s, and 80s.

In the 90s, however, the Suharto government turned its attention towards cash crops as food crop

production reached self-sufficiency and stabilized at adequate levels. To be internationally competitive and gain foreign exchange reserves, much needed to be done to improve cash crop performance. Some of these domestic policies are described below.

ifferent Policies and Programs

Since the late 1980s, the government and export groups such as AEKI (Indonesian Coffee Exporters Association) have implemented a countrywide program of "intensification" aimed at improving existing crops. This includes policies that encourage rehabilitation and intensification efforts to increase yield and improve crop quality, and discourage expansion of planted area. For example, AEKI, together with village cooperatives and the Department of Agriculture, offer extension services to coffee farmers to improve coffee quality and provide high-yield arabica seedlings to replace robusta at appropriate elevations, as well as providing high-yield robusta varieties.

The government has also made fertilizers and pesticides, which help improve both yields and quality, available at Village Unit Cooperatives throughout the country. However, they are not heavily used by smallholders, probably due to the added cost. These additives have been subsidized in the past, but the government has been increasing price ceilings and gradually dropping these subsidies since the mid-1990s. Thus, it is primarily large private and government owned plantation that can afford to apply fertilizer and pesticides on a regular basis. This increases production levels and exportable quality of produce for these large minority growers, but has not benefited smallholders.

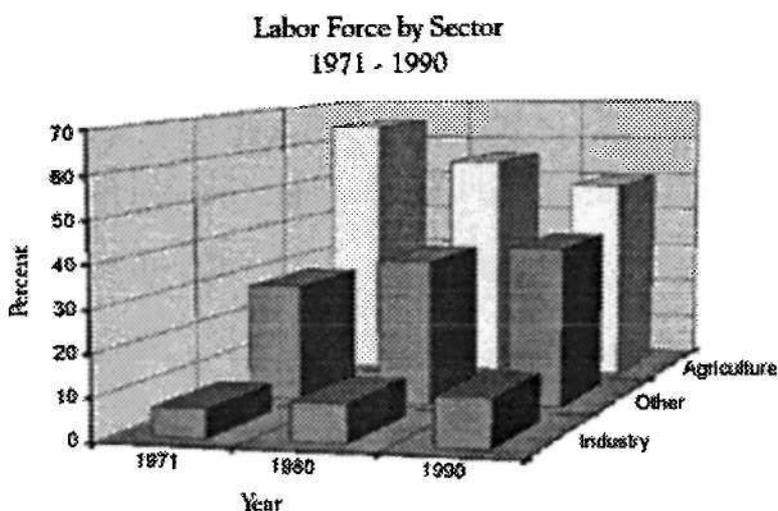
Other reforms do seem aimed at helping the smallholder; the government acknowledges that commercial cash crops provide one method to lift rural incomes and slow labor migration to the cities. Agronomists say there is great potential for cash crops to reduce poverty because of the large investments already made in these crops and because of the large pool of experienced farmers in Indonesia. (Schwarz, 1990) H.S. Dillon, an advisor to Agriculture Minister Wardoyo, sees the success of the rice industry as hope for future improvements in cash crops. "Going by our experiences with rice, we have found that organizing farms is possible; they are quite open to new technology and respond to incentives." (Schwarz, 1990) One scheme to address this potential development aims to bring smallholders into working relationships with bigger, more sophisticated farmers. This program, called NES, requires an investor to sell 80% of his land to smallholders while developing the remaining land in the center. The center becomes a production area to process the crop, which the investor guarantees to buy from the smallholders. The government planned to finance the smallholders' purchase of these plots, but budget austerity in the 90s has severely limited the government's reach.

Another development that may hold more promise is Agrobank, opened in February 1990. One major obstacle to improving planting techniques has been the cost of capital. This bank offers agro-management services, marketing advice, foreign exchange facilities, and supplies credit to smallholder projects.

III. Smallholder farming in Indonesia

The Indonesian Farmer

Smallholder Indonesian farmers dominate the agriculture sector, and cash crop production in particular. Although the number of people employed in the agricultural sector has declined in the past 30 years, this form of employment still dominates the economy. The following graph shows the relative decline in the agricultural labor force and incline in industrial labor. However, the agricultural sector is still dominates the labor force with a near 50% share.



Despite the relative decline in the agricultural labor force, according to Indonesia's Central Bureau of Statistics 1993 Agricultural Census, the number of agricultural households has increased from 12.2 million in 1963 to 21.5 million in 1993, a 76% increase. The increase was significantly higher in the outer islands (128%) compared to Java (47%), due to a higher initial base in Java, limits of arable land in Java, and transmigration programs that relocated Javanese from Java to the outer islands. The land controlled by agricultural households also increased 42.4% from 1963 to 1983, but decreased 0.68 million hectares, or 3.7% from 1983 to 1993. In accordance with this trend, the average land controlled by agricultural households has declined both in Java and the outer islands, reaching an average of 0.9 hectares and 1.2 hectares, respectively. Thus, it appears that while urban migration was a significant factor in the past three decades, there is a trend of more agricultural households being created through a division of land into smaller plots.

Structure of Distribution

The structure of distribution and the problems presented to the smallholder farmer vary for different crops. The generalizations described below are meant to give an overall picture, while the sections on coffee and spices present specific cases from which more realizable recommendations can be given.

Typically, the smallholder farmer in Indonesia must sell his crop to an agent or processor, who then either adds value to the produce before selling it to an exporter, or acts as a middleman to gather a large enough quantity of a given crop to sell it to an agent in a town or city. Although the steps vary from crop to crop and location to location, in most cases the farmers are in a geographically isolated situation and it is most feasible for them to sell their raw produce to a middleman. There may be several middlemen in the process of getting the crop to the exporter, and eventually to the manufacturer in the importing country. Since there are many links in the chain, each one adding a margin, and the price is determined by world supply

and demand, the farmer may end up receiving a low price for his crops. This price may or may not cover his costs. Also, even if there is a high demand for a certain crop, the farmer may be isolated from this information and not know whether he is getting a fair price for his produce.

This problem is exacerbated if the farmer is in a relationship with a money lender, of which there are many in rural Indonesia, to whom he has given his immature crop as collateral. If the farmer is not able to repay the loan, as is often the case with the high interest rates charged by the lenders, he must sacrifice his crop to the lender and begin the borrowing cycle again.

Another issue of concern for the farmer is that the majority of the time he is selling his crop as a non-value-added commodity. Since he does not have the technology, finances, or know-how to add value to his produce, he is not able to charge a premium above the market price. He may try to compete for a higher price with a higher quality crop, but the price differential is sometimes not high enough to compensate for the extra effort required. (McStocker, 1987)

Due to the fragmented nature and inadequate infrastructure of smallholder agriculture, it is easy to identify potential problems. The long supply chain also seems susceptible to monopolistic practices, through middlemen and a higher concentration of players at the top. To understand the reality of the situation, however, a review of the theory and case studies regarding this sector will be helpful.

A Review of Theory

The capacity of the peasant farmer to take advantage of market opportunities and integrate with an urbanizing society has generated several studies and corresponding theories. Reviewing these studies will help provide a rationale for the structure of distribution, the marketing of agricultural products, and the effects of policy intervention in this sector.

One highly acclaimed account of Indonesian rural agriculture is given by Clifford Geertz, who has written several books on the effects of colonization on Indonesian society. One of his better known works, *Agricultural Involution* (1963), makes the argument that agriculture in Indonesia, particularly Java, has experienced what he terms *involution*. This is a process in which increasing population is absorbed into the agriculture sector, as yields increase but production per worker does not increase. It describes a pattern that involves intricate dissection of the farming system (particularly rice) into a complex, complicated web that requires more and more labor. Under the Dutch plantation system (including the Culture System and the Corporate Plantation System), the whole rural economy was pervaded with "tenure systems that grew more intricate, tenancy relationships more complicated, cooperative labor arrangements more complex -- all in an effort to provide everyone with some niche, however small, in the over-all system." Because of this phenomenon, Geertz argues, Indonesian rural villagers were not able to connect with growing urban communities, which were dominated by foreigners, Chinese middlemen, and the wealthier classes who ran international trading operations.

Geertz's theory is connected to that of another Indonesianist, Julius Boeke, whose theory of social dualism was also formed based on the colonial era of Dutch rule. This theory states that during the colonial era, there were two societies, two economies, working side by side in Indonesia -- the bumiputra Indonesian farming villages and the worldly urbanizing export community. The Dutch kept these two societies separate from one another, reasoning that this would preserve the Indonesian way of life and thus fulfill a certain "moral" obligation.

The combination of these two phenomena, involution and social dualism, made a smooth transition to modernism more difficult than if the rural and urban sectors were allowed to integrate, such as was the

case in Japan. Japan, often used as a comparative case study for the late 19th century to early 20th century phase of Indonesia's development, had many similarities to Java: both were heavily populated, both had labor-intensive, small-farm, multicrop cultivation regimes centering on wet rice, and both managed to maintain a significant degree of social and cultural traditionalism in the face of profound interaction with the West. However, excess labor in Indonesia was used by the Dutch to build plantations for export or was absorbed into rice production; in Japan it was used to build a capital-intensive manufacturing sector. The Dutch may have built an infrastructure -- they created better irrigation, improved communications, increased availability of foreign manufacturers -- but they did not build human capital or a modern business class. The Javanese peasant did not need to leave his rice terrace, whereas the Japanese peasant had to become an active member of a manufacturing system, no matter how small scale it may have been.

Geertz conceived this theory in the early 1960s, while Sukarno was still president. This was a dismal time for Indonesia's economy, and the picture he paints for Indonesia's future is of a society imbedded in the trap of involution, unable to effectively industrialize. This inability is mostly rooted in an isolated rural majority that has not developed an economic mentality to think or act entrepreneurially.

A contrasting viewpoint is presented much later in a study done by Yujiro Hayami and Toshihiko Kawagoe. Although their study admits that Geertz theory of involution may have been an adequate description at the time in which he wrote, they found in their field research a situation quite the opposite.

Hayami and Kawagoe (1993), in *The Agrarian Origins of Commerce*, postulate that smallholder farmers in Indonesia are entrepreneurial, and the government can play a positive role in developing this trait through the following: fostering easy entry into trading by improving rural infrastructure, providing marketing information as widely as possible, developing reliable and appropriate property rights and contract mechanisms with grades and standards, and by staying out of the business themselves.

Between May 1986 and August 1990, Hayami and Kawagoe conducted studies in two Indonesian villages, one in Java and one in South Sumatra. They found that the peasant marketing of agricultural products was efficient and profitable with little government intervention and regulations. The trade hierarchy included a large number of self-employed marketing agents. The bottom of the hierarchy consisted of small traders specializing in the collection of small marketable surpluses from village farmers. At the top, there were large traders specializing in the shipment of the assembled commodities. The larger traders were usually more educated and of a wealthier class than the village collectors, and were able to receive credit from large lending institutions. They in turn extended this credit to the villager collectors and farmers, neither of which had the collateral to make these loans directly. This created a bond between the small and large traders, and guaranteed a delivery of produce upstream. Since charging interest is not permissible in Muslim law (approximately 80% of Indonesians are Muslim), the large traders indirectly lowered their credit costs through charging a premium for fertilizer and supplies, and "cheating" on weights and measures (i.e. underpaying).

According to Hayami and Kawagoe, this decentralized hierarchy stemmed from the following characteristics of Indonesian smallholder farming: 1) a small marketable surplus per farm in the peasant farming system, 2) scale economies in transportation and processing, 3) differences in labor's opportunity costs, and 4) differences in financial positions. The nature of agricultural production in Indonesia is largely fragmented, and the village collectors need to gather farm products in sufficiently large lots to exploit scale economies in long-distance transportation and processing. The large traders and factory owners have higher education and higher entrepreneurial/ management ability, so it is economical to let small traders (village collectors), who have lower employment opportunity costs, assemble small farm surpluses from farmers. Also, the large-scale traders and processors are able to mobilize less expensive credits on behalf of small collectors and farmers based on good collateral values of their real assets.

This decentralized system is akin to a sub-contracting system in which large firms contract out the supply of parts and materials to smaller firms. The large and small traders create long-term relationships based on ethnicity (discussed below) and extension of credit. This may appear to present ample opportunity for the larger traders to exploit small traders and farmers. However, it was found in these case studies that there was sufficient competition among large traders to temper this possibility. Although there is a time lag to communicate price information to villagers, they do eventually receive this information (usually via word-of-mouth, radio broadcasts), and this prevents large traders from exercising this monopolistic practice for very long. If they continued to use it, the villagers would be likely to shift their supply to other produce collectors in the future.

Another characteristic of the Indonesian village community that plays an important role in binding village collectors to farmers is social pressure. Due to the tight gossip network in a village community, any misconduct is quickly spread. Anyone who violates a contract with a fellow villager is subject to losing the benefits of the present contract as well as a bad reputation, which may prevent him from gaining future contracts. This social pressure mechanism should not be understated, and should be considered a crucial element to maintain as marketing becomes more institutionalized and formal.

The village traders and farmers are almost all *bumiputra* (indigenous Indonesians), which also creates a social bond and responsibility. The larger town-based traders are predominately ethnic Chinese, and do not have the same community mechanism to enforce contracts. Most transactions between large and small traders are done on the spot in cash, and farmers "tend to admit that these ethnic Chinese are trustworthy in the sense that they are largely accurate in offering the prices prevailing in the market -- no favors are given but no cheating." The ethnic Chinese, however, have ethnic ties to other interregional Chinese traders, which gives them an advantage in collecting information and enforcing contracts at a higher level of trade (i.e. across regions and for export).

