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DUTCH DISEASE IN SÃO E TOMÉ PRÍNCIPE: POLICY OPTIONS FOR THE COMING OIL BOOM

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Abstract

DUTCH DISEASE IN SÃO TOMÉ E PRÍNCIPE: POLICY OPTIONS FOR THE COMING OIL BOOM

_____This paper discusses the policy issues facing the country of São Tomé e Príncipe, a small island country in the Gulf of Guinea, given the discovery and imminent exploitation of large reserves of oil in its territorial waters. While presenting huge opportunities, the history of other African oil-exporting countries demonstrates that there are dangers as well. An appropriate policy for macro balance and for disposal of oil revenues will be essential if São Tomé e Príncipe is to avoid the economic pitfalls which have plagued countries such as Nigeria or Angola. The two main lessons of macroeconomics in such a situation is first not to generate revenue faster than it can be productively used and second to invest in such a manner that the country's underlying comparative advantages are preserved. This is based on the premise that since the oil reserves are finite, the oil boom is not permanent and the country will in the the foreseeable future be forced to fall back upon non-oil export sectors. In the case of São Tomé e Príncipe, history and recent analyses confirm that there is a strong comparative advantage in agriculture, implying that investments which enhance productivity and efficiency in this sector would be appropriate for expenditure of oil revenues. In addition, such a strategy would have beneficial effects in terms of poverty alleviation and equitable distribution of benefits from the coming windfall.

I. Introduction

São Tomé e Príncipe is a small island country in the Gulf of Guinea which is currently one of the poorer countries in the world, with a per capita income of about US\$ 290/year in 2000 and a population of about 148,500. The discovery of oil in its territorial waters and the imminent prospect of a large inflow of foreign exchange represent a huge windfall for the country but also present it with some macroeconomic policy issues and problems which can, with foresight, be ameliorated and turned to the benefit of the country in the long run. If these issues are not addressed, then São Tomé e Príncipe is likely to follow in the tracks of other low income oil exporting countries which have seen an exacerbation of inequality, poverty and civil conflict in a context of worsening environmental conditions. This paper analyzes the likely effects of an oil boom in São Tomé e Príncipe and discusses possible policy responses.

The size of the oil reserves are impressive, and especially so for a country the size of São Tomé e Príncipe. Seismic surveys undertaken by Exxon-Mobil have indicated a strong likelihood of exploitable reserves, and have estimated that they amount to about 500 million barrels with the Economic Exclusion Zone that has been under negotiation with Nigeria. The IMF assumes in its own forecasts that production will begin in 2005 at a level of about 10,000 bbl/day and will reach 120,000 bbl/day by 2009.¹ While revenue sharing between Exxon-Mobil and the government have still not been made explicit, it is clear that the 2009 production figure represents a major addition to GNP. Even a \$10/bbl return to the government would represent more than a 30% increase in GNP, a figure that would put São Tomé e Príncipe well up in the ranks of extremely oil-dependent countries. (See Table 1) Given the existence of severe oil-induced macroeconomic distortions even from countries with a far lesser dependence than this, it is obvious that São Tomé e Príncipe will be extremely vulnerable to these types of problems.

In essence, the problem is one of addressing the effects of “Dutch Disease” in a small largely agrarian low income country. Dutch Disease, so-called because the syndrome’s effects were first described in the context of natural gas exports from the Netherlands, consists of a set of problems arising principally from the distortions of the real exchange rate that result from large (relative to the economy) inflows of foreign exchange deriving most commonly from mineral exports.² In a very small country such as São Tomé e Príncipe the size of the inflows relative to the economy can be readily predicted to be quite large, and the resulting distortions correspondingly severe. The appropriate policy response, while fairly clear at the most macro level, depends crucially in its details on the structure of the economy and particularly in what sectors the country has a comparative advantage. Comparative advantage, of course, depends upon the natural resource base of the country in question.

São Tomé e Príncipe consists of two main islands whose physical circumstances and economic history have important implications for policy and investment. Located in the Gulf of Guinea just north of the Equator, the two islands have fertile volcanic soils, high mountains and rainfall that varies from more than 7000 mm annually to less than 1000 mm depending on elevation and orientation toward prevailing winds. Basic conditions for agriculture are good - a

wide variety of crops can be grown, though the country has historically devoted the majority of its cultivated area to monocropped plantations. At the present time cocoa is the most important crop in terms of area, revenue, and exports. While the government is working toward diversification of the nation's production structure, it is clear that São Tomé e Príncipe's main long run comparative advantage lies in agriculture, and that this sector is fundamental both to income generation and exports for the foreseeable future.

In any production activity, and certainly in agriculture as well, the most effective way to promote comparative advantage is to concentrate on lowering costs and increasing efficiency of production. There are a variety of ways in which this can be done in São Tomé e Príncipe but the most obvious is to improve the transportation and marketing system for agricultural products. Currently, a striking amount of the island is either inaccessible or not easily so, while facilities for export and import are severely deficient.

Another imperative, and one which promotes not only existing comparative advantages, but also helps to develop new ones, is to increase the human capital of the population. Basically, this means policies to maintain and increase São Tomé e Príncipe's already high levels of literacy and to promote basic public health and sanitation measures. This will not only increase the efficacy of agricultural modernization and improvement efforts, but will have positive spillover effects in other areas as well.

The islands' history of occupation and development is somewhat unusual and this too has implications for current policy and development efforts. Uninhabited before the arrival of the Portuguese in the second half of the 1400's, the islands are populated with the descendents of a mixture of peoples from various parts of Africa and Europe. At the present time all but around 6,000 of the total population live on the island of São Tomé. Until independence in 1975 the island economies were dominated by plantations (called "roças") which were taken over by the state after independence in 1975. The government initiated a process of land tenure reform and privatization in the 1990's which has resulted in a mixture of small, medium and large size holdings. The government is currently in the process of considering the breakup of the remaining large cocoa plantations.

This history has resulted in a smallholder sector that is different from that in any continental African country. Simply put, there is no indigenous tradition of smallholder agriculture. Rural poor typically have had home gardens (glebas) but have no history of operating their own farms, having instead worked as employees on the large estates which dominated the islands. The newly settled smallholders (as well as owners of many of the larger holdings) are embarked upon an enterprise in which they have no experience and for which supporting institutions and market mechanisms do not and never did exist.

Accordingly, the problem for the government in facing an oil boom which will be large, but not permanent, is to promote the development and growth of the sector in which the country has a long run comparative advantage - agriculture - while increasing the welfare of a large

newly created smallholder sector.

The next section presents an analysis of the phenomenon of Dutch Disease and the problems it can induce in mineral exporting countries. This is followed by a section describing the policy problems and solutions that this poses. The next section details the implications of this for São Tomé e Príncipe together with measures which could be adopted to address the situation. The final section presents some conclusions.

II. Dutch Disease and the Problems Associated with Large Foreign Exchange Inflows³

The effects of large foreign exchange inflows on those parts of the economy not directly related to the sector that is producing the riches dates from a discussion by Cairnes in 1857 of the effects of the Australian gold rush⁴ and has been of more direct interest in modern times in the analysis of the effects of large oil discoveries on the economies of oil exporters. Modern macroeconomic analysis focuses on the distortions in the exchange rate that result from large foreign exchange inflows, in particular the tendency toward appreciation of the home currency that such inflows can induce. This appreciation together with the spending patterns that generate it can cause large changes in the relative prices of goods in the economy, and most importantly in the relative prices of “traded goods” and those which are non-traded. The appreciation of the exchange rate provides incentives to increase consumption and decrease production of traded goods, and vice versa for goods which are not traded internationally. The result is stagnation of domestic traded goods production and large potential deficits in the balance of payments.

