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INCENTIVE SYSTEM AND ECONOMIC POLICY REFORM IN MALI

by

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June 1987

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INCENTIVE SYSTEM AND ECONOMIC POLICY REFORM IN MALI

EXECUTIVE SUMMARY

A. Introduction

1. This report formulates recommendations concerning the system of public policy incentives in Mali. The general objective of the recommendations is to promote economic growth, increase the efficiency of the allocation of resources, and establish a structure of production consistent with available resources in the main sectors of the economy -- agriculture and industry.

2. The Malian economy has been characterized since independence in 1960 by growing economic and financial problems. During the 1980s, these reached critical proportions, leading to an unsustainable level of national expenditure relative to output. Agriculture has been severely affected by the Sahelian drought, which in many years has sharply reduced domestic supplies of cereals. In 1986, the balance of payments worsened as a result of an unforeseen fall in the world price of cotton, the appreciation of the CFA franc vis-a-vis the US dollar, and a shortfall in external financial assistance.

3. In the midst of this crisis, the Malian government has initiated a series of reforms with three broad goals. The first is to stabilize the economy by achieving macroeconomic equilibrium in the balance of payments, national income and expenditure, the government budget, and the rate of inflation. The second goal is to adjust the incentive structure and to reallocate resources in directions that are consistent with Mali's comparative advantage in international trade. The third, and final, goal is to put into place the institutions and infrastructure that will contribute over the longer run to the equitable development of Mali's economy and its people.

4. This study focuses particularly on the second goal--that of structural adjustment. It analyzes the structure of Mali's comparative advantage in agriculture and industry and examines the extent to which existing trade, tax, price, investment, and other policies encourage resources to flow in directions that are consistent with that structure and its likely evolution over time. The analysis is limited in the number of productive activities that it includes, but the results are indicative of a broader pattern that emerges.

B. The System of Incentives

5. Beginning in the early 1960s, external and internal factors in Mali have contributed to low rates of output growth, rising inflationary pressures, a worsening of the external position, and an accumulation of

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domestic and foreign payment arrears. With a structure of international trade characterized by exports of agricultural products with little or no transformation and an environment of recurrent drought, Mali's balance of payments has persistently been in deficit. Additional factors contributing to the poor performance of the economy include an overly ambitious public investment program, a comprehensive system of price controls, substantial losses in the large public enterprise sector, and uncontrolled current government expenditures in the face of stagnant revenues. These have led to rising overall budget deficits, forcing the government to borrow heavily in both the domestic and external markets.

6. During the early 1980s, the government took steps to improve the deteriorating economic situation, including a number of supply oriented measures designed to reduce underlying economic and financial imbalances. The marketing system for coarse grains was liberalized, official agricultural producer and retail prices were raised, attempts were made to rehabilitate key public sector enterprises, financial management was strengthened, and domestic and external arrears of the public sector were reduced. In spite of the adverse effects of severe drought, some progress was achieved, but a number of structural bottlenecks and distortions continue to restrain economic activity.

7. In agriculture, the cereals sector is characterized by (1) dependence on imports, especially of rice, (2) subsidization of rice producers in the Office du Niger and other rural development schemes, (3) instability of coarse grain prices because of large fluctuations in production, and (4) no clear definition of the role of OPAM, the public grain marketing agency. Cotton exports are severely taxed relative to long-term prices on the world market, and the procedures and taxes required to export livestock and its products results in widespread smuggling. The livestock sector is also plagued by excessive price controls, problems in the implementation of the system of payment for vaccinations, and the vagaries of recurrent drought.

8. On the industrial side, the major problems are (1) a complex system of tariffs with widely varying rates and numerous ad hoc exemptions, (2) excessive quantitative restrictions and monopolies on imports, (3) price controls that discriminate against local industrial production and in favor of imports and commercial activity, (4) high rates of taxation, (5) inefficient operation of state-owned enterprises, and (6) an investment code that is somewhat arbitrary in the allocation of its benefits and discriminates in favor of large, capital-intensive firms at the expense of smaller, labor-intensive activities. Other areas in need of reform in the industrial sector are the system of valeurs mercuriales, the administration of trade taxation, and the lack of neutrality in the tax system.

C. Comparative Advantage and Incentives

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9. Much of the analysis of this report is based on the calculation of indicators of comparative advantage and incentives in Malian agriculture and industry. This involves the estimation of domestic resource costs (DRC) and various measures of protection for the major tradable goods produced by Mali. Domestic resource cost (DRC) analysis is based on the principle of comparative advantage that states that a country should produce and export goods in which it has a relative productivity advantage and that it should import goods in which it does not have this advantage. The analysis of economic incentives is related to trade protection. If the domestic price is greater than the world price because of an import tariff, for example, the nominal protection coefficient (NPC) is greater than one, and production of the domestic good is encouraged and consumption is discouraged. The effective protection coefficient (EPC), measuring value added in domestic prices relative to value added in world prices, provides an even better indicator of the extent to which government policy offers positive or negative protection to producers. The effective subsidy coefficient (ESC) adjusts the EPC for taxes and subsidies on nontradable inputs into production.

10. A major issue in the analysis of Mali's comparative advantage is the extent of overvaluation of the CFA franc in relation to Mali's balance of payments and structure of incentives. Correcting only for the deficit in the balance of payments, the exchange rate appears to be overvalued by about 33 percent. If the structure of protection in Mali is also taken into account, the degree of overvaluation is probably considerably greater. The DRC and incentive indicators have been adjusted accordingly.

11. The DRC analysis in Chapter 2 suggests that Mali has a strong comparative advantage in a number of agricultural activities, both for domestic consumption and for export. Although no specific data are available, it also appears highly likely that Mali has a considerable comparative advantage in livestock in both the pastoral and the agricultural zones. Its comparative advantage in industry is less well established, though the DRCs for a few products, such as agricultural equipment and cottonseed oil, are favorable, and there are other products, such as textiles and processed fruits and vegetables, in which such an advantage is likely to exist.

12. The potential for developing Mali's comparative advantage in agriculture is considerable. The Mali-Sud region is one of favorable rainfall and low population density, where cultivation of cotton and coarse grains, as well as production of livestock through mixed farming, can be expanded for at least several decades. The interior delta of the Niger River also offers considerable potential, though at current world prices this is difficult to exploit profitably with rice production, and irrigated cotton, fruits, vegetables, and other products may offer greater potential. Finally, the extensive rangelands of the pastoral zone are currently understocked, and there is therefor scope for expanding herds in this area over the next few years.

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13. Eventually, however, the growth of population will press on available agricultural resources to such an extent that Mali's comparative advantage at the margin can be expected to shift in favor of industry. This is already happening in some of the less favored agricultural areas. Industrial growth will require, however, the development of a skilled work force, physical infrastructure to provide power and transportation, and the financial and other institutions needed to support this sector. Before this development can successfully take place, however, an appropriate structure of incentives must be established. Given Mali's limited domestic market, moreover, these incentives should encourage the production of manufactures for export as well as for home consumption.

14. The structure of incentives in Mali, however, is heavily biased against exports. Overvaluation of the exchange rate discriminates against production of tradable relative to nontradable products. Even among tradables, exports are strongly disadvantaged vis-a-vis goods produced for the domestic market. High, and in some cases very high, rates of protection allow inefficient and costly production to take place within this sheltered market and discourage more efficient activities that would earn the foreign exchange necessary to ease Mali's balance of payments problem and permit the purchase of low cost imports from abroad.

15. A major difficulty that stands in the way of correcting these distortions is the combination of the overvalued exchange rate, which is unlikely to change given Mali's participation in the West African Monetary Union, and the fiscal problems faced by the government, which make it difficult to implement offsetting export subsidies except for a limited range of nontraditional exports. Furthermore, the government depends very much on import taxation as a way of raising revenue, and this tends inherently to protect against imports and to discourage exports, both directly and, in the long run, indirectly by causing the exchange rate to be overvalued. In the face of these constraints, the most that can be done is to reduce export disincentives to a minimum by eliminating all indirect taxes on exports, applying duty drawbacks on imported inputs used to produce exports, directly subsidizing nontraditional exports, and providing other encouragements that are fiscally feasible and economically desirable.

D. Recommendations

The following recommendations are made based on the analysis of Chapter 2. The recommendations are presented in detail in Chapter 3.

Reform of the Tariff Structure

16. The structure of tariffs in Mali should be changed in at least four respects.

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(1) Simplification: It is recommended that the tariff system be returned to the simplified structure established during the 1968 reform.

(2) Narrowing the Range of Tariff Rates: The present range of tariff rates of between zero and 105 percent for the droit de douane and droit fiscale d'importation combined should be narrowed so as to achieve more uniform nominal and effective protection across industries.

(3) Raw Materials and Intermediate Products: In order to narrow rates of effective protection, tariff rates on raw materials and intermediate goods should not be higher than those on the final products into which they are incorporated. Nor should producers of these raw materials and intermediate goods be penalized vis-a-vis enterprises producing finished goods.

(4) Elimination of Import Duty Exemptions: Exemptions for duties paid on imports of equipment, raw materials, and other inputs offered through the investment code should be eliminated.

Since these reforms will involve important implications for government revenue, as well as for the structure of protection, a detailed study should be carried out to make specific recommendations on these tariff reforms.

Elimination of Valeurs Mercuriales

17. The system of valeurs mercuriales on imports should be eliminated.

Quantitative Restrictions and Monopolies on Imports

18. It is recommended that import controls and all other quantitative restrictions be removed, leaving only tariffs as the basis for controlling imports and protecting domestic industry. Liberalization in areas where the state has a monopoly on imports is specifically recommended.

Administration of Trade Taxation

19. Two recommendations are made regarding the administration of trade taxation.

(1) Direct Removal of Dutiable Goods: Direct removal of dutiable goods must be strictly governed by the exception principle, and administrative procedures regarding this practice should be tightened.

(2) Prepayment of BIC Based on Imported Goods: The proposal for an advance BIC payment requires further study. Prepayment should be justified strictly in terms of improved collection performance and this, in turn, should be

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judged in light of the new burdens that the resulting increase in effective tax rates would create.

Variable Levy on Commercial Grain Imports

20. It is recommended that a study be undertaken to explore the feasibility of establishing a variable levy on commercial grain imports that would assist in stabilizing cereals prices on the domestic market. It is also recommended that the existing producer subsidy on rice be eliminated.

Elimination of Taxes on Exports

21. It is recommended that all indirect taxes, including export taxes and the CPS, on exports be eliminated. It is further recommended that duty drawbacks be applied to imported raw materials and intermediate goods used in the production of goods that are exported and that tax credits be allowed for the IAS and other indirect taxes paid on pre-export stages of production.

Reduction of CMDT Costs

22. The recommendations of the Cantournet and Waddell report (see Chapter 2) regarding the need for savings in several areas of the CMDT budget are concurred with. In addition, a study should be undertaken to analyze the feasibility of financing CMDT's developmental costs out of the government's general budget rather than by implicitly taxing cotton farmers through the producer price.

Simplification of Livestock Export Procedures

23. Procedures involved in exports of livestock should be restricted to those necessary for animal disease control. A fee should be charged to cover the cost of vaccination and clearance by animal health officials.

Subsidization of Nontraditional Exports

24. It is recommended that a study be undertaken to explore the feasibility of applying a subsidy, based on value added in local production, to nontraditional exports.

Price Reforms Related to Imports and Local Production

25. The following recommendations are offered regarding price policy

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reforms in order to accord equal treatment to imports and locally produced goods.

(1) When and where locally produced goods are subject to price margins, producers should be awarded the same privileges as importers and be exempted from prior official approval for price changes.

(2) When and where applicable, the fixed margin of 10 percent for the distribution of locally produced goods should be abolished. Locally produced goods and imports should be accorded the same distribution margin at the retail and wholesale levels.

(3) When and where prices are controlled, the fixed profit margin of 11.11 percent for locally produced goods should be abolished. Instead, locally produced goods should be accorded profit margins comparable to imports.

In addition, it is recommended that existing price regulations be reviewed periodically for the purpose of reducing the extent of price controls and relying more on market forces to determine prices.

Decontrol of Meat Prices

26. It is recommended that meat prices no longer be fixed at the local, as well as the national, level

Veterinary Service Charges

27. It is recommended that a study be undertaken of experience in recent years with the system of vaccination payment. Out of this study should come specific recommendations for improving the administration of the system, for determining appropriate levels for vaccine charges, and for establishing a distribution of payments between the animal health service, the veterinary pharmacies, private traders, and the Central Veterinary Laboratory.

Responsibilities of OPAM

28. It is recommended that a study be undertaken by the Government of Mali that would analyze the net costs associated with various options regarding the role of OPAM. The study should also evaluate the benefits achieved in relation to costs and the role that food aid would play in implementation.

Taxation of Industrial Activity

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29. The following reforms are recommended regarding taxation of industrial activity.

(1) Taxe sur les Benefices Industriels et Commerciaux (BIC): It is recommended that the government reduce the BIC rate for large firms to 40 percent and for small firms to the 30-35 percent range. It is also recommended that periods of exemptions on profits taxes begin not in the first year of operation but in the first year in which profits are earned or, in the case of reinvestment, in the first year after reinvestment when profits are earned, in order to provide incentives to infant industries.

(2) Impôt sur les Affaires et Services (IAS): It is recommended that the IAS be the main vehicle for differential taxation of products based on essentiality or other criteria. The rates should be the same, however, on imports as on locally produced goods and services. The IAS on capital goods should eliminated.

(3) State-Owned Enterprises: It is recommended that state-owned, mixed, and privately owned enterprises all be taxed on the same basis and at the same rates.

Incentives to Industrial Investment

30. The following are recommended.

(1) In place of import duty exemptions on equipment, raw materials, and other inputs, investment incentives should be focused on moderate import protection as well as profit tax credits and subsidies based on value added.

(2) The award of these incentives should be made as automatic as possible.

(3) Incentives should be awarded to all firms including artisans irrespective of size.

(4) The guarantee of a stable fiscal regime should be limited to 10 years and should be granted to all firms irrespective of size.

A detailed study of these recommendations should be undertaken in conjunction with the study on tariff reform in order to estimate the fiscal implications of both in a combined package. In addition, the study should examine alternatives regarding the phasing of benefits and criteria for eligibility.

FOREWORD

The present document is the final report of a study of incentives requested by the Government of Mali and financed by the United Nations Development Program (MLI/85/005 Fonds d'Etudes), with the World Bank acting as Executing Agency. The study was prepared by Associates for International Resources and Development. Its authors are:

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- Ignatius Peprah, Consultant (Industry Specialist)
- Donald J. S. Brean, Consultant (Public Finance Specialist)
- Carol E. Levin, Research Assistant
- Jennifer Wohl, Research Assistant

The terms of reference of the study called for the elaboration of policy recommendations for the Government of Mali concerning the system of incentives in agriculture and industry in order to increase the efficiency of investment and promote economic growth.

The present report is limited in its scope because of the constraints faced in terms of time and data. The study on which the report is based was conducted over a period of five months, including one month of field work in Mali. From both a methodological and an empirical point of view, the policy recommendations contained herein have a reasonably solid analytical baisis, but the recommendations cannot be considered to be fully elaborated given the very limited time and resources that were available. They should rather be taken as indicative guidelines of the direction to be taken by policy reforms. Several areas, mentioned in the text, will require more in-depth study.

The original version of the final report, which was submitted in October 1986, benefitted from numerous helpful comments on the part of World Bank staff members. This report was substantially revised in March - May 1987, and the revised version is submitted herein.

Somerville, June, 1987

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Many persons in Mali, both in the government and in the private sector, too numerous to be mentioned by name, provided us with help and information. We would especially like to acknowledge the advice and help given by numerous Malians in the Ministry of Industrial Development, the Ministry of Finance, and the Ministry of Planning.

We would also like to thank numerous World Bank staff members who provided us liberally with help and advice throughout the course of this study. Carol Levin and Jennifer Wohl provided most helpful assistance during the whole project. Joseph Richardson and Paul Ouga provided research assistance for the sections on industry. We thank them all.

Finally, we owe a debt of gratitude to Michael Furst, Resident Representative of the World Bank, and to Rachel N'Diaye and the staff of the World Bank Mission for their exceptional support in Bamako.

CHAPTER 1

THE SYSTEM OF INCENTIVES IN MALI

Section 1. INTRODUCTION

Mali is currently undertaking a series of important reforms designed to achieve macroeconomic stability and structural adjustment of the economy. Many of these reforms involve changes in the structure of incentives that face producers and consumers. If these reforms are to be effective, it is important to understand the existing system of government imposed policy incentives in relation to Mali's comparative advantage and whether these incentives do or do not contribute to economic efficiency.

Chapter 1 of this report describes the system of policy incentives that currently exists in Mali. The first section of the chapter presents a brief overview of the main features of the Malian economy. The second section gives a detailed description of the incentive system. This system comprises three categories of policy measures:

(a) financial policies, such as tariffs and taxes, that affect incentives to producers and consumers through the pricing system;

(b) direct allocation mechanisms, such as import licensing, that affect incentives via the quantitative allocation of resources;

(c) other incentives that distort prices, such as de facto or de jure state or private monopolies and investment code exemptions on a case-by-case basis.

The impact of this system of incentives on the main productive sectors of the Malian economy, agriculture and industry, is analyzed in Chapter 2 in order to formulate recommendations for economic policy reform that will increase the efficiency of investment and promote economic growth. These reform measures, which are summarized in the final chapter, aim to improve the efficiency of the price system and the allocation of resources by simplifying the structure and administration of tariffs, by eliminating export taxes and quantitative restrictions on imports, by reducing differential taxation and subsidization, and by improving the efficiency of the fiscal system.[1]

[1] For a wider discussion of these issues, see Stanley Fisher, "Issues in Mediur term Macroeconomic Adjustment," The World Bank Research Observer, 1(2), July 1986, p.175.

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Section 2. OVERVIEW OF THE ECONOMY

The economy of Mali was periodically characterized during the two decades following independence in 1960 by severe economic and financial problems. External and internal factors contributed to low rates of output growth, inflationary pressures, a weak external position, and an accumulation of domestic and foreign payment arrears. With a structure of international trade characterized by exports of agricultural products with little or no transformation (cotton fiber, for example, represents 34% of total exports) and an environment of recurrent drought and low agricultural prices on the world market, Mali's balance of payments on current account was persistently in deficit. Additional factors contributing to the poor performance of the economy included an overly ambitious public investment program, a comprehensive system of price controls, substantial losses in the large public enterprise sector, and rising current government expenditures in the face of stagnant revenues. These led to budgetary deficits, which forced the government to borrow heavily in both the domestic and external markets.

In 1980 and 1981, the government took steps to improve the deteriorating economic situation. Among actions undertaken were a number of supply and demand-oriented measures designed to reduce underlying economic and financial imbalances. The marketing system for coarse grains was liberalized, official agricultural producer and retail prices were raised, attempts were made to rehabilitate key public sector enterprises, financial management was strengthened, and domestic and external arrears of the public sector were reduced. In spite of the adverse effects of severe drought, some progress was achieved, but structural bottlenecks and distortions continue to restrain economic activity.

A. The Agricultural Sector

The agricultural sector, including livestock, plays a dominant role in Mali's economy, accounting for 57 percent of GDP and employing 86 percent of the labor force in 1980. Agriculture in Mali consists of the production of basic food crops, such as millet, sorghum, maize, and paddy, and the production of export crops, such as cotton and groundnuts.

Although incentives in agriculture result partly from the overall system of incentives described in Section 2 of this chapter, specific policies have also evolved in ways that distinguish agriculture from the rest of the economy. These policies and their evolution are described here.

Cereals

Government policies affecting cereals have varied considerably over the past 20 years. Early emphasis after independence was placed on mobilizing the rural population through collective cultivation and marketing

rather than using price incentives to encourage farmers. The government reduced official crop prices for producers below levels that prevailed at independence. Farmers were obliged to sell quotas of production at artificially imposed prices. State trading monopolies were granted statutory control over the distribution and marketing of basic commodities. OPAM, the state grain marketing board, was established in 1964 with monopoly powers. With these policies, the state hoped to appropriate commercial profits in order to lower consumer prices and finance public expenditures for development.

Political mobilization of the rural population proved unsuccessful in counteracting the effects of the dramatic decrease in real prices received by producers between 1960 and 1967. Production stagnated and severe shortages developed. In 1968, a new government came to power, which pursued a more liberal policy towards private merchants. In early 1969, the monopoly of OPAM was abolished and official producer prices were increased in order to provide greater incentives for production. OPAM began to use private traders as buying agents, but there was little incentive for traders to deliver grain to OPAM since official buying prices were below market prices. Later the same year, the state grains monopoly was reinstated.

Despite its objectives, OPAM was unable to mobilize a sufficiently large supply of grain to satisfy consumers at low official retail prices. A parallel market developed in which prices were 25 to 100 percent higher than official prices. Private grain traders were able to pay higher producer prices to farmers than OPAM, thus reducing the quantity available for official purchases, which were only 20 to 40 percent of total marketings. Not having enough grain to supply all consumers at official prices, OPAM was forced to ration its limited supplies to targeted consumers, mostly in urban areas.

During 1972-74, the Sahelian drought drastically reduced food production, leading to large inflows of food aid and commercial imports. OPAM incurred important financial losses arising from the need to subsidize imports for sale at low official prices at the same time that world market prices were at a historical peak. Between 1972/73 and 1974/75, OPAM's losses amounted to almost 10 billion CFAF. After the drought, official producer prices were significantly raised without commensurate increases in official consumer prices. This pricing policy left OPAM with further financial losses as it was responsible for subsidizing the difference between purchase and selling prices without adequate transfers from the central government.

The persistent large market distortions, OPAM's financial deficits, growing difficulties in financing these, poor production performance, and growing dependence on imports led to a reform of grain pricing and marketing policy in 1981. The reform program for cereals marketing, which continued through 1986, was supported by the Cereals Marketing Restructuring Program (PRMC). The objectives of this program were: (1) to liberalize Mali's

cereals trade and to allow private traders to operate, (2) to eliminate the operating deficits of OPAM, and (3) to promote food production by increasing official producer prices.

Under the PRMC, official producer prices were to be raised and cereals marketing was to be fully liberalized by December 1986. In 1981, the domestic grain trade was opened to licensed merchants, who were permitted to engage in the importation and marketing of coarse grains. In 1985, private traders were also authorized to purchase paddy in Operation Riz Mopti, after farmers had fully paid their fees and reimbursed credit. In 1985/86, decontrol of paddy marketing in the Office du Niger was initiated, and by 1986/87 the paddy market was completely liberalized.

Mali's cereals policy has over the years been accompanied by stagnation in production. The aggregate index of agricultural output (base 1969-71=100) was 87 in 1960, increased slightly during the 1960s, fell to 84 during the 1973 drought, and recovered during the latter part of the 1970s to reach an average of 130. It fell, however, from 126 in 1979 to 98 in 1980. After a sluggish recovery in 1981, it fell again during the 1982-85 period.[2]

Cereals production in recent years has fluctuated between an estimated 0.7 million tons during bad harvest years (1984/85) and 1.1 million tons during good years (1985/86). On a per capita basis, this translates into approximately 90 kg/year in 1984/85 and 150 kg/year in 1985/86. Demand for cereals is not known exactly, but domestic requirements for human consumption are estimated at 167 kg/year/person.[3] This indicates the extreme instability of production in relation to requirements, due in large part to agroclimatic conditions, and suggests the need to use imports to regulate the market and assure adequate supplies of cereals to consumers, especially in poor years.

Export Crops

Cotton is Mali's major export crop. It is produced in the south of the country and is managed by a semi-public enterprise, the Compagnie Malienne pour le Développement des Textiles (CMDT). CMDT provides inputs and extension services to farmers, purchases the seed cotton from them, gins the raw cotton, and delivers the fiber to SOMIEX, the state trading company, which until August 1986 had a monopoly on lint export services. CMDT now exports directly. Export revenues from cotton in Mali support the entire range of CMDT activities and are part of the net cash flow to the Treasury.

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[2] Based on FAO and World Bank sources, from Lecaillon and Morrisson, Politiques Economiques et Performances Agricoles: le Cas du Mali, OECD, Paris, p.23.

[3] Domestic requirements estimates are from OPAM/PRMC.

Thus the tax on Malian cotton producers is considerable when world prices are favorable.

In a reform introduced in 1983, a price stabilization fund (Fonds de Garantie) for producers was established. Surpluses from export operations were used to replenish the fund, and the remainder was transferred to the Treasury.[4] Previously, profits had been absorbed by SOMIEX to finance subsidies on consumer goods. Under the new system, the official price schedule (bareme) [5] for cotton production and marketing was rescinded, and CMDT and SOMIEX were remunerated on the basis of actual costs.

As a result of high fixed costs, the cotton sector's net surplus is extremely sensitive to world price fluctuations and to the size of the cotton harvest. As world prices plummeted in 1985 and 1986, serious questions were raised concerning Mali's comparative advantage in cotton. This issue is dealt with in Chapter 2.

Groundnuts are cultivated in the southern and western regions of the country. The agency responsible for extension services, credit, distribution of inputs, and purchases of output is the Office du Développement Integré de la Production Arachidière et Céréalière (ODIPAC). Since the mid-seventies, area planted, production, and marketing have declined steeply. In 1978/79, direct exports of groundnuts ceased altogether, the marketed volume being hardly sufficient for the SEPAMA mill, which exports unrefined oil.

While poor weather has been blamed for part of this decrease, other factors also explain the overall decline during this period. One was the substitution of cereals for groundnut production as cereals prices on the free market remained high throughout the 1970s. Furthermore, in addition to ODIPAC's inadequacy in providing the necessary inputs, marketing, and extension services, it also suffered from accumulated debts and lacked the funds for crop purchases. Increased domestic consumption of groundnuts also explained part of the decline in marketed production. In addition, groundnuts exports were caught in a squeeze between a stagnating world market, due to changes in European cooking oil tastes, and increasing domestic costs. During the 1970s, rising food prices, domestic inflation,

[4] For a summary of the accounts of the Fonds de Garantie, see DSRP, Etude sur l'Avenir de la Filiere Coton, Phase 1, May 1986, p.39.

[5] Baremes are ex ante cost reimbursement schedules prepared for major crops. These detail the producer price, plus all intervening processing, marketing, and transportation costs, as well as margins and levies, to the final point of distribution (either an estimated FOB export price or a local retail price).

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and the increasing cost of transport, insurance, and handling all severely eroded the competitiveness of local groundnut production. *

Some efforts have been made to revive groundnuts through improved extension services for seeds, equipment, and inputs. ODIPAC offered farmers 50 CFAF per kg in 1984/85, and, as a result, production increased by 43 percent. Further increases were expected in 1985/86. It is unclear, however, whether Mali can profitably grow groundnuts for export given current and projected world market conditions.

Livestock

The livestock subsector in Mali contributes approximately 18 percent of GDP and, after cotton, is the second most important source of export earnings. During the past two decades, however, the subsector has been seriously buffeted by recurrent drought. Partly as a result, the total national herd is today below its potential with respect to both size and productivity.

The government is severely handicapped in its ability to intervene in the livestock subsector. Many herders are nomadic or semi-nomadic and move their animals frequently in response to spacial and temporal variations in rainfall. Population density is low, especially in the pastoral zone, raising the cost of veterinary and extension services. Finally, there are extensive movements of animals across national frontiers, which complicate health control and make it difficult for the government to recover trade taxes or gain access to foreign exchange from livestock exports.