In sum, Hayami and Kawagoe have found evidence of a smoothly operating farmer-to-market system in two rural villages of Indonesia. They found that these systems work efficiently in economizing the use of scarce capital and management input, while making intensive use of local inputs, especially labor which has a low opportunity cost.

It is interesting to note that at least one of Geertz's comments remains relevant today: "Smallholder cultivation of export crops remains a source of succor for the hard-pressed Indonesian economy, but it is hardly even approaching the status of a driving force." Perhaps it is time to develop this sector into a driving force to help rebuild the Indonesian economy, quite literally, from the ground up.

IV. A. Coffee

Specialty coffee is one crop that meets the criteria set forth for this study: it is dominated by smallholders, has potential to go through an agricultural transition, and it has experienced growing demand in developed countries. A review of the history, production, structure of distribution, and markets for Indonesian coffee will be used to analyze this crop's potential. The influence of the international environment, perspectives from three U.S. companies, and a model of coffee production in Kenya will also be taken into account to form recommendations for the production and marketing of this important crop.

History

Coffee was one of the original crops produced in Indonesia for export. The coffee plant was imported to Indonesia from Malabar in 1699, and by 1725 coffee had become a commodity of major importance in Dutch East Indies trade. Over 1200 tons of coffee was exported to Amsterdam in 1725, an amount produced mainly by villagers who were required to grow it as a form of tax. Coffee became a dominant government-controlled crop under the Dutch Cultivation System, which required that coffee be grown in all suitable areas. With the introduction of estates, production grew to approximately 94,000 tons by 1885. After this peak, a combination of disease, pests, and unsuitable cultivation techniques led to a decline in coffee output. Production subsequently fell 60% over the next twenty-five years, and did not pick up again until introduction of the Robusta variety at the turn of the century. Robusta was a hardier, disease-resistant, high-yielding species, as opposed to the premium Arabica that was grown earlier. The world demand for Robusta was growing at this time, providing a market for increased Indonesian production. By the late 1920s, production surpassed the 19th century peak at 114,000 tons. During this time the present structure of the industry emerged, with smallholder farmers dominating production, and Sumatra's output exceeding Java's. The Sumatran smallholder has been the engine of growth in coffee production henceforth.

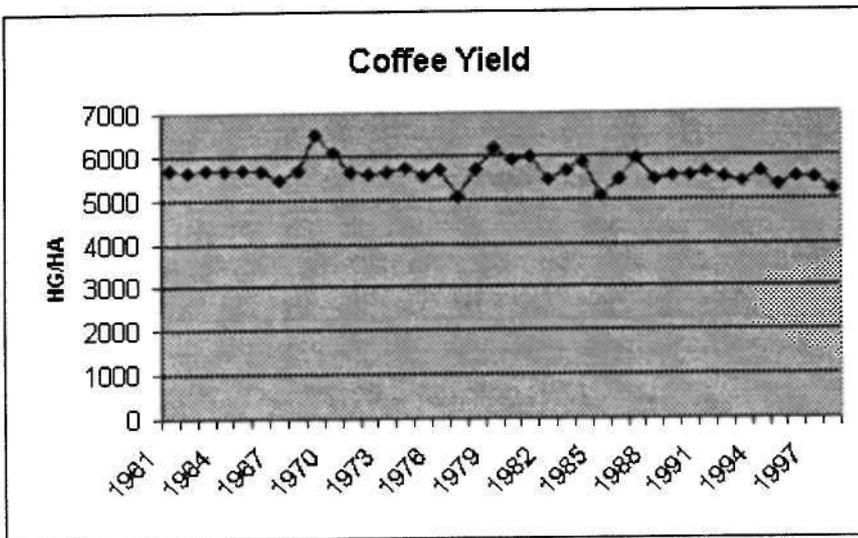
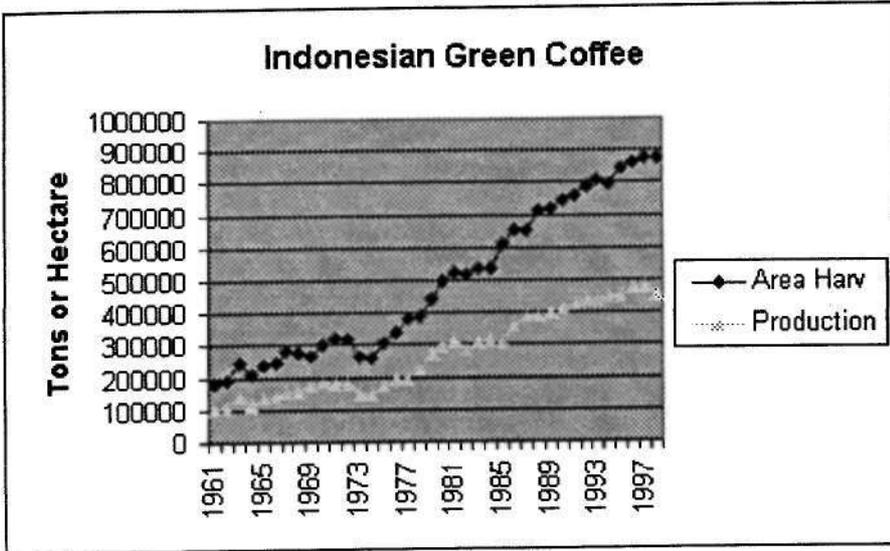
Throughout the 1930's production increased as a result of expansion of area under cultivation. This happened despite a decline in coffee prices; because of the smallholders low fixed and variable costs and abundant family labor, it was more beneficial for them to increase the area under production to compensate for the fall in price than to cut back. At the same time, the estate reaction to a fall in prices was to reduce the area under cultivation because of high fixed costs and reliance on wage labor.

During the Second World War, all traditional export markets collapsed and farmers returned to subsistence farming. After Indonesian independence in 1945, the nationalist regime neglected export industries and coffee recovered very slowly. Land under smallholder control increased gradually in the following decades, and beginning in 1970 growth accelerated on an average of 8%. This was due to both transmigration, a government program which relocated Javanese to the outer islands, and the favorable returns to coffee cultivation. Throughout the 1980s and 1990s, coffee production has remained in the hands of smallholders, and production of Arabica has seen resurgence due to the increased demand by the U.S. and other developed countries for high quality coffee.

Production

Though estates play a part, coffee production is largely based on the labor of about one million smallholder households that cultivate coffee on an average of 1.44 hectares per household. These smallholders generate 93% of total production, and the balance is made up by private estates in Eastern Java and government estates in Java. Coffee is rarely the sole crop grown, but provides the main cash income for about 5 million people.

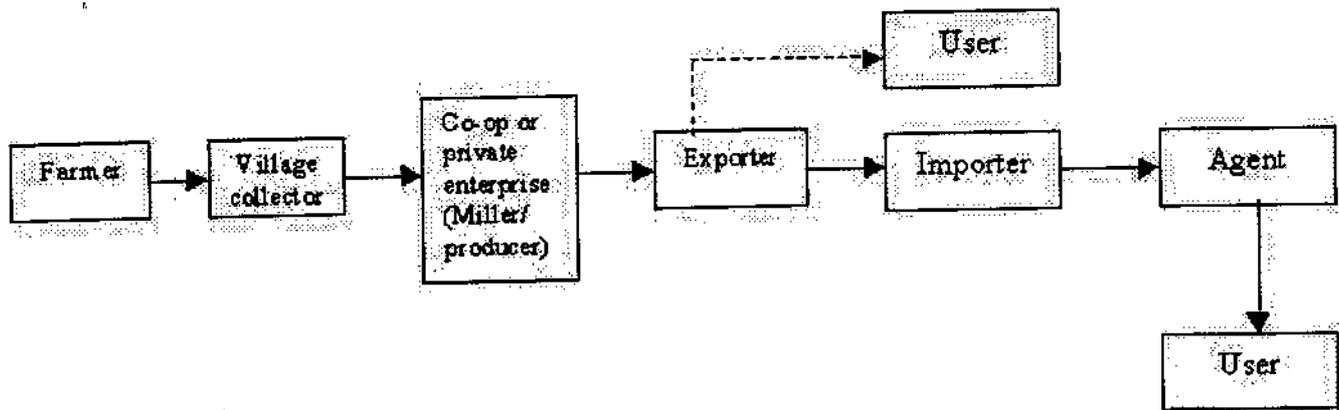
In contrast to the rice sector, coffee yields have remained steady or gradually declined since 1965. This implies that increases in production have come largely from land expansion, and that intensification of production through use of fertilizer, pesticides, and efficient, sustainable farming has been limited. The following graphs verify that while production has increased in the last 25 years, it is largely due to land expansion:



Source: FAO Statistical Database

The Structure of Distribution

The structure of distribution in the coffee industry is outlined in the diagram below:

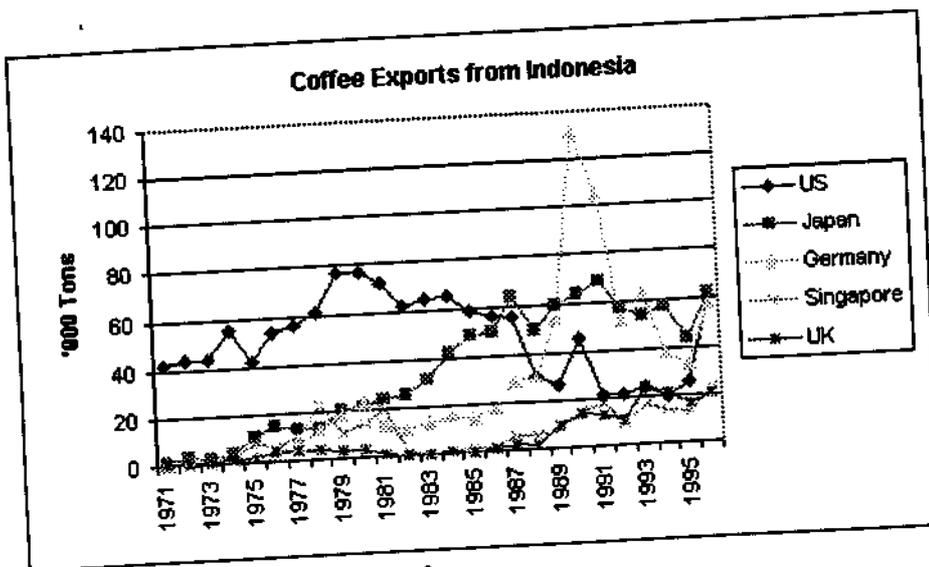


This diagram is a very rough approximation of distribution; in fact it may involve many more steps. For example, there may be several importers or "dealers" on the import side of the chain. The farmer usually sells the coffee cherry, unfleshed, to a co-op or private enterprise, which prepares it for export. He may do some intermediate backyard processing, such as drying the cherry in the sun and hulling (separation of the bean from the shell). In spite of the damage to the bean, hulling may be done by the traditional mortar and pestle, or by spreading the cherries on the road and allowing the wheels of passing vehicles to do the job, or, preferably, by the means of a village huller. Then, the "green bean" (raw, unroasted bean) is sold to a local trader or exporter, which is usually a private organization. All exports of coffee are made by registered government-approved exporters. The trader or exporter reprocesses the coffee to bring it to export requirements in accordance with the government provisions of the "A" quality standard for export coffee. This measure has been in force for approximately 10 years, and has led to significant improvement in the grades of coffee offered for export. The exporter mixes the beans and prepares them in large enough quantities for export. Finally, the beans reach the user through an agent, who connects the importer and user.

Markets

The coffee industry has remained an important generator of foreign exchange for Indonesia since the 1970s, and makes up over 10% of non-oil exports. The importance of coffee as an export has diminished as petroleum and manufactured goods exports have increased, but the crop has still contributed an average of \$0.5 billion annually to export earnings since the mid 1980s. Typically, it accounts for over one-fifth of receipts obtained from the exports of agricultural produce.

Currently, Indonesia is the 3rd largest producer of coffee in the world, after Brazil and Colombia. More than 80% of Indonesia's coffee is exported to over 50 countries, the principal consumers being Japan, Western and Eastern Europe, the United States, North Africa, and the Middle East. The following graph shows the countries of destination for the majority of coffee exports since 1971.



Source: FAO Statistical Database

The nature of demand for coffee in the importing countries has changed over the past 20 years. In the U.S., total consumption, averaging 2.4 billion pounds annually, is down 15% from 20 years ago. A factor in the changing tastes of coffee consumers is a shift toward higher quality but lower total volume. This translates to a higher demand for Arabica as opposed to Robusta coffee. For example, in the U.S., only 15-20% of imports are Robusta. The premium quality of Arabica is reflected in its price on the world market, which is more than twice that of Robusta. For example, the weighted average indicator price of a pound of Arabica from 1996 to 1998 was \$1.89, and for Robusta it was \$0.79.

Although imports of coffee have declined as a whole, higher demand for Arabica coffee is reflected in the growing presence of specialty coffee shops around the U.S. The number of small coffee roasters has jumped tenfold in the last 18 years, and there are more than 20 times as many coffee shops in 1997 as there were in 1980. Furthermore, that number is expected to double by the year 2000. This growth presents an opportunity for Indonesia to expand Arabica production. Now, Arabica is only 10% of production, and Indonesia is thus known primarily as the largest global producer of Robusta coffee. However, specialty coffee companies in the United States such as Allegro and Starbucks have recognized several Arabica coffees from Sumatra, Bali, and Sulawesi.