Traded goods consist of all those items which are or have the potential to be traded internationally including both exports and imports for any given country. Obvious candidates are commodities such as foodstuffs or other easily transportable agricultural output, products such as cloth or manufactures of various types. The key characteristic of traded goods is that their prices are fixed by international markets by virtue of the fact that they can be traded - If, for example, the price of food were to start to rise in São Tomé e Príncipe then it would pay for exporters in other countries to send some food there to take advantage of the new market conditions, thereby increasing the supply and preventing the incipient price rise. The same reasoning can be applied *mutatis mutandum* to the food market in countries exporting to São Tomé e Príncipe. If prices there were to try to fall, then it would pay to export wheat rather than keeping it for sale in the domestic market, thus preventing the incipient price decline. Thus, prices of these items are not determined by domestic market conditions - rather, the quantity adjusts (via changes in exports or imports) - and are instead determined by world market conditions in the aggregate. In the case of São Tomé e Príncipe the relative size of the domestic economy compared to the aggregate world market is quite small meaning that domestic market developments have no detectable effect on world prices.

Non-traded goods consist of all those items which cannot be traded internationally, or for which there are substantial barriers to such trade. Obvious candidates are housing, or personal services, which are of necessity produced at the point of consumption. The traditional example of this last category is a haircut, the price of which varies widely across borders since the demand and supply are essentially local phenomena and not subject to foreign influence since nobody crosses borders for the purpose of giving or getting a haircut. The key characteristic of non-traded goods markets which distinguishes them from traded goods is that incipient changes in supply and demand are of necessity equilibrated by changes in price rather than quantity since if these goods are not traded internationally, there can be no quantity adjustment via exports or imports.

The relative price of traded and non traded goods in the economy is what

macroeconomists refer to as the “real exchange rate”, usually expressed as the price of traded goods divided by the price of non traded goods: P_T/P_{NT} . In other words, it is the amount of traded goods that one can exchange for a given amount of non-traded goods. This relative price is of vital importance in determining the composition of both consumption and consumption in the economy in general. Two propositions hold:

1. The higher (lower) the real exchange rate, the more (less) expensive traded goods are in relation to non-traded goods, so that more (less) will tend to be *produced*. This additional (lesser) production of both export goods, and of goods that would otherwise be imported will tend to increase (decrease) the surplus in the balance of payments.
2. The higher (lower) the real exchange rate, the more (less) expensive traded goods are in relation to non-traded goods, so that more less (more) will tend to be *consumed*. This decreased (increased) consumption of both export goods, and of goods that would otherwise be imported will tend to decrease (increase) the surplus in the balance of payments.

The upshot of this is that the real exchange rate is of fundamental importance to an economy’s external balance - The higher it is the bigger the surplus on the balance of payments is, both because of increased production and decreased consumption of traded goods as compared to non-traded ones. It is also of key importance to internal balance as can be illustrated by considering the effects of a shock to the economy when large foreign exchange inflows occur.

Initially the effects of such an inflow depend on what the money is spent on. Insofar as the money is spent on traded goods, we can say two things:

- Relative prices do not change if money is spent on imported goods or goods that could have been exported. Instead, there will simply be a bigger deficit in the balance of payments or a smaller surplus.
- Given that there is no change in prices, there is no change in incentives for production or consumption, hence the structure of the economy does not otherwise change.

However, there is a very different outcome insofar as the money is spent on non-traded goods. Here, we can trace through the following effects:

- As a first round effect, money spent on non-traded goods will cause their price to go up (or in other words the real exchange rate, P_T/P_{NT} , will fall). This results in inflation.
- Second, producers and consumers respond to the new relative prices in the following ways:

Producers see that non-tradables are now relatively higher priced than are tradables and so will tend to switch production from tradables to non-tradables.

Consumers also see more expensive non-tradables and so respond by consuming less of them and more tradables.

Both of these reactions tend to worsen the balance of payments.

- Third, future investment and resource flows will follow the changes in production. Apart from the sector that is producing the windfall, both capital and labor will tend to migrate toward the sector where production is increasing and away from the one where it is decreasing. This means that resources will tend to flow out of the traded goods sectors and into the sectors producing non-traded goods.

Figure 1⁵ illustrates these changes. There are three sectors of interest. The Booming Sector (B), which is the one producing the windfall, be it oil or gold or some other good, the Lagging Sector, (L) which produces tradable goods other than those from the Booming Sector, and the Non-Tradable Sector (N). Figure 1 shows the effects of a foreign exchange windfall on the N sector.

As discussed above, the first round of effects depends on how the windfall is spent. If some part of it ends up being spent on non-traded goods, either directly by beneficiaries of the windfall buying mansions, hiring servants or via government taxation or appropriation and funding of non-traded spending, then there will be a consequent increase in demand for N goods, leading to rightward shift of the demand curve for N goods to D^1 . Depending on the elasticities of supply and demand there will be some combination of increased output of N and increased prices of N goods, which leads to an appreciation of the real exchange rate. This will tend to draw resources out of both B and L into N and to shift demand away from N and toward B and L. However, if B is indeed producing windfalls of sufficient magnitude to generate large macro effects, the resource movement effect will fall principally on the L sector.

There are further resource movement effects which are also shown in Figure 1. First, the B sector will tend to attract labor and capital from both L and N. This will result in a decrease in output in L (not shown in figure) as well as a decrease in the output of N goods. This last result is shown by the shift of the supply curve to S^1 , with still higher prices for N goods and consequent shift to the left of the equilibrium output for N.

If there is mobility of labor as well as capital, then we can expect a migration of labor toward those centers at which expenditure of the windfall is concentrated (typically capital cities in the case of government appropriated windfalls). This migration induced a further spending effect which, insofar as it falls on N goods, causes an additional rightward shift of the demand curve to D^2 with additional appreciation of the real exchange rate and a further round of effects as described above.

The lessons of this analysis are clear: Large inflows of foreign exchange, be they from oil, foreign aid, or other sources, have the capacity to seriously distort economies by suppressing

the growth of other sectors while facilitating the growth of a rentier class which lives off of the revenue stream produced by the foreign exchange generating activity. Investment in such an economy tends to be directed toward further expansion of this activity, whatever it is, as well as toward those sectors which help to dispose of the windfall. Typically, this would be trading, as well as a spectrum of service sectors aimed at supporting the consumption activities of the rentier class.

All of this is sustainable only so long as the foreign exchange windfall continues. Problems arise when the stream of easy money comes to a halt. The economy is then left with no source of foreign exchange and a stunted growth of all other productive sectors which is exacerbated by the typical failure to invest any of the windfall in the public infrastructure needed to support a diversified set of other activities. The center of such an economy, the capital city, enjoys an initial burst of activity as inflows of revenue fund large public works projects and the rentier class' consumption fuels a construction boom. Outlying areas are depressed as they not only do not enjoy the public expenditures of the center, but also are host to economic sectors which contract in the face of cheap import competition. In addition, the pull of resources (both labor and capital) out of these areas and into the sector producing the windfall gives further impetus to the downward spiral of economic activity away from the center.

Even those areas which are home to the activity producing the windfall do not enjoy a widespread or sustainable pattern of growth. With investment concentrated in only one activity, others wither except insofar as they can help fuel the expenditures which the large revenues generate. Examples of such local economies are found in oil producing areas in the modern age or in gold rush economies of the 19th century in such areas as California or the Yukon⁶. As with the capital city, such areas do not enjoy a prosperity which survives the exhaustion of the resource upon which they are based and see a pattern of investment and infrastructure development geared almost exclusively toward the extractive activity they are centered on.

An additional effect is often present in cases where capital is internationally mobile. As domestic prices inflate, interest rates on foreign capital look cheaper and cheaper at a given exchange rate. This stimulates foreign borrowing to support consumption and/or investment beyond that which can be supported by mineral rents alone. This effect helps to explain the apparently perverse situation of many oil countries where huge foreign exchange windfalls are accompanied by huge foreign debts.

In order to be able to speak more precisely about the appropriate policy response to oil income in São Tomé e Príncipe, it is first necessary to discuss the appropriate policy response in general terms, and then to look at the nature of the country's comparative advantage and the development problems facing its traded sectors.