In the face of these difficulties, and given the very meager financial and managerial resources available to it, the government has most effectively intervened in areas where there is a clearly defined public need. An example is the annual rinderpest vaccination campaign. This was started during the mid-1960s as part of Joint Project 15, a regional effort to bring rinderpest under control. It is now the responsibility of the animal health service and is fundamental to protecting the herd against this highly contagious disease. There remain substantial questions, however, as to the extent to which the vaccines and other costs of the campaign should be paid for by livestock owners or out of public revenues.

Another key issue in the livestock subsector is that of its taxation. The most important contribution made by the subsector to the budget is through the livestock tax, a head tax on the number of animals of different species. There are also slaughter taxes, fees for marketing patents and licenses, a tax on commercial profits, and health inspection fees. The multiplicity of taxes and fees, together with the complexity of

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* See World Bank. Mali: Agricultural Sector Memorandum, 1979.

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administrative procedures, acts strongly to discourage the legal exportation of live animals to neighboring countries.

A third important policy issue is the fixing of government controlled meat prices in the face of an essentially free market for animals. Given rigidity in changing official meat prices and volatility of livestock prices, a serious misallocation of resources occurs when excess supply and demand for meat cannot be reflected in price movements.

B. The Industrial Sector

Industry was practically non-existent in Mali at the time of independence. The small modern industrial sector, built on the basis of import substitution of manufactured goods and the processing of primary products (notably agricultural crops and livestock) mostly for local consumption, dates from the first five-year development plan (1961-1965). At that time, the desire to create conditions for rapid industrialization, the absence of private entrepreneurs, and the orientation towards a planned economy resulted in large public sector involvement in industry. The industrial sector grew substantially during the 1960-1970 period, but the pace could not be sustained as a leveling of the growth rate occurred between 1970 and 1980. Since 1980, industrial growth has once more accelerated, attaining 26% in 1984.[7]

The modern industrial sector now comprises around 145 firms, with about 60 percent concentration in Bamako. Tables A.24 and A.25 in Annex A present data, taken from the 1982-83 industrial census, on industrial firms by sector of activity and by ownership. The enterprises may be divided as follows: public enterprises (20 percent, of which 26 percent are in Bamako), mixed public and private enterprises (23 percent, of which 46 percent are in Bamako), and purely private sector enterprises (57 percent, of which about 80 percent are in Bamako).

Firms with one hundred percent foreign ownership account for about 12 percent of the total number of firms, while firms with foreign-Malian joint-venture ownership account for another 12 percent. Firms with 100 percent Malian ownership (public or private) comprise about 76 percent of the total number of enterprises.

Industry employs about 15,000 people out of a total labor force of about 3.5 million. Public enterprises provide 52 percent of industrial jobs, while mixed public and private enterprises provide another 29 percent. The private sector accounts for the remaining 19 percent of industrial employment. Restructuring of the public sector, however, is expected to reduce considerably public enterprise employment. The artisanal sector accounts for much of employment and income, both in rural and urban

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[7] See IMF, Recent Economic Developments, March 1986, p.61.

areas, where there are more than 100,000 artisans involved in small-scale productive activities.

Total industrial output is on the order of 120 billion CFAF, representing 11 percent of GNP, while manufactured output comprises 5 percent. The processing of agricultural primary products is predominant, which explains the importance of the food and textile industries. The mechanical engineering industry is still in its infancy. The country has one plant producing tools and small farm machinery.

The difficulties which the manufacturing sector confronts include the interior location of the country leading to high costs of imported inputs, a lack of infrastructure (roads, electricity, etc.), the vagaries of the agricultural sector supplying industrial plants with inputs, an unskilled labor force, the extremely competitive international environment, a lack of working capital, the slowness of the government's administrative processes, and the long borders that allow easily smuggled imports to compete with local production. Internal saving is also minimal and is mainly invested in commercial activities.

Section 3. THE SYSTEM OF INCENTIVES

Investment and production incentives derived from public policy are provided through a number of instruments, notably the investment code, the tax code, public investment in infrastructure, import and export policies, price policies, subsidies on inputs, wage policies, credit allocation, interest rate policies, the exchange rate, and monetary policies. These policy instruments influence investment decisions and production levels by affecting output prices, as well as the cost and availability of factors of production and intermediate inputs.

Mali's system of incentives is described below by type of incentive, namely policies affecting foreign trade (tariffs, quantitative restrictions), price controls, tax exemptions and subsidies, and investment policies. As much as possible, a distinction is made between those aspects of the incentive structure under the direct control of the government (e.g., fiscal duties and taxes) and those that are not under the direct control of the government because of regional agreements (e.g., exchange rates and interest rate policies). In focusing on the principal elements of the incentives system, this section touches upon some institutional factors that affect the pricing of capital, labor, and other inputs, but the focus is on policy, not institutional, reform, even though institutional changes may contribute to improved utilization of Mali's productive capacity and may be a necessary condition for the efficient operation of the price system.

A. Trade Policy Instruments

Tariffs and Import Taxes

Local production is highly protected, mainly by tariffs and, in some instances, by important non-tariff restrictions on imports. A comparison of tariff rates (pression fiscale) between Mali and its neighbor, Senegal, for instance, shows that the level of nominal tariffs is much higher in Mali (see Table A.15 in Annex A).

Mali's tariff structure, inherited from the former Afrique Occidentale Francaise, is also more complex than is that of other francophone West African countries. The droit de douane (DD) is the basic customs duty on which preferences are offered. It is supplemented by the droit fiscale d'importation (DFI), which is the consolidated fiscal import tax, and the impôt sur les affaires et services (IAS), which has an equivalent on locally produced goods and therefore is, strictly speaking, not an import duty.

During the 1960s, a multiplicity of tariffs was created in Mali as new duties were added for particular fund raising purposes. A 1968 reform consolidated these new duties into a single fiscal import tax and returned the tariff to its original three column structure. Since 1968, however, new taxes have been created, introducing greater complexity once more into the tariff structure. These include the taxe Office de Stabilization et de Regularisation des Prix (OSRP), established in 1972, and the contribution pour prestations de services particuliers rendus à l'importation (CPS), established in 1975 to be used in the servicing of the country's external debt. There is also the impôt special sur certain produits (ISCP), sometimes called the taxe locale (TL), which is applied to the importation and local production of products such as alcoholic and non-alcoholic beverages, tobacco, soft drinks, tea, sugar, milk, salt, petroleum products, and ammunitions.

Of the five or so main duties on imports, the droit de douane (DD), the droit fiscale d'importation (DFI), and the taxe OSRP are considered as external taxes, i.e., as tariffs set up normally to regulate external trade. When there are any international negotiations and agreements with regard to tariff preferences, these are the duties that are affected. The impôt sur les affaires et services (IAS), the contribution pour prestation de services particuliers rendus à l'importation (CPS), and the taxe locale (TL), are actually interior taxes even though they are applied at the border. They are not included, therefore, in any international negotiations and accords with regard to tariff preferences. It is mainly to facilitate the administration of the tax collection process that these taxes are collected at the border.

Duties payable on imports are differentiated by two major sources: imports from the CEAO (Communauté Economique de l'Afrique de l'Ouest) and imports from the pays tiers (countries other than CEAO countries). Apart from a relatively small number of products (68 out of 4,300 product categories -- mostly powdered milk, wheat, flour, sugar, salt, and pharmaceutical products), EEC countries are not distinguished from the pays tiers with regard to tariff rates. This report therefore adopts the Direction Nationale des Douanes usage of the term pays tiers to include EEC

countries except where specified. Imports from the pays tiers generally have higher tariff rates than comparable products from the CEAO.

Under the CEAO agreement, unprocessed products such as livestock, grains, lumber, coffee, fruits, and artisanal products are exempted from import duties, defined so as to exclude interior duties collected at the border. Industrial products are categorized into produits agrées à la taxe de coopération regionale and produits non-agrées à la taxe de coopération regionale. The former include products that have been submitted to and approved by the Council of Ministers of Finance and Commerce of the CEAO. Each country in the region then sets a reduced tariff rate for the approved products after taking into account the level of development in the exporting country relative to that of the importing country, as well as the relative cost of production of the product in both countries . For the produits agrées, the droit de douane, the droit fiscal d'importation and the taxe OSRP are replaced by a taxe de coopération regionale (TCR) at a reduced rate lower than the sum of the DD, the DFI, and the OSRP. For the produits non-agrées only the droit de douane is exempted. All other duties paid on imports from the pays tiers are applied.

Table 1 gives a summary of the various duties on imports. Tables A1-A3 in Annex A set out the basic structure of import taxes for selected products from the pays tiers (Table A1) and the CEAO (Table A2). Products from the CEAO are grouped into produits agrées and produits non-agrées (Table A3).[a]

Tariff Rates

The droit de douane (DD), with the exception of a few products such as diesel fuel, gasoline, and sugar, must be paid on all imports from the pays tiers (including EEC) at 5 percent. As mentioned earlier, the DD is exempted for all produits non-agrées from the CEAO, whereas for produits agrées both the DD and the DFI are replaced by the taxe de coopération regionale (TCR) at a rate lower than the DD and the DFI combined.

The droit fiscal d'importation (DFI) ranges from zero to 100 percent. For most goods, however, it tends to be between 20 and 45 percent. Products

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[a] Preferences exist for ECOWAS (BEDEAO) countries in the tariff code of Mali but these have not yet been applied. Under the ECOWAS treaty, the countries were expected to initiate progressive liberalization of their tariff rates over a period of 12 years after a period of delay. The sixteen ECOWAS countries were divided into three groups. The delay period for countries in the first group (e.g., Ivory Coast, Ghana, Nigeria, Senegal) was 4 years. That for countries in the second group was 8 years. The least developed countries in the region, which include Mali, were supposed to start reducing their tariff rates after 12 years delay. If this treaty had been adhered to, Mali's DD, DFI, and OSP would have been reduced gradually to zero within the ECOWAS zone.

like matches and ammunition have a DFI rate of 80 percent, while the DFI rate for alcoholic drinks is 100 percent.

TABLE 1
Summary of Import Duties, 1986

Type of import duty	Single Rate	Multiple Rates Minimum	Maximum	Average
Droit de Douane (DD)	5%			
Droit Fiscal d'Importation (DFI)		0%	100%	30%
IAS at border	reduced 11.1% normal 25% majoré 66.6%			
Taxe de Coopération Régionale (TRC)		0%	79%	20%
Contribution pour Services Rendus a l'Importation (CPS)				
. on petroleum products	3%			
. on other products	5%			
Impôt Spécial sur Certains Produits (ISCP), or Taxe Locale (a)				
examples: sugar		20CFAF/kg	25CFAF/kg	22.5 CFAF/ka
salt	7.5 CFAF/kg			
tobacco	78%			
milk powder	55 CFAF/kg			
beer	43%			
soft drinks		2.5CFAF/l	CFAF/l	2.9 CFAF/l
fuel		5 CFAF/l	18.5CFAF/l	9 CFAF/l

SOURCE: Compiled from tariff code.
NOTE: (a) See complete list in Table A.6.

The <u>impôt sur les affaires et services</u> (IAS) is a kind of sales tax and is levied at three rates for imports. Most imports have a rate of 25 per cent, resulting in a 5 percent rate of protection over equivalent locally produced goods, the IAS on all local goods being 20 percent. Some

essential goods (e.g., rice, sugar, flour, canned milk) have a reduced IAS rate of 11.1 percent, while on some luxury goods (e.g., cigarettes, wines and spirits) the IAS must be paid at an increased rate of 66.6 percent. The dutiable value for the IAS on imports is the border value (valeur en douane), plus the droit de douane and the droit fiscale d'importation.

The rate for the contribution pour prestation de services particuliers rendus à l'importation (CPS) is 5 percent for all imports. The taxe Office de Stabilisation et de Regularisation des Prix (OSRP) is a specific tax presently fixed at 5 CFAF per kilogram net. The impôt spécial sur certains produits (ISCP) is paid on alcoholic and non-alcoholic drinks, tobacco, soft drinks, tea, sugar, milk, salt, petroleum products, and ammunitions. Both imports and locally produced items are affected.

Variance in Tariff Rates

Total import duties, indicated by the pression fiscale, have a high variance, as shown in table 2.[9] For imports from non-CEAO countries, the range is from 5 percent (fertilizer) to 297 percent (alcoholic beverages). Cereals, concentrated milk, and some live animals have low tariff rates between 5 and 10 percent. The rates on industrial inputs such as plastic, wood, iron, and steel are 30-40 percent, while industrial products such as roofing have rates of 40-50 percent. The tariff protection on most live animals, fish, tea, fruits, and precious metals are 60-80 percent. The tariff protection on butter, cheese, other milk products, and sardines is within the 86 to 92 percent range. Meat, vegetable oils, and other food products have tariff rates of 90-100 percent.

For imports from the CEAO, the pression fiscale for produits agrées ranges from 5 percent (fertilizer) to 102 percent (cigarettes). With regard to the produits non-agrées, the lowest rate is 11.1 percent (salt) and the highest rate is 288 percent (whisky).

Considering only ad valorem import duties on external trade (DD and DFI),[10] the tariff rates for products from countries other than the CEAO range from zero (fertilizers) to 105 percent (alcoholic beverages). Most of the products (2843 out of 4261 items) fall between tariff rates of 25 and 55 percent, with a median of 35 percent. For imports from the CEAO, duties on external trade (DD and DFI) range from zero percent (fertilizers) to 100 percent (whisky).

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[9] See Annex Tables A1 to A5 for more detailed data.

[10] The ISCP includes many goods with specific rates (see Table A6 in Annex A).

TABLE 2
Total Nominal Tariff Rates (Pression Fiscale)
Non-CEAO Countries

Product	Rate (%)
Fertilizer, live animals (cattle), cereals (maize, rice)	5-10
Books	11-15
Concentrated milk	16-20
Cereals (millet, sorghum), plastic materials	21-29
Shellfish, cereals (paddy), wood, steel, iron	30-39
Plastic articles, roofing	40-49
Whole milk, flour	50-59
Live animals (goats, donkeys), dried fish, vegetables, cereals, (rye, barley), coins, tea, coffee, spices, oilseeds and fruit	60-69
Fresh Fish, fruits, precious metals	70-79
Dairy products, meat preparations, canned fish	80-89
Meat, vegetable oils, food products, cocoa	90-99
Liver, fats, alcohol, perfume	100-112
Alcoholic preparations	130-179
Fermented beverages	200-229
Tobacco	291
Alcoholic beverages	297

SOURCE: Tariff code.

Criteria for Determining Tariff Levels

The criterion of essentiality seems to have provided the main guideline in the determination of tariff levels, although some of the levels seem arbitrary. Essential consumer products generally have the lowest tariff rates. Low nominal tariff rates on essential and other basic consumption products are further decreased by the use of valeurs mercuriales that are significantly below market prices. Equipment, raw materials, and other industrial inputs come after these essential goods. With a view to protecting local industries, goods similar to locally produced products are generally accorded high tariff rates. Protection of local industries is further supported by import restrictions. Finally, luxury goods and alcoholic beverages have the highest tariff rates.

Valeurs Mercuriales

Like its CEAO neighbors, Mali uses the system of valeurs mercuriales for certain imports subject to ad valorem duties as a means of lowering the effective tariff rate. Table 3 provides data on the extent of undervaluation of selected products through the system of valeurs mercuriales. This system is also a means of combatting false invoicing of imports and exports.

Table 3
Ratio of Valeur Mercuriale to CIF Price
for Selected Products in 1986

Concentrated Milk	.27
Sugar (in cubes)	.97
Sugar (powdered)	.73
Tomato Paste	.36
Textiles (printed)	.35
Textiles (popeline)	.25
Cement	.14
Iron roofing	.51
Gasoline	.29
Fuel	.32

SOURCE: Data provided by the Direction Nationale des Douanes

The legal definition of customs value in Mali is the Brussels definition, which essentially refers to the price of the good as traded in the open market (Customs Code of Mali, Article 27). To apply this principle, it would be necessary to have information on comparable foreign trade transactions since prices are in constant flux. In practice, however, duties, tariffs, and taxes paid on goods that are "mercurialized" are determined on the basis of administratively set prices, valeurs mercuriales or valeurs indicatives, as opposed to market valuations. Valeurs mercuriales are set by a joint committee made up of representatives of the customs directorate and the private sector, whereas valeurs indicatives are set unilaterally by the directorate. Whether they are mercuriales or indicatives, these official values are always the obligatory basis of

tariff calculation regardless of the real market value of the transaction.[11]

Table 4 shows the evolution of valeurs mercuriales for a sample of products for the period 1972 to 1986. Table A7 in Annex A shows the evolution of valeurs mercuriales for a larger number of product categories. Those tables demonstrate the "stickiness" of valeurs mercuriales, which are always significantly below market prices. The merchandise subject to valeurs mercuriales represents close to one-third of the total volume of imports.[12]

Import Smuggling

Because of its long borders with neighboring countries, Mali has traditionally experienced significant smuggling that is a function of tariffs, direct trade controls, and the high cost of local production. It is also encouraged by the complex administrative procedures required before exporting. Smuggling is conducted from urban areas close to the borders, rather than directly from Bamako. The merchandise, however, is often shipped to Bamako under the guise of locally produced goods. The BCEAO evaluates import smuggling at 30 to 40 percent of the total value of imports. Smuggling does not occur on a large scale for bulky, low value goods such as cigarettes, matches, radios, spare parts, vehicles, textiles, sugar, salt, milk, soap, oil, and flour. A distinction is made between contrebande noncontrolée, which is associated with traditional channels of trade that long pre-date the Malian frontier, and contrebande controlée. The latter may be divided into smuggling outside border posts, smuggling through official bribery, and "technical" smuggling (fraud) in the form of falsely declared import prices.

Exemptions from Import Duties

A large number of enterprises in Mali have benefitted from exemptions from import duties on capital goods, raw materials, and other inputs either because of their investment code status or, in the case of public

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[11] In contrast, other West African nations that use the valeurs mercuriales system are not so rigid in their application. For example, in Niger, Senegal, Côte d'Ivoire, and Burkina Fasso, the real cost + insurance + freight value must be declared if it is higher than the valeur mercuriale. This in effect makes the valeur mercuriale a minimum value for important groups of products.

[12] The items included in the list of valeurs mercuriales fall into the following categories: food, live animals and fish, petroleum products, textiles (threads, cloth, garments), and construction materials.

TABLE 4
Evolution of Valeurs Mercuriales for Imports
of Selected Products
(CFAF francs)

Product	Unit	1972-1976	Jan 1977	Jan 1978	Aout 1978	Fev 1980	Oct 1980	Jul 1981	Mar 1982	Nov 1984	Jul 1985	Mar 1986
Whole Milk	1/2 kg		30	30	30	40	40	40	40	40	65	65
Powerdered milk	1/2 kg	1972-1973=55 1975-1976=55	55	55	55	65	65	65	65	65	65	65
Powdered or granulated sugar	kg	1975-1976=90	90	90	90	90	90	90	90	150	150	150
Sugar cubes	kg		85	85	85	85	85	85	85	250	250	250
Tomato paste and concentrate	kg	1974=125 1975-1976=100							125	165	165	180
Instant coffee	kg									1,500	1,500	1,500
Cement	ton	1972-73=12,500 1975-1976=5,000	5,000	5,000	3,500	3,750	3,750	3,750	3,750	3,750	3,750	3,750
Gasoline	ton	1972-76=3,600	4,250	4,250	4,250	55,000	55,000	55,000	55,000	55,000	55,000	55,000
Diesel oil	ton	1972-76=3,600	3,500	3,500	3,500	49,200	49,200	49,200	49,200	49,200	49,200	49,200
Fuel oil (light)	ton		3,250	3,250	3,250	53,000	53,000	53,000	53,000	53,000	53,000	53,000
Fuel oil (heavy)	ton		2,000	2,000	2,000	52,000	52,000	52,000	52,000	52,000	52,000	52,000
Cloth	ton	1974-1975=400		1,200	675	1,100	600	625	900	650		687.5
Tubes	unit									140	140	155
Roofing	kg		150							135	135	150
Iron rods	kg									85	85	95
Live Animals												
cattle.	head		50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
sheep	head		75,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000

SOURCE: Annex Table A-7.

enterprises, as a result of more informal exemptions. For example, the full import duty (including IAS) on machinery from the EEC would be in the range of 40-50 per cent, but enterprises accorded Regimes A or B status under the investment code are exempted from duties on the importation of machinery, materials, and spare parts for a period of 3 years. In addition, there are exemptions from import taxes on raw materials under the new Investment Code (Loi 86-39, Décret 93 of March 1986) as follows: 100% for the first 5 years, 66% for the following 2 years, and 35% for the eighth year. Enterprises accorded Regime B status are also guaranteed a stable tariff regime for a maximum duration of 20 years (which can be prolonged for 5 more years). Regime C enterprises enjoy up to 2 years of exemptions from import duties on raw materials and other inputs, as well as exemptions for the importation of equipment and spare parts.[13]

Quantitative Restrictions

Quantitative restrictions on imports create protection for domestic industry resulting in considerable incentives for investment and production over and above those created by tariffs. Controls are applied to imports from all sources, except possibly the CEAO.[14]

A recent government decree (Decret 33P6-RM, February 13, 1986) classifies all imports under one of three regimes depending on the extent of controls. This decree includes some important elements of liberalization. Imports of items under Regime A (foodstuffs and other basic necessities, as well as imports from the CEAO) are liberalized to the extent that they are not to be subject to any quantitative or value restrictions and require only an import certificate, which, according to Decree 33P6-RM, must be granted automatically. Imports under Regime B (including luxury consumer goods and products that compete with local production) are subject to quotas and require an import license. Quota setting is based on factors such as the requirements of the economy, the need to respect international accords, and the desire to protect infant industries. Items under Regime C are subject to prohibitions for reasons of security, public health, and other government concerns. While this new decree appears to signal a move towards a more liberal import policy environment, to the extent that it eliminates most

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[13] A definition of regime status and a more detailed discussion of the investment code is given below.

[14] Officially, governments are not supposed to prohibit imports from other CEAO countries, but these official rulings are sometimes not respected. For example, the government of Mali has on a number of occasions protested against administrative and other barriers mounted by the government of Senegal.

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import monopolies by government agencies (such as SOMIEX) and extends the list of products under the liberalized regime, a regime of liberalized imports already existed under the 1977 import licensing system but in practice import quotas were the rule.[13]

Import-Export Program

All legal imports into Mali enter under an annual import program, called the Programme IMEX. This program is determined by the Ministry of Finance and Commerce, Direction Nationale des Affaires Economiques (DNAE), within an overall value ceiling for imports broken down by major trade categories, on the basis of the demands of those entitled to import (licenced merchants, industrial and other private users of imported inputs, state enterprises, and government).[14] The resulting import quotas established for each user consist of overall value ceilings. There are no restrictions by source of supply or by type of product. Actual import transactions, which are debited against this quota, require specific import licenses, which allows the Ministry of Commerce to check that importers are importing products consistent with the nature of their businesses.

While import licensing and controls tend to restrict imports, industrial enterprises, both public and private, do not appear to face significant constraints in obtaining inputs under the import program. This may be partly because lack of working capital limits the raw materials and other inputs that merchants and industrial enterprise are able to import.

Import Monopolies and Protection of Domestic Industry

Since the beginning of the 1980s, there has been a progressive elimination of import monopolies by public enterprises. Presently, the only official import monopoly is held by SONATAM. This cigarette producing public enterprise has a monopoly on the importation of cigarettes and matches.

Until recently, SOMIEX had a monopoly on the importation of articles de première nécessité: sugar, flour, salt, milk, tea, and cement. OPAM had a

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[13] The import licensing system introduced in 1977 distinguished 5 categories: (1) imports subject to quotas and requiring import license (Regime A), (2) imports admitted freely and requiring only an import certificate (Regime B), (3) imports without settlement in foreign exchange (Regime C), (4) imports by government monopolies (Regime D), and (5) imports subject to special prohibitions for reasons of security, public health, etc. (Regime E).

[14] Direction Nationale des Affaires Economiques, Rapport de Presentation du Programme d'Importation et d'Exportation de l'Annee 1986.

monopoly on imports of rice and coarse grains. SOMIEX and OPAM monopolies, however, have now officially been completely eliminated.[17] While the major aim of these import monopolies was to control distribution, they also had regulatory effects in those cases (sugar, tea, rice, and cement) where there was competition between imports and local products.

Indeed, import controls to protect domestic production have been part of government policy since the early years of industrialization in Mali. During the '1960s, as a handful of new manufacturing enterprises was set up, a number of items appeared in import regulations or price control decrees restricting or banning certain imports. Since then, the control of imports competing with local production has expanded with the growth of local industry and is now widespread. While controls were originally justified as a means of protecting infant industries, they have never been removed. No specific lists of import prohibitions exist.[18] In actual practice, however, the Ministry of Commerce simply does not issue import licenses covering those items where local capacity is sufficient to meet the needs of the market.[19] The only competing imports officially permitted are those where local capacity is insufficient (e.g., shoes competing with TAMALI output, cigarettes competing with SONATAM) to satisfy demand and where there is a desire to reduce smuggling.

Export Duties

Exports are subject to three major taxes. A taxe d'exportation (TE), a contribution pour prestation de services particuliers rendus à l'exportation (CPS) of 3 percent on all exports, and a taxe conjunctuelle on certain

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[17] As part of the on-going Stand-By Agreement with the International Monetary Fund, the monopsony position of SOMIEX was abolished on March 1, 1986. The monopoly position that it held on four articles de première nécessité was officially abolished on August 1, 1986, though it continues to remain in effect de facto.

[18] Under article 22 of the new Decree 33PG-RM, the Minister of Commerce can prohibit imports of specific products. Some firms are protected de facto. Grands Moulins du Mali, for instance, holds a de facto monopoly on flour production since no licenses to import wheat are given to other mills.

[19] The effectiveness of this control was apparent from the survey conducted for this study. Firms were confident that no official imports were being permitted for some products and that quotas existed for others.

products.[20] A taxe Office de Stabilisation et de Regularisation des Prix (OSRP) was reintroduced in 1972 on the export of two agricultural products -- cottonseeds and unrefined oil. This tax, however, does not appear in the new tariff nomenclature. Export taxes for some major export products are provided in Table 5 below.

The taxe conjoncturelle is levied when the international price of the good for which it is applicable is high. It is not levied when prices are low. Unlike the taxe d'exportation and the CPS on exports, which are based on the value of exports, the taxe conjuncturelle is applied on profits made during the period the international prices are deemed to be high.

The TE and the OSRP tax on exports are external taxes. The CPS and the TC, on the other hand, are considered as interior taxes. Thus if there are any trade preferences to be negotiated between countries, it is the taxe d'exportation and the OSRP tax on exports that are affected. Trade preferences in Mali, however, have not involved export taxes.

While export duties are disincentives to exports, incentives in favor of exports to the CEAO countries exist in the form of reduced import duties in the importing countries.[21] The taxe de cooperation régionale (TCR) on produits agrées is supposed to be paid by the exporting country to the CEAO. From the total amount collected, the CEAO pays two-thirds to the importing countries, and the remaining one-third is put into the Fonds Communautaire de Développement (FCD) to be used partly to finance projects in the CEAO community and partly to augment contributions by the states for the administration of the CEAO. In practice, however, the exporting countries have not been paying the TCR to the CEAO to the full extent that it has been collected. Exemptions on produits du cru and produits de l'artisanat, as well as on the droit de douane for the produits nonagrées, are not compensated by the exporting country.