International Impact on Coffee

As a commodity with wide international demand, coffee markets and prices are directly dependent on international supply and demand. Thus, periods of growth and decline in Indonesia have been largely attributed to the situation of crops in other coffee exporting countries, rather than to any specific assistance given to coffee farmers or improvements made in the local industry. For example, in the 1980s, world coffee prices were high due to droughts and disease in Brazil, the world's largest exporter of coffee. This caused a surge in coffee export revenue in Indonesia, as world supply was down and demand for Indonesian coffee was driven higher. For the 1998/99 harvest, Brazil's coffee output is expected to be unusually high due to excellent weather, recovery from a 1994 freeze, and strong prices in the last couple of years that led growers to increase area and improve orchard care. The surge in Brazilian supply will cause other countries to cut prices, which will adversely cut into export earnings for countries like Indonesia.

For more than 25 years, global coffee trade was governed by the International Coffee Organization (ICO) in London, an organization made up of both the coffee producing and consuming nations of the world. The ICO attempted to regulate global coffee supply and demand in order to keep coffee prices steady. Many

coffee exporters grow coffee as a cash crop and rely heavily on coffee revenues for foreign exchange. If supply and demand is allowed to float in a free-market system, price fluctuations of coffee could severely impact these countries economies. Additionally, for several coffee-producing countries, there is no viable alternative to coffee, and thus they have no backup source of revenue if a price drop occurs. Under the quota system, ICO producer countries exported set amounts to ICO consumer countries, stabilizing both supply and demand and keeping prices within a predictable band. In general, quotas were set according to producing countries shares of world production.

By 1989, however, the ICO failed to implement quotas and price stability effectively. Coffee producing countries produced more than they were allowed according to the quotas, mainly in response to an increase in world demand. These countries found a market for their over-quota coffee in non-traditional markets, non-ICO members, and in whomever would buy outside of the quotas. This increase in supply led to a decrease in prices and consequently the demise of the ICO. The ICO no longer tries to regulate coffee trade, but functions as an information center for the coffee industry. It hopes to help stabilize prices by giving the market a clear picture of the coffee market through newsletters and publications. Without good, reliable information, prices are often based on rumors and speculation which can cause distortions in the market

The breakdown of the ICO began with a two-year suspension of coffee quotas after a failure to modify the quota system in June of 1989. Indonesia was a contributor to the breakdown, since it contested the ICO's quota proposals, arguing that they did not fairly reflect Indonesia's potential. (For example, production in 1988 was 385,000 tons, and the proposed quota was only 220,000 tons.) Prior to the breakdown, Indonesia's allotment was only 5.2%, against the 7% it feels is commensurate with its output. The board of the ICO argued this lower allotment was partially due to Indonesia's reputation for selling poor quality coffee, and the lower demand for Robusta beans on the world market. Conversely, Indonesian officials claim discrimination is the root cause of the lower quotas, as the ICO is a Latin American-dominated organization that Indonesia contends is biased against Asian producers.

Additionally, the ICO's 1989 proposals attempted to apply quotas to non-ICO members, primary markets for coffee produced above quota. This is evidenced by Indonesia's export statistics in 1988, one year prior to the breakdown: 135,000 tons of coffee was exported to ICO member countries, and another 135,000 tons was exported to non-members. Although it was acknowledged that suspension of quotas would drive prices and export revenue down in the short term, Indonesian officials welcomed the suspension. "It's better to get a suspension of quotas than to get a bad agreement," said Daryono Kertosastro, chairman of the AEKJ. (Schwarz, 1989) Without the quotas, it was believed that Indonesia would be able to gain more of the world market share.

However, the realities of a free market system have led to oversupply and a substantial decline in prices, hurting farmers, processors, and exporters. In 1991, approximately 85% of Indonesia's coffee exporters faced bankruptcy, mostly due to the fact that coffee prices on the international market dropped to their lowest point since the early 1960s, \$0.84/kg. When the quotas were suspended in 1989, Daryono seemed to believe that despite foreign exchange earnings declines, Indonesia could "survive lower prices because coffee production from our farmers is quite cost efficient" (Schwarz, 1989) Apparently, the drop in coffee proceeds was more than Indonesia's coffee producers could take - by 1991 AEKI and the Indonesian government were lobbying for a revival of the quota system.

The quota system has not been reinstated to date, and coffee prices have been volatile, varying from \$0.50/lb. to a record high of \$3.18/lb. From 1989-1994, coffee prices were relatively stable, varying from \$0.50-\$ 1.00/ lb. This low price caused a shakeout in the industry, as many coffee producers lost money at this level and either neglected their coffee farms, or if possible stopped growing coffee and started growing

more profitable crops. Since 1994, however, prices have been volatile, due to adverse weather conditions, new inventory management systems of roasters, fear of shortages, stock market speculators, and the increased demand for specialty coffee in the U.S. and Europe.

Indonesia has not escaped this price volatility; in fact, because of its reputation for lower quality coffee it has had a more difficult time establishing its place in the free-market system. The Indonesian government has acknowledged this problem, as indicated by Minister of Agriculture, Sjarifudin Baharsyah. "We had best start to think about ways to become independent of prices on the international market. Because the marketing of coffee in the world is not always smooth and stable. Whatever the impact of international coffee price fluctuations will be detrimental to the farmers." (MacDougall, 1997)

Indonesian Policy

Both AEKI and the Indonesian government have also recognized the need to improve quality to international standards. Beginning in 1984, the government implemented a quality standard for export coffee which classifies coffee beans into six grades based on defects. The adoption of these quality standards has significantly improved the composition of exported coffee, as indicated in the chart below:

Composition of Exports by Coffee Grade
(percentage of total)

Period	Higher grades (1 & 2)	Medium grades (3 & 4)	Lower grades (5 & 6)
1984/85-1987/88	6	69	25
1988/89-1991/92	8	72	20
1992/93-1995/96	11	75	14

Source: *ICO Profile, Indonesia*

Additionally, extension services and technical assistance have been in place since 1980 to encourage intensification, increase yields, and improve bean quality. An effort has been made to provide high-yield Arabica seedlings to replace Robusta at appropriate elevations, as well as providing high-yield Robusta varieties for replanting.

Despite these efforts, the above graph on Coffee Yields indicates that that yield improvement has been gradual and inconsistent. This is not entirely surprising, since the government has put more resources into programs to improve coffee quality rather than productivity. Work on Arabica breeding is intensively pursued by institutions such as the Indonesian Coffee and Cocoa Research Institute. Recently, a sub-station of this institute was established to manage a research program for Arabica at the Gayo Highlands in the Aceh province, where cultivation of specialty Arabica is very promising. The government has also discouraged expansion of Robusta coffee in recent years through restricting publicly-owned bank loans to finance rehabilitation (and not expansion) of Robusta plantings. The higher price of Arabica, combined with government efforts, have resulted in an increase in Arabica production and exports. While Arabica coffee still comprises only 10% of exports, it is a marked improvement from 10 years ago, when this higher quality coffee made up only 5% of total exports. During the same period, Robusta exports increased only 24%.

The quality improvement programs are partially a reaction to the fact that internationally, Indonesia has a reputation for producing lower quality coffee. This is one reason for Indonesia's loss in market share in countries where coffee prices are high and demand is growing for quality coffee. The lower quality of

Indonesia's coffee has been attributed to the concentration of production by smallholders, who lack sophisticated farming techniques, and who use only rudimentary processing facilities. Also, beans are often picked too early due to lack of knowledge by farmers, a rush to pick beans before leaf rust sets in, and a desire to sell crops and raise money as soon as possible.

To address this problem, coffee auctions are becoming more common to encourage farmers to improve the quality of their coffee beans. These auctions, when done fairly, give smallholders a better bargaining position and indirectly encourage them to pick only red (mature) beans. Also, farmers are encouraged to apply for short-term loans from the publicly-owned rural banks to assist their cash flow. This would prevent them from harvesting immature and unripened coffee. This, however does not always solve the problem, since interest rates make borrowing unattractive.

U.S. Retailer and Importer Perspective

According to three U.S. players in the coffee industry, Starbucks, Allegro, and Royal Coffee, Indonesia has a big opportunity at hand to increase revenue from sales of high quality Arabica coffee because of the weak rupiah and increasing demand for specialty coffee. Most of the Indonesian coffee these retailers (Starbucks and Allegro) and importer (Royal Coffee) purchase is from Sumatra, Sulawesi, Java, and Timor. The basic structure of distribution for these companies reflects that described above, and they all mentioned that the middleman plays an important role in the supply chain.

Scott McMartin, Green Coffee Buyer for Starbucks stated, "Depending on which island, the middleman or collector plays an important role in bringing remote coffee from producers to larger towns. The collector will typically represent a small or large network of small holding farmers. This role will likely stay constant for the near future."

Coffee buyers from these companies also all stated that the farmer receives prices based on world market and New York C market fluctuations. (The reference point for coffee pricing is typically the New York "C" market indicator price. Fine coffees command a premium above "C," while lower quality ones are sold at a discount to "C.") According to Bob Fulmer of Royal Coffee, although the farmers keep track of the market and price changes, "the level of education is low, so they are probably being taken advantage of." He commented that farmers usually get prices over the radio, but he was uncertain if or how the farmers reacted to the information. According to the International Coffee Organization's 1998 report on Indonesian coffee growing (ICO, 1998), the real (inflation adjusted) price paid to growers largely reflects global price conditions. However, in view of the extensive nature of production, with family time being the major input and some constraints on the use of fertilizers and chemicals, it would not be expected that price changes would have a very marked effect on output. According to the ICO, previous studies have indicated that the response to price is low. This reaction is further supported by the response to price reductions in the 1930s, when farmers *increased* production to compensate for the lower prices.

According to Kevin Knox, Senior Vice President and Coffee Buyer for Allegro Coffee, one of the problems with the fragmented structure of coffee-growing in Indonesia is that the farmers engage in "backyard processing," which adds little if any value to the coffee. Because they lack the infrastructure, skills, and capital to adequately process coffee for export, the farmers use very rudimentary techniques for washing, sorting, and hulling their coffee. The coffee must be re-processed by the exporters, and this gives them the ultimate control over the quality and value of the coffee.

Furthermore, Knox commented, there are powerful economic forces working against development of the smallholder coffee farmer. The control of the coffee industry falls into the hands of those that can add value to the coffee and prepare it for export. In Indonesia, this is most often the small group of exporters

and large-scale millers. Because it takes hundreds of farmers to create a quantity of coffee large enough for export, it would be difficult to transfer this power to them. Such a large mass of farmers would need to be educated, mobilized, and empowered. "Farmers have no idea of what goes into making good coffee," said Knox. "The control of adding value is not with the farmer."

The Kenya Model

Kenya has developed a system to grow and market its coffees with very different methods from other countries, which has helped to make it "the producing country with the highest overall quality." (Knox, 1998) Much like Indonesia, Kenya has a fast-growing population and limited arable land. Given these circumstances, the Kenyans realized that they needed a high return on each pound of coffee, one of their leading exports. Farmers wanted to ensure that their coffee demanded a consistently high price, which could only be done by creating a high enough quality coffee that consuming countries would compete with each other for access to each harvest. The slopes of Mount Kenya provided fertile ground and an ideal microclimate for cultivating Arabica coffee that generated this kind of demand. In addition to this, Kenya has some of the most sophisticated scientific research into coffee quality anywhere in the world.

Like Indonesia, Kenya's coffee is grown by small farmers with tiny plots of land. But while Indonesian smallholders inadvertently compromise the quality of their harvests through unskillful backyard washing and drying, Kenya's small farmers have organized themselves into cooperatives, each of which has a centralized wet processing facility with skilled operators. These co-ops produce small quantities of coffee, from 20 to 100 bags at a time, which are then auctioned off to buyers.

The auction system allows farmers to be directly rewarded for quality. Normally, importers, exporters, and buyers in consuming countries control the price of coffee, with the actual growers reaping only a tiny fraction of the final price. In the Kenyan system, each parcel of coffee produced is delivered to a centralized mill in Nairobi where samples are drawn and tasted. Expert tasters rate each sample on a 1-10 scale for flavor, acidity, and body, and growers (but not prospective buyers) receive a copy of these results. Prospective buyers are then sent samples of each coffee to taste and evaluate prior to the next week's auction. At the auction, the bidding sorts out the lower from the higher quality coffees. Sometimes, the better lots go for two or three times the price of average offerings. The money goes directly to farmers', who run small but excellent operations. They all contribute to the Kenya Coffee Board and Mill, which conducts research and grading, but they still receive 86% of the total price obtained by their coffee.

The possibilities for implementing this model in Indonesia would be limited by the expanse and geographical separation of the Indonesian coffee-producing areas (North Sumatra, South Sumatra, Sulawesi, Bali, Java, Timor, Irian Jaya) which are on different islands or do not have an easily accessible central location such as Nairobi. Also, Indonesia is subject to a high degree of corruption, which may interfere with the grading system if bribing occurred between graders, farmers, and buyers. One solution to mitigate these problems is to implement this type of program on a smaller scale. In fact, farmers in East Timor have organized into cooperatives similar to those in Kenya. According to Sam Filiaci, of the National Cooperative Business Association of Indonesia (NCBA), all farmers in East Timor (13,000 families at this time) are organized into 16 primary and one secondary cooperative. They do all of the procurement, processing, and export of the coffee. The secondary cooperative federation in Dili has the export license and receives the export payment proceeds. These small farmers use wet-processing, which is more appropriate for Arabica coffee. This technology was brought to the small farmers through the NCBA. According to Filiaci, the farmers do not need to utilize credit because it is a low input/ low output farming system. About 75% of the coffee produced is Arabica, and 60% of the demand is the U.S. specialty market. The other major importers are in the main European, North American, and Japanese markets, and the co-op farmers market their coffee directly to the importers.