III. Policy Response to the Coming Oil Boom

At the most general level, there are two main issues involved with this income:

1. How fast to exploit the various mineral resources.
2. How to spend the money.

How Fast to Exploit the Oil

With regard to the first issue, there is an extensive literature on the dangers of excessively rapid exploitation of oil reserves and expenditure of the funds in ways that do not contribute to long run growth and welfare. In particular, Gelb et. al. have shown in numerous case studies, including several directly relevant to the case of São Tomé e Príncipe, that the distortions which result from large expenditures in the near term can in the end leave a country worse off than it was in the beginning. Given São Tomé e Príncipe's markedly greater expected dependence on these revenues than any of the countries whose experience forms the basis for these observations, there is good reason for caution.

Essentially, the issue is this: Large inflows of foreign exchange have the potential to generate highly undesirable effects on the domestic structure of production and consumption due to the short run incentives to capture the large rents available. However, distortions in the domestic economy can be avoided if the foreign exchange bonanza is spent on imports rather than domestically produced goods and services.

On the production side, the offshore nature of the production in São Tomé e Príncipe will tend to reinforce the oil companies' historical inclination to extract the oil with 100% imported technology operated virtually 100% by expatriate workers, who live in contained facilities with virtually no linkages with the domestic economy. Indeed, this is exactly what some oil companies have already been trying to negotiate with the government of São Tomé e Príncipe, in that they want to locate offshore oil platform servicing facilities in a protected enclave on Príncipe which can be operated in complete isolation from the remainder of the country.

If this is to be the pattern of oil development, there will be no significant effects in terms of 'resource pull' from the rest of the economy since the oil sector makes almost no use of any domestic capital, labor, or even consumption items for its work force. It is likely that this situation will persist in the future if the government continues to contract extraction out to various foreign oil companies which operate their concessions as enclaves.

On the expenditure side, all of the oil money accrues to the central government apparatus, which in other African oil exporting countries has spent by far the largest part of its income on imports. What this typically means in terms of the internal and external balance is that the balance of payments remains severely in deficit while pressures on the real exchange rate have

been far less than would be the case if some of the oil funded demand had fallen on domestic production. Even so, it is clear even to a casual empirical observer of the urban economy in Luanda, Lagos and other cities, that prices are quite high by international standards. Even at black market exchange rates, they are often very expensive cities, comparable to large cities in Europe and North America, which is a testament to the high levels of demand resulting from mineral income.

So, if one of the basic problems is the inability of the economy to absorb the large sums of money spent in the short run without detrimental distortions, then one possible solution would be to save some of the money offshore, or to simply pump the oil out at a slower rate. The first option is one that has not been achieved with any great degree of success by any oil exporting country to date. There are simply too many pressures on the government officials both personally and in their official capacities to spend the money when it becomes available. Even so, the government can achieve much the same effect by using revenues to pay off past foreign debt to the extent possible. This would achieve the desired effect of limiting the impact of large expenditures in any given period while at the same time improving the country's long run financial position.

How to Spend the Mineral Revenues

The basic problem of oil economies, that of a highly overvalued exchange rate, has the effect of imposing high implicit costs on those sectors most exposed to international trade, either because they produce export products, or because they face actual or potential import competition. Accordingly, the factors of production employed in these sectors suffer, and to the extent they are able, migrate toward uses in which they can earn greater rewards, in this case the urban centers where oil money is received and spent.

A recent study of comparative advantage (AGRO.GES/CINFORMA 1999) indicates that São Tomé e Príncipe can efficiently increase production both of export crops and of crops destined for domestic production. Overall conditions for agriculture in the islands are excellent. What is key for the welfare of the rural population is to move beyond production for own-consumption to increased marketing of foods for internal sale and both traditional and non-traditional crops for export. What remains clear, regardless of the details of the strategy, is that São Tomé e Príncipe has a strong long run comparative advantage in agriculture under any plausible set of internal and external prices. Accordingly, it is this sector that is most vulnerable to oil-induced macro distortions and it is the health of this sector that is fundamental to an overall strategy for dealing with the coming oil boom.

In the case of other African oil exporting countries such as Nigeria and Angola, it is clear that the hardest hit sector is agriculture, together with associated processing and transforming industries. Angola and Nigeria have both historically demonstrated a strong comparative advantage in agriculture and this sector provides employment and income for the majority of the

population. In both countries agriculture has suffered so severely from oil-induced distortions that what used to be large net agricultural exports have been converted to large net imports. Therefore, from a the point of view of both poverty and equity, there is a powerful case to be made to avoid overvaluation to the extent possible to avoid penalizing this sector.

Even if exchange rate overvaluation persists to some degree, the strong underlying comparative advantage in agriculture suggests a government investment strategy directed toward provision of infrastructure and public goods which can help lower costs of production in this sector. Obvious candidates are rehabilitation of the country's transportation system, including roads, ports and related facilities, as well as investments in agricultural research and extension. In addition, lack of public services such as water and sanitation, as well as electricity and other utilities are a serious constraint to industrial investment and rehabilitation.

In summary, the experience of other oil countries, and the theoretical literature on Dutch Disease effects, show that the distortions induced, particularly via the exchange rate, create very adverse conditions for other sectors. As noted above, in the case of São Tomé e Príncipe agriculture is the most important of these, both in terms of its share of the labor force and due to the well demonstrated comparative advantage enjoyed by the country. There are also a wide range of light manufacturing activities which would be rapidly developed by the private sector given appropriate conditions. Accordingly, some clear long term policy prescriptions emerge from this analysis:

1. Maintenance of an appropriately valued exchange rate is paramount. As argued above, this will depend to a great extent on the ability to control inflation which in turn depends on fiscal control.
2. Free access to foreign exchange and ease of international trade (i.e. elimination of bureaucratic barriers).
3. A program of investment in public goods necessary to the agricultural sector and related processing and manufacturing.
4. A program of investment in human capital via improved education and health facilities to maximize the ability of the population to adapt to new technologies and continue to develop its comparative advantages in the future.

IV. Sao Tome e Principe's Existing Resource Base and Comparative Advantage

Sustainable and broad based growth for the country depends primarily on smallholders and some medium sized enterprises in the agricultural sector. These holdings were established through the past decade as a comprehensive land reform program has split up the large estates which dominated the colonial and post-colonial economy. This has strong implications for the most effective methods for promoting growth, as well as for ensuring that the benefits of that growth are spread to the maximum possible number of people. In particular, the extension of management responsibilities to a wide segment of the population that has never before had to run a farm or any other kind of business, means that education and extension will be extremely important in maintaining the competitiveness and welfare of this part of the population.

_____ Tables 2 through 5 provide information on the evolution of production of the main products over the past decade. As can be seen, cacao, palm oil and copra are the most important cash crops, with cacao by far the most important in terms of exports. Of food crops, the most important are banana, cassava and matabala (taro) while maize is the most important cereal crop grown domestically. Of animals, small ruminants (with goats predominant) and poultry (mostly chickens) are most important, with the majority of animals in both of these categories raised by smallholders.

Inward vs. Outward Orientation

It is clear that the only viable option for sustained agricultural growth over the long run in São Tomé e Príncipe (or indeed for growth in general) is to base it on an export promotion strategy. There are simply too few people on the islands who represent too small a potential demand (given their incomes and food demand net of own-production) for any sustainable strategy to be based on an orientation toward the domestic market.

Accordingly, the first priority is to promote agricultural exports capable of generating high levels of returns to national producers. The options here fall into two main categories: exports of crops currently grown and exports of crops which might be promoted in the future. If we look at those crops which are currently grown, cocoa is by far the most important in terms of area cultivated and export earnings. This means that measures to maximize the return from areas which are currently under cocoa have the potential to generate immediate returns in terms of higher productivity which directly translate into increased export earnings.

Given the existence of infrastructure and marketing channels, several technical options make sense, particularly those related to rehabilitation of existing plantings and training of new small and medium sized producers in appropriate cultivation, harvest and post harvest technologies. However, it must be emphasized that all of this will be for naught if problems with input supply cannot be resolved and incentives to produce cannot be improved.