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[20] These are groundnuts, groundnut oil, groundnut cake, cottonseeds, cottonseed oil, cottonseed cake, hides, leather, and gum arabic. The 1968 tariff reform consolidated a number of export taxes under one taxe d'exportation. The CPS on exports was introduced in 1975 at the same time that the CPS on imports was introduced. The taxe conjuncturelle was introduced in 1974.

[21] As mentioned earlier, under the CEAO accord, unprocessed products such as livestock, grains, lumber, coffee, fruits, and artisanal products are exempted from import duties, defined to exclude interior taxes collected at the border. Industrial products have lower tariffs relative to tariffs on imports from other countries, especially for produits agrées in the form of the taxe de cooperation régionale. Produits nonagrées are exempted from only the droit de douane.

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Table 5
Export Tax Rates on Selected Products in 1986 (a)

Product	Taxe d'Exportation	Taxe Conjoucturelle
Shelled groundnuts	2025 CFAF/ton	50%
Groundnut cake	1345 CFAF/ton	50%
Unrefined groundnut oil	6000 CFAF/ton	50%
Refined groundnut oil	Exempt	Exempt
Seed Cotton	5%	•
Cotton Fiber without seed	Exempt	•
Textiles	Exempt	•
Cottonseed	5000 CFAF/ton	50%
Unrefined cottonseed oil	Exempt	50%
Refined cottonseed oil	Exempt	Exempt
Cattle	2000 CFAF/head	•
Beef	5%	•
Dried skin	5%	50%
Dried leather	5%	50%
Sheanuts	14,500 CFAF/ton	Exempt
Unrefined sheanut oil	Exempt	•
Refined sheanut oil	500,000 CFAF/ton	•
Men's clothes, traditional	10%	•
Women's clothes, traditional	5%	•
Blankets, traditional	10%	•
All other industrial products	Exempt	•

SOURCE: Direction Nationale des Douanes
NOTES: (a) CPS is 3% on all products. All products exempt from OSRP Tax except unrefined groundnut oil (900 ton/FCFA).

Export Smuggling

Export smuggling is encouraged by export duties and producer prices that are often set lower than those in neighboring countries, as well as by lengthy administrative procedures. As with imports, export smuggling is made relatively easy by the long borders. Export smuggling occurs, too, in the form of smuggling (contrebande controlée and noncontrolée), outright bribery of officials, and technical smuggling in the form of falsely declared exports. It is estimated that two thirds of livestock exports are subject to noncontrolled smuggling by herdsmen following centuries-old practices. Overall, smuggled exports may account for some 30 percent of Mali's total exports.[22]

[22] The source for this rough estimate of export smuggling is the BCEAO.

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B. Price Controls

Until 1986, a comprehensive system of price controls was rigidly implemented. All commodities were subject to these controls, from agricultural and essential products to luxury goods, both imported and locally produced. Broadly speaking, two major levels of price-fixing could be distinguished. At one level, that of the major agricultural products and other local or imported essentials, prices were fixed by government-wide decisions. Since the effect of prices on real wages was a major consideration, retail prices in those categories were often fixed below cost or on the basis of depressed producer prices. The government's marketing monopolies in most of these areas enabled such a procedure to be used. At the other level, that of "nonessential" products, price control was limited to the control by administrative fiat of excessive margins in formal-sector production and, in theory at least, in all wholesale and retail distribution. Table A.8. in Annex A indicates the system of price controls in force up to early 1986.

This system was abolished in 1986 and replaced by a new system under which prices were to be determined freely by market forces, except for three categories of goods and services deemed as strategic or essential by the government. In addition, government monopolies held by SOMIEX and OPAM in the marketing of cereals and other essential products were also eliminated. The new decree (Decret MLI 82/020) regulating prices and internal trade continued to distinguish between controlled and uncontrolled prices.

Under the controlled price category, a significant number of products are subject to homologation souple, whereby producers and merchants of these products are free to determine their prices, but on the basis of preset profit margins.[23] For the remaining goods and services subject to price controls, prices are either fixed directly by the administration through homologation rigide or are determined on the basis of documented costs approved by the Commission Nationale des Prix.[24] All other products are

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[23] The list includes vinegar, tomato paste, broth in cubes, noodles, sardines in oil, instant coffee, tea, ice blocks, imported cereals, yarn, cloth, hardware, lanterns, candles, toiletries, bleach, school supplies, transportation spare parts, and construction materials such as cement, iron, roofing sheets, wood, and limestone.

[24] The products whose prices are subject to homologation rigide include sugar, cooking salt, edible oil, concentrated milk, milk powder, green tea, cigarettes, matches, petroleum products, water, electricity, movie tickets, and medical treatment. Products whose prices are fixed by the Commission Nationale des Prix on the basis of costs include agricultural products (cereals, cotton), agricultural inputs and materials, petroleum products, transportation including transit costs, pharmaceutical products, and veterinary products.

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free from price control, notably milk products, eggs, fruit juices, drinks, furniture and beds, fishing articles, hardware, and electrical material.

C. Taxation of Economic Activities

Traditional small-scale activities, which include most of agriculture and the informal sector, remain relatively untouched by the tax system.[23] The modern sector is the principle base for tax revenues.[24] The absolute level of some taxes (e.g., those on industrial profits and sales) is high in Mali by the standards of other West African countries, while others (such as payroll and property taxes) tend to be average. This situation is modified by differing rates of assessment and collection among firms, by widespread tax exemptions under the investment and tax codes, and as a result of ad hoc administrative decisions.

Table A.9 in Annex A is a summary of the structure of the Malian tax system. The various taxes are organized by conventional categories, including direct taxes on income and profits, social security contributions, taxes on property, indirect taxes on goods and services, taxes on international trade, and others.

Taxation of Industrial Activities

The principal taxes faced by industrial enterprises include the impôt sur les benefices industriels et commerciaux (BIC), the impôt sur les affairs et services (IAS), the impôt sur les revenus fonciers, the taxe des biens de main morte, patentes, licences, and the contribution forfaitaire. The relative magnitude of these taxes affecting all economic activities is shown in Table 6.

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[23] Taxation of modern agriculture (e.g., large farms with modern equipment such as tractors) is indicated in the tax code but is not applied in practice.

[24] For greater details on the taxation of economic activity in Mali, see Mali's Code Général des Impôts, 1986 and IMF, Fiscal Affairs Department, Report on Tax System of Mali, March 26, 1974.

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TABLE 6

Selected Taxes on Local Activities, 1985

Type of Tax	Amount Collected in 1985 (million CFAF)
BIC	5,917.6
Sectuer etat	736.9
Secteur prive	4,801.4
Minimum fiscal BIC	379.3
IAS (sur activities locales)	8,148.7
Secteur etat	3,446.5
Secteur prive	4,702.2
Patente	953.7
Patentes cercle	36.7
Patentes district	614.9
Patentes communes	302.1
Impôt Foncier	1,221.1
Impôt sur les revenus fonciers	980.3
Taxe des biens de main morte	240.9
Contribution Forfaitaire	2,683.1
IGR rôle	936.0
IGR retenu source	1,852.7

SOURCE: Direction des Impôts.

1. Impot sur les Benefices Industriels et Commerciaux (BIC)

Industrial enterprises, like commercial enterprises and other non-agricultural entities, are subject to the BIC. The BIC applies to profits of corporations, partnerships, and individual entrepreneurs. Business income of individuals is suoject to the BIC at a flat rate of 25 percent and to the IGR (impôt général sur le revenu) at progressive rates. The IGR is levied on business income net of the BIC. Corporate income is subject to a proportional rate of 45 percent while distributions of corporate income are normally taxed at a rate of 18 percent. The base of the BIC is the same regardless of the legal form of the enterprise.

Under the current progressivity of the IGR, an unincorporated business faces a marginal IGR tax rate of 50 percent at a relatively low level of income. Its marginal tax rate for both the BIC and the IGR is 62.5 percent at a net income level of 2.7 million CFAF. In contrast, owners of a corporation face a maximum marginal rate of taxation on earnings of

55 percent, assuming that it distributes all of its earnings after taxes. The maximum marginal rate is correspondingly lower the lower the earnings distribution rate. Thus, in general, the Malian tax system encourages incorporation or, viewed differently, the tax system has a fundamental bias against small unincorporated enterprise. Although a breakdown of BIC collections by legal status of the enterprise is unavailable, the information that exists indicates that collections of the BIC from individuals is relatively small.[27] This is explained, at least in part, by the considerable incentive to incorporate created by the tax system.

There is a minimum BIC (impôt forfaitaire BIC). The minimum tax is levied on all businesses, profitable or not, at a rate of 0.75 percent of turnover. This is perhaps justifiable on the basis of benefits received from public services. On the other hand, it penalizes enterprises with low profit margins and high turnover. Since the minimum BIC payment is deductible from the general BIC on profits, companies with a general BIC in excess of 0.75 percent of turnover do not incur any additional burden from the minimum tax. The impôt fortaitaire BIC has certain administrative advantages, such as its role as a de facto prepayment of tax and a partial offset of tax evasion.

2. Impôt sur les Affaires et Services (IAS)

Industrial and craft enterprises, as well as commercial enterprises, are subject to the IAS, which is a crude value added tax based on the old French production tax. The IAS is the single largest source of tax revenue in Mali. The normal rate of the IAS is 20 percent for domestic production and 10 percent for transportation and public works. This rate is applied on the prix carreau usine (ex-factory price) of the product less the cost of raw materials inputs. Depreciation and financial charges are not deducted.

Relative to the rate of 25 percent for most imported goods, the IAS at 20 percent for locally produced goods provides a 5 percent margin of protection on local production. While exported final products are exempted from the IAS during the final stage of production, they are subject to the IAS in the earlier stages.

3. Taxe Unique à la Consommation and Taxes Speciales

In addition to the IAS, some locally produced items face an excise tax called the taxe unique à la consommation, while a selective excise tax is levied on specific products such as cigarettes, whether of local manufacture or imported. The taxe unique à la consommation for several respective products is as follows: groundnut oil, 0.5 CFAF/litre; soap, 1 CFAF/kg,

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[27] See IMF, Study of Personal Income in Mali, 1982.

matches, 3.5 CFAF/box; soft drinks, 5%; tomato concentrate and tomato juice, 3%; and ceramic products, 5%.

Property-Type Taxes

Each of the property-type taxes (impôt sur les revenus fonciers, taxe des biens de main morte, patentes, licences) is much less significant in terms of revenue (see Table 6). Nonetheless, when combined at their full rates, these taxes would be equivalent to an estimated 25 percent of the annual value of depreciation. The investment and tax codes, however, allow firms exemptions on these taxes.

1. Impôt sur les Revenus Fonciers

The rate of tax on income from rental premises (impôt sur les revenus fonciers) is 30 percent. Net revenue, which serves as the base for this tax, is determined after allowances are made for depreciation and the cost of maintaining the real estate.[28] Rental income net of the rental income tax is subject to the IGR and therefore suffers from the same bias as the BIC against unincorporated enterprises. Owners are taxed on rental income of non-commercial and industrial real estate. In Mali, as in many other countries, property taxation is unpopular due to the highly subjective valuation of real estate and rental values.

2. Patentes

A patente is paid for at different rates by entities in different classes based on factors such as turnover and regional location. The tax has two components: a fixed component and a proportional component, which is 10 percent of the fixed tax over one quarter of the value of the property, whichever is greater. [29] The patente paid for by an artisan depends on the number of workers under his charge.

3. Taxe des Biens de Main Morte

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[28] With respect to the impôt sur les revenus fonciers and the taxe des biens de main morte, some question arises as to whether they should be classified as rental income taxes or property taxes since they share certain characteristics of both.

[29] For example, for a firm in the first category, the fixed component of the patent is as follows: first zone (Bamako) 250,000 CFAF, second zone (regional centers) 225,000 CFAF, and third zone (other locations) 180,000 CFAF.

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The taxe des biens de main morte has the same base as the impôt sur les revenues fonciers. The tax rate on the former is 20 percent and on the latter is 30 percent.

4. Licences

A licence permits the sale of alcohol. It is paid for by industrial and commercial firms that produce and sell alcoholic beverages at the wholesale or retail level.

The Impôt Général sur le Revenu

The general income tax (impôt général sur le revenu) is a progressive annual tax levied on family income from all sources net of tax payments. The tax is withheld at source for wages and salaries. The provisions of the general income tax for wages and salaries differ from the tax as applied to entrepreneurial income. Because the IGR serves as a complementary tax to schedular income taxes for entrepreneurial income but as the sole tax for wage and salary income, the rates of tax on labor and nonlabor income differ substantially.

About 90 percent of the general income tax is withheld by employers. Individual businessmen, however, must also pay the general income tax on their annual labor incomes. The top marginal rate for the IGR is 50 percent, which is reached at a current annual taxable income of 2 million CFAF. Business income of individuals is taxed at a rate of 25 percent and the net is then subject to the general income tax at progressive rates. This has the effect of increasing the minimum entrepreneurial income level subject to the top rate to approximately 2.7 million CFAF.

Through reforms of the tax code introduced in 1982, the importance of the income tax was reduced relative to other taxes on individuals, such as the payroll tax and the poll tax. Both the payroll and poll tax rates were increased while potential collection of income taxes was reduced by increasing allowable deductions. Because the calculation of taxable income allows for considerable amounts of deductions, it has been estimated that as few as 20,000 individuals actually pay any income tax.

The Contribution Forfaitaire

The contribution forfaitaire is a flat tax on the wage bill that must be paid by all employers. The rate was 15 percent but was reduced to 7.5 percent in early 1986.

Tax Concessions

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Import tax exemptions on capital goods and intermediate inputs resulting from investment code status or, in the case of public enterprises, from more informal exemptions have already been described. This section discusses other tax concessions granted under the tax and investment codes.

1. Concessions from the Tax Code

Incentives available to industrial and commercial firms from the tax code [30] include exemptions from the impôt sur les revenus fonciers for 5 years, starting from the year of completion of a building, and exemptions from the taxe des biens de main morte, also for 5 years, for new buildings or extensions to buildings used by the firm.[31]

The tax code allows a reduction of the BIC each year by up to 50 percent of profit for a period of 3 years to finance up to 50 percent of the amount of earnings reinvested. The major conditions for a firm to benefit from this exemption include: 1) the equipment and materials used in the investment must be new; 2) the equipment and materials used must not have a depreciation life of less than 5 years (this excludes trucks and small items); 3) the amount of the investment must be greater than 2.5 million CFAF; 4) the period over which the investment must be put in place must not exceed three years starting from the year following that in which the application was made; 5) the firm must undertake not to reduce its work force because of the new investment and to ensure that the new investment does not displace workers.

The tax code also allows losses to be carried forward for up to 3 years. The minimum BIC, however, is paid each year whether the firm incurs losses or not. Other concessions from the tax code include the ability to carry depreciation forward for a firm in deficit and a mild accelerated depreciation for equipment and buildings used to house company personnel if the value is below 3 million CFAF. [32] Equipment eligible for

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[30] Code General des Impôts - Ordonnance No. 6/CMLN, 1970. The tax code has been revised over the years. A newly revised text, which takes into account the revisions, was published in 1986.

[31] If a company constructs a building for use as a dwelling place by its employees, the exemptions are for up to 10 years. For an individual who constructs a building for his own use, the exemptions from the impôt sur les revenus fonciers and the taxe de main morte are for 10 years.

[32] Conditions for accelerated depreciation of equipment are: 1) the equipment must have a normal depreciation life (as indicated in the tax code) of more than 3 years and 2) the CIF value must be at least 500,000 FCFA.

accelerated depreciation can be amortized at double the normal rate for the first year only.[33] For buildings, the accelerated rate is 25 percent of cost and applies also to the first year only.

2. Concessions under the Investment Code

As in other francophone West African countries, the principal instrument for industrial promotion is the investment code. A new version of Mali's investment code, the fourth since independence, was adopted by the Government in 1986.[34] The major changes to the previous investment Code (adopted in 1976) include:

(1) extension of incentives to small enterprises and artisans (large enterprises still gain more benefits);

(2) provision of additional benefits for firms directed towards export and import substitution as well as for firms that provide more employment;

(3) inclusion of working capital in investment cost;

(4) increase in the minimum level of investments to qualify a firm for benefits under the various regimes;

(5) the setting of the maximum time limit for decisions to be made on applications for benefits; and

(6) an increase in the membership of the Commission Nationale des Investissement (CNI), which grants Regime B benefits, from 15 to 22 members. [35]

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[33] Under the investment code.

[34] Independent Mali's first investment code, which operated from 1962 to 1969, was in some ways restrictive. For instance, larger investments, once amortized, were to pass into government ownership. In any case, government policy was to favor public investment, and public enterprises were not allowed to claim investment code exemptions, though virtually all benefitted from ad hoc exemptions on tariff duties for capital goods, and some were even able to claim exemptions from the tax code during their initial years of operation. As a result, private industrial investments in this period were very small and public investments very large. In 1972, only four firms had benefited from the first investment code and these accounted for four percent of manufacturing output.

[35] See table A.10 in Annex A for a detailed comparison of the 1976 and 1986 codes.

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The Government grants Regime A or B status to private and mixed enterprises considered to be in priority areas. These enterprises include:

(1) industrial enterprises that prepare and transform animal, vegetable, or mineral products;

(2) agricultural, forestry, and livestock enterprises;

(3) metallurgic, mechanical, and maintenance enterprises;

(4) manufacturing enterprises;

(5) enterprises for the production of energy and water;

(6) transport, hotel, tourist, and real estate enterprises;

(7) enterprises involved in investment promotion.

Enterprises that are exclusively commercial are excluded from the benefits awarded through the investment code.

Enterprises are accorded one of three categories depending on size. The minimum investment for a project to be awarded Regime A status is 150 million CFAF, Regime B status is 500 million CFAF, and Regime C status is 25 million CFAF. To qualify for Regime C, the enterprise also has to be 100 percent Malian.

Enterprises accorded Regime A status enjoy the following benefits:

(1) exemptions for a period of up to three years of all taxes (except the CPS) on the importation of capital equipment and spare parts not produced locally;

(2) exemptions of all taxes (except the CPS) on the importation of raw materials and other inputs, including nonreusable packaging materials not produced locally as follows: 100 percent for 5 years, 66 percent for the following 2 years, and 33 percent for the following 1 year;

(3) exemptions for up to 5 years on the BIC and the <u>patente</u>;

(4) for new construction, a five-year exemption on <u>the impôt sur les revenus fonciers</u> and the <u>taxe des biens de main morte</u>, starting from the date of completion of the construction. The period of exemption from these taxes can be extended to 10 years for real estate enterprises;

(5) guarantee of repatriation of external capital and transfer of profits and salaries of expatriate personnel.

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Enterprises granted Regime B status enjoy benefits under Regime A as well as a stable fiscal and tariff environment for 20 years at the rates existing at the time of the signature of the agreement. Firms in Regime B status can also enjoy preferential treatment with regard to the use of water, electricity, etc. for their operations.

Enterprises under Regime B go to the Commission National d'Investissement, where the incentive levels are accorded on a case by case basis. The Commission is composed of 22 ministers and director generals from the ministries, and representatives from the Banque de Développement du Mali and the Chamber of Commerce. Small projects remain at the level of the Ministry of Industrial Development, which may grant incentives in consultation with the ministers of planning and finance.

Enterprises granted Regime C status may be awarded exemptions as follows:

(1) exemptions for a period of up to 3 years of all taxes (except the CPS) on imports of equipment, raw materials, and spare parts. The exemption of tariffs on imports of raw materials can be extended after the first 3 years to a 66 percent exemption in the 4th year and a 33 percent exemption in the 5th year;

(2) exemptions on the BIC and patente for up to 3 years;

(3) for new construction, exemptions for 5 years, starting from the date of completion of construction, on the impôt sur les revenus fonciers and the taxe des biens de main morte.

The code further grants benefits for enterprises that export products, use labor extensively, or locate in areas not sufficiently industrialized. Artisanal enterprises can benefit from exemptions of all import taxes (with the exception of the CPS) on equipment. Cooperatives and associations of artisans can also benefit from the advantages of Regime C.

D. Interest Rate and Credit Policy

As a member of the West African Monetary Union (WAMU), much of banking policy is outside the control of Mali. The Banque Centrale des Etats de l'Afrique de l'Ouest (BCEAO) is responsible for the determination of credit policy and interest rates. The council of ministers of the WAMU makes decisions relating to obligatory reserves, ceilings for the amounts of certain uses of funds, and rates and conditions of transactions with clients. These regulations are transmitted to the banks by the BCEAO.

The banks in Mali and their ownership are presented in Table 7. The BDM is by far the biggest of the six banks, holding about 75 percent of total credit. The proportion of bad debt in its outstanding credit is

large and applications for investment financing take a long time to process (see Annex Table A.11 for a sample of six firms). The other banks are reluctant to take too much risk, partly because of lack of effective legal security.

Table 7

Banks and Their Ownerships

Banks	Ownership
1. The Malian Development Bank (BDM)	100 percent Government of Mali
2. The National Agricultural Development Bank (BNDA)	55 percent Government of Mali; 80 percent BDM and Central Bank; 20% CCCE (The French financial assistance organization) and DEG (German financial assistance).
3. The Malian Credit and Deposit Bank (BMCD)	50.2 percent Government of Mali; 49.8 percent subsidiary of the Credit Lyonnais.
4. The International Bank for Mali - West African BIAO	23 percent Government of Mali; 77 percent subsidiary of BIAO Paris, the Union of Swiss Banks, The Bank of Brazil, and the Inter-African Banking Company of which the BCEAO is a shareholder.
5. The Bank of Africa, Mali (BOAM)	100 percent private
6. The Libyan-Malian Arabic Bank (BALIMA)	Subsidiary of the Libyan Foreign Trade Bank

With Mali's re-entry into the WAMU in 1984, the structure and levels of interest rates were modified substantially, as shown in Table 8. The central bank's preferential discount rate was raised to 8 percent from 2.5-3.5 percent and its ordinary discount rate was increased to 10.5 percent from 6 percent. The interest rate on crop marketing loans increased from 7.5 percent to between 9 and 10 percent, while interest rates on public sector loans increased from 9.5 percent to the 10.5 - 15.5 percent range. The range of interest rates to private enterprises narrowed from 10-18 percent to 10.5-15.5 percent, while interest rates on deposits increased generally, thereby making saving more attractive.

As of March 1986, the preferential interest rate was 8 percent for

short-term crop financing. Interest rates on industrial credit increase with the size of the enterprise. Credits for small and medium enterprises

Table 8
Interest Rates, October 1982 - December 1985

	October 1982 - May 1984	June 1st, 1985
Central Bank		
Preferential Discount Rate	2.5-3.5	8.0
Ordinary Discount Rate	6.0	10.5
Lending Rates		
Crop Financing and Agricultural Export Credit	7.5	9.0-10.0
Public Enterprises	9.5	10.5-15.5
Private Enterprises	10-18	10.5-15.5
Deposit Rates		
Demand [a]	3	[b]
Savings Deposits	5	8.5
Time Deposits [a]		
Less than 6 months	4	7.25
6 months - 1 year	5	8.50
1-2 years	5.5	9.50
Over 2 years	6	9.50

SOURCE: IMF, Recent Economic Developments-Mali, March 19, 1986.
NOTES: (a) Minimum rate for deposits above CFAF 2 million.
(b) Since January 1, 1985, commercial banks are no longer required to remunerate demand deposits.

(SME) pay rates r[illegible]g from 8 to 10 percent.[34] The maximum rate is 14.5 percent. In addition to the lower interest rates accorded to the SMEs, a number of enterprises have obtained preferential interest rates, sometimes as low as 5 percent.

The minimum rate for savings deposits was reduced from 8.5 percent in 1984-85 to 7.5 percent in March 1986, while money market rates have been progressively decreased by the BCEAO in line with trends in international money markets. By June 1986, rates ranged between 5.25 percent and 9 percent. With the composite price index for basic foodstuffs in Bamako (CPI) growing at a compound rate of between 9 and 11 percent between 1983

[34] On top of these rates are taxes and other charges, which bring the effective interest rate to between 18 and 19 percent.

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and 1985, real rates of interest were negative or close to zero. They were positive, however, when compared with the GDP deflator.

E. Wage Policies

The government sets different minimum wages for agriculture (salaire minimum agricole garanti, or SMAG) and industry (salaire minimum industriel garanti, or SMIG). The evolution of the SMAG and SMIG from 1980 to 1985 is shown in Table 9. Wages for the lowest level of government employees have been about twice the agricultural minimum wage (see Table 10).[37] The differential between rural and urban wages represents a strong incentive for labor to migrate out of agriculture into the cities, even though the rural cost of living is lower than that in urban areas.

Table 9
Evolution of Minimum Wages, 1980-85
(CFAF per hour)

Date	Minimum Wage for Unskilled Agricultural Workers (SMAG) (a)	Minimum Wage for Workers Outside Agriculture (SMIG) (b)
1980 - January	35.91	39.08
1980 - March	44.40	44.59
1982 - February	50.17	56.14
1985 - March	67.46	73.44

SOURCE: IMF, Recent Economic Developments - Mali, March 19, 1986.
NOTES: (a) Includes special and cost of living allowances.
(b) Based on 173.3 hours worked a month.

[37] The wage rate for the highest level of government employee is about 20 times the SMAG.

Table 10
Monthly Wages and Salaries, 1981-85
(CFA francs per month)

	1981	1982	1983	1984	1985
Contractural workers					
Minimum Wage for Unskilled Agricultural Workers (SMAG)	7,696	8,696	8,696	8,696	11,690
Basic Wage	4,446	5,446	5,446	5,446	8,440
Special allowance	1,000	1,000	1,000	1,000	1,000
Cost of Living allowance	2,250	2,250	2,250	2,250	2,250
Minimum Wage for Unskilled Workers Outside Agriculture (SMIG)	7,730	9,730	9,730	9,730	12,730
Basic Wage	4,403	6,403	6,403	6,403	9,403
Special allowance	1,000	1,000	1,000	1,000	1,000
Cost of living allowance	2,250	2,250	2,250	2,250	2,250
Adjustment of March 1980	77	77	77	77	77
Government Employees					
Grade 100	18,540	19,540	19,540	19,540	25,025
Salary	17,040	17,040	17,040	17,040	22,525
Housing allowance	1,500	1,500	1,500	1,500	1,500
Special allowance	—	1,000(a)	1,000	1,000	1,000
Grade 316	60,732	60,732	60,732	60,732	69,368
Salary	59,232	59,232	59,232	59,232	67,868
Housing allowance	1,500	1,500	1,500	1,500	1,500
Grade 650	123,336	123,336	123,336	123,336	141,103
Salary	121,836	121,836	121,836	121,836	139,603
Housing allowance	1,500	1,500	1,500	1,500	1,500

SOURCE: IMF

NOTES: (a) includes maximum allowance granted from February 1982 to workers whose monthly wage are less than CFAF 25,000

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CHAPTER 2

ANALYSIS AND RECOMMENDATIONS

Section 1. INTRODUCTION AND METHODOLOGY

A. Introduction

This chapter discusses the results of the empirical analysis of incentives and comparative advantage in Malian agriculture and industry, and formulates specific recommendations to ensure an efficient allocation of resources and a structure of production consistent with available resources. The recommendations are designed to move towards an incentives system that is neutral among sectors and types of economic activity (industry versus agriculture, export promotion versus import substitution, intermediate versus final goods, capital- versus labor-intensive projects) except where there are clear reasons for not maintaining this neutrality. It is also generally recommended that distortions of incentives be corrected at the point where the distortions occur since this is less likely to create costly side effects. A change in the structure of protection, as discussed later in this chapter, for example, should be effected directly through changes in tariffs and not indirectly through changes in the valeurs mercuriales. Investment incentives, to take another example, should not be granted via import duty exemptions but through tax credits or subsidies directly related to value added.