It appears that the cooperative nature of the Timor system is similar to that in Kenya. However it lacks the tasting/rating and auctioning processes. The benefit of the tasting/rating system is that it allows farmers to understand more about what is required for a "quality" cup of coffee. Also, they know the value of their coffee before it is auctioned off, so they are not undersold. Since Timor's coffee has gained a good reputation internationally, it commands a higher price, but the farmers do not know on what element their coffee is being rated. Also, prices are not differentiated through an auction, so the prices are determined by importers and exporters. In short, the Kenyan system gives more control to the farmers by educating them about the quality of their coffee through objective and market forces (tasting/rating and auctioning.)

The Timor case may be an excellent opportunity to implement a "pilot" of the Kenyan model since it has the cooperative structure already in place. To implement the model, the cooperatives would need to have a tasting/research facility, which could be administered by the NCBA and AEKI. By involving the AEKI several exporters could learn the process of the model so that it could be adapted and implemented in other areas. The AEKI would be an ideal partner since it has 12 provincial offices in major producing or exporting centers throughout Indonesia, and it already does extensive work on improving productivity, quality, and marketing of smallholder coffee. It also is an important counterpart for the Government in dealing with coffee trade and development.

The benefits of implementing this model include a higher priced coffee and higher returns to farmers, elevated international reputation of Indonesian coffee, more highly educated farmers, incentives for farmers to grow the highest quality coffee, improved processing methods, and a more stable income for farmers (i.e. incomes would not be as influenced by coffee prices on the world market).

Although recent cost information was not available, the benefits of converting from Robusta to Arabica coffee growing indicate a substantial revenue increase. The annual average price of a kilogram of Arabica from 1996 to 1998 was \$4.16, versus \$1.74 for Robusta. Currently, there are approximately 78 000 hectares of land under Arabica cultivation, and over 1 million hectares of land under Robusta cultivation. Although yields of Arabica are generally lower than Robusta (due to intercropping, fragility of crop versus Robusta, and stricter quality specifications), the economic gain of growing Arabica is substantial. Using a yield rate of 300/kg per hectare for Arabica and 400/kg per hectare for Robusta (ICO 1998) if 25% of Robusta crops were converted to Arabica, the increase in total revenues for Indonesia would be approximately \$151 million, or an 18% increase. On the individual farmer level, the increase would be even greater, as indicated below:

	Arabica	Robusta
Land Held	1.4 ha	1.4 ha
Yield	420 kg	560 kg
fob price per kg	\$4.16 * 77%=\$3.20	\$1.74*92%=\$1.60
Total revenue	\$1344	\$896
Rupiah (Rp7500=\$1.00)	Rp 10,080,000	Rp 6,720,000
Difference	33% increase	

(Note: fob percentage is based on "1995 Farmers' Share of fob Prices" from South Sulawesi, Dinas Perkebunan (Provincial Estates Office). Percentages will vary by region, depending on transportation costs and number of middlemen.)

In order to understand the real advantages of Arabica production, a cost structure would have to be

determined as well as the feasibility of converting Robusta to Arabica, since Arabica must be grown at higher elevations. It is probable that the upfront costs of conversion are high, which would include replanting costs, new seedlings, and wet processing facilities. Wet processing is not necessarily a large investment, however. For example, Sumatran smallholder Arabica coffee farmers apply the wet process using simple hand pulpers for pulping cherries and wooden or bamboo boxes for the fermentation and washing of the parchment coffee. The coffee beans are totally sundried. More capital intensive wet processing includes the use of mechanical pulpers, washers, and dryers.

Solutions and Obstacles

There are both internal and external forces that have influenced smallholder coffee farmers. Externally, world supply and demand and price volatility make coffee growing a risky crop to depend on. On the positive side, the increase in demand for specialty coffee has created an opportunity for Indonesian farmers to increase production of high quality Arabica coffee, and receive higher returns for it than for Robusta.

Internally, the smallholder has been neglected, first by the Dutch who focused on plantation production, then by Indonesia's first president, Sukarno, whose primary focus was on nation-building rather than the economy, and finally by Suharto, whose agricultural priorities were in rice self-sufficiency rather than cash crops. Understandably, in the early stages of his presidency, Suharto was pressured to focus on rice in the name of political stability. However, this inattention was detrimental to smallholder farmers, who fell behind in technology and whose yields declined steadily. The combination of both the external and internal situations has put the smallholder coffee grower at a disadvantage, with outdated farming techniques, lack of capital, and an international reputation for lower grade coffee production.

Since the 1980s, however, it appears there has been some improvement with policies geared towards coffee growing. Suharto's attention turned to external markets and exportable crops, particularly since self-sufficiency in rice was achieved. The recent rise in demand for specialty coffee, (particularly Arabica) has encouraged the government to assist in the development of exportable quality beans to become a more viable contender in this type of coffee trade. Most of the policies have been more beneficial to plantation growers than smallholders, as they have the capability to produce higher quality beans. However, smallholders have received some efforts at assistance, particularly subsequent to the lifting of international quotas that hurt smallholder revenues. This assistance was likely due to the domination of smallholders in Indonesia's coffee production, which were too great to be ignored if Suharto truly wanted to improve the reputation of Indonesia's coffee on the world market. Assisting in the development of these crops also served other goals of Suharto, such as stemming urban migration.

Despite efforts to improve the lot of coffee farmers, there are some aspects of the coffee industry that cannot easily be changed. Supply and demand on the world market, the economies of scale required by large importers, and unpredictability of weather patterns will remain features of the system that are somewhat unalterable. The chain of distribution is also a difficult structure to change, although from Indonesia's perspective, the smallholder could potentially increase both his power and coffee quality by implementing a system modeled after Kenya's.

The trend towards smaller roasters in the U.S. provides a market for smaller quantities of coffee, ideal for cooperatives of small farmers. By vertically integrating through some of the middle links in the chain, as in the cooperative structure, farmers can add value to their coffee, have closer access to markets, and understand what price their coffee deserves. However, this can only be successful if farmers have the ability to increase crop yields, quality, and production.

One alternative to accomplish this is for smallholders to work closely with millers and processors in order

to understand what goes into ensuring a consistently high quality coffee crop. This initiative would be facilitated if designed by an authority, such as AEKI or Agrobank, which could assist in building relationships between the two parties. Once smallholders increase the quality of their coffee and learn processing techniques from millers, groups of smallholders could cooperatively become millers and processors themselves, and sell directly to the roaster in the consuming country. This second initiative would take a great deal of coordination, skill, and initiative by smallholders, and of course would depend on the demand for smaller batches of high quality coffee on the world market.

Since smallholders dominate coffee production, it seems that they are the most likely targets for raising standards and quality. Some of the government's initiatives, mentioned above, do seem to be geared towards improving the quality of smallholders' coffee, such as replacing low yielding varieties with high ones, but they do not give a sustainable advantage to smallholders. In order for smallholders to survive, they need to have the technology and farming techniques to compete on the world market. They also would be in a better position if they had more power in the distribution chain. Both of these improvements could be achieved through a cooperative/miller relationship described above.

A remaining obstacle is access to capital for smallholders. This is where either private lending institutions or government banks would need to step in. If government statements about re-investing in the cash crop sector are valid, government financing is a possibility. The IMF and World Bank have also encouraged a re-focus on agriculture. The IMF's \$33 billion rescue program abolished restrictions on the import and export of agricultural commodities. The World Bank has offered a \$400 million loan to rejuvenate agriculture. The concern, according to Dennis de Tray, the bank's country director, is the willingness of the government to try new ideas (*Far Eastern Economic Review*, 6/4/98). De Tray says that the government needs to free up fertilizer and seed distribution, now still largely in state hands; accelerate the process of handing over irrigation systems to local water-use associations; and encourage universities to become more active agricultural research and training schemes.

Other national projects are aimed at boosting the rural agricultural sector, such as a \$400 million investment by the Agency for Technology Application and Study (BPPT). This money is to be used to introduce technology into Indonesian villages for three to six months. In nearby Singapore, Rabobank International is offering an export funding scheme for agricultural commodities from Indonesia to abroad. The bank is also planning to act as an intermediary with overseas buyers. Through a partnership with PT Sucofindo, the bank would ensure inspection of the quality and quantity of export commodities. This would help convince buyers to place orders, since the products have been duly inspected by a trusted institution. Foreign investors are also eyeing the agricultural sector. After an agribusiness exposition in Jakarta held in July of 1998, at least 15 domestic and foreign investors expressed interest in investing in Indonesia's agriculture sector. (*Asia Pulse*, 8/20/98). The Head of Agribusiness in Indonesia's Ministry of Agriculture, Ato Suprapoto, stated that the future prospects of investments in agribusiness will be bright in 1998, because this sector has potential for national development and is insufficiently affected by the economic crisis compared with other sectors. Investments thus far include development of cassava in Sumatra by Netherlands investors, and investment in Abaka banana plantations by other foreign investors. Specialty coffee would also be an ideal crop for investors to develop given its potential for highly valued exports.

A final unique opportunity for Indonesian smallholders is production of organic coffee. Most of the country's coffee can be classified as organic because smallholders rarely use chemical fertilizers and controls. This is a growing segment in developed countries, and may provide a unique positioning for smallholder to market their coffee. Allegro, being the U.S' largest organic coffee company, has found Indonesia as a good source of organic coffee. An obstacle to marketing the coffee as organic is obtaining organic certification. This is a costly and cumbersome process, and is happening mostly with the

assistance of U.S. importers such as Holland Coffee Company and Forest Trade. Farmers have not grown organic coffee as a reaction to increased Western demand; it is an outcome of prohibitive prices and lack of access to pesticides and fertilizers. Thus, the concept of marketing coffee with an organic benefit, including the regulations involved, is an area unfamiliar to coffee farmers. Continued education from Western companies as well as assistance from AEKI and ICCRI could help farmers more fully capitalize on this opportunity.

TV.B. The Case of Spires

Brief History Spice. Trade

Spices were some of the first items sought after in Europe from abroad, and were an impetus for the beginnings of international trade. During the Middle Ages in Europe, a pound of ginger was worth the price of a sheep; a pound of mace would buy three sheep or half cow; cloves cost the equivalent of about \$20 a pound. Pepper, always the greatest prize, was counted out peppercorn by peppercorn. In the 11th Century, many towns kept their accounts in pepper and taxes and rents were assessed and paid in this spice. Many of these spices were found on the islands of what is now Indonesia. Marco Polo, who voyaged across Asia in the late 13th century, wrote of Java, "from thence also is obtained the greatest part of the spices that are distributed throughout the world."

Portugal remained dominant in the Far Eastern spice lands until the end of the 16th Century, when the Dutch entered the competition in earnest. Van Houtman and Van Neck, each in command of expeditions to the Indies, made friends with native sultans, and organized trading posts which eventually gave their country a monopoly in the early 17th Century. With the Dutch conquest of Malacca in 1641 the Malay Peninsula and northern Sumatra came under their control.

In 1650 the Dutch took over the cinnamon trade in Ceylon, and by 1663 the best pepper ports of the Malabar Coast were theirs. Before the end of the 17th Century, Macassar on the Island of Celebes and Bantam in Java were added to make the Dutch complete masters of the immensely profitable spice trade. The Dutch ruled the market with a rod of iron. If the price of cinnamon fell too low in Amsterdam, they burned the spice. They soaked their nutmegs in milk of lime, a process which did not affect flavor, but supposedly killed the germ of the nut. This was to prevent nutmegs from being planted elsewhere.' France's role in spice trading was generally a minor one, not backed by its government. However, they helped destroy the century-old Dutch spice monopoly when, in 1770, the French contrived to "kidnap" enough cloves, cinnamon and nutmeg plants from Dutch possessions to begin spice-growing in the French islands of Reunion, Mauritius and Seychelles in the Indian Ocean and in French Guiana on the north coast of South America.

Meanwhile, the sea-faring English were not idle. They, too, were looking for routes to the riches of the East. Throughout the 1500s, the British searched for a passage to India and the Indies by way of a Northern route, but had little success. Yet, the extensive exploration and navigation of the seas made England a power at sea. In 1600 the British East India Company was chartered by Queen Elizabeth, with spice cargoes as its big objective. Where the Dutch controlled the East Indies, the English were gaining supremacy on the mainland of India itself. In 1780, the Dutch and the English fought a war, which was to be ruinously costly to the Dutch East India Company. In 1795 the English took Malacca and a year later all Dutch property and trading centers except Java. The Dutch East India Company had to be dissolved in 1799.

It was not until the mid-1700s that America entered the spice trade in a big way. The leader of the American spice trade was a sea captain named Jonathan Carnes. Sailing on one of the early American trading voyages out of Salem in 1778, he discovered places in the Orient, principally in Sumatra, where he could deal directly with the natives, thus circumventing the Dutch monopoly. Financially backed by a wealthy Salem family, he made a voyage in 1795 which yielded 700% profit in spices. This sent America into the spice competition so actively that between 1784 and 1873, about a thousand vessels made the 24,000 mile-long trip to Sumatra and back. In 1818, when the pepper trade was particularly intense, 35 vessels made the long and dangerous trip. Pepper trade furnished a great part of the import duties collected in Salem (which at one point were enough to pay 5% of expenses of the entire U.S. government). Pirates

finally put America out of the oriental trade. American merchant ships were raided and destroyed time and again, and the United States government decided against backing the spice trade with naval protection in foreign waters.