In spite of the fact that the extensive areas under cocoa dictate that it be a part of any short run strategy, it is clear both from comparative advantage studies and from continued volatility in international cocoa prices that export diversification is key in the medium to long run. This need has been recognized by both the government and international donors and is the reason for various attempts to promote non-traditional exports in the past.

One area which seems very attractive but which has not received the emphasis that it probably deserves is the possibility of increasing production of food items for export. The reason for the lack of emphasis is clear: in a situation where São Tomé e Príncipe receives substantial quantities of food aid and where food imports are substantial, the government is thinking in terms of import substitution rather than exports. However, there is strong reason to believe that São Tomé e Príncipe could in a relatively short time become not only self sufficient in food, but enjoy substantial income from exports as well.

Evidence in support of this is abundant. First, recent studies of comparative advantage (including both the AGROGES-CINFORMA study in 1999 as well as studies in support of the 1991 appraisal of the World Bank's Agricultural Privatization Project) show that smallholder food production is very efficient in São Tomé e Príncipe and compares well with cocoa for smallholders. Second, smallholders have shown a tendency to shift in this direction over the past few years as production choice has become possible for them. Third, there are several viable markets on the continent where São Tomé e Príncipe is already selling food, most notably Gabon.

A push to increase food production could very easily result in substantial exports over the medium run, with national self sufficiency achieved en route to this goal. What is key here is the fact that though import substitution may be a reasonable and viable goal from the point of view of national economic policy, the stated goal of increasing rural welfare requires a much broader view. Put another way, while a national level goal of replacing food imports is reasonable and attainable, it cannot by itself achieve the equally important stated goal of raising rural incomes and welfare. An export promotion strategy would require a strong extension effort for smallholders focused on improving productivity and also post harvest conservation and preservation techniques so that food exports can expand beyond that which can be transported rapidly via the current transportation system. At the present time, spoilage is a serious obstacle both internally (farm to port) and externally en route to the continent.

A strong caveat is in order here. Annual food crops, especially root crops such as taro, cannot be grown sustainably on steeply inclined fields due to the danger of erosion. Accordingly, there is a natural limit to the extent to which production can be expanded in that there is a limit to the amount of land that is flat enough to support annual cropping of this type. It is not unreasonable, however, to expect that in the long run, cocoa and other tree or perennial crops will be grown on all land too steep for annual crops, and that these food crops will predominate in less inclined areas.

In the longer run, exploitation of niche markets for crops such as pepper, flowers or aromatics has substantial potential to generate exports. This effort would be dependent on research and extension efforts, but even a small niche market in Europe or North America could prove to be a substantial growth opportunity for São Tomé e Príncipe. Even more important than production issues for these crops is the ability to market them successfully to destination countries. São Tomé e Príncipe is capable of producing a wide range of crops - what is key is that decisions focus on a well researched and reliable marketing opportunity. At the moment, there has been some success in the area of aromatics, while peppers, introduced some years ago, are not spreading due to disease problems.

Cocoa

_____ Given the fact that cocoa is the single most important crop in the islands, accounting for more than 60% (24,000 ha.) of cropped area and the vast majority of agricultural exports, it merits special attention. Production levels at the present are only around half of those achieved prior to independence. This situation is in part due to lack of investment in infrastructure and replanting, part to disease, part to breakdown in marketing, and part due to the inevitably disruptive effects of the land reform program. While it is unlikely (indeed undesirable) that cocoa can attain the dominant, even pervasive, role in the islands' economies that it had under the colonial regime, the existence of a huge area of cocoa together with the associated human and physical capital make exploitation of this crop a attractive way to generate surpluses to invest in future development. In essence, while export diversification is a good goal, the existing cocoa export capacity can provide the wherewithal to finance this strategy. Accordingly, the issue is how to maximize the returns from this existing capacity.

The government has proposed a variety of measures to address this situation which it hopes will restore production at least to pre-independence levels. There are a variety of technical measures which can clearly help the situation. It is recognized that a strong extension effort will be necessary given the fact that the majority of cocoa plantings are now in the hands of smallholders and medium size farms, though approximately 8,000 hectares remain in large estates. Among the measures proposed are training in cultural, harvest and post-harvest techniques which are particularly important to production of high quality output. Other important initiatives involve replanting of old or diseased trees, introduction of new higher yielding hybrids, and efforts at control of disease and pests.

It is also clear that there are problems with institutional and marketing arrangements in the cocoa subsector as well. The biggest issue is that of the breakup of the old plantations. Both input supply and postharvest operations including processing and marketing were set up on the basis of these large entities, and have yet to be reconfigured in line with the new situation. In particular, input supply has been a major problem as smallholders have few options but to purchase from processors who they then promise their output at an agreed price. There have been numerous reports of failure to comply with these agreements, with smallholders instead selling to independent traders rather than to their input suppliers as originally agreed. This

situation has caused a breakdown in input supply as large enterprises cannot continue to provide them if they do not in turn process the crop at the end of the season.

Finally, there has recently been considerable debate regarding marketing efficiency (i.e. the danger of monopolistic practices) as well as the need to implement a system capable of rewarding higher quality. On the first issue, the existence of approximately 10-12 major cocoa buyers together with various smaller ones appears to be sufficient to prevent any ability to exercise monopoly power. In order to promote visible linkages between domestic and international prices, it has been proposed that the farmer organization FENAPA publish indicative prices on a monthly basis derived from international market prices. In addition, premia would be paid for cocoa which, upon fermentation and drying, is shown to be of higher quality. One option which makes sense is to eventually move fermentation and drying operations to the village level as is common in cocoa growing areas on the continent and elsewhere. The benefits of doing this include both a reduction of transport needs of approximately 60% (given an average transformation ratio of raw to dried cocoa of between 34 and 43%) and also the ability of farmers to retain a greater share of value added at the farm level.

This discussion supports an argument for a smallholder strategy in cocoa centered on a strengthening of village level farmer cooperatives to take on post harvest processing and marketing as well as input supply functions. Exploitation of such a strategy could also be linked to social development and to address rural social capital needs. However, apart from this, and far more importantly in terms of production agriculture, São Tomé e Príncipe presents almost textbook conditions for success of smallholder cooperatives. As a result of the land reform the following conditions characterize most of the smallholder sector:

- Large numbers of similar sized holdings
- Near total homogeneity in input requirements
- Identical output marketing needs
- Reliance on a crop with relatively large capital needs for transformation post-harvest

These characteristics indicate that most (if not all) of the problems identified above in terms of input markets and the danger of monopolistic practices in output markets can be addressed via farmer cooperatives based at the village level. Input purchasing can be far more efficiently done on a bulk basis and the problem of excessive market power of cocoa buyers (if, indeed, it exists at all as discussed above) can be effectively addressed by a farmer federation composed of village level cooperatives. Indeed, there is no reason why the initial stages of cocoa processing (fermentation and drying) cannot be performed by coops at the village level as is commonly done on the continent.

In effect, this means that the current farmer associations could be encouraged to take on

real economic functions beyond those that they currently perform. In addition to the production agriculture based functions noted above, there are many obvious social capital needs which could be productively addressed via village level organizations.

One very attractive possibility is the use of farmer cooperatives for input purchase and supply. Given the similar needs of most farmers and the fact that most live in close proximity in the former dependencias of the large plantations, there is much to recommend this strategy in the long run. Current farmer associations could thereby transform themselves into a far more important economic role beyond that which they are fulfilling at the present time. This could achieve both a move away from the virtual paralysis and monumental inefficiency of government run input supply, while avoiding problems of monopolistic exploitation of scattered smallholders.

While the goal of community building is obviously a long run one, the means to achieving it can be used to generate high returns in the shorter run. There has been substantial success in other parts of Africa with Social Action Funds designed to provide communities with assistance in social capital needs identified by the communities themselves. These could be in the form of schools, roads, health posts, or whatever the community decides is the most pressing need.