Several factors presently inhibit growth and investment in Mali. Those can be divided into two major groups from the point of view of a policy reform. First, there are those that can be modified in the short to medium term within the context of a structural adjustment program aimed at creating favorable incentives for investment; second, there are those that can only be addressed over the longer term. Among the principal constraints that the government can change only through long-term policies are (1) the smallness of the domestic market, (2) the lack of industrial experience on the part of entrepreneurs, and (3) an unskilled labor force.

The main constraints that need to be corrected through structural reforms in the short to medium term include:

(1) the deficits of the government and of parastatals;

(2) the overvaluation of the exchange rate and the balance of payments deficit;

(3) existing of cereals policy;

(4) tariffs and import controls that create a wide a range of

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nominal and effective protection, which distorts the allocation of resources between industries;

(5) the investment code, which is costly in terms of government revenue foregone and which favors large firms over small enterprises;

(6) existing tax legislation;

(7) the regime of price controls;

(8) the economic environment that favors commerce and trade relative to industry;

(9) the incentive system that is biased against exports;

(10) the slowness of government administrative procedures.

In the recommendations that follow, particular emphasis is placed (1) on issues of comparative advantage and price stabilization for agricultural products and (2) on reform of trade policy. Specific recommendations regarding the livestock sector, tax reform, decontrol of administered prices, and incentives for industrial investment and employment creation are also included in this chapter. These recommendations are not exhaustive. They do not seek to address all the issues that arise in these areas. Rather their purpose is to point out the major distortions that can be corrected through policy reform.

B. Methodology

Effective Protection and Domestic Resource Cost

The recommendations concerning the structure of protection and comparative advantage in agriculture and industry are based on an analysis that involves the calculation of effective rates of protection (ERP) and domestic resource costs (DRC) for the major tradable goods produced by Mali. The methodology and calculations are explained in detail in Annexes B and C. Annex B contains the complete results of the base case and simulations for cotton, rice, and coarse grains for nine crop techniques, including detailed crop budgets and the calculation of reference parity prices. Annex C presents results for 17 industrial products involving ten firms under different assumptions regarding capacity utilization and the shadow exchange rate. A brief explanation of the methodology underlying the analysis follows.

The theory of comparative advantage states that a country should produce and export goods in which it has a relative productivity advantage and that it should import goods in which it does not have this advantage. Productivity, in this sense, is defined as the efficiency with which a country's factors of production are converted into value added expressed in world prices. The ratio of the economic cost of the factors of production used in a given productive activity to value added measured in world prices is called the domestic resource cost (DRC).

Both numerator and denominator of the DRC are expressed in terms of the same currency by multiplying the denominator by the efficiency price of foreign exchange, i.e., the shadow exchange rate or the official exchange rate multiplied by the reciprocal of the standard conversion factor (SCF). The shadow exchange rate expresses the marginally efficient rate of transformation for converting nontradable factors of production into tradable value added. Multiplying the denominator of the DRC by this rate converts the efficiency prices of tradable outputs and inputs, expressed in terms of foreign currency, into their opportunity cost at the margin in terms of domestic factors of production. Once this is done, the numerator and denominator of the DRC may be compared to see whether a particular activity is more or less efficient than the activity somewhere in the economy that is marginally efficient.

Taking cotton as an example, if the DRC is less than one (if the numerator is less than the denominator), the domestic resource cost per unit of value added is less than it is for the marginally efficient activity, so the country has a comparative advantage in cotton production. If the DRC is greater than one (if the numerator is larger than the denominator), the opposite is true and the country does not have a comparative advantage in cotton.

While DRC analysis is related to the theory of comparative advantage, the analysis of economic incentives is related to the theory of protection. The nominal protection coefficient (NPC) reflects incentives to consumers (users) and producers of a given product. Nominal protection indicators may be calculated for final products, such as rice, and for intermediate inputs, such as fertilizer. The NPC measures the ratio of the domestic price of the product to its world price expressed in domestic currency at the official exchange rate. If the domestic price of imported rice is greater than its border price because of tariffs or import controls, the NPC is greater than one, consumption of the domestic good is discouraged, and production is encouraged. If the domestic price is less than the world price because of an import subsidy or price controls, the NPC is less than one, consumption of the domestic good is encouraged, and production is discouraged.

The effective protection coefficient (EPC) measures value added in domestic prices divided by value added in world prices. It provides a measure of incentives to producers. The EPC indicates the extent to which government policy offers positive or negative protection to a given activity, depending upon whether the EPC is greater or less than one. Since

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producers are concerned with prices of inputs as well as of outputs, it is the EPC that is the best measure of producer incentives. The consumer, on the other hand, is influenced only by output prices so that the NPC is most appropriate for measuring consumer incentives.

An indicator of incentives related to the EPC is the effective subsidy coefficient (ESC), obtained by subtracting net taxes (adding net subsidies) on nontradable factors of production from (to) the numerator of the EPC. This indicator also measures incentives to producers.

The nominal rate of protection (NRP), effective rate of protection (ERP), and effective rate of subsidy (ERS) is each obtained from the NPC, EPC, and ESC respectively by subtracting one. If the denominator of the NPC, EPC, or ESC is multiplied by the ratio of the shadow to the official exchange rate, these indicators are referred to as net coefficients, designated respectively the NNPC, NEPC, and NESC.

The NEPC and DRC are closely related to each other, each having the same denominator (value added at world prices). The numerator of the EPC shows the scope provided by world prices and by trade and price policy for some combination of domestic resource costs, rents, profits, taxes, and subsidies. The numerator of the DRC, on the other hand, consists only of domestic resource costs. The EPC thus indicates the potential for incurring domestic resource costs, whereas the DRC measures the extent to which these costs are actually incurred.

Overvaluation of the Exchange Rate

A critical variable in estimating net indicators of protection and the DRC is the shadow exchange rate. Using rough approximations for the elasticities of demand for and supply of foreign exchange, the extent of overvaluation of the currency in Mali was estimated for the period 1981-85. The method employed consists of correcting the level of the official exchange rate E_o by adding a term that adjusts it to the rate that would need to prevail in the market for foreign exchange if there were to be no current account deficit. For small deviations this equilibrium rate of exchange E^* can be approximated by:

$$E^* = E_o + E_o \, (DEF / (e_s EXP + e_d IMP)$$

where E_o is the official exchange rate, DEF is the current account deficit, IMP is the existing level of imports, EXP is the existing level of exports, e_s is the elasticity of supply of foreign exchange, and e_d is the elasticity of demand for foreign exchange. The values of these elasticities are roughly estimated as $e_s = 1.0$ and $e_d = 2.0$.

The resulting "equilibrium" rate of exchange, shown in Table 11, suggests that the local currency was overvalued by 33-37 percent during the five years under consideration. This does not allow, however, for distortions in domestic prices resulting from price controls and from trade taxes and controls. If these were taken into account, the exchange rate would almost certainly be even more overvalued because of the high tariffs and the system of import controls described in Chapter 1. An upward adjustment to the official exchange rate of 33 percent to allow for overvaluation would therefore appear to be a fairly conservative assumption.

TABLE 11
Overvaluation Of the Nominal Exchange Rate

	1981	1982	1983	1984	1985
Average Official Exchange Rate (a) (CFAF/US$)	272	329	381	437	449
Equilibrium Exchange Rate (CFAF/US$)	371.77	446.01	514.35	582.27	601.73
Rate of Overvaluation (equilibrium/official minus 1)	37%	36%	35%	33%	34%
Current Account (b) (billion CFAF)					
Exports	54.4	61.8	78.6	97.2	96.8
Imports	-129.3	-138.0	-166.5	-193.6	-199.8
CA Deficit	-74.9	-76.2	-87.9	-96.4	-103.0

SOURCE: IMF, Recent Economic Developments - Mali, March 19, 1986.

NOTES: (a) The official exchange rate, in CFAF/SDR, was converted to CFAF/US$ using the SDR/US$ ratio given in IMF, International Financial Statistics.
(b) Exports include merchandise exports FOB and invisibles; imports include merchandise imports FOB and invisibles (which include freight and insurance costs). Current Account (CA) Deficit is defined here as Imports minus Exports. All CA data are converted to CFAF at the official exchange rate.

Section 2. ISSUES AND RECOMMENDATIONS FOR AGRICULTURE

A. Analysis of the Results

The analysis of effective protection and domestic resource costs is presented in this section for cotton and cereals. Groundnuts are not included in the analysis because of difficulties in obtaining reliable data and the limited amount of time available for the computations. In view of the importance of livestock, this subsector is also analyzed, though no reliable data are available to compute measures of incentives and comparative advantage.

The nine crop techniques for which such measures were computed are:

- rice: traditional flooded, animal traction, Mopti
- rice: controlled flooded, animal traction, Mopti
- rice: gravity irrigation, animal traction, Office du Niger
- maize: improved manual, Mali-Sud
- maize: improved animal traction, Mali-Sud
- millet/sorghum: improved manual, Mali-Sud
- millet/sorghum: improved animal traction, Mali-Sud
- cotton: improved manual, Mali-Sud
- cotton: improved animal traction, Mali-Sud

The base case estimates for these 9 crop-techniques are calculated using actual world prices for 1986 and projected world prices for 1995.[38] All prices and costs in the calculations are expressed in constant 1985 CFA francs. Producer prices are official prices for the crop year 1986/87. Most costs are based on prices forecast for the crop year 1986-87.

Base Case

Table 12 presents the results of the base case using Bamako as the reference market for consumption of cereals and the border as the reference market for cotton exports.[39] Estimates are given for financial profitability, the nominal protection coefficient (NPC), the net nominal protection coefficient (NNPC), the effective protection coefficient (EPC), the net effective protection coefficient (NEPC), the effective subsidy coefficient (ESC), the net effective subsidy coefficient (NESC), and the

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[38] World Bank, EPDCS, "Primary Commodity Price Forecasts," Memorandum, February 5, 1987.

[39] Calculations for the base case are explained in detail in Annex B, which also contains some results of the simulations for the nine crop - techniques, detailed crop budgets, and the calculation of reference parity prices.

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Table 12

Indicators of Comparative Advantage and Incentives
in Agriculture - Base Case (Bamako/Frontier) (a)

Crop-Technique	Financial Profitability		Calculated using Actual 1986 World Prices							Calculated using Projected 1995 World Prices						
	Per Day (b) (CFAF/DAY)	Per Kg (c) (CFAF/kg)	NPC	NNPC	EPC	NEPC	ESC	NESC	DRC	NPC	NNPC	EPC	NEPC	ESC	NESC	DRC
Rice, traditional flooded	344	-34	1.25	0.94	1.42	1.07	1.76	1.32	1.67	1.14	0.86	1.25	0.94	1.55	1.17	1.47
Rice, controlled flooded	165	-38	1.25	0.94	1.54	1.16	1.80	1.35	1.86	1.14	0.86	1.31	0.98	1.52	1.15	1.58
Rice, irrigated	610	1	1.26	0.95	1.47	1.11	1.78	1.34	1.33	1.15	0.87	1.26	0.95	1.53	1.15	1.14
Millet/sorghum, manual	490	-12	1.10	0.83	1.12	0.84	1.33	1.00	1.13	1.01	0.76	1.01	0.76	1.19	0.90	1.02
Millet/sorghum, animal	513	-6	1.10	0.83	1.14	0.86	1.29	0.97	1.04	1.01	0.76	1.02	0.77	1.16	0.87	0.93
Maize, manual	322	-25	1.08	0.81	1.05	0.79	1.09	0.82	1.11	0.99	0.75	0.93	0.70	0.97	0.73	0.99
Maize, animal	387	-12	1.08	0.81	1.07	0.80	1.10	0.82	0.97	0.99	0.75	0.95	0.71	0.97	0.73	0.87
Cotton, manual	238	-132	1.21	0.91	1.36	1.02	1.55	1.16	1.74	0.65	0.49	0.55	0.41	0.62	0.47	0.70
Cotton, animal	238	-97	1.21	0.91	1.36	1.03	1.53	1.15	1.58	0.65	0.49	0.54	0.41	0.61	0.46	0.63

SOURCE: Annex B

NOTES:

(a) Based on world prices in constant 1985 CFA francs and official producer prices for 1986-87. The reference market for cereals is the Bamako wholesale market and for cotton is the frontier. The official exchange rate is 346 CFAF/$ and the shadow exchange rate, used to calculate the NNPC, NEPC, NESC and DRC, is 460 CFA francs/$.

(b) Net cash revenue per manday of family labor.

(c) Net farm revenue per kilogram of output with family labor valued at 600 CFAF/day.

domestic resource cost (DRC). Financial profitability is calculated as both net cash revenue per unit of labor and net farm income per kilogram of output with labor valued at 600 CFAF/day. This is the wage rate that prevailed in the central agricultural areas during the crop year 1985-86. The NPC, EPC, and ESC indicators are calculated at the average official exchange rate that prevailed in 1986 of 346 CFA francs/$. The NNPC, NEPC, NESC, and DRC indicators are calculated using a shadow exchange rate of 460 CFAF/$, which is consistent with the 33 percent overvaluation estimated previously. Sensitivity analysis is used below to test the robustness of the conclusions to this rate.

The results in Table 12 show that, at current official prices, production of almost every crop is financially unprofitable if labor is valued at the wage rate of 600 CFAF/day, whatever the technology used. The only exception is the Office du Niger, where the return to labor at the producer price for rice of 70 CFAF/kg is approximately equal to the daily wage rate. For other techniques, the returns to labor vary from 238 CFAF/day in cotton to 513 CFAF/day in improved millet and sorghum using animal traction.

The NPCs calculated using actual 1986 world prices are all greater than unity, indicating positive nominal protection. This was a year, however, in which grain prices, and particularly cotton prices, were quite low in relation to levels expected to prevail over the longer term. When world prices projected for 1995 are used, instead, cotton receives strong negative protection at the existing producer price of 85 CFAF/kg. The nominal rate of protection (NPC-1) on the coarse grains, millet/sorghum and maize, is very close to zero at projected 1995 world prices, but there continues to be positive protection of rice when the CIF price is converted to local currency at the official exchange rate. The NNPC for rice, as for all the other products, is less than unity when this conversion is made at the shadow price of foreign exchange.

Effective protection is also positive for every agricultural activity when output is valued at 1986 world prices. For most activities the EPC is greater than the NPC, indicating that inputs are either subsidized or are taxed at lower rates than output. The differences between the EPCs and the NPCs are not very great, however, because intermediate inputs are relatively unimportant in Mali and are taxed or subsidized at low rates. The nominal protection coefficient (NPC) for intermediate inputs at the official

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exchange rate, in fact, ranges only from 0.88 for traditional flooded rice to 1.18 for improved manual maize.[40]

Using 1986 world prices and the official exchange rate, the ERP (equal to the EPC-1) is 36 to 54 percent for rice and cotton, and 5 to 14 percent for coarse grains, depending upon the particular crop-technique being considered. At prices expected to prevail in 1995, on the other hand, the ERP is strongly negative for cotton, close to zero for the coarse grains, and clearly positive for rice. It becomes negative for all crop-techniques if the shadow price of foreign exchange is used instead of the official exchange rate to convert valued added in world prices to local currency. This is not true, however, of the net effective subsidy coefficient (NESC) for rice, which remains positive at the shadow rate of exchange and is in all cases greater than the NEPC.

The domestic resource cost (DRC) parallels the EPC and ESC indicators to a considerable extent. The DRC is greater than one for every rice technique in both actual 1986 and projected 1995 world prices. This suggests that Mali does not use its resources efficiently by growing rice, even in the least costly way -- gravity irrigation in the Office du Niger. The cultivation of coarse grains is marginally profitable or unprofitable, depending on whether animal traction or manual techniques are employed and which world price is used. Finally, the DRCs suggest that cotton cultivation is highly unprofitable at 1986 prices and very profitable at 1995 prices.

Analysis of Base

The incentive indicators presented in Table 12 are calculated on the basis of official producer prices plus the appropriate costs of collection, processing, and distribution to obtain the domestic price at the point of consumption. While this is useful for understanding why official producer prices have been too low to encourage production and public sector marketing, it does not measure incentives where output is sold on the private market. It also ignores the influence of trade policy in determining local prices. This policy consists of a combination of tariffs, controls on private imports, agreements regarding food aid, purchases abroad by OPAM, and other government interventions. These act together with world market prices and domestic demand and supply conditions to determine domestic prices on the private market.

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[40] The apparent subsidy on inputs for traditional flooded rice exists, not at the farm level, but because of a subsidy on the distribution of rice to Bamako by OPAM, the state grain marketing agency. The same subsidy applies to the other rice techniques, as well, but is offset to a large extent by taxes on intermediate inputs, which are more important for these techniques.

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In order to understand better the impact of trade policy on domestic prices, indicators of financial profitability and protection were calculated using average prices of rice and coarse grains in the Bamako markets during 1985. Although cereals prices were relatively high during the first part of that year as a result of the drought in 1984, this was partially compensated by a sharp decline in prices following the good harvest of 1985. Average prices over the year are probably more reasonable, therefore, than they would be for the saturated markets of 1986.

The results are presented in Table 13. In contrast to those that use official producer prices, which are shown in Table 12, these indicate positive financial profitability for every crop-technique except traditional flooded rice.[41] The NPCs are all greater than one, but only slightly so, suggesting low rates of taxation and limited, if any, restrictions on imports.[42] There is a somewhat greater range in the EPCs and ESCs than in the NPCs across crop-techniques reflecting variations in input taxes and subsidies. Finally, the net indicators, corrected for overvaluation of the exchange rate, are for the most part close to or less than one.

On balance the evidence suggests that, except for rice, protection in 1985 did not adequately compensate for the overvaluation of the exchange rate. For rice, the NESCs are close to unity, but the NNPCs and NEPCs are considerably below one. This is because of the subsidy that affects the price to producers but not to consumers.

Following the abundant grain harvest of 1985-86, cereals prices dropped precipitously. Although no figures on annual averages were available at the time that the calculations for this study were made, it is clear that production of cereals for sale on the private market became very unprofitable and that OPAM and CMDT quickly exhausted their capacity to buy cereals at official producer prices. One result was that farmers in southern Mali shifted strongly in the direction of cotton production in 1986-87 despite what appeared in 1985-86, according to Table 12, to be a low producer price. This can be explained by the fact that the opportunity cost of labor in grain production had decreased markedly, lowering the wage rate at which labor was valued. This wage rate can be expected to rise once again when cereals prices return to "normal" levels.

As it is currently operated, the Office du Niger encourages the adoption of a fairly extensive technique for rice production, which involves low labor requirements and low yields, especially for irrigated cultivation.

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[41] Traditional flood rice is financially profitable for consumption on-farm or in the region of production, where most of it is actually consumed.

[42] Despite the higher financial profitability, the NPCs are lower than they are in Table 12 because world prices were greater in 1985 than in 1986 and the exchange rate was much higher.

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Table 13

Incentive Indicators for Cereals in 1985 (Bamako)

Crop-Technique	Financial Profitability		Calculated using Actual 1985 World Prices						Calculated using Projected 1995 World Prices					
	Per Day (b) (CFAF/DAY)	Per Kg (c) (CFAF/kg)	NPC	NNPC	EPC	NEPC	ESC	NESC	NPC	NNPC	EPC	NEPC	ESC	NESC
Rice, traditional flooded	537	-8	1.10	0.83	1.17	0.88	1.40	1.05	1.11	0.84	1.19	0.89	1.42	1.07
Rice, controlled flooded	461	-12	1.10	0.83	1.20	0.90	1.35	1.02	1.11	0.84	1.22	0.91	1.37	1.03
Rice, irrigated	1028	26	1.10	0.83	1.16	0.87	1.35	1.02	1.11	0.84	1.18	0.89	1.37	1.03
Millet/sorghum, manual	767	16	1.05	0.79	1.05	0.79	1.19	0.90	1.10	0.83	1.11	0.84	1.27	0.95
Millet/sorghum, animal	964	22	1.05	0.79	1.06	0.80	1.16	0.88	1.10	0.83	1.13	0.85	1.24	0.93
Maize, manual	637	3	1.01	0.76	0.97	0.73	1.00	0.75	1.08	0.81	1.06	0.80	1.09	0.82
Maize, animal	890	16	1.01	0.76	0.98	0.74	1.00	0.75	1.08	0.81	1.07	0.81	1.09	0.82

SOURCE: Annex B

NOTES:

(a) Based on world prices in constant 1985 dollars and actual market prices for 1985. The reference market is the Bamako wholesale market. The official exchange rate is 449 CFAF/$ and the shadow exchange rate is 597 CFA/$.

(b) Net cash revenue per manday of family labor.

(c) Net farm revenue per kilogram of output with family labor valued at 600 CFAF/day.

At the current level of the producer price, this technique appears to be just financially profitable, and this result depends on the producer subsidy that is paid. Furthermore, despite the fact that most investment costs in the Office de Niger are treated as sunk in the calculations, the DRC's are greater than one. It is unlikely that production would become economically profitable if the irrigation system were rehabilitated and farmers were encouraged to intensify production since new capital costs would have, in this case, to be recovered. This is consistent with other evidence regarding the unsuitability of intensive rice cultivation in much of West Africa. [43]

DRC Sensitivity Analysis

In order to test the robustness of the DRC estimates to changes in world prices and the shadow price of foreign exchange, sensitivity analysis was performed at actual 1986, projected 1990, and projected 1995 world prices. In addition to the shadow exchange rate of 460 CFAF/$ estimated earlier, a lower rate was used, equal to the average official exchange rate in 1986 of 346 CFAF/$. To take into account the failure of the estimated shadow exchange rate of 460 CFAF/kg to allow for overvaluation due to trade distortions, especially those resulting from tariffs and import controls, the analysis was also performed assuming a further 33 percent overvaluation, yielding an upper exchange rate of 612 CFAF/$.

The results are presented in Table 14. They show that the DRC is quite sensitive both to world prices and to the shadow exchange rate. Rice produced in the Office du Niger, for example, is quite unprofitable at 1995 world prices if the shadow price of foreign exchange equals its official price. At a shadow rate of 612 CFAF/$, on the other hand, it is profitable when world prices projected for either 1990 or 1995 are used.

Of particular interest is Mali's comparative advantage in cotton, its major export, especially in view of the large changes in world market conditions that took place in 1985 and 1986. At the world price of $890/ton that prevailed in 1986, (constant 1985 prices), the DRC's for cotton are greater than one no matter which exchange rate is used. At the projected 1995 price of $1640/ton, on the other hand, just the opposite is true -- the DRC is less than unity at each of the exchange rates. Even at the intermediate world price of $1280/ton projected for 1990, the DRC for cotton is less than one in both cases for which some degree of overvaluation is assumed. Thus the conclusion that Mali will continue to have a strong comparative advantage in cotton over the longer term appears relatively robust.

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[43] Scott P. Pearson, J. Dirck Stryker, and Charles P. Humphreys, Rice in West Africa: Policy and Economics, Stanford: Stanford University Press, 1981.

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Table 14

Domestic Resource Cost in Agriculture -
Sensitivity Analysis (Bamako/Frontier) (a)

Crop-Technique	Actual 1986 World Prices			Projected 1990 World Prices			Projected 1995 World Prices		
	346 CFAF/$	460 CFAF/$	612 CFAF/$	346 CFAF/$	460 CFAF/$	612 CFAF/$	346 CFAF/$	460 CFAF/$	612 CFAF/$
Rice, traditional flooded	2.22	1.67	1.26	1.99	1.50	1.12	1.96	1.47	1.11
Rice, controlled flooded	2.48	1.86	1.40	2.15	1.61	1.21	2.10	1.58	1.19
Rice, irrigated	1.77	1.33	1.00	1.55	1.17	0.88	1.52	1.14	0.86
Millet/sorghum, manual	1.50	1.13	0.85	1.36	1.02	0.77	1.35	1.02	0.76
Millet/sorghum, animal	1.39	1.04	0.78	1.25	0.94	0.71	1.24	0.93	0.70
Maize, manual	1.48	1.11	0.84	1.34	1.01	0.76	1.32	0.99	0.75
Maize, animal	1.29	0.97	0.73	1.16	0.87	0.66	1.15	0.87	0.65
Cotton, manual	2.31	1.74	1.30	1.30	0.98	0.74	0.93	0.70	0.53
Cotton, animal	2.10	1.58	1.19	1.17	0.88	0.66	0.83	0.63	0.47

SOURCE: Annex B

NOTES:

(a) Based on world prices in constant 1985 CFA francs. The reference market for cereals is the Bamako wholesale market and for cotton is the frontier. The official exchange rate is 346 CFAF/$.

B. Cotton Exports

The impact of low cotton prices on the world market may be passed on to producers, absorbed by the government, or shared between the two. The major vehicle for doing this is the producer price. As described in Chapter 1, the difference between the FOB price, converted into local currency at the official exchange rate, and the producer price plus the cost of processing and marketing is first used to replenish the Fonds de Garantie and then is transferred to the Treasury. If the world market price decreases and there is no corresponding reduction in the domestic producer price, this source of government revenue is reduced and could even become negative if the Fonds de Garantie were to be exhausted. Thus the government is confronted with a trade-off between stabilizing producer prices and maintaining its own revenues.

To examine this issue, the effects of three alternative producer prices on producer income and government revenue are calculated assuming actual 1986 and projected 1990 and 1995 world market prices (1985 constant prices). The three producer prices are (1) the actual price of 85 CFAF/kg for seed cotton, (2) the farmer's breakeven price for the animal traction technique of 122 CFAF/kg, and (3) an intermediate price of 105 CFAF/kg. The calculations are made at the actual 1985-86 level of marketed cotton with no expansion of production being assumed at higher producer prices.

The producer price plus the costs of collection, ginning, and transportation to the frontier is subtracted from the FOB price of cotton converted into local currency at the official exchange rate.[44] The balance is the tax (if positive) or subsidy (if negative) on cotton exports. This tax/subsidy is divided into two parts. The first goes to CMDT to cover input subsidies, extension costs, and recurrent expenses not directly linked to the processing and marketing of cotton. In 1985-86 these expenses were estimated to total CFAF 6.5 billion. The rest of the tax, in the absence of any net transfers to or from the Fonds de Garanti, goes to the Treasury.

The results of this exercise are shown in Table 15. First, they indicate that farmers would suffer financial losses at any producer price below 122 CFAF/kg. This conclusion should be treated with caution, however, since it assumes that family labor is valued at 600 CFAF/day, the daily wage rate generally paid in 1985 to hired labor, and not the lower opportunity cost that prevailed in 1986-87 because of unusually low cereals prices. Nevertheless, the magnitude of the losses shown suggests that a producer price of 85 CFAF/kg is clearly too low to encourage cotton production over the longer run when cereals prices return to "normal".