Throughout history, the country that has controlled the spice trade has been the richest and most powerful in the world. Fortunately, these aromatic plants are not so costly today as they once were. In the 19th Century Great Britain's maritime prowess gradually established her as the leader of the spice trade, and London's Mincing Lane became the spice-trading center of the world. Since then, dominance in this ancient trade has once again changed hands. The United States is now the prime figure in world spice buying and New York is its center. Most U.S. spices are imported, although there is approximately 190 million pounds produced domestically on an annual basis. Imported spices enter the U.S. through the ports of both coasts, but by far the largest volume comes through New York. Spices are first inspected for cleanliness and must pass U.S. Food & Drug Administration and the American Spice Trade Association standards before they are allowed to clear the port. After that, they go to spice grinding plants where they are further inspected, cleaned, processed and packaged. Various types of mills are used in spice grinding because of the wide variety of materials, which must be processed, including leaves, seeds, bark, etc. Today, in addition to ground spices, the spice industry offers extractives of spices in which the essences are concentrated from the raw products. These are available in various forms to meet specific flavoring needs. Included are essential oils, oleoresins and compounds containing these plus natural spices and other ingredients.

Markets

Spice consumption in the United States has been on a steady incline over the past four decades, having risen by 126% in the past 35 years. This translates to an average per capita annual consumption of 3.1 pounds of spice, a number that has grown 45% since the mid-80s. If the steep climb in spice usage continues, the U.S. could be using a billion pounds of spices by the year 2000. These facts make the U.S. the largest importer and consumer of spices used to season food products. In 1994, 285 million pounds of 40 different spices were imported, up from 171 million in 1961. This amounted to \$417.7 million spent on spices in 1994. In terms of volume, the most important spices in 1995 were dehydrated onion and garlic, mustard seed, sesame seed, black pepper, and red pepper. Other big sellers include cinnamon, oregano, poppy seeds, white pepper, cumin seeds, and basil. The countries of European Union are also large importers of spices; in 1994, total imports were 195 million tons, equivalent to \$444.4 million. Germany is the largest single market in Europe for spices, and imports over a third of the total shipments of spices going into west European countries. Next in line are Spain, France, and the United Kingdom. North African countries and the Middle East have accounted for substantial increases in spice imports, and Japan is the major importer in Asia, in addition to being the world's third largest spice market.

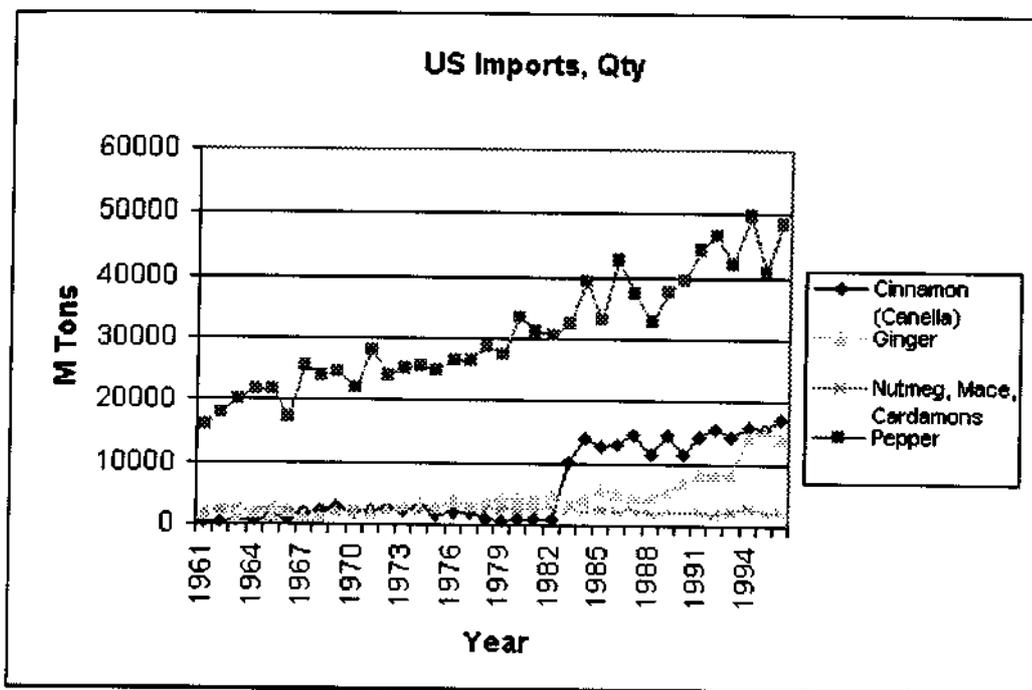
This trend in spice consumption is due to several factors, including high-income levels, a growing demand for convenience food items, and changing consumer tastes towards more variety. Also, the rising consumption of dietary foods has added to the demand. Spices can make these foods more palatable for the consumer without adding fat or calories. According to a buyer at Wild Oats, one of the nation's largest natural foods supermarkets, one way to create excitement over existing foods is with different and exotic spices. "Spices provide a way to make the old new," she says. In accordance with these trends, food manufacturer and processors are learning to rely on distinctive spicing to make their products more flavorful than competitive brands. In industrialized countries, about 50% to 60% of the spices sold are used by industry, mainly in food industries. Around 10% are used by the catering sector, and the remainder are consumer packed and sold through retail shops for home use.

Another use of spices that has seen tremendous growth in the United States is essential oils used for

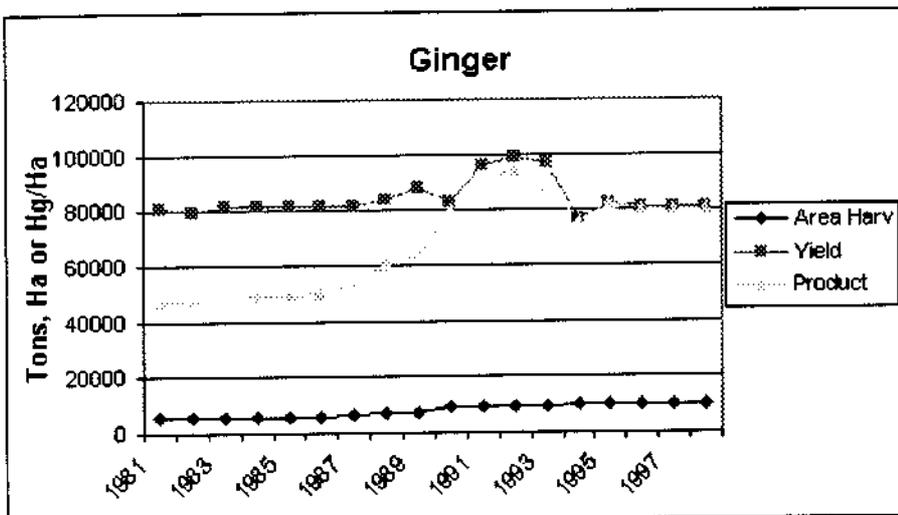
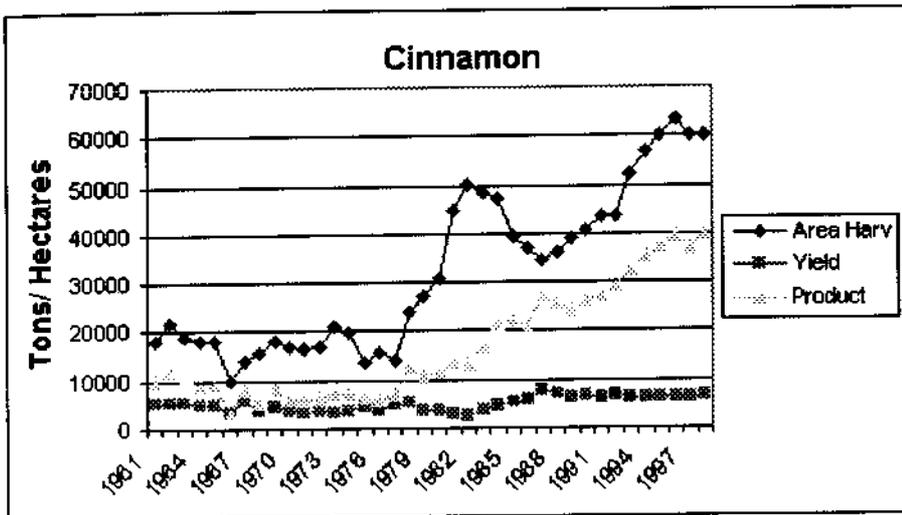
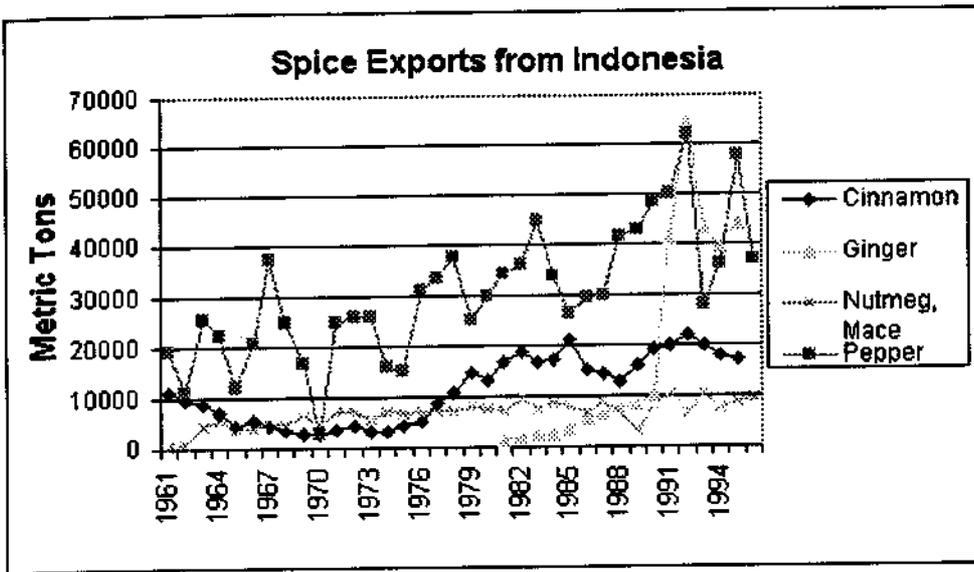
aromatherapy and food flavoring. There has been an increasing demand for "all-natural" ingredients in hair, shampoo, skin and cosmetic products in the U.S., which is opening up a sizable market for natural aromatherapy oils. While the demand for such oils originated in smaller natural products companies, large companies such as S.C. Johnson, Clairol, and Estee Lauder have more recently created products that use these oils for their fragrance and medicinal benefits.

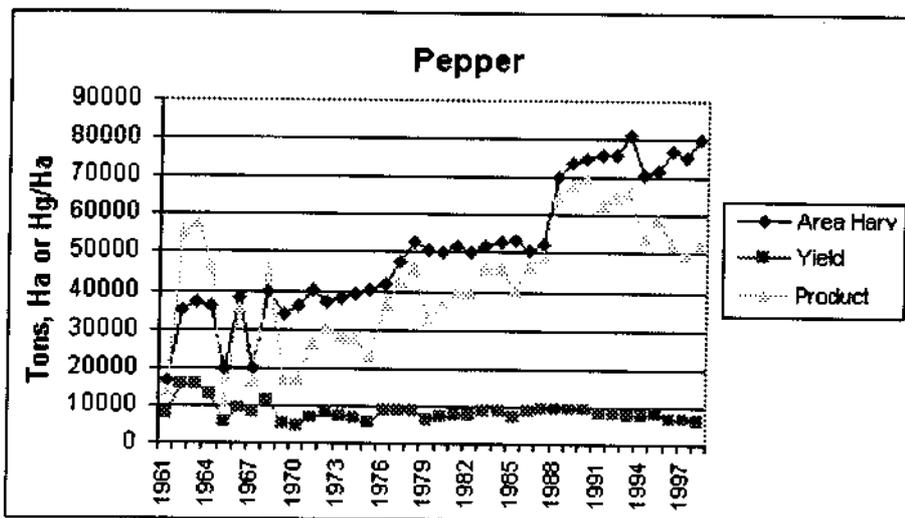
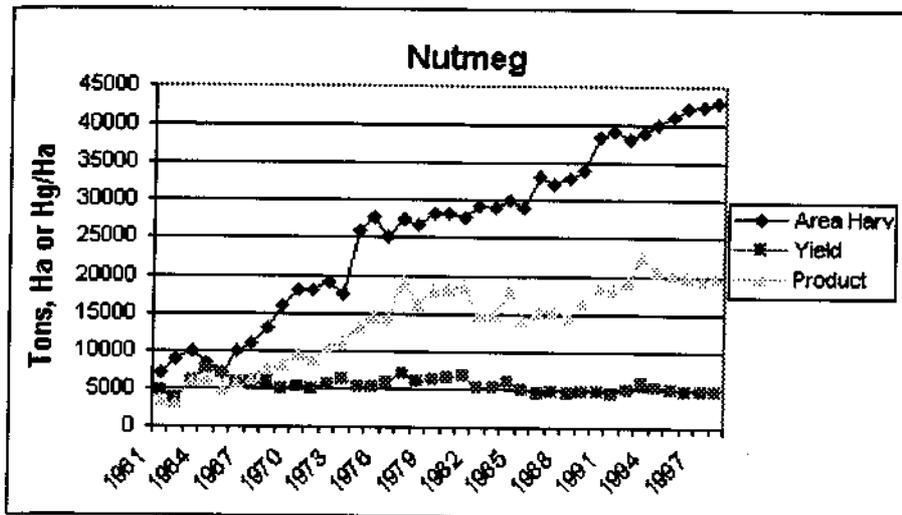
Indonesian Spices in the US

Indonesia is a source of many spices that are popular and growing in demand. To identify which spices in particular have seen a rise in demand, it will be helpful to look at the amounts of specific spices imported to the U.S. in the past several years.