Land, Labor, Inputs and Support Services

Most important, and most fundamental is the issue of land. The government has for the past decade planned and implemented a major land reform with the assistance of the World Bank which has been quite successful in distributing the land of the former large state plantations to farm workers. A priority for action at the present time is the finalization of this land reform to move beyond distribution of use rights to regularize smallholder tenure legally and to recognize and regularize the existing trade in land rights. Unfortunately, the World Bank, once having promoted land distribution, has essentially abandoned the process without implementing follow-on measures to ensure that new smallholders have the extension and other support services they need to be viable productive entities.⁷

Land tenure is an area in which many people have strong political, philosophical and economic opinions, and São Tomé e Príncipe is no exception. There are some who do not believe on philosophical grounds that a free and open land market is a desirable goal while others do not believe smallholders will be able to successfully operate their new holdings. However, the stated government policy is to assure tenure security both for cultivated land and for housing in former dependencias of the large estates. The exact form of the guarantees to be given to smallholders has yet to be determined, though the need for revision of the existing land law is recognized.

The position of the government at the present time is clear: it does not intend to grant

definitive titles to farmers both because they wish to assure that farmers actually farm their land and to avoid reconcentration of large estates and/or sale to foreigners. Just how incentives to invest and improve land will be promoted without granting definitive title has not been made explicit, and it is entirely possible that this issue will remain at the forefront of agricultural policy debate as long as smallholders feel that they are not definitive owners of their parcels.

Regardless of the speed at which these legal problems are resolved, there is a great need to strengthen support services for new landholders. New beneficiaries are typically near destitute in terms of both financial and physical assets and are also usually inexperienced not only in running the operations of an independent farm but also in many of the individual farming operations required for successful cultivation. Extension services are of key importance but it is also important to bear in mind that the absence of input supply systems and well developed output marketing systems means that they cannot be expected to be self sustaining through their earliest years in their new landholding.

It is worth noting that there is already in existence an informal land market which is based on unregistered trade in use rights for parcels which were distributed under the current reform program. This is one reason for the government's desire for a complete cadastral survey - it will permit regularization and regulation of these transactions as well as providing a basis for imposition of land taxes. It is also the case that the first steps recommended by the government strategy - simplification of reform and registration procedures, finalization and legalization of title to use rights as currently contemplated, and completion of an accurate cadastral survey - are the appropriate first steps to any reasonable land tenure regime.

It is apparent that foreigners are permitted to own houses and other structures, and may also have use rights to land, but cannot get definitive title as this is not an option even for citizens. In general, there is a lack of a well defined policy toward foreign investment, and this is true in agriculture as well. Some statement of the government position vis a vis foreign capital would be quite useful in moving beyond the current ad hoc case by case treatment of foreign investors.

Extension

At the present time, extension services are provided through projects which are limited in size and duration, but it is intended to institutionalize these services in an autonomous entity supported by the government. It is recognized by the government that a strong national extension program is an essential component of the strategy to transform the former plantation economy into a viably smallholder sector.

In addition to traditional extension messages relating to technical issues of agriculture, it will also be important to assist new smallholders in various other aspects of farm operations relating to business, management and marketing. Given the near total lack of experience in

running a small farm of any description, it is to be expected that such efforts can have large payoffs in the long run, though it may indeed be a substantial time period before full returns can be realized.

Two major constraints (apart from funding which is and will likely remain the most important constraint of all) are:

- The shortage of qualified extensionists who have both on-farm experience and a sufficient level of education
- Lack of linkages with research in order to generate appropriate extension messages, technology and advice. While it is a truism that extension must start from a dialogue with the farm population itself, there are various technical improvements, particularly in the area of improved varieties of both traditional and nontraditional crops, which can be usefully derived from in-country research.⁸

It is worth addressing the question of private sector extension. There is a school of thought which holds that public extension efforts are wasteful, inefficient, and often counterproductive in that they often tend to center on a top-down mode and do not address issues of real importance to farm populations. However, in the context of São Tomé e Príncipe it is entirely unreasonable to think that the private sector can constitute a viable mode for provision of services for the destitute smallholder sector. While large enterprises may be able to pay for needed services, and medium enterprises may be able to do so in the medium run, it will be a very long time before the same can be expected of the majority of poor farmers.

Indeed, there are public good aspects to some extension services which provide a sound economic reason for promoting a publicly funded extension program. Apart from the extremely high rates of return that can be generated over the long run of 20-60%⁹ there is a strong public interest in providing whatever services are necessary to help prevent an exodus from rural areas of destitute former plantation workers. Public good attributes are even more evident in the case of livestock, where simple extension messages can help promote hygiene and vaccination programs which can prevent epidemics among the animal population.

Education/Training

One of the most valuable capital assets São Tomé e Príncipe has is the relatively high literacy of the adult population, estimated at over 70%. Many studies demonstrate that higher educational levels, particularly minimal literacy, have a strong positive effect on agricultural productivity, especially in adoption of new technologies and other extension messages. At the present time, São Tomé e Príncipe is in danger of losing this asset as rural schools have been abandoned and many children do not attend schools even when available. Accordingly, restoration of an adequate primary school system should be regarded as a very high priority, even

though the benefits are long term rather than short term.

In terms of agricultural training and education per se São Tomé e Príncipe is fortunate in already possessing adequate infrastructure in the form of CATAP (Centro de Aperfeiçoamento de Tecnologia Agropecuária) a post secondary school for agricultural education which has modern facilities rehabilitated under projects from the EU and Italy some years ago, and CENFOPA (Centro de Formação Profissional Agrícola) a training center for agricultural technicians and employees of agricultural enterprises. These facilities include dormitories with a capacity of 50 students and classrooms and experimental plots and animal facilities with a capacity for as many as 150 students at one time. At the present time these facilities are largely unused due to lack of financing, though still in good condition, and could be put back into use at minimal cost. Those faculty members who have moved to other positions could be recalled on a part time or full time basis, making a reactivation a relatively low cost proposition.

Infrastructure

It would be difficult to overemphasize the importance of rural infrastructure, especially roads. Regardless of the direction of strategy in terms of crop choice or internal/external orientation, some basic infrastructure needs must be met if progress is to be made. First among these is the need to improve roads, thereby lowering costs for farmers and increasing farmgate prices for outputs. Trunk roads are currently being rehabilitated and repaved, and this is essential. However, secondary roads are in terrible condition with many of them impassable except on foot. Serious study should be given to the best way to rehabilitate them given the extremely short life of dirt roads in a climate where rains reach 7000 mm/yr. over terrain that is extremely inclined over much of the country. In the past, it is reported that some roads rehabilitated in the form of packed earth have lasted less than half a year in these conditions. While the labor intensive maintenance possible with dirt roads makes them attractive under some circumstances, this method has not had good results in São Tomé e Príncipe. Alternatives such as stone or gravel should be investigated given the fact that they are also amenable to labor intensive construction and maintenance methods while avoiding the prohibitive expense of pavement.

If São Tomé e Príncipe is to base its long term growth strategy on export promotion, it will be essential to improve the port facilities that now exist. Not only would it be useful in the long run to have facilities capable of accommodating larger ships, but the current bureaucracy and mismanagement associated with the port are a substantial obstacle to exports and imports. While an improvement in this situation would both lower import prices and increase farmgate prices for all exports, it is particularly important for exports of perishable products such as many of the food items which São Tomé e Príncipe produces.

São Tomé e Príncipe cannot pay for large infrastructure investments any time in the

foreseeable future. Accordingly, it will be dependent upon donors to achieve even part of the port outlined in a feasibility study performed some years ago. In the meantime, there is much to be gained from a radical reform of the manner in which current port facilities are managed. Privatization has met with success in some other contexts where this has been a problem.

The need for improved primary and secondary roads is universally recognized as one of the main prerequisites for sustained growth in the agricultural sector. The abysmal state of roads throughout much of the islands, as well as the complete absence of roads in some zones, results in a situation of almost total isolation for many rural people. Road improvements are the single most important factor in improving effective farm gate prices and lowering costs of getting needed inputs. Without improved roads, it is unlikely that any effort to substantially increase marketed production can be successful.