At the 1986 world price of $890/ton, the government is shown in Table 15 as having to pay a net subsidy even at a producer price of 85 CFAF/kg.

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[44] The value of cotton seed is subtracted from these domestic costs. See Annex B.

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Table 15

Producer Financial Profit and Government Export Tax/Subsidy on Cotton Produced Using Animal Traction (a)

	Producer Price 85 CFAF/kg				Producer Price 105 CFAF/kg				Producer Price 122 CFAF/kg			
	Financial Profitability		Export Tax/Subsidy		Financial Profitability		Export Tax/Subsidy		Financial Profitability		Export Tax/Subsidy	
World Price (US$/ton)	Per kg (CFAF)	Total (m CFAF)	Per kg (CFAF)	Total (m CFAF)	Per kg (CFAF)	Total (m CFAF)	Per kg (CFAF)	Total (m CFAF)	Per kg (CFAF)	Total (m CFAF)	Per kg (CFAF)	Total (m CFAF)
890	-97	-7	-62	-4	-44	-3	-114	-8	-0	-0.00	-158	-11.50
1280	-97	-7	72	5	-44	-3	20	1	-0	-0.00	-25	-1.79
1640	-97	-7	195	14	-44	-3	143	10	-0	-0.00	99	7.17

Source: CMDT budget and Annex B.

Notes:

(a) Export tax/subsidy is net of the contribution to CMDT. All costs and prices used in theses caculations are measured in constant 1985 CFA francs. World prices are converted to local currency at the official exchange rate of 346 CFAF/$. Total profitability and the export tax/subsidy are measured in million CFAF.

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If the producer price were to be raised, the amount of the subsidy would have to be increased. At the projected world price for 1990 of $1280/ton, the government would recover some tax revenue at a producer price of 105 CFAF/kg, but not at the breakeven price of 122 CFAF/kg. Given the reservation regarding labor costs mentioned above, however, 105 CFAF/kg might be a sufficiently high price to make production privately profitable, though it would not offer a strong incentive to farmers. Finally, the world price of $1640/ton projected to prevail in 1995 would allow a substantial tax to be recovered at the price of 122 CFAF/kg. Thus the problem is not so much one of long-term financial viability as it is of short-term stabilization of both world cotton prices and domestic cereals prices.

The analysis of the exchange rate presented earlier suggests that the CFA franc is overvalued by at least 33 percent as far as Mali is concerned. If trade distortions are taken into account, the degree of overvaluation is even greater. At the world price of $1100/ton expected to prevail in 1987 and 1988, (constant 1985 prices), the DRC with 33 percent overvaluation is 1.11 If the degree of overvaluation is 50 percent, on the other hand, the DRC is 0.98. Given the magnitude of errors in the data, there is a good possibility that cotton production is economically profitable even at this relatively low world price. Because the exchange rate is overvalued, however, it would not be financially profitable, assuming cereals prices to be at "normal" levels, even in the absence of export or other taxes. Given the government's precarious budget situation, subsidization of cotton exports to fully offset overvaluation may be untenable, but at the very least the sector should be exempted from taxation in order to at least partially counteract the effect of the overvalued exchange rate.

Specific recommendations regarding the cotton sector have been formulated by Cantournet and Waddell in their May 1986 report.[48] The analysis of CMDT costs undertaken for the EPC/DRC calculations presented here reinforces their conclusions concerning the need for savings in several areas of the CMDT budget. Generally speaking, the cotton sector is required to support too many CMDT expenditures of an overall developmental nature that should be financed out of general revenues. Furthermore, until cotton prices recover, at least, tax liabilities and other payments owed to the Treasury should be deferred, and the import tax exemption of CMDT should be extended as necessary to allow a producer price to be paid to farmers that will cover their costs to the maximum extent possible.

C. Cereals Policy

Introduction

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[48] J. Cantournet and A. Waddell, Etude de l'Avenir de la Filière Coton au Mali - Phase I, OSRP, Bamako, Mali 1986.

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Considerable progress was made in the reform of cereals policy during the first five years of the PRMC's operation, though that progress was somewhat uneven.[46] Three out of five years were ones of drought. Emergency measures had to be taken and the policy focus was, of necessity, very short term. During the years of shortages, the problem was to supply adequately and at reasonable prices population groups and zones affected by cereals deficits. During the years of relative abundance such as 1985/86, on the other hand, the problem was how to avoid producers being excessively discouraged by low prices. These issues of stabilization tended to dominate those related to economic efficiency, which were at the heart of the cereals reform.

The main areas of cereals policy considered here are Mali's comparative advantage in foodgrains, trade policies and protection, stabilization, and the role of the public sector. Before examining these, however,it is useful to look at the overall dimensions of Mali's cereals situation, the objectives of its government, and the obstacles faced in attaining those objectives.

The evolution of cereals production, marketing, imports, and net availablility in recent years is shown in Table 16, along with estimated consumption requirements. The figures indicate that there was a significant shortfall in the net availability of cereals relative to requirements during the period from 1980 to 1984. In part this may be due to the unreliability of the production data.[47] Even if the average levels of production are underestimated, however, year to year variations are likely to have some meaning. They show a significant decrease in production during 1982/83 - 1984/85 for both coarse grains and rice. This was largely offset by inflows of food aid and commercial imports so that net availability decreased to a lesser extent.

Both the difference between cereals requirements and net availability, on one hand, and the high level of food imports, on the other, suggest that Mali is far from self-sufficient in cereals. Even in 1981/82, when grain production was at its peak during the first half of the 1980s, Mali imported 135,000 tons, or over 13 percent of its total net availability. Especially important has been the growth of rice imports, which reached 172,550 tons in 1983/84, compared with the production of 75,640 tons and estimated marketing

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[46] See, for example, Charles P. Humphreys, Cereals Policy Reform in the Sahel: Mali, report prepared for the OECD/Club du Sahel/CILSS, Elliot Berg Associates, April 1986 and "Mali: Cereals Policy Reforms Issues Paper", World Bank, June 6, 1986.

[47] The figures in Table 15 are from the Ministry of Agriculture and are based on estimates of ministry officials stationed throughout the country. These numbers differ substantially from those obtained from a limited sample survey by the Direction Nationale de la Statistique et de l'Informatique (DNSI) of the Ministry of Planning.

Table 16

Production, Marketing, Imports, and Net Availability of Cereals
(000 tons)

	1980/81	1981/82	1982/83	1983/84	1984/85	1985/86
PRODUCTION AND MARKETING OF COARSE GRAINS						
PRODUCTION						
millet-sorghum	654.00	856.00	795.00	663.00	521.00	NA
maize	73.00	75.00	95.00	89.40	73.00	NA
TOTAL PRODUCTION	727.00	931.00	890.00	752.40	594.00	991.00
MARKETING						
OPAM	15.10	17.50	18.30	3.20	9.90	39.00
as % of prod.	(2.08)	(1.88)	(2.06)	(0.43)	(1.67)	(3.94)
Private	109.40	140.00	133.60	114.30	89.20	179.79
as % of prod.	(15.05)	(15.04)	(15.01)	(15.34)	(15.02)	(18.14)
PRODUCTION AND MARKETING OF RICE						
PRODUCTION	102.30	109.12	79.98	75.64	64.48	111.60
MARKETING	20.40	26.47	23.68	19.59	25.92	29.39
as % of prod.	(19.94)	(24.26)	(29.61)	(25.90)	(40.19)	(26.33)
IMPORTS						
FOOD AID						
Sorghum	0.00	0.00	17.75	11.00	20.15	NA
Maize	24.00	31.50	24.40	60.40	104.20	NA
Rice	3.00	15.45	26.60	41.55	63.05	NA
Wheat	9.80	6.75	14.05	14.15	13.65	NA
Total	36.80	53.70	82.80	127.10	200.45	NA
COMMERCIAL IMPORTS						
OPAM Rice	12.50	10.90	0.00	11.50	3.70	NA
OPAM Total (a)	12.50	10.90	0.00	18.10	20.90	NA
Private Wheat	25.00	30.00	16.00	20.00	NA	NA
Private Rice (b)	53.04	30.00	82.00	131.00	NA	NA
Private Total	78.04	60.00	98.00	151.00	170.00	NA
Total	90.54	70.90	98.00	169.10	190.90	NA
TOTAL IMPORTS	86.00	135.00	135.00	320.00	329.00	NA
NET AVAILABILITY (c)						
Millet	555.90	727.60	693.50	581.15	476.20	NA
Maize	86.05	95.25	105.15	136.39	170.25	NA
Rice	155.50	149.10	176.58	248.34	NA	NA
Wheat	34.80	36.75	30.05	34.15	NA	NA
Total	832.25	1008.70	1005.28	1000.03	NA	NA

SOURCES:

Charles P. Humphreys, Cereals Policy Reform in the Sahel: Mali, report prepared for the OECD/Club du Sahel/CILSS, Elliot Berg Associates, April 1986; data from OPAM/PRMC.

NOTES:

(a) In 83/84, OPAM imported 6600 tons of sorghum, and in 1984/85 it imported 13200 tons of sorghum and 4000 tons of maize.

(b) Assumes that "other cereal imports" by the private sector are rice only.

(c) Production minus feed, seed, and losses (15%) plus imports.

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of 19,600 tons in that year. Furthermore, the instability of production due to variations in rainfall poses an additional burden on the economy, as evidence by the 191,000 tons of commercial grain imports in 1984/85 in addition to the 200,000 tons of food aid.

Cereals Policy Objectives and Constraints

The principal objectives of the PRMC have been (1) to reduce the deficits and operating losses of OPAM and the other rural development agencies, (2) to liberalize grain marketing to include private traders, and (3) to increase prices both to producers and to consumers. It is clear that the government, on the other hand, views cereals sold to urban consumers-- and civil servants in particular-- as an important wage good and that it is careful not to place strong pressure on real wages through food price increases. The sale of rice to public agencies at an official price that in 1985 averaged 28 percent less than the market price, for example, was a way to forestall wage increases for which urban workers would have otherwise have pushed as a result of higher grain prices.[48] This, in turn, helped to reduce additional budgetary expenditures, albeit at the cost of increasing the financial deficit of the Office du Niger.[49]

OPAM does not, however, have the capacity to intervene in the cereals markets on a scale sufficient to prevent market prices from rising. Throughout the 1970s and 1980s, OPAM was unable to mobilize a sufficiently large supply of grain to satisfy demand at low official prices, and a parallel market developed in which prices were much higher than official consumer prices. Despite OPAM's official monopsony, it was able to purchase less than one half of marketed production and it had to ration its limited supplies to consumers. The use of marketing quotas and other means of coercion, in the meantime, played havoc with producer incentives and the development of a viable marketing system.

The major goal of the PRMC, therefore, was to unify the grain market by eliminating OPAM's monopoly and increasing official prices. This, together with improvements in OPAM's operating efficiency, would also reduce its financial losses. Left unclear, however, was the role that OPAM would eventually play and how official prices would be maintained in the face of strong market pressures. Ostensibly, OPAM was "... to maintain price stability, assure regional price equality for consumers, and act as a buyer

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[48] In spite of some wage increases in 1985, for example, the Secretary General of the Union Nationale des Travailleurs Maliens declared that the cost of living for Malian workers had become "unbearable" since Mali joined the West African Monetary Union on August 31, 1984.

[49] Humphreys, Cereals Policy Reform ..., estimates that the 60,000 tons of cereals sold by OPAM to public agencies in 1983/84 "reduced" budgetary expenditures by about CFAF 3 billion.

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of last resort for farmers when market producer prices were low."[80] There was no quantitative analysis, however, to determine how this was to be accomplished, including the magnitude of stocks, storage facilities, financial resources, management skills, and recurrent subsidies that would be required.

OPAM's inability to stabilize prices was clearly visible by mid-1986, when record harvests forced grain prices to very low levels -- far below official producer prices. There was no evidence, moreover, that OPAM was in any way seriously affecting regional price differences. Finally, OPAM's financial difficulties continued because it purchased grain at official producer prices but was unable to sell it at official consumer prices, which were substantially in excess of those on the open market. In the meantime, of course, its storage and interest costs continued to mount.

In the face of these difficulties, the Malian government formally requested to the PRMC donors a three-year extension (1986/87 to 1988/89) in order to pursue the reforms initiated during the first phase (1981/82 to 1985/86). The donors agreed in principle. There has been little agreement, however, on Mali's cereals policy over the longer term. The rest of this section examines some of these issues in the light of the EPC/DRC analysis presented earlier.

Comparative Advantage and Incentives in Cereals Production

The analysis in this report suggests that Mali has a significant comparative advantage in coarse grains but, does not have a comparative advantage in rice. This does not imply, however, that Mali should not be producing rice. The analysis thus far has assumed that domestically produced rice is transported to Bamako, where it competes with imported rice. If the rice is consumed, instead, in the region in which it is produced, the increased transport costs for imported rice and the decreased costs for domestic rice are such that the DRC is less than one. As an example, the DRCs for rice produced and consumed in the Mopti region are 0.79 for the traditional flooded technique and 0.75 for controlled flooding, using the 1995 projected world prices in constant 1985 prices.[81]

Despite the fact that rice produced in the Office du Niger is slightly unprofitable economically, the security of this source of food supply implies that rice will probably continue to be cultivated there for sale in Bamako. Nevertheless, if the only major domestic source of supply for that market is the Office du Niger, this implies a considerable dependence on

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[80] Charles P. Humphreys. "Cereals, Policy Reform in Mali," May 1986, p.9.

[81] These results are calculated using a shadow exchange rate of 460 CFAF/$. See Annex B for other examples and details.

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imports. This dependence is not unreasonable, however, given the remarkable success over the past 10 years of the Green Revolution in much of Asia, which has resulted in a large structural decrease in international rice prices. In 1970, for example, the price of 5 percent broken rice exported FOB from Thailand was $397/ton in 1985 constant dollars. By 1981, that price had risen to $460/ton. Thereafter it dropped steeply to $177/ton in 1986 and is expected to increase to only $216/ton by the year 2000.[82]

This implies that rice imports for many years to come are likely to be a reasonably inexpensive and dependable source of food supply that could satisfy some of Mali's food needs and help to stabilize the domestic market. Domestic resources should not, therefore, be wasted on high cost schemes designed to substitute locally produced rice for these imports but should instead be allocated to profitable export activities, such as cotton, that can earn the foreign exchange necessary to pay for food imports. At the same time, however, incentives should be structured so as to take into account the overvaluation of the exchange rate and other national objectives such as food security. This implies that some protection should be offered to domestic rice production, as is discussed below.

The same comment applies to the coarse grains. As was seen in Table 14, at the world prices and official exchange rate that prevailed in 1986, the DRCs range from 1.29 to 1.50, implying a lack of comparative advantage when these grains are transported to Bamako.[83] At 1986 world prices and a shadow exchange rate of 460 CFAF/$, on the other hand, production for sale in Bamako is close to being profitable, especially for animal traction techniques. With the slight rise in world coarse grain prices that is projected to take place by 1990, moreover, the DRCs range from 0.87 for maize using animal traction to 1.02 for manual cultivation of millet and sorghum. These results assume a shadow exchange rate of 460 CFAF/$; if the official rate of 346 CFAF/$ is used, instead, the DRCs in 1990 range from 1.16 to 1.36 Since 460 CFAF/$ is a conservative estimate of the shadow exchange rate, however, it can be concluded that Mali has a comparative advantage in producing coarse grains for its home market.

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[82] World Bank, EPDCS, "Primary Commodity Price Forecasts," Memorandum, February 5, 1987.

[83] Even at these world prices and this exchange rate, production is economically profitable for consumption on-farm or within the producing region since none of the DRCs, in this case, are greater than 0.5.

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Trade Policy and Protection

Earlier it was shown that, except for rice, tariff protection in 1985 did not adequately compensate for overvaluation of the exchange rate. Compensation for rice occurred principally because of the subsidy to producers. Trade policy, in this case, would have been a more appropriate means of offsetting the overvaluation of the currency because it would have affected both consumers and producers.

The import tariff on cereals, which was suspended in 1981 during the drought years, was reestablished in January 1986. The ad valorum tariff for rice then was fixed at 27.2 percent.[84] This tax rate is reflected in the NPC shown in Table 12 and is consistent with the official producer price and distribution subsidy used to calculate the NPC. In July 1986, the government accepted the recommendation of the IMF to increase the tariff rate on rice to 32.76% and to fully apply similar import duties and taxes shown in the tariff code for coarse grains.[85] The rationale for such a decision was apparently twofold. First, the CFA franc was known to be overvalued for Mali. Second, the tariff was seen as a means of increasing government revenue.

On the basis of the calculations made earlier of the extent of overvaluation in Mali, this tariff level appears to be a minimum given the official exchange rate that prevailed in 1986 and the inability of Mali to alter this rate because of its membership in the West Africa Monetary Union. A more careful estimation of the shadow exchange rate could well suggest the desirability of a higher tariff rate. As the exchange rate and balance of payments situations change, moreover, the tariff on cereals should be reviewed, as should tariff rates for all products in order to assure reasonably uniform protection across industries.

To the extent that there is some weight attached to national objectives other than economic efficiency, an argument can be made for varying the tariff rate across products. In particular, the security attached to rice production in the Office du Niger could justify raising the tariff rate on rice sufficiently to make production there privately profitable. This assumes, of course, that the producer subsidy would be eliminated so that consumers would pay part of the cost of increased food security. The DRC results in Table 14 indicate the extent to which effective protection would have to be increased beyond that required to offset the effects of different degrees of overvaluation.

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[84] This tax rate included a 10 percent DFI, a 11.1 percent IAS on the CIF plus DFI price, and a 5 percent CPS on the CIF price. There was also a 5 CFAF/kg specific OSRP tax.

[85] Letter of Intent of the Minister of Finance of Mali to the IMF, July 11, 1986.

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Stabilization

As noted earlier, a major concern of the Malian government over the past few years has been the stabilization of domestic cereals prices to producers and consumers. Of equal importance have been fluctuations in the world market price of cotton, Mali's major export. The sources of instability in grain prices have been twofold. First, large fluctuations in international prices have taken place during the past two decades under the influence of broad structural changes in the pattern of world production and consumption and the vicissitudes of agricultural policies in the major producing and consuming countries. Second, Mali is subject to recurrent drought that influences both rainfed crops and flooded rice production. Only rice produced in the Office du Niger is relatively immune to changes in weather because of the Office's irrigation system. Elsewhere, fluctuations in rainfall lead to large price changes. Because Mali can ill afford massive commercial imports during years of bad harvests, food aid is required in large quantities. This, in turn, is itself a source of instability since deliveries are often late and arrive after the critical moment when the food is most urgently needed.

There are a few policy actions which the Malian government clearly cannot take to ease this situation. Beyond timing its purchases and sales of security stocks so as to even out excessive fluctuations in cereal prices over short periods, there is little it can do domestically to promote price stability through buffer stock operations. Given very serious financial and managerial constraints, the task of buying, selling, and storing quantities of cereals sufficient to seriously influence prices is far too costly and vast to be contemplated as a policy alternative. Experience in Mali and other Sahelian countries provides abundant evidence of this and suggests that efforts in this direction are likely to be counterproductive.

A more practicable approach is to stabilize grain prices through imports. In some countries, this is coupled with the use of stabilization funds that avoid passing fluctuations in world prices fully on to the domestic economy. Even assuming that such a scheme could function effectively in Mali, however, there are several major difficulties associated with its use.

First, as shown in Table 16, imported cereals in most years account for less than 15 percent of total availability. Only in the case of rice do imports amount to 50 percent of total consumption. This implies that the ability to stabilize domestic prices through imports depends to a large extent on the elasticity of substitution in consumption between rice and coarse grains. Little is known about this parameter.

The second limitation is that, during drought years, one of the important causes of malnutrition is the lack of effective demand. There is a loss of purchasing power in the economy as a whole and on the part of individual farmers and herders whose crops and livestock have been destroyed by the drought. The ability of the government to handle this problem by

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setting aside foreign exchange reserves to purchase food and to finance its transfer to the needy is very limited. It must therefore rely on food aid to fulfill for this function in the foreseeable future.

Finally, there is the difficulty of establishing the level of prices around which stabilization should take place. Should cotton prices be raised, for instance, to encourage production assuming that world prices will increase in the future, or should they be reduced in order to discourage production in the face of a weak world market? The answer will depend on the viability of world price projections, the elasticity of producer response with respect to price change, the useful service life of capital assets involved in production, and other factors about which there is little information. Furthermore, given the uncertainty associated with determining appropriate domestic price levels, there is the constant tendency to shift prices in directions that are politically and financially most expedient. In Mali, this has usually implied lowering producer prices of cereals in order to benefit urban consumers and taxing export crops such as cotton in order to provide public revenue.

Given these important constraints, what are the advantages to stabilizing domestic prices. First, to the extent that producers and consumers are risk averse, they benefit directly from more stable economic conditions.[86] Second risk averse farmers tend to produce less of products whose prices fluctuate widely, even if these are products in which Mali has a strong comparative advantage, e.g., cotton.[87] To the extent that the government can stabilize prices at low cost through trade policy, there would be a net gain to the economy.

Stabilization of domestic prices through trade policy and the operation of a stabilization fund would be desirable if the major difficulties discussed above could be overcome. This might be possible if stabilization were limited, at least at first, to two commodities - - rice and cotton. The discussion presented earlier suggested that cotton exports should be encouraged and that Mali should probably rely on imports to satisfy most of its growth in demand for rice. These imports should be taxed, however, to offset the overvalued exchange rate. Part of this revenue could be

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[86] A caveat to this is that larger producers, who have a marketable surplus, may find that their net cash incomes are more unstable when prices are stabilized in the face of fluctuations in domestic output. This is because the quantities marketed and market prices tend, under these conditions, to move in opposite directions. Net purchasers from the market, however, gain from price stabilization. Everyone gains, moreover, when the source of instability is the world market.

[87] Estimates of risk aversion among farmers vary widely, and no precise quantitative guidelines can be derived from other country studies. What can be said is that risk aversion is widespread and that farmers do tend to produce less of crops for which risks are high.

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channeled to the Treasury, but the rest of the difference between the domestic price of rice and its border price would go into the stabilization fund and be used, if necessary, to subsidize cotton exports. The subsidy on rice production, as mentioned earlier, could be eliminated since producer prices would be increased indirectly through import taxation.

An alternative to a stabilization fund for Mali would be a variable levy on rice imports. This levy would equal the difference between a target price established domestically and the CIF border price. Since rice is imported in every year in considerable quantities, the target price could be effectively maintained through use of this trade policy. Taxes on rice imports would go directly to the Treasury and would not be used to finance a subsidy on cotton exports when world cotton prices are at low levels. Although this would expose cotton farmers to the vagaries of the world market for cotton and would prevent them from being compensated for overvaluation of the exchange rate, these disincentives could partially be offset by eliminating all export taxes on cotton and by financing CMDT's development activities out of general revenues, including the duty on imported rice. This would be administratively simpler and would eliminate the temptation to keep cotton prices low in order to boost government revenues. Although cotton farmers would face some increased risks, capital invested in production consists chiefly of oxen and equipment that can also be used to produce cereals, allowing them to shift efficiently between crops in response to short-run price changes.

Stabilization of rice prices through the use of trade policy would eliminate the need for seasonal variation in the price of rice since imports would replace storage as the means of supplying consumers during much of the year. Mali's comparative advantage in coarse grains, though not very great, is such that commercial imports of these cereals would not be competitive with domestic production if tariff protection were sufficient to offset the effects of the overvalued exchange rate. Prices of coarse grains would continue to vary seasonally, encouraging private storage, as long as the elasticity of substitution in consumption between rice and these cereals is not infinite. The greater is the elasticity, the more useful stabilization of rice prices would be in reducing fluctuation in prices of other cereals, but if the elasticity were too great, some seasonal movement in the price of rice might be necessary to encourage economically efficient storage of coarse grains. The magnitude of this elasticity, then, is an important policy parameter that needs to be estimated before the recommendations presented here are implemented.[88]

Price policy is, of course, no substitute for disaster relief in bad years. Stabilization of prices for commercial imports would, therefore,

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[88] This estimation is currently taking place as part of the analysis of a consumption survey recently undertaken by the DNSI in Bamako and the regional capitals that is being financed by USAID with technical assistance from Tufts University.

have to be carefully coordinated with the arrival and distribution of food aid. Nevertheless, price stabilization would act in the direction of sustaining the real income of consumers, and would at least contribute to alleviating the impact of drought and famine.

Finally, though there is no guarantee, even under the variable levy, that price targets would not tend over time to benefit consumers or the treasury at the expense of producers, the vested interests involved in the scheme proposed here would be at least acting in opposite directions. Urban consumers, for example, would benefit from a lower target price, but this would be at the expense of public revenued acquired through the variable levy or its stabilization fund equivalent.

Role of the Public Sector

Because the problem of stabilizing cereals prices through domestic buying and selling is so daunting in a country like Mali, it is important to define carefully the role that the public sector can and should play in cereals marketing. Above all it is vital that the activities of public trading agencies supplement rather than try to replace the private sector. Experience in other countries provides abundant evidence that the public agencies that work best are those whose role is quite limited.[89]

The major responsibilities of OPAM should comprise the following:

(1) operate and maintain limited emergency grain reserves;

(2) provide for emergency shipments of grain to people in distressed areas;

(3) act as the recipient of food aid in poor years for sale on the open market or for free distribution in distressed areas.

These are clearly public service activities that, with the exception of selling food aid on the open market, are bound to lose money. Money-losing operations to maintain the welfare of the population should, however, be a service provided by the public sector, and the magnitude of these activities should be determined by the willingness of the government to fund them directly out of its budget. Revenue from sales of food aid should only be used to offset the costs of emergency shipments and distribution. These public service activities should not be undertaken through commercial operations involving purchased food unless the government is willing to finance the losses that will be incurred.

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[89] World Bank, World Development Report 1986, and "Grain Marketing, Policy Options, Background Paper," Report No. 4411, March 17, 1983.

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Beyond this, there are a number of other public responsibilities that OPAM might be asked to fulfill. One is to provide information to private and public agents about supply, regional needs, prices, and markets. Another is the provision of food at low cost to the nutritionally deprived. The people in Mali who are at greatest risk nutritionally have not yet been clearly identified.[40] Most evidence, however, points to rural areas, especially those where rainfall is marginal. Here the most severe droughts during the past two decades have had their greatest impact. The problems of protecting these regions against nutritional deprivation are many. First, the costs of transport and distribution of food are high since these areas are long distances from the major surplus regions, and the road network in much of Mali is poor. Second, the establishment of refugee camps to lower delivery costs tends to remove people from areas of production and to make them dependent on external sources of food. Third, the cost of commercial food purchases for delivery to these areas is high for a government that has very limited fiscal resources.