Although data was not available on country of origin for these imports, the purpose of studying the quantities of imports is to discover which spices that are grown in Indonesia have seen a rise in U.S. demand. Clearly, pepper is the largest in terms of sheer quantity, but ginger and cinnamon have seen significant increases as well. Having identified these three spices as potential sources of increased demand in the U.S., looking at the export and yield data for each spice will identify the opportunities for Indonesian production.





Source for all graphs: *FAO Statistical Database*

These graphs indicate that there is potential to increase yields in pepper, nutmeg, and cinnamon. Ginger, on the other hand, has seen yields move generally at the same rate as production, as acreage has remained relatively flat. Thus, for the purposes of this paper, the crops of pepper, nutmeg, and cinnamon will be examined. Ginger may provide an opportunity, and deserves further study, but does not meet the criteria of being at an early stage in agricultural transition. To understand the dynamics and possibilities for each of these spices, it will be helpful to have a brief explanation about where they are grown and some of the history behind their development.

Cinnamon

There are several varieties of trees in what botanists call the "cinnamomum" family. Most of the cinnamon used in the U.S. is derived from trees of the "cinnamomum cassia" division of the family, which is why cinnamon is sometimes referred to as cassia. Among spice experts, this term is used to distinguish between the cassia types of cinnamon and the Ceylon type of cinnamon. The cassia group is native to China, Indo-China and Indonesia. They produce the product most Americans recognize as cinnamon -- a reddish brown powder with a strong characteristic aroma and flavor. Quite different from these are the Ceylon and Ceylon-types of cinnamon. The products in this case are characteristically tan-colored, with flavor and aroma much milder than that of cassia that the average person in the U.S. would consider

them weak or poor cinnamon. Most Ceylon cinnamon brought into the U.S. is re-exported to Mexico, where it is preferred for certain confections. In labeling, however, bark from the cinnamomum family (whether cassia or Ceylon-type) may be called "cinnamon."

The most commonly used cinnamon in the U.S. comes from the cassia type of cinnamon trees, for which there are three main producing areas. Indonesia supplies two types: "Korintje" and "Vera" (or "Batavia"). China, now that the U.S. has resumed trade with that country, is an increasingly important source. Vietnam is the third producing area, (known for "Saigon" cinnamon).

Indonesian cinnamons (cassia) come from the mountainous areas inland from the port of Padang on the island of Sumatra. The highest concentrations of essential oil in Korintje and Vera are found in the thicker bark on the lower parts of the trees. The grade designations for both cinnamons are "Quality A": (quills must be one meter long, taken from the main trunk), "Quality B": (from the side branches) and "Quality C": (broken pieces). Coming from a higher altitude, the Korintje cinnamon characteristically has a slightly more intensive color and flavor than the Vera and is thus rated the better type. In general, Korintje is deep reddish brown and has a sharp cinnamon flavor; the Vera is lighter in color.

The U.S. is the largest importer of cinnamon, and imports have been rising gradually, especially since 1982. The average annual volume of cinnamon world trade is 35,000 tons. In the wake of the recent financial crisis and adverse weather conditions, cinnamon was an alternative crop that Indonesian farmers turned to when faced with devastated rice crops and the devaluation of the rupiah. This increased production drove export prices to 40 cents per pound in 1997, down from 80 cents per pound in the same period of 1996. This is likely a short-term phenomenon, however, as the effects of El Nino subside and supply of cinnamon returns to levels more commensurate with demand.

Nutmeg and Mace

Nutmeg is the seed of the pala fruit tree, found close to the sea in well-drained areas of some tropical islands. The seed is partially covered by a thin red membrane that when removed and dried becomes the spice called mace. Both are enclosed within a hard shell inside the fruit. Indonesian nutmeg and mace are grown on the islands of Sian and northern Sulawesi, and the processing center is in Menado. Smaller amounts are grown in Maluku, Aceh, West Java, Irian Jaya, and West Sumatra. Most of the East Indian product today arrives in the U.S. cracked and cleaned, ready to be ground (whole nutmegs cannot be fed directly into a grinding system). Indonesian nutmeg is highly aromatic, with a distinctively characteristic bouquet. It tests high in steam volatile oil, but not as high (as the West Indian) in fixed oils, making it an excellent choice for grinding and use in the ground form.

Indonesia produces more than three-quarters of the world's output of nutmeg and mace, and has been the world's dominant source of these spices for hundreds of years. In 1986, the Indonesian government introduced export regulations that facilitated cartelization of the market, and prices of nutmeg and mace on the world market increased dramatically. These regulations allowed exports only by approved traders, who were members of ASPIN (Asosiasi Pala Indonesia), and required exports to be coordinated and restricted by the ASPIN marketing board. Subsequently, a cartel agreement was made with Grenada, which exports 20% of total world nutmeg exports. Problems such as accumulation of unsold stocks and smuggling of nutmeg and mace through Singapore led the Indonesian government to abolish the regulations in 1990. Other goals of the deregulation were to create greater business opportunities, raise farm productivity, and diversify the market.

Since deregulation, prices of nutmeg and mace have dropped drastically, and now Indonesia earns only about \$7 million in export revenues compared with more than \$42 million in the late 80s. Because of this, there is a temptation to return to regulations like those in effect from 1986-90. Indonesian nutmeg and

mace exporters have repeatedly called for reregulation, not surprisingly, since they benefited the most from the controls through increased prices. Although farmers did receive an increase in revenues, from approximately Rp 500 per kilogram in 1985 to a high of nearly Rp 4000 in 1988, exporters and foreign traders earned much more. Exporters' margins went from about Rp 2000 to Rp 9000, while foreign traders' margins increased from just over Rp 2000 to Rp 12,000. Additionally, the control of supply was at the exporter level rather than the farmer level. This created a situation of exporter monopoly power over both foreign buyers and domestic sellers, and farmers continued to accumulate unsold stocks. It was costly to produce output and not sell it, so smuggling became an alternative outlet for excess nutmeg and mace supply. Also, as prices increased on the world market, demand for exports declined, but the decreased demand never influenced farmer production. This is partly due to the nature of nutmeg production, which is highly inelastic. There are only a few crops to substitute for nutmeg, and it is difficult and costly to switch to new crops. Also, limited availability of rural credit makes it difficult for farmers to withhold supplies in response to price falls.

The return to regulated nutmeg trade is not probable, especially in light of the Uruguay Round Agreement in 1997. One part of these agreements was the Agreement on Agriculture, which lays the foundation for reducing distortions in agricultural trade and for the gradual establishment of a fair and market-oriented agricultural trading system. Additionally, according to Article 11 of the Agreement on Safeguards, "spice-producing countries will no longer be able to resort to minimum restraints or to form cartels and associations for the purpose of imposing such measures" (International Trade Forum, 1/12/97). Thus, to ensure positive development of international trade, it is unlikely that the cartel will be reestablished.

About 12,000 tons of nutmeg and mace are traded annually, with the United States as the largest single importing market. Recently, the price of nutmeg has soared from Rp 2500 to Rp 140,000 per kilo, due to a resurgence in global demand for the spice, combined with the weaker rupiah. Consumption is generally steady in the United States, but rises in October through December as seasonal usage comes into play. New uses, such as aromatherapy oils, perfumes, and essential oils used as food flavorings may help to boost demand.

Pepper

In terms of both volume and value, pepper ranks as the main spice in international trade. Historically, pepper has been one of the most sought after spices of the Orient, and the island of Sumatra produced a considerable supply. Pepper was valuable not only for its ability to flavor food, but also for its preservative qualities. In 1805, Indonesian pepper exports reached a level of 7 million pounds; in 1997 the U.S. imported 41,602 tons of whole black peppercorns. Of this, India supplied 44% and Indonesia 41%. The U.S. is the largest market for pepper, accounting for 25% of world trade. Total world trade amounts to \$564 million or 140,000 tons.

Pepper in Indonesia is principally grown on the island of Sumatra, a major producer of fine quality black pepper. Cultivation is centered in the Lampong district of southeastern Sumatra and shipments are made from the port of Pandjang. This pepper compares with pungency and flavor, testing high in steam volatile oil and non-volatile extract. Pepper is commonly intercropped with other cash crops, such as coffee and tobacco. Although the income per hectare is higher for perennial plants such as pepper, it takes many years before these plants bear fruit. Farmers have to wait five years before they begin to harvest. Pepper also requires a large initial investment in seedlings, supports, and fences, plus the opportunity cost of a perennial crop with delayed yielding.

Pepper demand has experienced steady growth of about 4% in the past several years. Increased purchasing power throughout the 1980s in some Middle East and North African countries saw a rise to

sharp increases in pepper consumption. The U.S.' demand has also risen, from 60.5 million pounds in 1985 to 78.5 million pounds in 1995. Recently, there has been a surge in prices for pepper due to increased demand, damaged crops caused by El Nino weather conditions, and looting in Indonesia. According to one supplier, "raw material pepper prices have reached levels never before experienced." (Chemical Market Reporter, 7/28/97) According to the International Pepper Community, "world pepper demand will continue to outstrip supply for the next 10-15 years." (The Financial Post, 3/7/97) The 800% increase in prices from 1997 to 1998 forced a shake out of Indonesian pepper exporters, from 42 to 8 companies. The huge working capital needed at the farmer level weakened the purchasing power of exporters, and forced many of them out of business. Those farmers who have maintained production are gaining substantially, earning Rp 43,000 (US\$4.30) per kilogram versus Rp 5000 (US\$2.00) a year ago.

Recommendations

The islands of Indonesia hold a comparative advantage in spices which can be exploited as the demand for spices rises in the U.S. and other developed economies. In addition to their role as a foreign exchange earner, spices can act as a stimulus for rural growth. Spices are generally suitable as a smallholder backyard crop, as is the case for the majority of spices grown in Indonesia. Furthermore, spices can be cultivated on slopes and other marginal lands that are unsuitable for other crops. This makes many spice crops an excellent secondary crop, and perfect for intercropping with crops like coffee. Spices and essential oils offer further advantages of being relatively low volume, long-storage items, important in Indonesia's more remote areas where transportation is limited.

The potential for value-added exports, including grinded spices, essential oils, spice mixtures, and oleoresins is growing for some spices, as shown by the increasing demand from developed countries. By adding value before export, Indonesian farmers could gain a more substantial portion of the end value of the product. Possibilities include development of oil distillation plants, grinding facilities, and seminars to discuss new end-uses for spice products. One example of value-added processing has occurred in Grenada, which has established a nutmeg oil distillery. This made economic sense, in light of the fact that nutmeg oil has experienced increasing demand, while demand for whole raw nutmegs has not grown. The distillery can also be used to make oil from mace, cinnamon, and clove, offering further diversification for Grenada's spice sector.

The possibilities for adding value go beyond simple processing. Production of soaps, lotions, shampoos, and food items with essential oils would integrate the rural and manufacturing sectors, a relationship that has been limited in Indonesia thus far. Further usage of spices downstream into end products could create larger manufacturing opportunities, but would also require more sophisticated marketing and manufacturing facilities than do raw commodities. It should be pointed out that adding value may make sense for some spices and not for others. The value of some spices in their raw state makes it less worthwhile to invest in the processing and manufacturing facilities needed for end products. To determine the possibilities, each spice should be considered individually. Nutmeg oil, for example, is used by many food manufacturers in meat products and bakery goods. It is also used to manufacture perfumes and to an extent in the pharmaceutical industry. In general, the demand for products and scope of usage should be determined prior to investment in value-added processing.

The maintenance of quality and safety of spices is of prime concern to the spice industry. Care must be taken in harvesting and handling of spices so as to prevent microbiological contamination. Especially in the industrial sector, a niche of spice trade that is important for export expansion, the confidence of the user in quality and safety is crucial. Quality assurance needs to commence at the farm and follow through to exports. This can be done through adoption of appropriate post-harvest handling methods, adequate storage facilities, and suitable packaging. India provides an interesting case for improving the quality and

marketing of spices. The Spices Board of India assists farmers in meeting quality standards, as well as teaching better methods of harvesting. Training programs have been conducted to educate farmers about quality improvement at the farm level, quality requirements of importing countries, and quality testing before shipment. The Spices Board extends its assistance to exporters as well, by establishing processing and cleaning units and small laboratories for quality testing. Warehouses and sophisticated cleaning plants have also been built near the ports or marketing centers as a common facility. To facilitate spice marketing, the Board has created a logo as a mark of quality assurance for exports of spices in consumer packs. The logo ensures that spices have undergone physical, chemical, and microbial examinations, as well as tests for pesticide residues. Wide publicity is being given abroad to the logo, so as to create a demand for quality-assured Indian spices.

Quality assistance programs such as this would encourage diversification into spice crops by smallholder farmers, especially if they are given information on how to cultivate crops with a higher world market value. Additionally, a combination of subsidized plant material, assistance with fertilizers and pesticides, and ongoing research on more sophisticated farming techniques would help to boost yields. One program instituted by Grenada's Ministry of Agriculture is an agreement to encourage proper farming techniques. The farmer signs a loan agreement for the plant materials, and if he cultivates the land according to instructions, his loan is converted into a grant. Two spice specialists work along with the Ministry's 20 regular agricultural extension officers to help farmers with spice cultivation. Extension services such as these, which work closely with farmers to cultivate desirable crops and to teach them cultivation techniques, would create a supply of highly valued crops while also increasing yields.