Forests and the Environment

Much of São Tomé e Príncipe is still undeveloped, consisting of mountainous tropical forests on both of the main islands. Much of this terrain is not conducive to agriculture due to its extremely steep nature which, combined with very high levels of rainfall, makes erosion a serious danger. It is for this reason that the historical dependence on tree crops such as cocoa or other perennials such as coffee makes environmental sense since these products do not present the same problems for soil retention that annual crops do.

At the present time one of the major dangers is logging not only of undeveloped forests, but also of newly created smallholdings whose proprietors have few options for generating funds other than selling what few assets they have. There is a ready market for some of the more desirable species from the islands, making this problem one which is not entirely under the control of the government.

While the government has a stated policy barring exports of wood, forests are still in some danger given the dependence of the family sector on firewood as an energy source. In addition, housing and furniture are also almost predominantly made of wood, and constitute an additional source of demand for timber. To date, as much as a third of the islands remain in primary forest, while much of the rest is under tree cover, which is necessary to successful cocoa cultivation.

The government has estimated that sustainable fuelwood production on the islands is about 90,000 cubic meters annually, compared to consumption of about 235,000 cubic meters. The majority of this consumption is based on demand for fuel for home cooking (200,000 cubic meters per annum) though there is also some demand for cocoa drying and for bakeries. It is obvious that these figures imply pressure on forests which will increase as population rises.

Policies to address this problem include dissemination of more efficient designs for stoves as well as investigation of alternative energy sources.

The government has stated its intention to police forest removal via a dedicated forestry force, but it is inevitable that the demands of a growing population will put additional pressure on forest resources. Perhaps most important is the link between roads and deforestation. Experience in many other contexts has shown that road construction can lead to timber extraction. Recent experience in São Tomé confirms that this is as true there as it is in other parts of the world. Given the key role of road improvement in any strategy of agricultural growth, the danger of increased deforestation cannot be ignored. Any project with a road building component must, therefore, also allow for measures to protect forested areas.

One big exception to the policy of not promoting wood exports is the Zona Franca in the island of Príncipe. This area, comprising about one third of the island, is open to logging, though none has occurred to date. Some government control on logging would be important to prevent irreversible damage.

Príncipe

With a population of only 6,000 there is a tendency to neglect the case of Príncipe when speaking of national strategy. Indeed, in most respects there is little reason to differentiate given the similar problems confronting the two islands. However, there are some issues which are distinct.

First, it would be extremely beneficial to the island to allow it to trade directly with the mainland rather than requiring all exports and imports to first go through São Tomé. There is no reason why this cannot be done in the very short run by simply placing a customs office in the city of Santo Antonio. In this way, the costs of transshipment will be eliminated from Príncipe's cost margins with consequent beneficial results for incentives. Similarly, any remaining bureaucratic obstacles to trade between the islands (fees, taxes, regulations) should be eliminated in order to allow free trade between the two parts of the country. In particular, some observers have remarked on what they consider to be excessive port fees in São Tomé. This issue could be resolved with a privatization of port operations.

The other major issue regarding Príncipe is the proposed Zona Franca (Free Trade Zone) conceded to a South African company, WADCO, covering approximately a third of the island. The concession was granted at a very high level, making lower level policy makers somewhat reluctant to take an official position regarding it, but it is clearly the most important development facing the island.

The terms of the concession grant a virtual free hand for 100 years to the concessionaires. While nothing has happened yet, the intention is apparently to build a servicing facility for

offshore oil drilling platforms and facilities for rest and recreation for platform workers. There have also been preliminary investigations regarding logging. There are various reasons to be apprehensive about this arrangement. First, the enclave nature of the development planned promises little in the way of benefits for the citizens of Príncipe while the social consequences of injecting hundreds of off duty oil workers into the island are unpredictable at best.. Apart from that, the ecological consequences of oil drilling platform servicing, not to mention logging, are extremely undesirable. Príncipe is at the moment a beautiful and unspoiled tropical island. There are opportunities for development which can truly benefit the inhabitants - not only does the Zona Franca appear not to be such an opportunity, but its consequences may spoil large parts of the island beyond retrieval and foreclose other more beneficial economic options in the future.

Construction of a much needed deep water port would be part of the overall project, but it would be of little use to the main economic activities of the country which are centered on the other island of São Tomé. Indeed, this whole issue encapsulates the problem of Dutch Disease in a quite graphic manner. The proposed port development is of an enclave nature and would bring no benefits to other traded sectors. In fact, it would hurt them insofar as it diverts resources from infrastructure that could actually benefit them.

V. Summary and Conclusions

São Tomé e Príncipe's coming oil boom will have large and predictable effects on the macroeconomic stability of the country and on its structure of production. In a nutshell, those sectors in which the country has a long term comparative advantage will suffer, and in São Tomé e Príncipe it is clear that this means agriculture. Given the transient nature of the oil revenue (though it may last some decades, it will clearly not last forever) it is essential that the government's long term strategy for dealing with the oil income include measures to ensure sustained growth even after it is gone. This means a program of investment in and development of the agricultural sector and in the human capital of the people themselves via improved education and health.

Given the long gestation period of many of the needed investments, there is much to recommend starting now, especially since the recommended program is in line with existing comparative advantage and so would be viable with or without oil exploitation. An early start means additional aid or borrowing - and this is something that may not meet with much approval from donors or creditors. Nevertheless, on purely economic grounds there is much to recommend it, since these investments will eventually be required under any circumstances and, as noted above, substantial environmental damage can be avoided by not waiting. At a minimum, available current resources could be channeled in a manner consistent with this strategy.

In terms of comparative advantage, studies have shown that São Tomé e Príncipe can efficiently produce food crops such as taro, breadfruit, cassava and vegetables as well as tree crops such as citrus. In fact, the newly created smallholder sector has already shifted away from cocoa and toward these food crops, partly in response to their own consumption needs, but also in response to favorable prices in the capital city of Sao Tome and on the continent, especially in Gabon. It is to be expected that smallholders will continue this trend, particularly if the government can negotiate a reduction of import tariffs in Gabon, currently greater than 50%. There is every reason to think that São Tomé e Príncipe can efficiently become self sufficient in food production and even produce substantial exports.

In terms of crop choice, it is important realize that the islands are now, as a result of their history, heavily biased toward cocoa production, not just because of the more than 20,000 ha. are planted to this crop but also because input supply and output marketing arrangements are already in place and rural populations have experience with and knowledge of cocoa. In spite of this, many years of heavy investments in cocoa projects have not resulted in improved welfare or higher returns. This means that while existing cocoa plantings should be managed to maximize their returns, massive investments beyond those currently contemplated (which include a program of replanting with improved hybrid varieties) are not the best option.

There is much to recommend promotion of cooperatives at the village level to deal with input supply, and postharvest processing (fermentation and drying) and marketing of cocoa. In

fact, São Tomé e Príncipe's smallholders have virtually textbook conditions for viability of producer cooperatives given the fact that they are geographically close, have nearly identical input needs, have virtually identical processing needs which require capital investments too great for individuals to undertake, and can avoid the potential of monopolistic exploitation on the output side by selling on a cooperative basis. Initial processing at the village level would also reduce transport needs by more than half, given the transformation ratio of raw to dry cocoa of about 40%. It should be emphasized that this process is at an extremely early stage in São Tomé e Príncipe - social development and cohesion in the former "dependencias" of the large estates is at a very low level, with the current smallholder organizations providing little more than information services at the present time. This means that the goal of forming cooperatives capable of performing a wide range of economic functions must be a long term one.

However, before any substantial increase in marketed production can occur, there are some key preconditions that must be met. It would be very difficult to overstate the need for investment in rural infrastructure, especially roads. The extremely poor condition of rural roads has resulted in a condition of isolation for rural communities that is remarkable in so small a nation. Without improvement in this situation, it is difficult to imagine any substantial increase in marketed surplus beyond the immediate environs of the major population centers.