Food aid seems to be the only alternative, but continuing inflows of this aid may increase dependence, discourage producer incentives, and do little to alleviate the fundamental problem. Use of food aid in years of drought is desirable, however, as an alternative to implementing costly policies designed to assure self-sufficiency in all years. It would be undesirable, on the other hand, for Mali to import coarse grains, either as food aid or on commercial terms, in years of normal rainfall, since the ERP/DRC analysis indicates that production for consumption in urban areas is profitable when foreign exchange is valued at its shadow rate. As mentioned earlier, this should not be a problem as long as a tariff of at least 33 percent is applied to coarse grain imports as a means of offsetting the overvaluation of the CFA franc. This tariff rate, of course, would have to be periodically reviewed.

D. Livestock Subsector

Introduction

Most livestock production in Mali uses very extensive techniques involving grazing or browsing of flocks and herds. Agricultural by-products are also fed to animals, but there is little cultivation of forage or feed. Most costs involve the labor used in tending and watering livestock, and the capital that herders and farmers tie up while waiting for animals to mature. Data are very scanty on these costs and on the yields that are achieved. Consequently, it is not possible to estimate quantitatively measures of incentives and comparative advantage.

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[40] This situation may change, as far as urban areas are concerned, once the consumer survey undertaken by the DNSI has been analyzed.

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There is reason to believe, however, that the DRC's are quite favorable. During the 1950's and 1960's demand for meat rose rapidly in Africa, especially in coastal areas such as those of the Ivory Coast. Real prices of animals remained fairly stable, however, as the increase in supply was met by an expansion in the number of animals being marketed out of existing herds. Furthermore, an extensive campaign against rinderpest during the 1960's helped to increase herd productivity. By the end of the 1960's, however, the ability of supply to stay up with demand was approaching its limit.[41]

Following the 1972-74 drought, animal prices rose sharply because of the losses sustained throughout the Sahel. Those herders who had animals that had survived were well remunerated for their input of labor and capital. Although the export tax acted to depress domestic prices, thus providing negative protection, the tax was widely evaded. The major constraint, instead, was the environment and the succession of years of poor rainfall that followed.

There is some reason to speculate that this period may be over. Droughts of the magnitude and duration that existed between 1967 and 1984 have historically occurred about once in a century.[42] The following two years, 1985 and 1986, were relatively good. If this does signal an end to this period of devastating drought, the potential for profitable expansion of livestock activities will have substantially increased.

Policy measures to aid this expansion are not easily devised. Pastoral activities take place over a vast zone that is sparsely populated. People move extensively in the face of a variable pattern of rainfall. Given the meager financial and managerial resources available to the Malian government, its influence is weak. Nevertheless, the government has played an important role in certain areas, particularly its vaccination campaign, and there are a few desireable policy reforms that can be readily identified. Three of these are discussed below.

Financing Vaccination Campaigns

For many years, vaccinations against infectious diseases were administered in Mali at no charge to the animal owner. The costs of these services could be broken down into three categories:

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[41] J. Dirck Stryker, Livestock Production and Distribution in the Malian Economy, Supplementary Report prepared for the U.S. Agency for International Development, Washington, D.C. August 1973.

[42] Richard A. Kerr, "Fifteen Years of African Drought," Science, 227, March 1985, pp.1453-5.

(1) production at the Central Veterinary Laboratory in Bamako, or procurement elsewhere, of vaccines, medicines, and other supplies;

(2) transport of these materials between Bamako and the field;

(3) vaccination and other animal health care activities in the field by personnel of the animal health service.

Under increasing fiscal pressure after the mid-1960's, the animal health delivery system began to break down. The Central Veterinary Laboratory (CVL) operated at a continuing deficit and found itself unable to purchase supplies and equipment. Lack of vehicles, refrigerators, freezers, spare parts, and fuel inhibited the timely delivery of vaccines and other supplies to the field and threatened to break the cold chain, which is vital for maintaining the critical rinderpest vaccine. In some cases, vaccines were administered that were no longer viable because of inadequate cold storage. Finally, animal health agents in the field were victims of low pay and inadequate incentives. Since the herders clearly recognized the value of the vaccinations, however, they frequently paid the agents directly for their services.[43]

In response to this problem, the government instituted a system of payments by herders for vaccines used on their animals. The schedule of charges in effect today is as follows:

Contagious bovine pleuropneumonia	17.7 CFAF/dose
Rinderpest	12.5 CFAF/dose
All others	15 CFAF/dose

The vaccines are sold to buyers for 2.5 CFAF/dose less than these charges in order to cover part of the cost of delivery. Vaccines are purchased at this reduced rate by herders, traders, and the animal health service.

In order to encourage quality control and a wider market, a system of publicly owned veterinary pharmacies was established in 1979. About 15 branches and depositories currently handle animal vaccines, medicines, and other supplies. Elsewhere these products are stocked by the animal health service posts.

The preliminary 1986 budget for the Central Veterinary Laboratory proposed 102.8 million CFA francs from sales of vaccines and 96.7 million

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[43] For a more complete discussion of the problems associated with the financing of livestock vaccination campagnes, see J. Dirck Stryker, "Recurrent Costs for Animal Health Services: Mali, Mauritania, Senegal, and Upper Volta -- A Case Study for the Sahel Recurrent Cost Study." November 1979, and William F. Beazer and J. Dirck Stryker, Financing Recurrent Government Expenditures for Livestock Development in Mali, Report prepared for the Government of Mali, May 1976.

CFA francs to be furnished by a government subsidy. There have been complaints, however, that the livestock service retains most of the payments for vaccines and that the veterinary pharmacies do not turn all the funds they receive over to the CVL. One reason for this is that the 2.5 CFAF/dose to which the purchaser is entitled is not adequate to cover transport and distribution costs.

Equally serious is the issue that has been raised concerning the reaction of herders to being charged for vaccinations. Herders clearly recognize their value in preventing rinderpest. Their convictions regarding other vaccinations, however, seem less strong despite the fact that the charges per dose are much less than the value of the animals being vaccinated. Even for rinderpest, there may be some hesitation in paying for vaccinations when the threat of the disease does not seem great. It is clear, however, that this issue needs further study.

It is recommended that a study be undertaken of experience in recent years with the system of vaccination payment. This study would focus on several issues:

(1) the distribution of vaccination charges among the animal health service, the veterinary pharmacies, private traders, and the CVL in relation to actual costs of production, delivery, and administration;

(2) procedures for financial planning, procurement, inventory control, and accounting within the vaccination payment system;

(3) reaction of herders to the imposition of charges by specie, age/sex, disease, prevalence of disease, indicators of wealth, etc.

Out of this study would come specific recommendations for improving the administration of the system, for determining appropriate levels for vaccine charges, and for establishing a distribution of payments between the animal health service, the veterinary pharmacies, private traders, and the CVL.

Export Taxation and Procedures

Another issue related to livestock policy is the procedures for and taxation of livestock exports. Most important, perhaps, are the complex procedures which traders must go through. In Bamako, for example, an exporter must go to at least six different physical locations to have his animals vaccinated, pay his taxes, get a bank guarantee, and obtain a license and other papers. This may take two or three days. There are other delays at the border, both on leaving Mali and on entering the neighboring country. Corruption has increased markedly in recent years, and bribes of 500 to 1000 CFAF must be paid at each step of the export process.

The export tax is 4000 CFAF for horses, 2000 CFAF for cattle, and 500 CFAF for small ruminants. In addition, there is the CPS equal to 3 percent of the valeur mercuriale. Currently this ad valorem tax amounts to 3750 CFAF for horses (other than thoroughbred or race horses), 1500 CFAF for cattle, and 300 CFAF for small ruminants. There are also animal health taxes and a special tax to pay for the operations of OMBEVI. In addition to these taxes, the exporter must purchase a patente to engage in foreign trade and an export license for specific export transactions. Finally, there is the BIC tax to be paid on any profits earned.

The net effect of these complicated procedures, taxes, and restrictions is to strongly encourage smuggling. It is estimated that two-thirds of all animal exports are illegal. Furthermore, the contribution of the livestock export tax, which includes taxes on skins, hides, and other livestock products in addition to those assessed on live animal exports, is minimum. Thus the export tax on live animals and animal products amounted to less than 0.5 percent of total revenue in 1985.

It is recommended that the export tax (taxe d'exportation and CPS) on animals and animal products be eliminated for the following reasons. First, every effort should be made, following the severe drought of 1984 and the prospects for improved rainfall in the future, to restock the rangeland with breeding females and their young offspring. This means selling male animals as they mature. The higher domestic price for animals that would result from the elimination of the export tax would encourage such sales.

Second, the earlier analysis of the exchange rate showed that it is overvalued in relation to the equilibrium rate by at least 33 percent. This implies that exports are being highly penalized. Elimination of the export tax, though not fully offsetting this overvaluation, would be a step in the right direction.

Third, the fiscal consequences of this measure would be minimum. The International Monetary Fund has estimated that abolition of all export taxes, most of which are on animals and their products, would reduce public revenues by CFAF 400 million.[64] Furthermore, much of the increased income to traders and herders, plus that resulting from the expansion of exports because of improved incentives, would ultimately be spent on imported goods that would contribute to public revenues through import taxes.

In addition to abolishing the export tax, procedures should be restricted to those that are necessary for animal disease control. Licensing of exports, for example, is administratively cumbersome and unnecessary. On the other hand, animals should be vaccinated and cleared by health officials for export in fulfillment of regional agreements for cooperation in disease control. A fee for this service could appropriately

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[64] International Monetary Fund, Fiscal Affairs Department, Mali: Reform of the Tax System, October 31, 1985, p.6.

be changed. The special tax to pay for the activities of OMBEVI, which are not directly linked to livestock exports, should be eliminated, and these activities should be paid for out of general revenue. The fiscal loss would be very slight and could be outweighed by the reduction in administrative costs required to collect the tax.

Fixed Meat Prices

Meat prices are currently fixed at the local but not the national level. This raises the question of whether these prices are sufficiently high and are adjusted often enough to allow an adequate margin to be paid to butchers and middlemen. If not, there are likely to be shortages to consumers and a misallocation of resources, as butchers and traders divert animals to the parallel market or to exports.

Table 17 sheds some light on this issue. It presents monthly data for 1984 and 1985 on the average price per kilogram of carcass for steers in selected markets compared with the official retail price of beef meat. Missing, of course, are data on the processing and commercial costs and margins involved in transporting animals to consumer centers, slaughtering them, and marketing their meat. Nevertheless, the figures give some idea of regional and temporal variations in the margins allowed.

It is useful to note, first, that the delegation of price fixing authority to the municipalities is a marked improvement over the nationwide determination of prices that used to exist. For one thing, there is substantial regional variation in animal prices, which generally rise from north to south and as one approaches Bamako. For another, it is easier to make more frequent changes in prices locally than nationally. In the four urban areas shown in Table 17, eight price changes occurred during 1984 and 1985.

Although prices in the market for live animals were usually less than the official price of meat in 1984 and 1985, the difference was generally less than 30 percent of the live animal price, and in many cases it was much less. This margin was often insufficient to cover marketing costs. In a few instances, the carcass price was even greater than the official retail price, implying a severe price distortion. There was also very little regularity of official price movements, implying lack of responsiveness to seasonal variations in supply and demand.

On balance, therefore, there is a strong presumption that the system of administered prices creates distortions and imposes constraints on the efficient allocation of resources. More information is needed, however, on the magnitude of these effects. This will require estimating the costs of transport, processing, and marketing between live animal markets and retail sales outlets. It will also involve assessing the magnitude of shortages caused by the disequilibrium between official and market prices, as well as the impact this might have on livestock production and

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Table 17

Average Price Per Kilogram of Carcass for Steers and Official Retail Price of Beef in Selected Markets
(CFAF/kg)

	Bamako		Sikasso		Segou		Kayes	
Year, Month	Cattle	Retail	Cattle	Retail	Cattle	Retail	Cattle	Retail
1984 Jan	453	600	438	475	435	500	450	550
Feb	459	600	454	425	431	500	473	550
March	451	600	495	425	444	500	491	550
April	450	600	372	475	449	500	495	550
May	467	600	426	450	424	500	452	550
June	471	600	451	450	440	500	526	550
July	478	600	450	450	343	500	506	550
Aug	486	600	348	450	397	500	484	550
Sept	575	600	412	450	396	500	392	550
Oct	459	600	399	450	399	500	468	550
Nov	452	600	435	450	404	500	466	550
Dec	NA	600	NA	450	NA	500	NA	NA
1985 Jan	466	600	426	450	386	500	483	600
Feb	464	600	402	450	398	500	452	600
March	462	600	432	450	395	500	461	600
April	463	600	399	450	371	500	NA	NA
May	456	550	421	450	418	500	NA	NA
June	485	700	442	450	378 (b)	500	NA	NA
July	519	700	418	450	427	500	NA	NA
Aug	550	700	409	450	404	500	NA	NA
Sept	540	NA	449	450	410	500	NA	NA
Oct	535	650	459	450	343	500	NA	NA
Nov	530	650	NA	NA	333	500	NA	NA
Dec	560	650	443	450	399	500	NA	NA

SOURCES: For Jan-Dec 1984 source is OMBEVI, "Statistiques Du Detail Et De La Viande 1984". For Jan-Dec 1985 sources are monthly issues of OMBEVI, "Synthese Des Rapports Des Foires Et Marches".

NOTES: (a) Niono market
(b) Segou market

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marketing. Such a study should present specific recommendation for changes in price policy that would result in more efficient livestock marketing.

Section 3. INDUSTRIAL SECTOR

This section examines protection and comparative advantage in the industrial sector of Mali and explores some major issues regarding the incentive system. Specific questions related to import policy, export promotion, taxation , price reform, and incentives to industrial investment are considered and recommendations are made. The analysis and recommendations are based on a survey of enterprises conducted in June 1986 and a review of official documents and studies prepared by the government. [48]

The methodology and detailed estimates of protection and comparative advantage for the industrial sector are contained in the annexes. The basic methodology is the same as that described for agriculture in Annex B. Sources and methods of calculation specific to industry, as well as the detailed estimates, are presented in Annex C.

A. Import Trade Policy and Industrial Protection

Tariff Structure

Total import duties in Mali, as indicated by the pression fiscale noted in the tables of Chapter 1 and in Annex A, range from 5 percent (fertilizer) to 288 percent (whisky). Limited solely to duties on external trade (i.e., droit de douane and droit fiscalé d'importation), the range is zero to 105 percent. Table 18 shows the Nominal Protection Coefficients, or the ratio of the domestic price to the CIF border price, for imports from CEAO and non-CEAO countries after adjustment for the impôt sur les affaires et services (IAS) on domestic production. The table is based on the structure

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[48] In a questionnaire asking what are the major problems that these enterprises face, 14 firms gave the following answers:

(1) lack of working capital: 8 firms
(2) difficulties with supply of local raw materials: all 5 firms that process local raw materials (sheanuts, fruits, tobacco, dah, groundnuts)
(3) lack of qualified manpower: 4 firms
(4) slowness of administrative process: 3 firms
(5) irregular supply of electricity: 4 firms
(6) competition from imports by fraud: 3 firms
(7) small market: 3 firms
(8) taxes too high: 3 firms
(9) lack of capital for expansion: 1 firm
(10) lack of containers: 1 firm.

of tariffs only and does not take into account the impact of import restrictions on domestic prices.

Table 18
Nominal Protection Coefficients for Selected Products (a)

Produits Agrées	From CEAO Countries	From Other Countries
Live Cattle	1.090	1.352
Maize	1.090	1.248
Hulled Rice	.975	1.115
Canned Milk (Sweetened)	.925	1.022
Millet	.975	1.115
Sugar	.925	.975
Peanut Oil	1.383	1.665
Macaroni	1.300	1.456
Cigarettes	1.688	2.618
Beer	1.698	1.938
Salt	.920	1.115
Cement	1.182	1.182
Fertilizers	.880	.925
Soap	1.373	1.560
Cycle Tires	1.248	1.352
Wood	.975	1.114
Kraft Paper	1.091	1.352
Printed Fabrics	1.300	1.352
Clothing Woven	1.091	1.560
Leather Shoes	1.456	1.601
Galvanized Sheets	.975	1.068
Nails	1.279	1.508
Unweighted Average Produits agrées	1.174	1.372
Produits Nonagrées		
Flour	1.020	1.068
Green Tea	1.175	1.248
Canned Tomatoes	1.613	1.665
Sacks, New Jute	1.300	1.352
Plastic Shoes	1.613	1.664
Household Ceramics	1.613	1.664
Concrete R. Bars	1.300	1.207
Weaving Machinery	1.195	1.248
Batteries	1.175	1.248
Radios	1.161	1.207
Passenger Cars	1.373	1.425
Cycles & Motorcycles	1.195	1.248
Enamelled Houseware	1.613	1.665

Table 18 (continued)		
Whisky	2.777	2.846
Unweighted Average produits nonagrées	1.439	1.482
Unweighted Average all products in sample	1.277	1.415

SOURCE: Ministere des Finances, Direction Nationale des Douanes, SYDONIA (Systeme Douanier Automatisé), Janvier 19, 1985

NOTE: (a) Nominal Rate of Protection after adjustment for IAS tax on domestic production, calculated as (1+DD+DFI) X (1 + IAS on imports) /(1 + IAS on domestic production).

The table suggests an average rate of protection of 28 percent on imports from within the CEAO and 42 percent on imports from third countries. These levels of tariff protection are considerably higher and more varied than those in neighboring countries such as Senegal (See Annex A, Table A15). The table also shows substantial variations in the NPC across products.

The effective protection coefficient (EPC) measures the combined effect of incentives on outputs and inputs in a particular production activity. It is equal to value added in domestic prices divided by value added in world prices. The domestic resource cost (DRC) is a measure of comparative advantage. It is equal to the opportunity costs of domestic resources used in the activity divided by value added measured in world prices.

The calculations of EPC and DRC, presented in detail in Annex C, are summarized in Table 19. They suggest, first of all, that the average rate of effective protection in Malian industry is fairly high and slightly greater than the average rate of nominal protection. This is because protection on intermediate inputs is generally less than protection on outputs. This is not always the case, however, as illustrated in Table 20, where examples are presented of three firms for which the NPC on some inputs is greater than on outputs.

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Table 19
Effective Protection Coefficients and Domestic Resource Costs
for Selected Products

	Year	EPC (a)	DRC (b)
Agricultural Equipment (SMECMA)			
1. Tool-bar	1985	1.47	0.72
2. Seeder	1985	1.63	3.00
3. Cart wheels	1985	0.53	0.39
Cigarettes (SONATAM)			
4. Liberté Ordinaire	1986	1.84	N/A
5. Liberté Filtre	1986	1.75	N/A
6. Mansa	1986	1.98	N/A
7. Matches (SONATAM)	1986	1.74	N/A
8. Roofing (TOLMALI)	1986	0.69	N/A
9. Batteries (FAMAC)	1986	1.59	3.83
10. Nails (SOMAFAM)	1985	-3.71	-0.66
11. Plastic Sacks (SADA DIALLO)	1985	1.29	0.68
Textiles (COMATEX)			
12. Cloth	1985	1.27	N/A
13. Thread	1985	1.28	N/A
14. Cottenseed oil	1986	1.08	0.58
Tamarin Sirop SOCAM)			
15. Bottles	1985	4.35	N/A
16. Canned	1985	1.30	N/A
17. Sheanut butter (SIKAMALI)	1986	N/A	N/A
Weighted Average		1.45	1.50

SOURCE: Annex C.

NOTES: (a) Effective protection coefficient for the domestic market.
(b) Domestic resource cost at actual capacity utilization, taking into account an overvaluation of the exchange rate of 33 percent.

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Table 20

Three Firms for which Tariffs on Inputs are Higher than on Outputs

FAMAC	NPC(a)
Output: Storage batteries	1.20
Inputs:	
Lead oxide	1.30
Sulphuric acid	1.30
Casings	1.11
Caps	1.11
Separators	1.11
SOMEPAC	
Output:	
Cartons	1.30
Inputs:	
Twine	1.41
Paper	1.30
Starch	1.20
Ink	1.30
TOLMALI	
Output:	
Galvanized roofing	1.06
Input:	
iron sheets	1.16

SOURCE: Data from firm survey, June 1986.
NOTES: (a) Calculated as (1+DD + DFI) x (1+IAS on imports) /(1+IAS on domestic production).

Second, Table 19 shows large differences across products, with effective rates of protection (ERP = EPC -1) ranging from -47 percent for cart wheels to 335 percent for bottled tamarin syrup.[44] This variation in the incentive structure is partially, but not completely, reflected in the DRC's, the difference between these and the EPC's reflecting taxes and

[44] The EPC for nails is less than unity not because of highly negative protection but because its denominator, value added in world prices, is negative, suggesting a high degree of technical inefficiency in the industry.

subsidies on nontradables, monopoly profits, rents, underutilization of capacity, errors in the data, and other factors.

Of particular interest are the DRC's that are less than unity. These suggest that Mali has a comparative advantage in production for the domestic market of agricultural equipment, plastic sacks, and cottonseed oil. The DRC's of these products are sufficiently low, in fact, that Mali should be able to export these products, at least to neighboring countries. There undoubtedly are also other products that Mali could profitably export, but limited time and resources available for the survey did not permit the more extensive data collection that would have been necessary to expand this list.

In addition to the large variation in effective rates of protection that results from the tariff structure, it is also very complex. The customs service currently collects twenty-five duties and foreign trade taxes, nineteen on imports and six on exports. This increases administrative costs and slows down customs procedures. The complex tariff structure also adds to the perception of a duty level higher than it actually is. Delays in customs procedures and a perception of high tariff rates (imaginary or real) contribute to widespread smuggling.

The situation is made even more complex by the exemptions of intermediate inputs from import duties offered by the investment code. Whereas these may give strong incentives to some enterprises, they discourage the growth of enterprises that produce these inputs and distort resource use in favor of imported inputs. There is considerable potential for the production of intermediate inputs and spare parts in Mali by artisans and small to medium scale enterprises (SME).[47] Unless they are offered protection comparable to other industries, however, users of these inputs are likely to continue purchasing them from abroad. The new investment code attempts to deal with this problem by allowing duty exemptions on the import of inputs only in cases where there are no domestic suppliers, but this fails to encourage potential entrepreneurs from becoming domestic suppliers.

Disparities in tariff protection encourage misallocation of resources and involve substantial costs to the national economy. A uniform structure of nominal and effective protection would leave relative incentives undistorted, reduce resource misallocation, and lower costs to the national economy. Given that Mali's membership in the West African Monetary Union precludes direct control of its exchange rate, and that there is evidence, presented earlier, of overvaluation of the CFA franc as far as Mali's balance of payments is concerned, a second best alternative to devaluation would be to establish a uniform level of tariffs and export subsidies that would compensate for overvaluation and provide for the revenue needs of the

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[47] See table A.16. in Annex A for a list of artisanal enterprises that might offer complementarity with the formal industrial sector.

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government. Deviations from this uniform level of protection should be introduced only to the extent that there are externalities or other factors causing market prices not to reflect marginal social costs and benefits.

Based on this analysis, the following steps are recommended in order to rationalize and harmonize the tariff structure:

(1) simplification of the tariff system;

(2) narrowing of the range of tariff rates in the direction of achieving a uniform level of nominal and effective protection across industries sufficient to compensate for overvaluation of the CFA franc and to provide for public revenue needs;

(3) realigning individual tariff rates to avoid cases where the rates on raw materials and intermediate inputs are higher than those on the finished goods into which they are incorporated; and

(4) elimination of exemptions on import duties on equipment and raw materials accorded under the investment code.

A detailed study should be undertaken in order to implement these recommendations. The study should consider (1) the revenue implications of alternative tariff levels and structures, (2) products that might warrant being exceptions to the uniform tariff principle, and (3) means of facilitating the adjustment process for firms exposed to import competition.

1. Simplification

It is recommended that the tariff system be returned to the simplified structure established during the 1968 reform. This structure should have at most three main components: the droit de douane (DD), required by Mali's membership in WAMU and its association with the EEC, the droit fiscale d'importation (DFI), used for revenue or protection purposes, and a taxe interieure, which would combine all the other taxes (IAS, CPS, ISCP, DSRP, etc.) for ease of collection.

2. Narrowing the Range of Tariff Rates

The present range of tariff rates of between zero and 105 percent for the droit de douane and droit fiscale d'importation combined should be narrowed so as to achieve more uniform nominal and effective protection across industries. Rates should be established keeping in mind both revenue needs and the degree of overvaluation. Existing evidence suggests that a rate of effective protection of at least 33 percent would be needed to offset the overvaluation of the CFA franc.

3. Raw Materials and Intermediate Products

In order to narrow the dispersion of effective rates of protection, nominal rates on raw materials and intermediate goods should not be higher than those on the final products into which they are incorporated. Producers of these raw materials and intermediate goods, on the other hand, should not be penalized vis-a-vis enterprises producing finished goods.

4. Elimination of Import Duty Exemptions

Exemptions for duties paid on imports of equipment, raw materials, and other inputs offered through the investment code should be eliminated as a step towards removing all distortions on the relative use of capital and labor, as well as of extending protection to enterprises that produce intermediate and other inputs. This would also increase tariff revenue and make the incentive system more transparent. In place of import duty exemptions, investment incentives should be centered around wage subsidies and profit tax credits, a form of subsidization based on value added, since these are neutral with respect to their impact on the relative use of capital and labor.

Valeurs Mercuriales

The system of valeurs mercuriales is used as a device for controlling the effective tariff rate on certain products by changing the valeur mercuriale and not the tariff rate applied to that value. This has three important consequences. First, effective tariff rates - and changes in those rates - are somewhat less visible. Second, the variance in real traded goods prices relative to the valeur mercuriale contributes to the unevenness of the tariff structure. Finally, since the valeurs mercuriales are set outside the regular legislative process for establishing taxes and tariffs, the Direction des Douanes has significant discretionary power, and inasmuch as the procedure for setting valeurs mercuriales involves representation from the private sector, the pressure of private interests also undoubtedly has an important influence on trade policy.

As demonstrated earlier (Tables 3, 4, and A.7), Malian valeurs mercuriales have in the past been adjusted infrequently and have been consistently and substantially below corresponding real market prices. As a consequence, the system of valeurs mercuriales has tended to shift trade taxation from an ad valorem to a specific basis. This has eroded the real tax base with inflation.

The system of valeurs mercuriales on imports should be eliminated. Reassessment of administrative prices in Mali has already been recommended by a number of studies, including those of the IMF in 1974 and 1981, and has been incorporated into the more recent USAID Economic Policy Reform Program. Historically, however, this has been insufficient to avoid rigidity in the face of inflation and relative price movements. Whereas elimination of the

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valeurs mercuriales system may be somewhat risky in the short run because commodities covered by these values -- fuel, petroleum products, cement, staple food commodities, and cloth -- play an important role in national consumption, long-run economic benefits will result from more even tariff rates and more purposefully designed protection.

In lieu of using valeurs mercuriales as a means of avoiding underinvoicing of imports, the Direction des Douanes should privately keep a list of average CIF prices. If necessary, certificates of CIF values issued by reputable international firms may be required in order to facilitate administrative procedures and guard against underinvoicing.

Quantitative Restrictions and Monopolies on Imports

While tariff revenue goes to the government, rents from import controls and other quantitative restrictions go to private importers. This creates incentives for administrators to require bribes. In addition, the extent of protection accorded by quantitative restrictions is not readily obvious. Further, import controls and other restrictions add burdensome and unnecessary administrative procedures. It is therefore recommended that import controls and all other quantitative restrictions be removed, leaving only tariffs as the basis for controlling imports and protecting domestic industry.