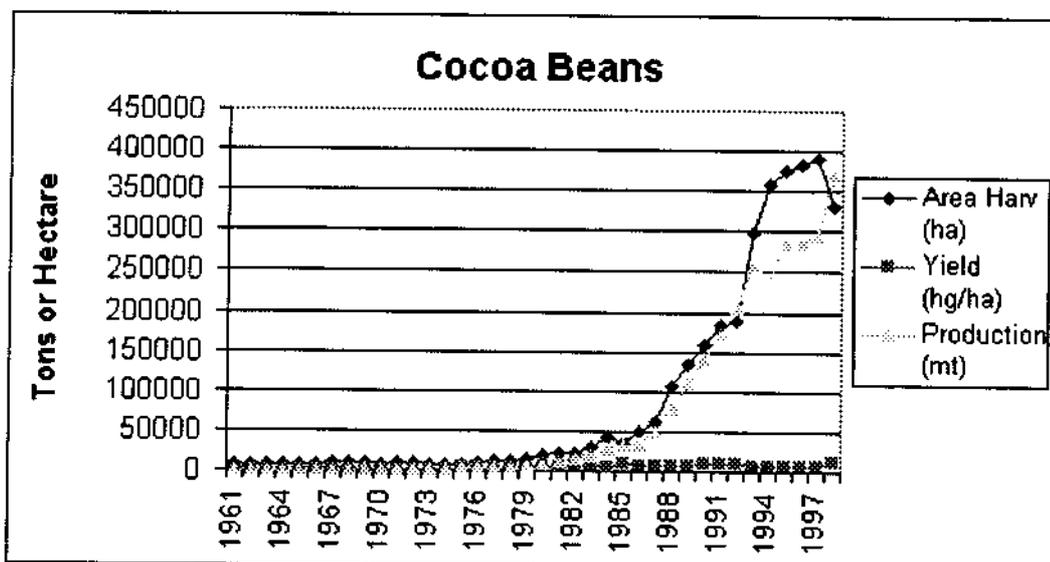
A final recommendation includes cooperation and sharing on an international level. Both India and the Caribbean islands have done considerable research on alternative uses for spices. The Indonesian government, through agencies like the Indonesian Pepper Exporters Association (AELI), could work with these countries to understand developments in spice usages, as well as improvements in cultivation techniques and plant material. Although some countries may cultivate competitive products, limited collaboration may help to grow the entire spice category worldwide, thus benefiting all involved.

TV. C. Case study; Cocoa production in Sulawesi

The Indonesian island of Sulawesi has experienced rapid and unusual growth in cocoa production since 1980, surprising the world and making it the world's third largest cocoa producer. It is a major generator of export revenue, bringing in \$166 million in 1993. From 1981 to 1996, the volume of cocoa beans exported has increased from approximately 7000 tons to 275,000 tons. Notable about this expansion is that the engine of growth has been smallholders, and that these farmers have come to enjoy a high proportion of the returns from cocoa exports. This case study, therefore, has the objective of identifying those characteristics of cocoa production and marketing that may be transferable to other smallholder export crops in Indonesia.

The production boom of cocoa in Indonesia was spurred by high world cocoa prices in the late 1970s, prompted by a sharp reduction in output from West Africa and the Dominican Republic. The increase in demand encouraged smallholders to invest in cocoa production, and total smallholder acreage expanded over 30-fold between 1980-1995, from 13,125 ha in 1980 to 418,400 ha in 1995. During the same time period, smallholder production increased from about 1000 tons to over 200,000 tons, and their share of total production (vs. private estates and government-owned estates) increased from 10% to 73%. Reasons for the success of the smallholder farmers include: an abundance of land available for cocoa production in Southeast Sulawesi, knowledge and capital disseminated by farmers who had experience farming in Sabah, Malaysia, government policy that required dissemination of seed from government and private plantations, and adequate transport infrastructure. Additionally, the cost of production for Indonesian cocoa smallholders is among the lowest in the world, due to efficient production methods, inexpensive labor, and a suitable climate and soil. Finally, smallholder entrepreneurship and a highly competitive marketing system with limited government intervention contributed to the expansion of cocoa production since 1980.

The chart below indicates that most of the increase in production has come as a result of land expansion rather than intensification of crop production. Yields have remained constant, while the area harvested has grown rapidly. Cocoa production has not yet reached a transitional stage that would encourage intensification. However, the area harvested began to level off in 1993, and dropped in 1998. Thus, it appears that the time may be appropriate for a focus on intensification efforts, which would increase yields. Issues such as crop quality, research, disease prevention, and deforestation prevention are concerns closely related to a transition by means of crop intensification. These issues are discussed below.



Source: *FAO Statistical Database*

Marketing and Distribution

Unique to Indonesia's cocoa industry is its free marketing and pricing system. In most African cocoa-producing nations, a government marketing board controls prices, which benefits particular groups of people within a country at the expense of farmers. The administered prices also lead to inefficiencies because they do not transmit market signals correctly. This leads to distortions in resource allocation and an environment in which farmers cannot respond to fluctuations in world supply and demand (i.e. isolation from the market).

The free trade regime in South Sulawesi, on the other hand, has created a competitive environment and low marketing and distribution margins. The world price for cocoa is highly correlated with the fob (freight on board) price at Ujung Pandang (Sulawesi's major port), indicating that the system is transparent and pricing is competitive. Farmers have also benefited from a relatively good transport infrastructure in major producing areas, which has meant relatively low transport costs. Finally, cocoa is not subject to large government levies such as export taxes. These factors have allowed smallholder farmers to receive a high share of the export price for cocoa. A study done in 1995 found that cocoa farmers in South Sulawesi received 90% of fob prices. Some crops, such as cassava, generate only 18% of the fob price for farmers.

Government, Policies

As mentioned above, the government of Indonesia has had a mostly hands-off policy with regards to cocoa production. The only tax producers are subject to is a value added tax imposed in 1995. The government food logistics agency, Bulog, has no involvement with cocoa. Export commodities such as cocoa have also benefited from macroeconomic policies that have created a favorable exchange rate and low inflation. For example, the real devaluation of the rupiah in 1986 meant higher real producer prices for exports. This of course is also true at the present time, in the midst of a financial crisis which has devalued the rupiah considerably. Also, the government has invested in rural infrastructure in the Outer Islands, such as roads and schools, which has helped to keep transportation costs down and encouraged expansion of smallholder cocoa.

Two other government initiatives were a tree crop rehabilitation program and a smallholder plantation development program. The first mainly benefited estate holders, but it did provide smallholders with cocoa seeds. The second initiative was called P2WK (Perkembangan Perkebunan Wilayah Khusus, Plantation Development in Special Areas). It was aimed at smallholders and provided them with modest grants and reimbursement of land preparation, planting costs, and seedlings. Although the program increased planted area by 205,296 ha (of which about 63,000 was cocoa), it was criticized for targeting areas where the infrastructure was not adequate and the soil quality and climate were unsuitable.

Issues

Although the growth in production and exports has been remarkable in the past 18 years, there are several issues which must be addressed to maintain healthy, sustainable growth in the cocoa sector. These include quality, export marketing, oversupply on the world market, and disease and deforestation.

The quality issues involves the processing of cocoa beans, which can be sold either fermented or unfermented. Fermented beans are used for chocolate production and require a longer time to process, and sell at a price premium to unfermented beans. Unfermented beans are lower quality and used primarily for cocoa butter production. They take only 1-2 days of processing, and sell at a price discount of about \$100 per ton, or 7% of the value. Cocoa bean production in Indonesia is primarily unfermented, driven by the decline in production of unfermented cocoa by the Dominican Republic in the early 1980s. The Indonesian

Cocoa Association, Askindo, has encouraged farmers to produce fermented beans in order to tap the premium market. However, there is little reliable and concrete information about price premiums passed on to farmers, and currently, there is sufficient demand for unfermented beans.

In order to switch farmers to production of fermented beans, several free market mechanisms will have to operate. First, transparency in price information (through media such as radio broadcasts) is necessary, to let farmers know the potential earnings increase they could gain from fermented bean production. Next, the premium paid for fermented cocoa bean exports needs to be passed back to farmers to reward them for their extra efforts. Exporters, middlemen, and farmers need to make sales and purchases at premium prices at every stage in the marketing chain. If one link does not pass along a premium, then it will never reach the farmer, and he will not be incentivized to produce the higher quality beans. Direct government intervention, such as export controls, would not be as effective as implementing mechanisms to ensure that the market can operate freely.

Another issue is export marketing, which includes a warehouse receipt proposal and risk management. Cocoa exporters, as they become more established and financially well-off, they are becoming more conservative and protective of their gained interests. An example of this is their resistance to a warehouse receipt system proposed by one of the world's largest cocoa brokerage houses. Under this system, any exporter can deliver cocoa to a warehouse in Ujung Pandang, have the quality checked, and obtain receipts which can be used as collateral against loans. The loans are provided by banks and the warehouse operators. The advantages of this system are increased liquidity and greater transparency in price differentials depending on quality. Large, established exporters are resisting this system because it takes away their advantages in providing financing to middlemen and collectors, and it also takes away their control of determining good quality cocoa. The warehouse system would be an objective source of grading cocoa, whereas the current system allows the exporter to gain extra profits by sorting cocoa by grade and selling sorted good quality cocoa at a premium.

The risk management issue involves the ability of smaller exporters and middlemen to use instruments such as futures, options, and forward contracts. Large exporters are able to do this through overseas brokers, which may give them an advantage in securing cash flows. The Ministry of Trade needs to consider how to make these instruments accessible to smaller operators.

A third issue is oversupply on the world market. In commodity markets, the "adding up" problem can occur when the incremental growth in the production of a commodity results in an increase in export revenue proportionally much less than the rise in volume production. This will lead to depressed world cocoa prices, which would undermine the welfare of cocoa producers. This possibility may encourage the government to impose export controls to restrain increases in cocoa production. However, export regulations in the past have led to problems such as smuggling and corruption.

The environmental issues surrounding cocoa production also are cause for concern. The cocoa pod-borer was the main reason for stagnation of Indonesia's cocoa sector in the early 20th century, an insect pest that drastically reduces yield. Measures for controlling this pest include eradication of affected cocoa trees and application of chemicals. Both of these measures are costly and resisted by farmers. Since this insect has the potential of destroying the cocoa subsector, stronger government support is needed to devise better control methods through research, extension, and mobilization of smallholders. Another environmental concern is deforestation. Many of the cocoa fields in Sulawesi were created by opening up forests, which carries the risk of erosion, reduction of watershed areas, and loss of biodiversity. To counter this trend, new plantings of cocoa could be directed towards relatively degraded or underutilized land rather than forest areas. Sulawesi has large grassland and scrub areas, which could be used productively if not severely degraded. Another way to mitigate deforestation is to identify and demarcate the vulnerable and

valuable forest areas. This would be most effective if it were paired with economic incentives to encourage farmers to plant cocoa on non-forest land. Finally, research and development in the area of crop intensification would help to mitigate the problems created by land expansion. As illustrated in the above graph, it appears that there is great opportunity to increase yields, and land expansion may be reaching its limits.

Lessons learned

What can this tell us about policies for other agricultural commodities in Indonesia? It appears that policy which allows free-market mechanisms to work efficiently is more desirable than direct intervention such as marketing boards or export controls. Many crops in Indonesia are subject to government intervention, such as export tariffs, fertilizer and seed monopolies, and state-administered cooperatives. With minimal government intervention, the entrepreneurial attitude of smallholders and a competitive marketing and distribution regime in Sulawesi have been allowed to flourish and have contributed to the success of cocoa exports. Cocoa is now one of Indonesia's main export commodities, which has increased employment and raised incomes in rural areas.

Additionally, this case reflects a similar quality issue as is true for coffee. Fermented cocoa beans, similar to Arabica coffee, is a higher quality and thus more highly valued crop. An obstacle to production of these more highly valued crops is that they require more intensive and longer processing periods. An effective means of improving quality is to provide incentives to producers through transparent price differentials. This could be achieved through an objective grading system, as proposed by the warehouse receipt system and the central coffee tasting/grading system done by the Kenya Coffee Board and Mill. These bodies could also serve to place a "stamp of approval" on these commodities, ensuring buyers that they have been inspected for quality by an independent body. A challenge would be to keep systems such as these free from corruption, which is particularly widespread in Indonesia. A corrupt environment would damage the free market mechanisms that have worked to create a competitive environment among cocoa traders. Again, minimal government involvement may help to stem the effects of corruption. Higher quality crops could also be achieved through extension programs to educate farmers about more productive farming and processing techniques. Extension services also could help prevent expansion of crops into valuable forest areas.

A final lesson is that cocoa farmers have been able to gain a large share of export prices relative to other crops, helping to generate income for farmers and making it an attractive sector. The three factors that have facilitated this are: 1) low marketing and distribution margins, 2) adequate transport infrastructure, and 3) an absence of government levies. Other crops could generate more income for farmers if distribution and marketing margins were kept at a minimum through intense competition among traders. Lower margins through the value chain could also be developed through improved transportation, which would lower the costs to the collectors and middlemen. An absence of government levies would also make the system more efficient throughout. Finally, a measure which could lower costs for farmers and middlemen in cocoa and other crops is crop intensification. Farmers may incur higher upfront costs to generate higher yields, but over the long run, the crops would require fewer inputs (i.e. labor, materials) for higher output. Higher yields would also be more efficient for collectors, who would be able to collect from fewer farmers to amass the quantity needed to sell to local traders or processors.