Also important, given the export orientation of the overall strategy proposed, is improvement of port conditions in the island of São Tomé (as opposed to doing so on Príncipe only). New or improved facilities capable of accommodating larger vessels would reduce costs, but in the short run improved management of the port and of customs could greatly facilitate trade. Privatization of port operations is an option which should be seriously considered.

A final consideration is environmental protection. In São Tomé e Príncipe the most important issue is that of deforestation. It is inevitable that any program of road building or improvement will increase access to forest areas with a consequent increase in potential for deforestation. Measures to deal with this must accompany any infrastructure improvement program and could include improved cookstoves (which are the main source of demand for firewood) as well as increased community awareness of the value of standing trees and feeling of ownership for them together with improved policing. Environmental concerns are especially important with respect to development plans for the island of Príncipe. Here care must be taken to avoid spoiling what is in fact a natural treasure, and one which requires slow and careful steps to aid the small existing population without destroying the considerable natural assets they now have.

Table 1: Oil Dependence of Selected Developing Countries

<u>Country</u>	<u>Oil Windfall as % of Non-Mining GDP</u>
Algeria	27.1%
Ecuador	16.8%
Indonesia	15.9%
Nigeria	22.8%
Trinidad & Tobago	38.9%
Venezuela	10.8%

Source: Alan Gelb et. al. *Oil Windfalls: Blessing or Curse?* Oxford University Press 1988.

TABLE 2

PRODUCTION OF MAIN AGRICULTURAL PRODUCTS, 1990-1996

	1976-89	1990	1991	1992	1993	1994	1995	1996	1997	1998
A. Cacao (<i>1000 tons</i>)	5.0	3.6	3.6	4.1	4.3	3.4	4.6	3.5	3.1	3.3
% Growth (Base year = 76/89)	100	72	72	82	86	68	92	70	62	66
B. Copra (<i>1000 tons</i>)	3.7	1.2	0.6	0.7	0.7	0.9	0.7	1.2		
% Growth (Base year = 76/89)	100	32	16	19	19	24	19	32		
C. Palm Oil (<i>1000 tons</i>)		0.2	1.0	1.5	1.0	0.7	0.7	102		
% Growth (Base year = 1990)		100	500	750	500	350	350	600		
D. Banana (<i>1000 tons</i>)		7.1	10.0	12.0	13.0	13.7	12.7	13.5	15.0	
% Growth (Base year = 1990)		100	141	169	183	193	179	190	211	
E. Breadfruit (<i>1000 tons</i>)		1.9	0.9	1.5	1.8	1.5	1.6	1.8		
% Growth (Base year = 1990)		100	47	79	95	79	84	95		
F. Maize (<i>1000 tons</i>)		2.7	3.6	4.0	4.0	4.3	4.3	4.5	3.7	
% Growth (Base year = 1990)		100	133	148	148	159	159	167	137	

Source: Ministério de Plano e Finanças

TABLE 3**AGRICULTURAL EXPORTS OF SÃO TOMÉ E PRÍNCIPE (1000 kg)**

	Year								
Product	1990	1991	1992	1993	1994	1995	1996	1997	1998
Cinnamon	25	25	25	25	25	25	25	n.a.	n.a.
Cocoa	3245	4759	4363	3725	3160	4577	4415	2935	2698
Coconut	20	20	15	0	20	40	40	n.a.	n.a.
Coffee	0	4	0	5	6	0	0	5	6
Copra	453	159	0	200	200	200	180	n.a.	n.a.

Source: Instituto Nacional de Estatística

TABLE 4
AGRICULTURAL EXPORTS OF SÃO TOMÉ E PRÍNCIPE (1000 \$US)

Product	Year						
	1990	1991	1992	1993	1994	1995	1996
Cinnamon	15	15	15	15	15	15	15
Cacao	3900	4414	3684	3838	5168	2400	3200
Coconut	3	3	7	0	3	10	10
Coffee	0	10	0	19	33	0	0
Copra	100	36	0	50	50	50	50
TOTAL	4018	4478	3706	3922	5269	2475	3275

Source: FAO

TABLE 5
CROP MIX, 1996

Food Crops (87.5%)	Tons	Percent
Banana	12,685	27.1
Cassava	8,500	18.2
Matabala	8,245	17.6
Tomato	4,500	9.6
Maize	4,000	8.6
Breadfruit	1,600	3.4
Various Horticultural Crops	<u>1,385</u>	<u>3.0</u>
	40,915	87.5
Cash Crops (12.5%)		
Cocoa	4,578	9.8
Palm Oil	720	1.5
Copra	507	1.1
Coffee	<u>29</u>	<u>0.1</u>
	5,834	12.5

Source: AGRO.GES/CINFORMA

Table 6
Balance of Payments
(\$ m)

	1993	1994	1995	1996	1997
Merchandise exports fob	5.2	5.9	5.1	4.9	5.3
Cocoa exports	4.2	5.0	4.7	4.8	4.6
Other exports	1.0	0.9	0.4	0.1	0.8
Merchandise imports fob	-25.6	-24.3	-23.4	-19.8	-19.2
Trade balance	-20.4	-18.5	-18.3	-14.9	-13.9
Services & income balance	-16.9	-16.3	-23.3	-21.2	-19.8
Private unrequited transfers	1.5	3.4	0.6	0.5	0.8
Official unrequited transfers	11.5	14.7	22.7	21.6	31.3
Current-account balance	-24.4	-16.6	-18.4	-14.0	-1.6
Long-term capital	8.8	7.0	10.8	11.8	2.7
Short-term capital	0.2	1.9	0.2	-2.6	-0.4
Total financing (incl changes in reserves)	15.3	7.7	7.4	4.8	-0.8

Source: IMF, *São Tomé and Príncipe – Recent Economic Developments and Selected Issues*, Statistical Appendix, June 1998

Table 7.
São Tomé and Príncipe: Sectoral Contributions
to Real GDP Growth, 1999-2001

	1999	2000	2001
(Growth from previous year in percent)			
Gross domestic product at market prices	2.5	3.0	4.0
Primary sector	4.5	2.6	2.7
<i>Of which:</i> Food	5.0	3.5	3.5
Secondary Sector	2.3	3.4	4.2
<i>Of which:</i> Construction	2.0	4.0	5.0
Tertiary sector	1.3	3.1	4.8
<i>Of which:</i> Tourism	2.5	5.0	7.0
Public Administration	1.8	4.0	5.0

Source: IMF

Table 8
São Tomé and Príncipe: Selected Economic Indicators, 1987-2000

	1987-96 Ann. Av.	1997	1998	1999 Est.	2000 Prog.
(Annual percentage change, unless otherwise specified)					
Real GDP growth	42.8	1.0	2.5	2.5	3.0
Consumer prices (end of period)		81.1	20.8	12.6	9.0
Broad money	40.4	94.5	24.5	-2.8	3.0
Credit to government (net) ¹	60.3	-113.4	18.2	-17.8	-19.5
Exchange rate (DB:US\$; period av.) ²	572	4,553	6,927	7,093	7,958
Exchange rate (DB:US\$; end of period) ²	2,833	6,970	6,885	7,300	8,617
Spread of official and parallel exchange rates (in percent; end of period)	6.5	2.5	1.5	1.0	2.4
(In percent of GDP, unless otherwise specified)					
Overall fiscal balance (commitment basis)	-36.0	-26.7	-30.5	-25.9	-118.2
Primary budget balance (commitment basis; excluding foreign-financed investment)	-16.95	-2.2	0.7	1.3	2.1
Current account balance (excluding official transfers)	-68.2	-3.6	-21.1	-26.2	-49.4
(including official transfers)	-43.2	-74.8	-53.9	-58.0	-24.8
External public debt outstanding	437.0	608.5	728.5	624.1	625.7
Net present value of external public debt (before debt relief) ³	1,508	1,442	1,766	1,395	1,267
External debt-service ratio (before debt relief)	95.6	71.8	83.1	49.8	33.6

Sources: São Tomé and Príncipe's authorities; IMF

¹ In percent of broad money at beginning of period.