Monopolies, like quantitative restrictions, create opportunities for economic rents to be reaped by the firms involved. Indeed, it was partly to curb the high prices permitted by import controls and other quantitative restrictions that led to price controls being instituted. With the import monopoly positions of SOMIEX and OPAM now broken up, the government has already taken very significant steps to remove this important type of distortion.

Certain public enterprises also occupy monopoly positions with respect to production. A notable example is SONATAM, the cigarette producing public enterprise. While SONATAM is economically efficient in producing low quality cigarettes (Liberté Ordinaire), its production of high quality cigarettes (Mansa) appears to be very costly, partly because of restrictions on imports. Furthermore, the quality of SONATAM's cigarettes improved substantially only after competition with smuggled imports started eroding its market base. Liberalization of imports would thus be effective in stimulating both efficiency and quality in domestic industry.

The study of tariff reform should examine the likely impact of removing quantitative restrictions and monopolies on imports. As with tariff reform, it should propose ways of easing the burden for firms faced with competition from imports.

Administration of Trade Taxation

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The main dimensions of trade policy reform -- realignment of customs duties, replacing valeurs mercuriales with market values, and elimination of quantitative restrictions and monopolies -- are structural adjustments proposed to remove distortions created by unnecessary tariff variance, anachronistic administered prices, and inappropriate industrial incentives. But there is also a need to raise revenue through trade taxation. A customs system that is efficient, must be designed and operated with minimal corruption and evasion. At present, it does not appear that Mali's system satisfactorily meets these requirements. Consequently the country's most important fiscal revenue source is being undermined and the basis of its industrial protection is being weakened.

Most of the necessary changes in customs administration are matters of management, not economics or trade policy. Additional resources in terms of technical assistance, equipment (computers, vehicles), and local personnel (both numbers and training) will be necessary for improving the operational efficiency of the Direction des Douanes. There are also two administrative reforms that would have a positive impact on revenue. These reforms concern the direct removal procedure and the advance payment of BIC on imported items.

1. Direct Removal of Dutiable Goods

Article 89 of the customs code permits removal of dutiable goods only if two specific conditions have been met. First, all duties and charges must be paid, deposited, or guaranteed; second, the customs service must authorize removal. The second condition may override the first at the discretion of the Direction des Douanes, a procedure referred to as direct removal.

Direct removal of imported goods is governed by Ministry of Finance Order No. 27/MF.CAB of 2 January 1974, which specifies that, under certain circumstances, goods may be removed prior to submitting the detailed declaration Form C1. Direct removal is an exceptional procedure, granted for only one year. The importer must be approved by Customs, he must provide reliable guarantees, a bond must be posted, each direct removal operation is to be requested separately, and the entire process is restricted to a list of eligible items. As a matter of administrative policy, direct removal is intended to serve as an emergency procedure to be applied when an importer has insufficient time to complete the detailed declaration by the usual deadline, or when the Direction des Douanes is unable to process the operation within a reasonable time and its inaction could be costly to the importer or disruptive of industry and commerce.

In practice, direct removal is not an exceptional procedure. Over 40 percent of the declarations signed in Bamako and two-thirds of those in

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Faladie related to direct removal operations in the early 1980s.[40] Furthermore, more than 95 percent of trade transactions in Bamako are not completed within the legally specified time period of two weeks; in Faladie the record of administrative punctuality is only slightly better. The high number of unfinished transactions indicates that many removal operations are never settled and simply die on the books. Indeed, there is little incentive to settle since failure to do so does not seem to involve penalties. Unjustified direct removal of imported goods and the corresponding loss of import tax revenue is thus a serious problem in Mali.

Simple adjustments are required to correct the problem of revenue leakage through direct removal. It should be strictly governed, for example, by the exception principle. Rapid clearance of items under Declaration D24 should be limited to those that are crucial to national health and safety. The use of the procedure in cases of acute shortage or epidemic ought to require authorization of a high official, such as the Minister of Finance or the Directeur des Douanes; authorization should be valid for a limited period of time; items allowed for direct removal should be specified explicitly with each removal being verified by Customs officials; final settlement ought to be enforced through a follow-up procedure, with penalties imposed when signed commitments are not fulfilled.

2. Prepayment of BIC Based On Imported Goods

A proposal for advance payment of the BIC has been developed by the IMF (1985) in consultation with the Direction des Impôts, Direction des Douanes, and Tresor. Essentially the procedure is to impute profitability based on the volume and value of imports by specific enterprises and to impose the advance BIC on the imputed profits at the time the imports are received. Adjustments for over- or under-payment of the BIC would be made at the end of the accounting period. The advance payment system obviously would require accurate and verifiable data on imports, and the availability of this information would depend on the recently installed SYDONIA system of trade accounts. At the end of each fiscal year, the relevant departments (Impôts, Douanes, and Tresor) would be provided with a detailed statement of operations of each importer showing the value of imports by tariff heading, as well as the amount of taxes collected.

The proponents of the advance BIC arrangement point to several advantages. First, it would speed up BIC payments instead of delaying them until the filing of returns. Second, it would facilitate the cash management of businesses, which would settle the BIC on a continuous basis as imports take place instead of having to pay the entire assessment all at once. Third advance payment of the BIC would enhance the exchange of

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[40] IMF, Mali: The Present Tax System - Problems and Proposed Adjustments, 1981.

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information between the tax department and the customs authorities and would increase revenue while imposing no additional charges on businesses.

There are, however, a number of potential problems with this system. The advance BIC could be construed as - and have the economic effect of - an additional indirect tax on specific industrial inputs as opposed to a direct tax on entrepreneurial profits. If, as anticipated, the change in collection methods actually increases the flow of revenue and if that revenue is linked to specific inputs, the introduction of the advance BIC would have the same economic effect as an additional tax on imported inputs. It needs to be coordinated, therefore, with other reforms of the tariff structure. Furthermore, in contrast to the view noted above that an advance BIC would improve the cash management of businesses, the system would extract a tax payment prior to the generation of cash earnings and thus create a cashflow problem for entrepreneurs.

B. Export Taxation and Protection

Elimination of Taxes on Exports

As mentioned in Chapter 1, Mali currently levies export duties on certain agricultural products, live animals, livestock products, and textiles (Tables 5 and A.18). The goods are taxed ad valorem at rates of 5 to 10 percent of the FOB price or valeur mercuriale. Other goods are subject to specific taxes. For export products with valeurs mercuriales (livestock, smoked meat, fresh and dried fish, etc.), the application of ad valorem rates to sticky valeurs mercuriales is tantamount to specific taxation.

Between 1978 and 1985, the share of export tax revenue in total revenue from taxation of trade fell from 10 percent to less than one percent. The major cause of the sharp decrease in export tax revenue was the exemption of cotton fibre exports introduced in 1981 and extended up to the present, which was prompted by a fall in world cotton prices. There were, however, significant transfers made to the treasury from the cotton guarantee fund. In 1985, for example, they amounted to CFAF 4 billion.

In addition to the taxe d'exportation, exporters also pay the CPS on exports at 3 percent for all products (Tables 5 and A.19). The CPS on exports of cotton was suspended in 1986 because of the sharp drop in cotton prices on the world market.

Relative to some other countries in the West African region, Mali's taxes on exports are high. Table 21 gives a comparison of export tax/subsidy regimes in Mali and Senegal. While Mali taxes numerous products, with total ad valorem rates ranging from 3 percent to 13 percent,

Table 21

Comparison of Export Tax Regimes in Mali and Senegal

Tax/Subsidy	Mali	Senegal
CPS on exports	3% on all products	Nil
Taxe d'Exportation	Ad valorem rate: 5-10% of valeur commerciale or FOB price; specific rates for some products.	Nil except groundnuts, groundnut products, and phosphate. Rates: groundnuts and groundnut oil (20%); feed cake from groundnut and other residual products (10%); phosphate: 1-10%
Tax Conjuncturelle	50% of profits on exports of groundnuts, groundnut oil, other groundnut products, hides and leathers, cotton products, arabic gum (see Table A18).	Nil
Subsidies	Nil	Subsidies on 22 products.

SOURCE: CMCE

Senegal only taxes exports of groundnuts, groundnut products, and phosphate -- its traditional export products.

Earlier it was recommended that export taxes on cotton and livestock and their products be eliminated. A major reason for this was the overvaluation of the exchange rate, which already penalizes exports by at least 33 percent of their value FOB. In addition, the administrative procedures involved in collection of export taxes and other requirements act as a considerable impediment to exports.

Each of these reasons also applies to industrial exports. In addition, there are likely to be important learning externalities associated with breaking into external markets for industrial products. Finally, as noted earlier, the abolition of all taxes d'exportation would reduce revenues by only about 400 million CFA francs per year, and this, plus the loss of

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revenue associated with eliminating the CPS on exports, could easily be made up through import tariff reforms.[69]

Promotion of Industrial Exports

Elimination of export taxes is unsufficient, however, to offset the bias against exports. In addition to the effect of overvaluation, which penalizes exports vis-a-vis nontradables, the high rate of industrial protection in Mali discourages exports vis-a-vis production of import-substituting goods for the domestic market. Yet the potential for expansion of exports exists for Mali, especially in nontraditional export products. Exports of manufactured products, mostly to countries in the West Africa region, are in general increasing. In 1970, manufactured exports made up 10 percent of total exports. By 1980, they exceeded 24 percent. Examples of low domestic resource costs in Mali have already been given. Other areas of comparative advantage probably include textiles, fruits, and vegetables. In the textile sector, opportunities for the export of "wax" and "fancy" types of knitwear in the West African region are considerable.[70] In the fruits and vegetables sector, the potential for export of fruit juices to the West African subregion and the EEC is large. Yet, except for SOCAM, there is little processing of fruit, though the processing of mango pulp for export to Europe is a project in the pipeline.

Other areas of considerable promise with regard to exports include oil, butter, and feedcake of sheanuts and cottonseed. The government policy of restricting oil, as well as animal feedcakes, made from cottonseed and sheanuts to the local market needs to be abandoned. For example, cottonseed oil is reserved for the local market because of the policy of self-sufficiency in food production and feedcakes is reserved for the raising of domestic livestock. The export markets for these products, however, could be more profitable than the local market. Because of linkages between the oilseed products, a policy for the development of the subsector as a whole is necessary if efforts to promote the export of these products are to be fruitful. As an illustration, the collapse of groundnut production several years ago shifted the demand for cooking oil to cottonseed oil, which is now in short supply.

With regard to nontraditional exports, there is also considerable potential for the export of artisanal products (jewelry, textiles, clothes,

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[69] Rebates of indirect taxes when goods are exported is a common policy in countries that are successful in exporting manufactures. This is already done with the IAS and should also be the case with the CPS, which is a domestic indirect tax assessed at the border.

[70] The possibility of exporting cotton yarn, especially combed cotton yarn, into the EEC should also be examined since it would be duty free.

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utensils).[71] In this respect, the Centre Malien de Commerce Exterieur (CMCE) and other government agencies concerned with exports should be given technical assistance and organized for aggressive export promotion.

Although promotional effects can be very useful, there is also a need to provide financial incentives for exports. Exemptions on the BIC for one year and raw material import taxes for two years, as currently provided by the investment code, are too discriminatory and not sufficiently sustained to create an adequate incentive to offset the bias against exports previously described. Instead, consideration should be given to providing an export subsidy, based on value added in local production, for nontraditional exports. At the very least, a duty drawback on imported inputs should be automatically granted for all products that are exported so as to avoid negative effective protection.

The revenues needed to finance a subsidy on nontraditional exports could come from several sources. First, there would be savings resulting from the revision of the investment code recommended earlier to eliminate duty-free entry of raw materials and intermediate goods. There would also be savings from revisions of the investment code to eliminate export incentives for selected firms. Most important, however, the revenue from taxation of imports should be adjusted as part of the overall tariff reform to provide for an export subsidy sufficient to offset most of the bias against nontraditional exports resulting from overvaluation and tariff protection. A study should be undertaken to estimate the costs of this subsidy and the revenues from various sources that could be used to pay for it.

C. Price Policy for Manufactures

The comprehensive system of price controls that was in effect until recently had serious adverse effects on economic activity and resource allocation. Many public enterprises incurred losses. Price controls were also partly responsible for the poor performance of many private enterprises. While the government has taken steps to liberalize prices on some products and has abolished the monopoly positions of SOMIEX and OPAM, there are still many products which are subject to one form of price control or another.

This encourages inefficiency to the extent that competition does not force producers and traders to take less than full advantage of the prices or margins allowed. For example, the regime of homologation souple, in which imported and locally produced goods are priced on the basis of a fixed margin, provides no incentive for importers to seek the cheapest foreign

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[71] J.C. Woillat, L'Artisanat Urbain au Mali: Choix de Produits et Politiques Visant à la Promotion du Secteur Nonstructuré Urbain du Mali, ILO, World Employment Programme, WEP/2/33/DOC20, February 1985.

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sources for their goods or for local producers to minimize their production costs. Though the alternative system of rigid prices set by the government seems to avoid this problem, in practice it is often much worse because of long delays in revising prices.

A number of other issues need to be raised with regard to the pricing of locally produced goods. First, importers are able to set prices for their goods based on the costs of their imports provided that they follow the government's procedures and use the appropriate margins. In contrast, local producers have to obtain prior approval before making price revisions. Often they have to wait for many months, sometimes years, before obtaining official approval, and by that time, costs have increased, rendering the hard-won new prices obsolete. This differential treatment of importers and local producers favors commercial activity and discourages industrial investment. It is recommended that where locally produced goods are subject to price margins, producers should be awarded the same privileges as importers and be exempted from prior official approval for price changes.

The authorized retail distribution margins for imported products range from 9 percent to 50 percent, while the authorized margin on locally produced goods is fixed at only 10 percent of the factory gate price. A similar situation exists with regard to wholesale distribution of imports and locally produced goods. Thus the incentive for selling a locally produced good is often much lower than that for selling a similar imported good. It is recommended that, where applicable, the fixed margin of 10 percent for the distribution of locally produced goods should be abolished. Both locally produced goods and imports should be accorded the same distribution margins at the retail and wholesale levels respectively.

Profit margins on imports range between 11.5 percent and 50 percent of the CIF price depending on the product, while profit margins on local production have been traditionally fixed at 11.11 percent irrespective of the product. The effect of this, once again, is to favor commerce and discourage industrial investment. It is therefore recommended that where prices are controlled, the fixed profit margin of 11.11 percent for locally produced goods should be abolished and locally produced goods should be accorded profit margins comparable to imports.

D. Taxation of Industrial Activities

Compared to fiscal arrangements in other countries facing similar circumstances, the tax system in Mali is unduly burdensome. Nominal rates of taxation are high, reflecting the vicious circle that high rates make tax evasion and fraud more attractive, making further rate increases necessary. Consequently, tax reform must recognize that further increases in tax rates cannot be relied upon to produce additional revenue.

Previous studies of the Malian tax system strongly emphasize this point. These studies are summarized in Annex D. There is a clear consensus that new taxes cannot be introduced since the existing tax legislation covers virtually all taxable activities and - subject to qualifications to be made later - the fundamental structure of taxation is appropriate for the country given its economic base and level of development. Tax rates can be substantially reduced without a corresponding reduction in tax revenue, however, if a concerted effort is made to minimize the opportunity for evasion and fraud through more vigorous and efficient tax collection, while at the same time broadening the tax base.

Taxe sur les Benefices Industriels et Commerciaux (BIC)

The corporate tax rate in Mali is high compared to rates in neighboring countries. Table 22 compares the tax rates on industrial activities in Mali with those in the Ivory Coast and Senegal. Even after the corporate tax rate in Mali was reduced to 45 percent in January 1987, it is still higher than the rates in these countries (33.33 percent in Senegal and 40 percent in the Ivory Coast). With the elimination of exemptions of import duties on equipment and raw materials, recommended earlier, the government could afford to lower corporate tax rates to be more in line with those in neighboring countries.

The number of enterprises in the industrial zone in Bamako which paid the BIC tax in 1985 at different rates is presented in Table 23. Also given in the table are data on the turnover and profits of these firms. The figures show that most private sector and mixed enterprises (14 out of 19) paid the minimum BIC of 1 percent of turnover either because they reported losses or their reported profit levels were low. The table also indicates that most incorporated private sector firms and mixed enterprises paying the BIC at 1 percent were small enterprises. The five incorporated private sector firms and mixed enterprises that paid the BIC at 50 percent had a total turnover of 43 billion FCFA, compared to a total turnover of 5 billion FCFA for the 14 firms which paid the BIC at 1 percent.

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Table 22
Comparison of Taxes on Industrial Activities
In Mali, the Ivory Coast, and Senegal

	Mali	Senegal	Ivory Coast
A. Profit Taxes			
Incorporated Firms	45%	33.33%	40%
Persons and un-incorporated Firms	25%	Revenue more than 420,000 CFAF = 28%. Revenue between 240,000 and 420,000 CFAF = 16.1%. Revenue less than 240,000 CFAF = Exempt.	25%
Minimum	.75% of turnover	400,000 CFAF (firms only)	1,000,000 CFAF (firms only)
B. IAS (as % of value added)	20%	Reduced rate 7% of value added Normal rate 20% High rate 50%	Reduced rate 10% Normal rate 20% High rate 20%
C. Impôt Foncier	30%	Local Firms 20% Foreign Firms 33.33%	22.5%
D. Contribution Forfitaire	7.5%	Nationals 3% Foreigners 5%	Nationals 10% Foreigners 16%

SOURCE: Tax codes.

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Table 23
Mali BIC Taxation in 1985 of Enterprises in the Industrial Zone, Bamako (a)
(million CFAF)

	Number of Enterprises	Turnover	Profit	Loss
Unincorporated Firms				
BIC at 30% of Profit	2	300	1.5	--
BIC at 1% of Turnover	4	604	7.0	18
Public Sector Firms				
BIC at 50% of Profit	2	7,312	345	--
BIC at 1% of Turnover	3	884	N/A (a)	--
Private Sector Firms and Mixed Enterprises				
BIC at 50% of Profit	5	43,000	2,000	--
BIC at 1% of Turnover	14	5,021	50	75
Firms with Exemption BIC Tax	13	8,756	249	--

SOURCE: Direction des Impôts
NOTE: (a) Some public sector firms fail to declare profits to the Direction des Impôts or do so only after a long delay. The Direction des Impôts therefore estimates their turnover and forces them to pay 1 percent of their turnover as a BIC tax.

The minimum BIC in Mali is currently higher than that in Senegal or Ivory Coast for any sizeable firm. A number of enterprises in the survey expressed concern about the requirement to pay this tax when a firm is in deficit. This was said to be forcing some enterprises into financial difficulties and compounding their already precarious situation regarding working capital. A minimum BIC tax may be justifiable on the basis of benefits received from public services, but the government should consider allowing firms with deficits to carry forward the payment of the minimum BIC for up to 3 years.

A final point on the BIC tax should also be made. If incentives are to be shifted from exemptions of import duties on equipment and raw materials to exemptions of profits taxes, the latter are worthless if there are no tax liabilities. Most of the existing incentive schemes award exemptions on profits taxes during the earlier years of establishment or, in the case of expansion, in the years immediately after the investment. These are typically years, however, in which profits are low or nonexistent. It is therefore recommended that periods of exemptions of profits taxes begin not in the first year of operations but in the first year that profits are

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earned or, in the case of reinvestment, in the first year after reinvestment in which profits are earned.

Impôt sur les Affaires et Services (IAS)

The IAS tax charged on local production is at an ad valorem rate of 20 percent, while imports into the country pay an IAS of 11.1, 25, or 66.6 percent depending on the product (see Table A.1 in Annex A). In the case of essential imports (sugar, flour, etc.), which pay the IAS at 11.1 percent, this implies negative protection of domestic production, while for most items an IAS of 25 percent implies a 5 percent positive rate on protection of domestic production. For luxury goods (cigarettes, strong alcoholic drinks, etc), an IAS of 66.6 percent on imports implies very high protection of domestic production. The result is to create distortions in the allocation of resources between imports and local production when what is desired is a differential tax on consumption. It is therefore recommended that the single IAS tax on domestic production at 20 percent be abolished and that the IAS on local production be set equal to that on importable substitutes.

The way in which the IAS on locally produced goods is computed also discriminates against local entrepreneurs and favors traders importing the same product. This is due to the fact that depreciation is not deducted in calculating the value added which serves as the base of the IAS. When equipment is imported to produce a product locally, an IAS is paid on the equipment at customs. If depreciation is not deducted from value added before estimating the IAS on the product made with the equipment, a second IAS is paid on the equipment.[72] Thus the IAS tax on equipment is included twice in the price of the product produced locally. If the final product is imported for direct consumption, on the other hand, the IAS is paid only once. This practice increases the cost of capital equipment and thereby also creates distortions in the relative use of capital and labor. The elimination of the IAS on capital goods is therefore recommended.

While exports of final products are exempted from the IAS on local production, there is no full IAS tax remission on inputs going into the production of those exports. To remove this impediment to exports, it is recommended that tax credits be allowed for the amounts of the IAS paid at all pre-export stages of production. The practice of full domestic tax exemption/remittance is adopted by most exporting nations and is consistent with the tax-neutral destination principle of trade taxation. It is also an important measure in helping to decrease the bias against exports created by the protection offered against imports. The tax credit should encompass taxes paid on capital goods and on services such as construction.

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[72] Depreciation being the same as the equipment cost except that it is spread over time.

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Finally, the IAS on local production is paid at the time the enterprise produces the good, whereas quite often payment for goods sold may take some time. This contributes to the precarious working capital situation of many firms. It is therefore recommended that local producers be allowed some grace period before collecting the IAS.

Incentives Provided Through the Tax Code

A number of investment incentives awarded through the tax code were cited in Chapter 1. These include reduction of the IAS, exemptions from the impôt sur les revenues fonciers and the taxe des biens de main morte, the channelling of the BIC tax into reinvestment, accelerated depreciation, the carry forward of losses, and the ability of firms in deficit to carry depreciation forward.

From the sample of 21 firms surveyed, 5 firms were found to benefit from exemptions or reductions of the IAS through the tax code. Eleven of the firms benefitted from exemptions through the investment code, while the remaining 5 firms paid all their taxes (see table A.19). No records are available of the cost to the government in terms of tax revenue forgone from incentives awarded to firms through the tax and investment codes. These incentives are awarded to qualifying firms more or less automatically, though many instances were encountered in which firms (particularly small ones) did not appear to know about the existence of some of these incentives. Finally, these incentives are relatively unimportant compared to those stemming from the investment code. [73]

Taxation of State-Owned Enterprise

Mali maintains a large and diverse set of state-owned enterprises, which produce goods and services in key economic sectors including industry, agriculture, transportation, trade, and finance (see Table 24). De jure, state-owned enterprises in Mali are taxed similarly to private enterprises. De facto, however, state-owned enterprises and private enterprises in Mali do not bear equal tax burdens.[74] For example, a study based on the accounts of 12 major state-owned enterprises reveals that, in contrast to their 50-60 percent of activity in the modern sector, taxes assessed on them account for less than 30 percent of the total, including only 20 percent of taxes on industrial and commercial profit (BIC), 22 percent of the turnover tax (IAS), and 44 percent of customs duties. On the other hand, state-owned firms collectively are responsible for approximately 80 percent of total tax arrears in Mali. Although these data predate recent reforms and

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[73] For example, accelerated depreciation provisions in Mali are minor.

[74] This is in the sense of the legal burden of taxation - who pays the tax - and not in the more subtle sense of economic incidence.

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restructuring of state-owned enterprises, the basic inference is still valid: despite their prominent role in industry and commerce in Mali, the aggregate contribution of state-owned enterprise to government budget revenue is disproportionately small.

Table 24
State Owned and Mixed Enterprises

State-Owned Enterprises

Industrial Sector

SOMATAM*	Société Nationale des Tabacs et Allumettes
SEPOM*	Société d'Exploitation des Produits Oleagineux de Mali
COMATEX*(T)	Compagnie Malienne des Textiles
SONETRA (T)	Société Nationale d'Entreprises et des Travaux
SOCIMA (T)	Société des Ciments du Mali
EMAB (T)	Société Malienne du Bois
SEBRIMA	Société d'Exploitation des Briqueteries
UCEMA (T)	Usine Céramique du Mali
TAMALI*(T)	Société des Tanneries du Mali
ULB*	Union Laitière de Bamako
EDIM	Les Editions Imprimeries du Mali
SONAREM*	Société Nationale de Recherches et d'Exploitations Minières
EMAMA*(T)	Entreprise Malienne de Maintenance

Transportation Sector

RCFM	Regie Chemins de Fer du Mali
CMTR*(T)	Compagnie Malienne des Transports Routiers
CMN (T)	Compagnie Malienne de Navigation
BETRAM	Base Equipment Transport du Mali
AIR MALI (T)	Compagnie Aérienne du Mali Direction des Aeroports du Mali

Trade and Service Sector

SOMIEX (T)	Société Malienne d'Importations et d'Exportations
PPM (T)	Pharmacie Populaire du Mali
LMP*(T)	Librairie Populaire du Mali
SHM*(T)	Société des Hotelleries du Mali
OCINAM (T)	Office Malien de Cinematographie
OPAM*	Office des Produits Agricoles du Mali
SMERT	Société Malienne d'Expliotation de Resources Touristiques

Agricultural Sector

SOMEBEPEC	Société Malienne des Peaux et Cuirs
ON	Office de Niger
AF	Abattoir Frigorifique OMBEVI Office Malien du Betail et de Viande

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Table 24 (continued)

Financial Sector

BDM (T)	Banque de Développement du Mali
BMCD	Banque Malienne du Crédit et des Dépôts Caisse Nationale d'Assurance et de Réassurance

Mixed Enterprises

EDM (T)	Energie du Mali
ITEMA* (T)	Industrie Textile du Mali
SOCORAM* (T)	Société de Construction Radioelectrique du Mali
SEMA* (T)	Société d'Equipement du Mali DM 1979
SMECMA* (T)	Société Malienne d'Etude et de Construction de Material Agricole
SOCOMA* (T)	Société de Conserverie du Mali
SEPAMA* (T)	Société d'Exploitation des Produits Arachides
HUICOMA*	Huilerie Cotonnière du Mali
CMDT*	Compagnie Malienne de Textiles

NOTES: T = Ministère de Tutelle (ministry responsible for state enterprises)
* = Enterprise accorded benefits of the Investment Law

Public enterprises benefit to a large extent from tax exemptions. Many individual firms also incur substantial accounting losses as a result of managerial indifference to operational efficiency or because of extraneous constraints imposed upon them by government. Producing a particular good or service is only one, and not necessarily the most important, mandate of state-owned enterprise. Welfare, employment, and other noncommercial considerations typically loom just as large.

In a meeting with the Directeur du Cabinet and senior staff of the Ministère de Tutelle, which is responsible for the state-owned enterprises, two specific tax problems were discussed. The first concerned the BIC and the second the IAS. With respect to the BIC, the ministry is concerned that the minimum of 0.75 percent on turnover is an unfair imposition on state-owned enterprises. They reason that since taxes paid by state-owned enterprises are essentially intergovernmental transfers, these firms have no particular reason to hide profits and therefore the raison d'etre of the impôt fortaitaire does not apply. This line of argument is not necessarily sound; the contrary case can be made that managers of state-owned enterprises are primarily interested in the growth and stability of their operations and that they have strong self-serving incentives to minimize taxes they pay. Nevertheless, in 1985 the rate for state-owned enterprise was cut in half to 0.5 percent.