While cocoa farmers still have many challenges to face, such as quality issues, intensification versus expansion, and a maturing and increasingly protective export network, the free market system has up to this point helped to create a competitive cocoa subsector which has increased farmer incomes. Of the lessons learned, this is probably the most valuable; Indonesian farmers are entrepreneurial and will react to worldwide demand if given transparent market information. A free market can create a competitive value

chain with low intermediary margins, thus rewarding the farmer according to price fluctuations on a worldwide level. Other cash crops in Indonesia could benefit if the government allowed similar market mechanisms to operate. Policy to improve transportation, support extension services, and strengthen research on improving yields and preventing disease would also assist in sustainable, healthy, and profitable cash crop development.

V. Recommendations

Implications for Policy

Policy intervention in the agriculture sector can be categorized into three major areas: 1) Market mechanisms, 2) Farming production, and 3) Trade controls. Each category has different implications for the development of the agriculture market and of the farmer; some involve more direct intervention while others take a more hands-off approach. In the following paragraphs, each category will be reviewed.

Market Mechanisms

Policy in the "market mechanisms" category is an indirect approach to supporting development in agriculture. As we saw in the cocoa case, by investing in infrastructure and institutions that allow the free market to work efficiently, the agriculture sector can be most productive in terms of returning gains to the farmer and meeting market demand. Specific measures include investment in roads and highways to reduce transportation costs among the widely dispersed smallholder farms. Investment in transportation and communication would also reduce trade risk and transaction costs, and promote entry and competition in marketing.

Beyond physical infrastructure, development of institutions for the service of market information, such as grading, standardization of measures and weights, commodity exchange, crop forecasting, and regular quotation of market prices, can contribute to reductions in trade risks and transaction costs. Another service that would help farmers is timely issuance of title certificates for land. Since land is often used as collateral for bank loans, having title would give farmers easier access to badly needed credit.

Farming Production

Farming production policy is a more direct approach to assisting farmers, and includes extension services, fertilizer subsidies, new farming technologies, and other crop intensification methodologies. Equally if not more important than creating a more efficient marketing system is assisting farmers in increasing their yields. Yields have been steady for all of the crops studied in this paper; coffee, pepper, cinnamon, and nutmeg have all experienced steady or declining yields since the early 1960s. Since scale economies are vital to the activities of traders and processors of agricultural goods (such as searching for supplies, negotiating contracts, and arranging transportation) the unit marketing cost would be reduced significantly if the marketable surplus per farm were increased. This would also benefit farmers, as they would increase their marketable surplus (and therefore income) without expanding harvested land. Thus, government investment in agricultural research and extension geared for increasing crop yield and marketable surplus would reduce marketing costs. The necessary research includes not only methods to increase productivity, but also identification of new profitable crops (such as those that this paper has attempted to identify) and cropping systems. This would increase rural incomes and employment opportunities in farm production and marketing, thus making this sector more attractive.

In several cases, the Suharto-led government has invested in high-tech, capital intensive projects which create global awareness and are meant to impact a large group of people. However, if the government tries to develop the smallholder agricultural sector through a modern system that requires an intensive use of capital, it would reduce the efficiency of the current system and impair equity by reducing labor income and employment. Higher-tech processing should be delayed until the real wage rate rises sharply and devices that save labor become socially beneficial. At current wage rates, it is more economical to utilize labor-intensive processing, and integrate technology on a smaller scale that includes involvement of the smallholder farmer.

The success of the rice strategy brings to question whether a similar approach would be suitable for development of cash crops. There are several reasons why the rice strategy is not transferable. First, the infrastructure needed for each crop is different. Second, the rice program was a very expensive program. Last, the area to harvest is limited since rice production accounts for 69% of total area harvested under food crops. This land includes the most fertile lowlands of Java, Bali, South Sulawesi, and South

Sumatra. This also means that increased productivity (for rice or cash crops) must come from intensification or expansion into marginal lands.

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Trade Controls

A final category of policy intervention includes direct intervention in the market, a nearly opposite approach to the market mechanism policy described above. Government market interventions, regulation on trade, price controls, quotas, etc. will not prevent the accumulation of middlemen profits and high marketing margins, but will widen it due to the increased cost of evading the regulations. By reducing competition (i.e. by prohibiting Chinese traders' operating in local towns, as some laws have imposed), the likelihood of monopolistic behavior is increased, contradicting the initial goal of the policy. To effectively counteract the possible monopoly of middlemen, and to increase prices and incomes received by farmers, the government should invest in physical and institutional infrastructures to promote the free market mechanism.

Furthermore, we have seen in both the coffee and nutmeg cases that a cartel structure, while boosting prices in the short terms, is not feasible in the long-term. Accumulation of crops, smuggling, and black market trade are all reactions to a cartel structure that does not let the free market operate. Trade control are being liberalized by the Uruguay Round Agreement on Agriculture, through tariffication of non-tariff barriers, reduction of tariffs, and the provision of minimum market-access commitments. Since the majority of spice crops are exported, elimination of trade controls and compliance with international standards would place Indonesia in a favorable position internationally.

Alternatives for development of rural cash crop farming

In light of the situation for cash crop farmers, and in particular the cases of coffee and spices, there are several possible alternatives to improve the prospects for the farmer in the value chain. The most favorable alternative would allow the farmer to use rupiah for local capital and investment, and receive foreign exchange for his exportable crops. The following suggestions would help to achieve this goal, while transferring more market power to the farmer:

- **Structure of distribution:** a more vertical system, in which farmers participate in more value-added activity, would increase the returns to the farmer. Currently the structure is a horizontal, decentralized, fragmented system. One way to achieve this is through a cooperative structure, such as that in Kenya for specialty coffee. In such a structure, farmers would know the value of their crops and may be able to export directly to smaller importers in consuming countries.
- **Value-added:** implementation of simple technology for post-harvest processing to add value to raw material would eliminate middlemen whose role is to process raw material. The Grenadan oil distillery for spices, and the Sumatran method of wet processing are examples of low-tech value-added processing. The potential for the value-added items should be carefully studied to ensure the investment is worthwhile. Another alternative would be for smallholders to produce crops that require minimum post harvest processing. These crops are particularly suitable for farmers who have little capital, or are just starting out in cash crop production. Both pepper and ginger fall into this category.
- **Financing:** generally speaking, government financing schemes that create transparency and accountability for the farmer, as well as assist him in production methods and crop education are most productive in the long-term. Examples include the package in Grenada, which converts a loan into a grant if proper cultivation methods are followed. To involve private banking, the government could provide incentives for local banks to provide directed credit, which is focused not only on financial assistance but also on assisting farmers implement plans for production, sustainability, processing, and marketing of their crops. A pilot study of this is being done by one private bank in

Jakarta, which is comparing this type of financing versus non-directed credit. In this study, farming cooperatives use computers to communicate with banks on their cash flow and production. Through this technology, banks monitor loan repayments, as well as withdrawal and savings/ deposit activity. This allows the bank to detect problems early, minimizing their risk. Under this pilot study, electronic data interchange and cash flow monitoring replaces the usual collateral that farmers have difficulty supplying.

Access to technology: possibilities in this arena include improvement in radio broadcasts, radio frequencies to access the internet (a project currently being worked on by the Bandung Institute of Technology), telephone lines for telephones or PCs, and cellular telephone access (wireless communication alternatives). This access would allow farmers to easily get information about market prices for different crops. It would also allow for communication between lenders, exporters, and buyers of commercial crops. Technology could also be used for farmers to create a close relationship with lending institutions, as described above. Finally, the internet provides opportunity for farmers to market their crops directly to distributors or end-users, as well as access to market research information. The possibility of displaying product images on the Internet opens up attractive prospects for promoting new products. The UN Trade Point Development Centre in Melbourne has given assistance to developing countries in developing Internet websites through its incubator service, <http://www.unicc.org/untpdc>. Through this program, producers in developing countries, even in remote areas, have been able to provide information about their export capacities and establish communication with many other business partners at very low operational costs and with minimal initial investment. This website, which promotes over 400 products, is aimed at distributors rather than end-users or consumers. Similar websites that are focused on promoting artisanal products from developing countries include: Newstart, <http://ottmall.com/newstart/index.htm>, Oxfam, <http://www.web.net/oxfamgft/index.htm>, and Ten Thousand Villages, <http://www.villages.ca>.

Summary

Indonesia is experiencing a time of crisis and change, which has hurt many sectors of the economy but helped others. The rural agricultural sector is one that has benefited from the rupiah's depreciation, as dollar denominated exports translate into many more rupiah. Additionally, agriculture does not require a large amount of imported inputs; it is a relatively low-input industry. This has resulted in an uneven crisis; while spending in urban areas fell by 10% in the year to August 1998, it actually rose by more than 10% in middle-class rural households (McBeth, 1998). In light of these facts, it is an appropriate time for Indonesia to focus on developing the agriculture sector. This sector is dominated by smallholder farmers; thus, its development serves the dual purposes of stimulating the economy and raising the standard of living for the rural majority.

In order to take advantage of this phenomenon, the government and national organizations can assist farmers. One way is through allowing the free market to operate fluidly, by abolishing trade controls, improving transportation and communication infrastructure, and providing market information. Direct assistance to farmers is also needed to educate farmers on proper cultivation to ensure quality crops, to boost yields, and explore opportunities in value-added processing. New technologies, such as e-banking and the Internet could also assist farmers in financing and marketing their crops to developed countries. Crops identified in this paper that could benefit from all of these initiatives include specialty coffee, pepper, cinnamon, and nutmeg. Further study of these and other crops is warranted, to identify which policies are most appropriate for each crop. Since all of them have the commonality of smallholder production, intercropping, and fragmented distribution, the creation of cooperatives may be a suitable alternative to generate more power and increased returns to farmers. The time is ripe for the Indonesian policy-makers

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and those with national decision-making authority to re-invest in the agriculture sector. It would be a dramatic reversal from the high-tech and manufacturing developments that the former Suharto-led government, and current Habibie government have been so focused on. But if the government is able to look outside of Java, into the rural farming masses, it will see a great potential for the development of cash crop exports.

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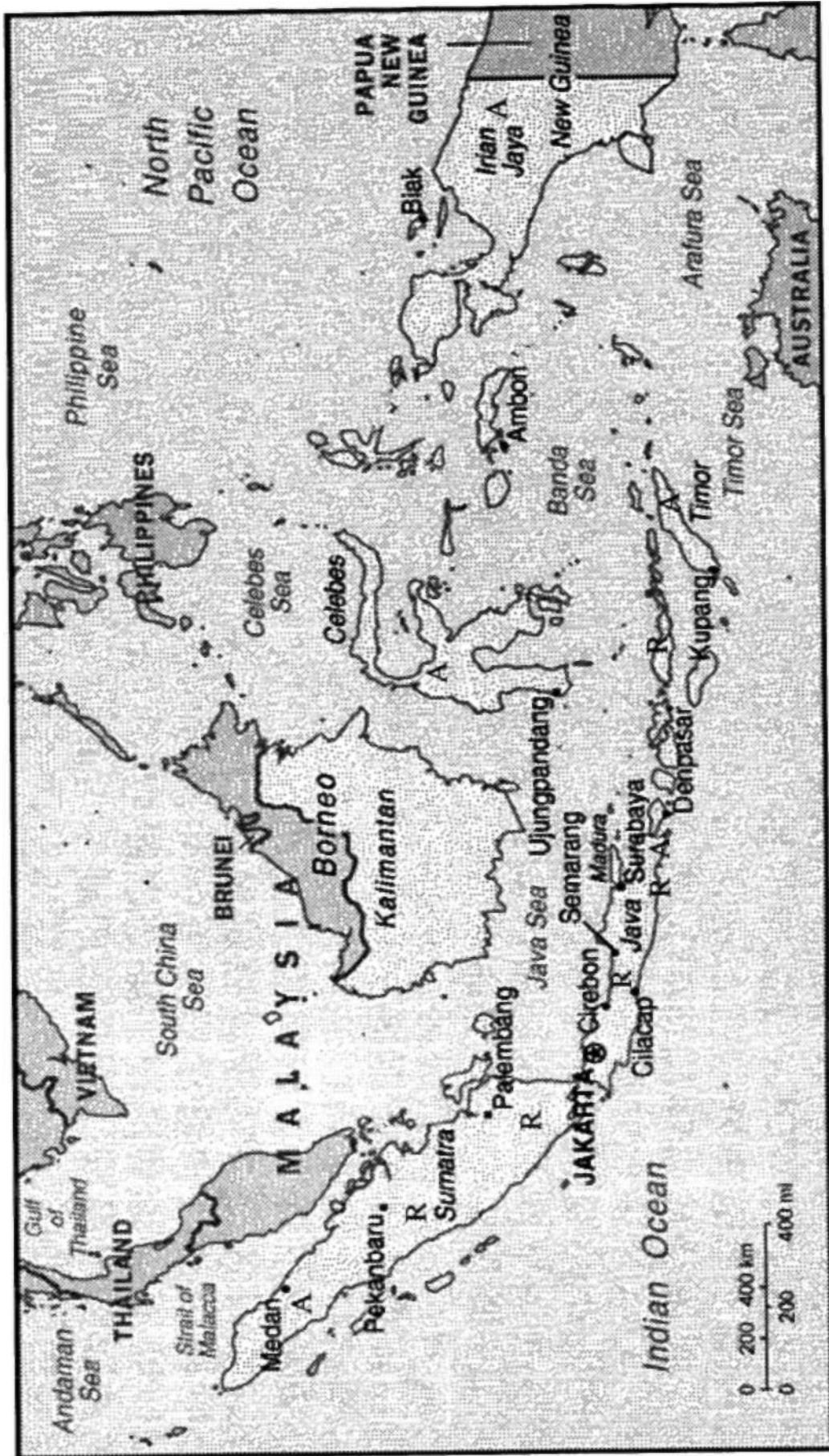
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A=Arabica, R=Robusta