² For 2000, exchange rate average is for January-October, and end of period is end-October.

³ In percent of three-year average exports of goods and services.

Table 9
São Tomé and Príncipe: Selected Poverty and Living Standard Indicators, 1996-99

	São Tomé and Príncipe	Sub-Saharan Africa
(Latest single year, 1996-1999; in percent, unless otherwise specified)		
Population (in millions, 1999)	0.14	642
Urban population (in percent of total, 1999)	41.8	34
Population growth (1999)	2.4	2.4
Fertility rate (1997)	4.7	5.4
GNP per capita in US dollars (1999)	298.9	500.0
Infant mortality rate (per 100,000, 1999)	65.0	91.8
Under-5 child mortality rate (per 100,000, 1999)	125.0	151.0
Maternal mortality (per 100,000 live births, 1999)	122.0	...
Total mortality rate (per 1,000 inhabitants, 1997)	8.5	14.0
Malaria cases (per 1,000 inhabitants, 1999)	235.0	...
HIV/AIDS prevalence (per 100,000 inhabitants, 1999)	10.0	8.0
Access to safe water (1996)	82.0	43.0
Literary rate (1999)	80.0	61.0
Gross primary school enrollment (1999)	70.0	78.0
Female primary school enrollment (1999)	70.1	71.0

Sources: São Tomé and Príncipe authorities, World Bank, African Development Bank, and United Nations Development Program.

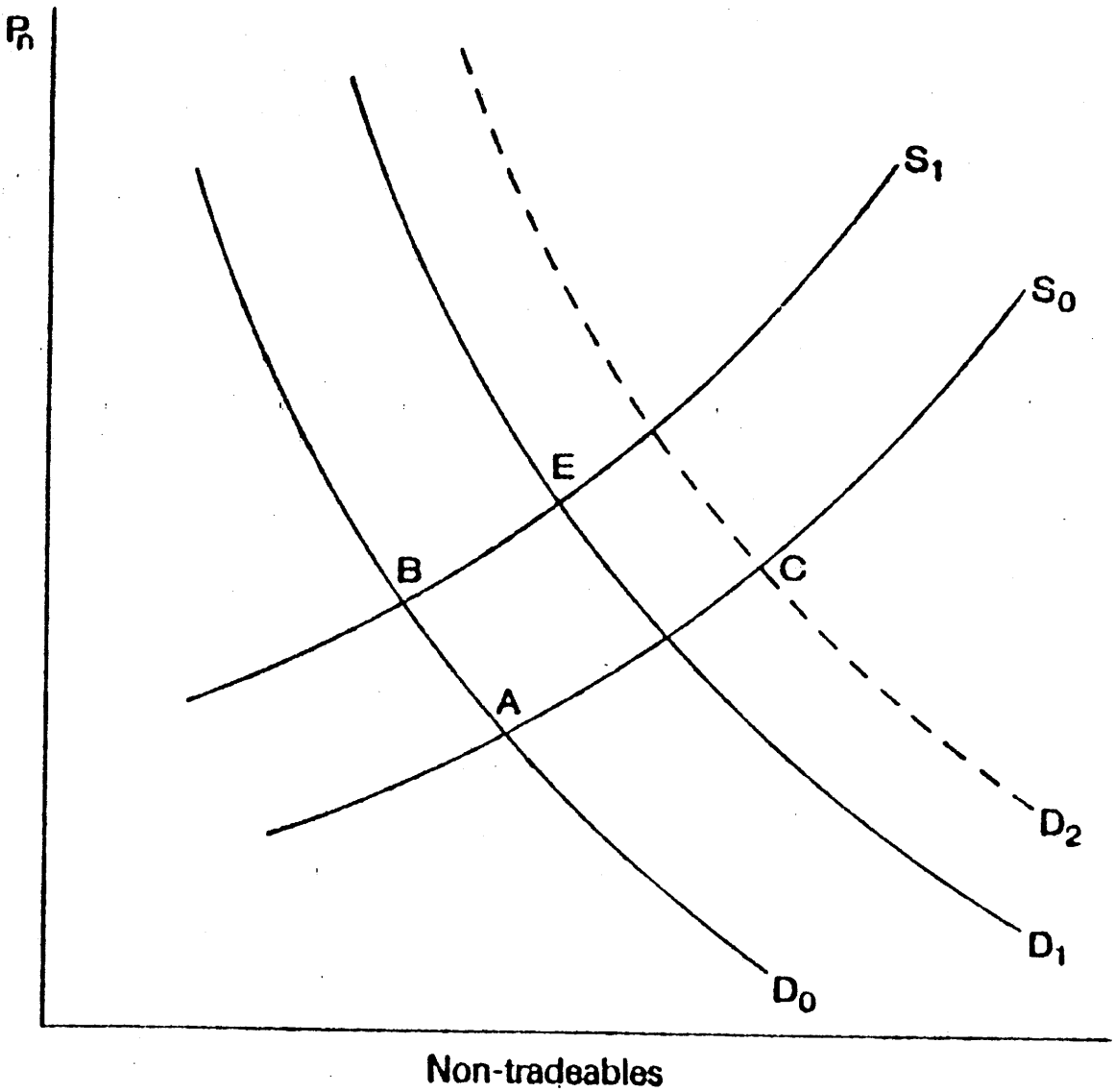


FIG. 1

NOTES

1. See *The Economist Intelligence Unit Country Report* for Sao Tome & Principe, various issues.
2. It should be noted that the foreign exchange inflow need not come from mineral exports. Indeed, the inflows could come from foreign aid or from such sources as plundering other countries, as was the case for Spain during its conquest of the Incan and Aztec empires in the 16th century. The common thread is an inflow of foreign exchange that puts pressure on the real exchange rate and induces particular patterns of resource flows described below.
3. This discussion draws on Corden, W, Booming Sector and Dutch Disease Economics: Survey and Consolidation *Oxford Economics Papers* 36 (1984) 359-380 and Alan Gelb et. al. *Oil Windfalls: Blessing or Curse?* Oxford University Press 1988.
4. Summarized in Bordo MD John Cairnes on the Effects of the Australian Gold Discoveries 1851-73 *History of Political Economy* 3 (1975) 337-359.
5. Based on Corden, op. cit.
6. It should be noted that the California gold rush, though typical of mineral economies, was neither integrated enough into the economy of the Eastern US nor was it large enough compared to it to cause some of the “center” or capital city effects identified above. It remains, however, quite typical of the distorted development of booming areas themselves.
7. In fact, many of the new smallholders have inadequate knowledge of running a small farm and near zero levels of assets apart from their new land holdings. Many have chosen to log their land as the trees are often the only readily salable asset they possess.
8. Currently, research is done at the Centro de Investigacoes Agronomicas e Tecnologicas (CIAT) is an agricultural research institute which was originally founded to study cocoa in the colonial era. It is now dedicated to a wide range of crop research, and has benefitted from aid and technical assistance from CIRAD. With almost 100 employees, including 10 scientific staff, it conducts crop breeding and research and also engages in multiplication and distribution of varieties. Cocoa remains the most important crop and CIAT has a breeding program based on crossing native varieties with imports from the continent of Africa and Trinidad. These improved varieties should, according to CIAT help raise smallholder yields from the current 80-200 kg/ha to approximately 400 kg/ha over the next 1- years. This would allow exports to regain the levels of about 8,000 tons/yr. of the pre-independence period. CIAT also has a post-harvest processing research program which they say has the potential to increase yields of dried cacao from raw cacao to a transformation ratio of about 43% from current smallholder levels of 33%. At the present time, CIAT is pursuing a strategy of multiplication of improved hybrids for dissemination. CIAT also has a program in tree crops, which includes multiplication and distribution to smallholders. Among the varieties are citrus, mangos, guayabas, and others. Other efforts include research into various food crops including maize, banana, beans cassava, taro as well as various horticultural crops and coffee. It is also in the preliminary stages of a cattle program, which will be aimed primarily at medium size farmers
9. See V. Ruttan 1982 Agricultural Research Policy pp. 237,261.

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