The ministry also opposes the IAS being assessed on state-owned enterprises. It contends that the IAS creates a special problem for these

enterprises insofar as the state itself purchases goods and services from them. For example, to a large extent, the users of Air Mali are civil servants and the military.[78] Likewise, government agencies are major consumers of the output of Energie du Mali. The tax problem, in the view of the ministry, is that the IAS is assessed and collected on a current basis, whereas the Treasury frequently does not promptly pay its bills to the state-owned enterprises that provide goods and services to the government. This creates a cash flow problem.

One important financial restriction on Malian state-owned enterprises has recently been relaxed. In the past, there was a mandatory distribution of the after-tax income of state-owned enterprise among the national budget (40 percent), the fund for aid and equipment (45 percent), the social fund (5 percent), the legal reserve (5 percent) and the special reserve (5 percent). Thus a state-owned enterprise was left with none of its after-tax earnings for investment purposes. Decree 138 replaced this regulation with an arrangement whereby the boards of directors of the various state-owned enterprises decide on the split of after-tax income among the various funds.

Estimates of Foregone Government Revenues

Apart from the substantial incentives granted to enterprises through the investment code by way of exemptions of various import taxes, there are also exemptions on the BIC, the patente, the taxe des biens de main morte, and the impôt sur les revenues fonciers.

Table 25 gives a list of exemptions granted by both the tax and investment codes to the firms included in the survey undertaken for this study. It is estimated that the total loss from these exemptions has been about 80 billion CFA francs over the past 25 years. The elimination of benefits granted to individual firms, discussed in the next section, together with the measures proposed for abandoning the valeurs mercuriales system and harmonizing tariffs, would easily compensate for the revenue lost through elimination of all taxes, including the CPS, on exports. Rough estimates of the impact of these reforms on government revenues add up to the following.

	CFA francs
Elimination of investment code benefits	4 billion +
Elimination of valeurs mercuriales	1.5 - 2 billion
Tariff harmonization	1.5 - 2 billion
Elimination of export taxes (including 3% CPS)	- 2 billion
	5-6 billion

[78] Air Mali is currently in liquidation.

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Table 25

Tax Exemptions Granted by the Tax and Investment Codes to Firms in the Sample

	SOMASAC	SEPAMA	ITEMA	TIBOU KANTE	SABA DIALLO (1)	DIALLO (2)	DIALLO (3)	SOMABIPAL	TOLMALI	SOCAM	COMATEX	SONAPAC
	Regime B Convention	Regime B Convention 10 yrs	Regime B	Regime A	Regime A et C Convention 10 yrs + 1 yr	Regime A Convention 10 yrs	Regime B Convention 10 yrs	Regime ( )	Regime A	Regime A	Regime ( )	Regime B
Droit et taxe à l'importation des équip, mach, et mat												
Delay	4 yrs	5 yrs	3 yrs	2 yrs	5 yrs	5 yrs	5 yrs	3 yrs	3 yrs	3 yrs	3 yrs	2 yrs
Begin	1971	01/11/76	1971	1970	1970	1970	1971	1978	9/2/76	2/8/80	12/10/79	1976
End	1975	1982	1974	1972	1975 + 1978 to 1979	1976 + 1977 to 1980	1976	1981	1979	2/8/82	12/10/82 Sur pieces de rechange	1979
Droit et taxe à l'importation des matières et de cons												
Delay	14 yrs	10 yrs	15 yrs		5 yrs	5 yrs	12 yrs	5 yrs	3 yrs	5 yrs	5yrs	8 yrs
Begin	1/1/71	1/11/76	1971		1971	1971-76	1977	1978	13/6/80	2/8/80	12/10/79	1976
End	1/1/85	1/10/86	1986		1976	+5 ans 1979-84	1989	1983	13/6/83	2/8/85	2/8/85	1984
Impot sur le BIC												
Delay	9 yrs	5 yrs	6 yrs	5 yrs	5 yrs	5 yrs	7 yrs	5 yrs	3 yrs	5 yrs	5 yrs	5 yrs
Begin	1971	1/11/76	1980	1971	1971	1971-76	1977	1978	1981	2/8/80	12/10/79	1976
End	1979	1982	1986	1975	1976	+ 5 ans 1979-84	1984	1983	1983	2/8/85	1981	
Taxes des biens de main morte												
Delay	9 yrs	5 yrs			5 yrs	5 yrs	7 yrs			5 yrs	5 yrs	5 yrs
Begin	1971	11/76			1971	1971-76	1977			2/8/80	12/10/79	1976
End	1979	1982			1976	+ 5 ans 1979-84	1984			2/8/85	12/10/84	1981
Impot sur les revenus fonciers												
Delay	9 yrs	5 yrs			5 yrs	5 yrs	7 yrs			5 yrs	5 yrs	5 yrs
Begin	1971	11/76			1971	1971-76	1977			2/8/80	12/10/79	1976
End	1975	1982			1976	+ 5 ans 1979-84	1984			2/8/85	12/10/84	1981
Contributions des Patentes												
Delay	9 yrs	5 yrs		5 yrs	5 yrs	5 yrs	7 yrs		3 yrs	5 yrs	5 yrs	5 yrs
Begin	1971	1/76		1971	1971	1971-76	1977		1981	2/8/80	12/10/79	1976
End	1975	1982		1975	1976	+ 5 ans 1979-84	1984		1983	2/8/85	12/10/84	1981

NOTES: Saba Diallo - manufacture of
(1) vinegar
(2) bleach
(3) packaging

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E. Incentives to Industrial Investment

In addition to the costs of tariff exemptions on imports of equipment and raw materials, the investment code is biased in favor of large investments. This is clear from the eligibility conditions for the various regimes and hence the amount of benefits awarded. Even within regimes, there is considerable latitude for the Commission National d'Investissement (CNI) to vary the benefits, generally in favor of large enterprises. In fact, the early codes excluded SMEs and artisans entirely.

There is no a priori reason to assume that larger investments are more beneficial to the economy than small ones. Larger investments tend to be more capital intensive, reinforcing the bias in favor of capital goods from import duty exemptions under the investment code. The artisanal sector in Mali, for example, provides employment to about 100,000 people compared to 15,000 employed in the industrial sector, and represents 7 percent of total production compared to 11 percent for the industrial sector.

There are 22 ministers and directors general involved in decision-making with regard to the award of Regime B status. This implies a good deal of senior management time taken up with applying the investment code. It also implies delays in decisions on applications by often as much as 26 months, with the average delay in processing application being 7.5 months. [76] This problem of long delays in processing applications has been partly addressed in the new code by specifying the maximum time allowed in making decisions on applications. However, experience in other countries indicates that this reduced processing time is usually not observed.

There is also considerable room for arbitrary and ad hoc decisions in the granting of benefits under Mali's investment code.[77] Lack of automaticity implies uncertainty on the part of investors and room for corruption and other abuses. It also implies time spent in decision-making by ministers and other top level government administrators. Furthermore, a substantial amount of time is required to ensure that enterprises fulfill the conditions imposed on them.

Exemptions of import duties on equipment, raw materials, and other inputs should be eliminated from the investment code in order (1) to remove distortions in favor of capital intensive activities and dependency on imports; (2) to extend existing protection to enterprises that produce intermediate and other inputs so as to encourage the growth of such enterprises; (3) to raise much needed tariff revenue and 4) to make the incentive system more transparent. In place of import duty exemptions, investment incentives could be focused on moderate import duties and

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[76] See Table A.17. in Annex A

[77] This problem used to be more serious with earlier investment codes. Though reduced in the latest code, it still exists.

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protection as well as on profit tax credits and subsidies based on value added, which are more neutral in their impact on resource allocation. The award of these incentives should be made as automatic as possible. Finally the incentives should be awarded to all firms irrespective of size.

The investment code provides incentives for employment creation. Employment incentives are justifiable in Mali because of (1) the presence of minimum wage and other labor market distortions that fix the cost of labor above its opportunity cost, thereby discouraging its use; (2) the bias of the incentive structure in favor of the use of capital to the neglect of labor; and (3) the presence of positive labor externalities in the form of new skills.

Political stability aside, the most influential factors affecting decisions of foreign investors are favourable terms for the transfer of profits and repatriation of capital and the absence of discrimination against foreign ownership and control. The cost to the treasury of a guaranteed stable fiscal regime for up to 25 years for firms qualifying for Regime B status may, however, outweigh its value to the entrepreneur. It also greatly reduces the government's flexibility in responding to new economic conditions. Given the uncertainties attached to foreign investment in developing countries and the resulting short-term horizon over which entrepreneurs seek profits, their discount rates are likely to be high compared to those of the government. Benefits offered in the early years of a project are therefore likely to have the greatest impact, and the more extended the period over which incentives are offered, the greater will be their cost to the government relative to their value to the firm. It is therefore recommended that the guarantee of stable fiscal regime be limited to 10 years. It is also recommended that this benefit be given across the board to all firms irrespective of size.

A detailed study of these recommendations should be undertaken in conjunction with the study on tariff reform in order to estimate the fiscal implications of both in a combined package. In addition, the study should also examine alternatives regarding the phasing of benefits and criteria for eligibility.

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CHAPTER 3

CONCLUSIONS AND SUMMARY OF RECOMMENDATIONS

Section 1. INTRODUCTION

Mali is currently in the process of trying to accomplish three broad goals. The first is to stabilize the economy by achieving macroeconomic equilibrium in the balance of payments, the relationship between national income and experditure, the government budget, and the rate of inflation. The second goal is to adjust the incentive structure and to reallocate resources in directions that are consistent with Mali's comparative advantage in international trade. The third, and final, goal is to put into place the institutions and infrastructure that will contribute over the longer run to the equitable development of Mali's economy and its people.

This study focus particularly on the second goal--that of structural adjustment. It analyzes the structure of Mali's comparative advantage in agriculture and industry and examines the extent to which existing trade, tax, price, investment, and other policies encourage resources to flow in directions that are consistent with that structure and its likely evolution over time. The analysis is limited in the number of productive activities that it includes, but the results are indicative of a broader pattern that emerges. This chapter begins with a discussion of this broader pattern of Mali's comparative advantage and incentive structure and then goes on to summarize the specific recommendations that are made.

Section 2. COMPARATIVE ADVANTAGE AND INCENTIVES

A. Mali's Comparative Advantage

The DRC analysis in Chapter 2 demonstrates that Mali has a strong comparative advantage in a number of agricultural activities, both for domestic consumption and for export. Although no specific data are available, it also appears highly likely that Mali has a considerable comparative advantage in livestock in both the pastoral and the agricultural zones. Its comparative advantage in industry is less well established, though the DRCs for a few products, such as agricultural equipment and cottonseed oil, are favorable, and there are other products, such as textiles and processed fruits and vegetables, in which such an advantage is likely to exist.

The potential for developing Mali's comparative advantage in agriculture is considerable. The Mali-Sud region is one of favorable rainfall and low population density, where cultivation of cotton and coarse grains, as well as production of livestock through mixed farming, can be expanded for at least several decades. The interior delta of the Niger River also offers considerable potential, though at current world prices

this is difficult to exploit profitably for rice production, and irrigated cotton, fruits, vegetables, and other products may offer greater potential. Finally, the extensive rangelands of the pastoral zone are currently understocked, and there is therefor scope for expanding herds in this area over the next few years.

Eventually, however, the growth of population in Mali will press on available agricultural resources to such an extent that Mali's comparative advantage at the margin can be expected to shift in favor of industry. This is already happening in some of the less favored agricultural areas. Industrial growth will require, however, the development of a skilled work force, physical infrastructure to provide power and transportation, and the financial and other institutions needed to support this sector. Before any of this development can successfully take place, however, an appropriate structure of incentives must be established. Given Mali's limited domestic market, moreover, these incentives should encourage the production of manufactures for export as well as for home consumption.

B. Structure of Incentives

Unfortunately, however, the structure of incentives in Mali is heavily biased against exports. In the first place, the overvaluation of the exchange rate by at least 33 percent discriminates against production of tradable relative to nontradable products. Even among tradables, moreover, exports are disadvantaged. Unless producer prices are increased in real terms, the effective rate of protection on cotton at 1995 projected world prices is about -45 percent (Table 12) compared with the existing average rate of protection on industrial output and rice production, both of which are destined largely for local consumption, of about +40 to +45 percent (Tables 12 and 19). Effective rates of protection and subsidy estimated for a small sample of manufactured exports, shown in Annex Tables C.1 and C.2, are for the most part either negative or close to zero.

This bias against exports results in a flow of resources toward production activities that depend solely on the domestic market. High, and in some cases very high, rates of protection allow inefficient and costly production to take place within this sheltered market and discourage more efficient activities that would earn the foreign exchange necessary to ease Mali's balance of payments problem and permit the purchase of low cost imports, such as rice, from abroad.

A major difficulty that stands in the way of correcting these distortions is the combination of the overvalued exchange rate, which is unlikely to change given Mali's participation in the West African Monetary Union, and the fiscal problems faced by the government, which make it difficult to implement offsetting export subsidies except for a limited range of nontraditional exports. Furthermore, the government depends very much on import taxation as a way of raising revenue, and this tends inherently to protect against imports and to discourage exports both

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directly and in the long run indirectly by causing the exchange rate to be overvalued. In the face of these constraints, the most that can be done is to reduce export disincentives to a minimum by eliminating all indirect taxes on exports, applying duty drawbacks on imported inputs used to produce exports, directly subsidizing nontraditional exports, and providing other encouragements that are fiscally feasible and economically desirable.

Reducing discrimination against exports is imperative in Mali if economic growth is to take place. But there are also a number of other recommendations that come out of this study. These call for simplifying and making more uniform the structure of tariff rates, using the IAS as the principal mechanism for differential taxation of products, reducing import duty reductions and exemptions resulting from the system of valeurs mercuriales and the investment code, eliminating quantitative restrictions and monopolies on imports, establishing a variable levy on grain imports, simplifying administrative tax and customs procedures, avoiding discrimination against locally produced goods through price regulation, reducing the extent of price controls, eliminating the biases resulting from the existing investment code, and other reforms. The analyses supporting these recommendations is presented in detail in Chapter 2; the recommendations themselves are outlined in the next section.

Section 3. RECOMMENDATIONS

A. Reform of the Tariff Structure

The structure of tariffs in Mali should be changed in at least four respects. Since this will involve important implications for government revenue, as well as for the structure of protection, a detailed study should be carried out to make specific recommendations on these tariff reforms. The reforms should comprise at least the following elements:

Simplification

It is recommended that the tariff system be returned to the simplified structure established during the 1968 reform. This structure should have at most three main components: droit de douane (DD), required by Mali's membership in WAMU and its association with the EEC, the droit fiscale d'importation (DFI), used for revenue or protection purposes, and a taxe intérieur, which would combine all the other taxes (IAS, CPS, ISCP, OSRP, etc.) for ease of collection.

Narrowing the Range of Tariff Rates

The present range of tariff rates of between zero and 105 percent for the droit de douane and droit fiscale d'importation combined should be narrowed so as to achieve more uniform nominal and effective protection

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across industries. Rates should be established keeping in mind both revenue needs and the degree of exchange rate overvaluation. Existing evidence suggests that a rate of effective protection of at least 33 percent would be needed to offset the overvaluation of the CFA franc. Deviations from the uniform tariff principle should be permitted only to the extent that there are externalities or other factors causing market prices not to reflect marginal social costs and benefits

Raw Materials and Intermediate Products

In order to narrow rates of effective protection, tariff rates on raw materials and intermediate goods should not be higher than those on the final products into which they are incorporated. Nor should producers of these raw materials and intermediate goods be penalized vis-a-vis enterprises producing finished goods.

Elimination of Import Duty Exemptions

Exemptions for duties paid on imports of equipment, raw materials, and other inputs offered through the investment code should be eliminated as a step toward removing all distortions on the relative use of capital and labor, as well as of extending protection to local enterprises that produce intermediate and other inputs. The only exception would be duty drawbacks on inputs used to produce products that are exported. In place of import duty exemptions on inputs used in producing for the domestic market, investment incentives should be centered around exemptions on profit taxes, a form of subsidization based on value added.

B. Elimination of Valeurs Mercuriales

The system of valeurs mercuriales on imports should be eliminated. In lieu of using valeurs mercuriales as a means of avoiding underinvoicing of imports, the Direction des Douanes should privately keep a list of average CIF prices. If necessary, certificates of CIF values issued by reputable international firms may be required in order to facilitate administrative procedures and guard against underinvoicing.

C. Quantitative Restrictions and Monopolies on Imports

It is recommended that import controls and all other quantitative restrictions be removed, leaving only tariffs as the basis for controlling imports and protecting domestic industry. Liberalization in areas where the state has a monopoly on imports is specifically recommended.

D. Administration of Trade Taxation

Direct Removal of Dutiable Goods

Since indiscriminate authorization for direct removal is a fundamental problem, direct removal must be strictly governed by the exception principle. This will require shortening of the list of items eligible for direct removal. Rapid clearance under Declaration D24 should be limited to those items which are crucial to national health and safety. In addition, the use of the procedure in cases of acute shortage or epidemic ought to require authorization of a high official, such as the Minister of Finance or the director of the Direction des Douanes; authorization should be valid for a limited period of time; items allowed for direct removal should be specified explicitly with each removal being verified by Customs officials; final settlement ought to be enforced through a follow-up procedure, with penalties imposed when signed commitments are not fulfilled.

Prepayment of BIC Based on Imported Goods

The proposal for an advance BIC payment made by the IMF, requires further study before it is adopted. The prepayment of the BIC must be justified strictly in terms of improved collection performance and this, in turn, must be judged in light of the new burdens that the resulting increase in effective tax rates would create.

E. Variable Levy on Commercial Grain Imports

It is recommended that a study be undertaken to explore the feasibility of establishing a variable levy on commercial grain imports to assist in stabilizing cereals prices on the domestic market. This levy would equal the difference between a target price established domestically and the CIF border price. The study should examine the alternatives of having the variable levy paid (1) directly to the treasury or (2) into a stabilization fund that would be used to support cotton prices or to subsidize grain imports should the CIF price rise above the target price. In any case, it is recommended that the existing producer subsidy on rice be eliminated, and that the tariff on rice imports be adequate to make production in the Office du Niger privately profitably for sale in Bamako.

F. Elimination of Taxes on Exports

It is recommended that all indirect taxes, including export taxes and the CPS, on exports be eliminated. It is further recommended that duty drawbacks be applied to imported raw materials and intermediate goods used in the production of goods that are exported and that tax credits be allowed for the amount of the IAS and other indirect taxes paid on all pre-export

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stages of production. A study should be undertaken of appropriate mechanisms for implementing these recommendations.

G. Reduction of CMDT Costs

The recommendations of the Cantournet and Waddell report (see Chapter 2) regarding the need for savings in several areas of the CMDT budget are concurred with. In addition, a study should be undertaken to analyze the feasibility of financing CMDT's developmental costs out of the government's general budget rather than by implicity taxing cotton farmers through the producer price.

H. Simplification of Livestock Export Procedures

Procedures involved in exporting livestock should be restricted to those necessary for animal disease control. A fee should be charged to cover the cost of vaccination and clearance by animal health officials.

I. Subsidization of Nontraditional Exports

It is recommended that a study be undertaken to explore the feasibility of applying a subsidy, based on value added in local production, to nontraditional exports. The subsidy would apply to all eligible products that are exported and not just to those of firms with "regime" status under the investment code. The study should examine the criteria for determining which exports are "nontraditional," the magnitude of subsidy required to offset the overvaluation of the currency and the bias against exports, the cost of the subsidy to the treasury in relation to the revenue gain from other reforms recommended here, and practical measures for implementing the subsidy.

J. Price Reforms Related to Imports and Local Production

The following recommendations are offered regarding price policy reforms in order to accord equal treatment to imports and locally produced goods.

(1) When and where locally produced goods are subject to price margins, producers should be awarded the same privileges as importers and be exempted from prior official approval for price changes.

(2) When and where applicable, the fixed margin of 10 percent for the distribution of locally produced goods should be abolished. Locally produced goods and imports should be accorded the same distribution margin at the retail and wholesale levels.

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(3) When and where prices are controlled, the fixed profit margin of 11.11 percent for locally produced goods should be abolished. Instead, locally produced goods should be accorded profit margins comparable to imports.

In addition, it is recommended tht existing price regulations be reviewed periodically for the purpose of reducing the extent of price controls and relying more on market forces to determine prices.

K. Decontrol of Meat Prices

It is recommended that meat prices no longer be fixed, even at the local level. Short of this, a study should be undertaken to measure the magnitude of the distortions and misallocation of resources created by the system of fixed meat prices. This study should estimate the cost of transport, processing, and marketing between live animal markets and retail sales outlets and compare these with price differentials. It should also assess the magnitude of shortages caused by the disequilibrium between official and market prices and the impact that this might have on livestock production and marketing. Finally, it should make specific recommendations for changes in price policy that will result in more efficient livestock marketing.

L. Veterinary Service Charges

It is recommended that a study be undertaken of experience in recent years with the system of vaccination payment. This study would focus on several issues:

(1) the distribution of vaccination charges among the animal health service, the veterinary pharmacies, private traders, and the CVL in relation to actual costs of production, delivery, and administration;

(2) procedures for financial planning, procurement, inventory control, and accounting within the vaccination payment system;

(3) reaction of herders to the imposition of charges by specie, age/sex, disease, prevalence of disease, indicators of wealth, etc.

Out of this study should come specific recommendations for improving the administration of the system, for determining appropriate levels for vaccine charges, and for establishing a distribution of payments between the animal health service, the veterinary pharmacies, private traders, and the Central Veterinary Laboratory.

M. Responsibilities of OPAM

It is recommended that a study be undertaken by the Government of Mali that would analyze the net costs associated with various options regarding responsibilities for OPAM. These should include:

(1) operation of emergency grain reserves;

(2) emergency shipment of grain to distressed areas;

(3) receipt and distribution or sale of food aid;

(4) provision of information on regional production, consumption, stocks, prices, and market conditions;

(5) subsidization of food sales to particular groups (army, civil servants, nutritionally deprived).

The study should also evaluate the benefits achieved in relation to costs and the role that food aid would play in implementation.

N. Taxation of Industrial Activity

The following reforms are recommended regarding taxation of industrial activity.

Taxe sur les Benefices industriels et Commerciaux (BIC)

It is recommended that the government reduce the BIC rate for large firms to 40 percent and for small firms to the 30-35 percent range. The tax revenue lost by reducing the corporate tax rate on small-scale enterprises will not be very high since many of these firms either pay no taxes or pay only the minimum. It is also recommended that periods of exemptions on profits taxes begin not in the first year of operation but in the first year in which profits are earned or, in the case of reinvestment, in the first year after reinvestment when profits are earned, in order to provide incentives to infant industries. Finally, various possibilities should be studied for reducing the cash flow problems of firms required to pay the impôt forfaitaire BIC in years of deficit.

Impôt sur les Affaires et Services (IAS)

It is recommended that the IAS be the main vehicle for differential taxation of products based on essentiality or other criteria. The rates should be the same, however, on imports as on locally produced goods and services. The IAS on capital goods should be eliminated. Finally, the

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possibility should be studied of allowing firms a grace period after production before the IAS is collected.

State-Owned Enterprises

State-owned and mixed enterprises should either be operated as private firms or, if not, they should be explicitly subsidized for the public services they preform. It is therefore recommended that state-owned, mixed, and privately owned enterprises should all be taxed on the same basis and at the same rates.

D. Incentives to Industrial Investment

In view of the shortcomings of the new investment code and of its application, namely the bias in favor of large investments, the delays in the granting of benefits, and the considerable room for arbitrary and ad hoc decisions in the granting of benefits, the following are recommended.

(1) In place of import duty exemptions on equipment, raw materials, and other inputs, investment incentives should be focused on moderate import protection as well as profit tax credits and subsidies based on value added.

(2) The award of these incentives should be made as automatic as possible.

(3) Incentives should be awarded to all firms including artisans irrespective of size.

(4) The guarantee of a stable fiscal regime should be limited to 10 years and should be granted to all firms irrespective of size.

A detailed study of these recommendations should be undertaken in conjunction with the study on tariff reform in order to estimate the fiscal implications of both in a combined package. In addition, the study should also examine alternatives regarding the phasing of benefits and criteria for eligibility.

ANNEX A.

SUPPORTING TABLES

MALI

TABLE A1: Nominal Tariff Rates for Selected Products
Source (percent) from Countries Other than CEAO

Products	Droit de Douane (DD)	Taxe á L'importation (TI)	Sub Total (Import Duties)	IAS à L'importation	CPS	Other Advarorem (Taxes on Imports)	Total Advalorem Tax (Pression Fiscale)	Specific Taxes
Live Cattle	5	20	25	25	5		61.25	
Maize	5	10	15	25	5		61.25	
Hulled Rice	5	10	15	11.1	5		48.75	
Canned Milk (Sweetened)	5	EX	5	11.1	5		32.765	ISCP 44 FCFA/KN
Millet	5	10	15	11.1	5		32.765	
Sugar	5	Free	-	11.1	5		16.1	ISCP 20 FCFA/KN
Peanut Oil	5	50	55	25	5		98.75	ISCP 25 FCFA/KN
Macaroni	5	30	35	25	5		73.75	
Cigarettes	5	80	85	66.6	5		213.21	
Beer	5	35	40	25	5	ISCP 43%	123	
Salt	5	10	15	11.1	5		32.765	ISCP 7.5 FCFA/KN
Cement	(DS)	EX	-	11.1	5		16.1	
Fertilizers	(DS)	Free	-	Free			5	
Soap	5	40	45	25	5		86.25	
Cycle Tyres	5	20	25	25	5		61.25	
Wood	5	10	15	11.1	5		32.765	
Kraft Paper	5	20	25	25	5		61.25	
Printed Fabrics	5	20	25	25	5		86.25	
Clothing Woven	5	40	45	25	5		86.25	
Leather Shoes	5	50	55	25	5		98.75	
G.I. Sheets	5	5	10	11.1	5		27.21	
Nails	5	35	40	25	5		80	

Products	Droit de Douane (DD)	Taxe à L'importation (TI)	Sub Total (Import Duties)	IAS à L'importation	CPS	Other Advalorem (Taxes on Imports)	Total Advalorem Tax (Pression Fiscale)	Specific Taxes
Matches	5	80	85	25	5		136.25	OSP 5 FCFA/KN
Flour	5	5	10	11.1	5		27.21	
Green Tea	5	10	15	25	5		48.75	
Canned Tomatoes	5	50	55	25	5		78.75	
Sack New Jute	5	20	25	25	5		61.25	
Plastic Shoes	5	50	55	25	5		98.75	
Household Ceramics	5	50	55	25	5		98.75	
Concrete R. Bars	5	20	25	11.1	5		43.875	
Weaving Machinery	5	10	15	25	5		48.75	
Batteries	5	10	15	25	5		48.75	
Radios	5	20	25	11.1	5		43.875	
Passenger Cars	5	27	32	25	5		70.	
Cycles & Motorcylces of less than 50cc	5	10	15	25	5		48.75	
Enamelled Houseware	5	50	55	25	5		98.75	
Whisky	5	100	105	66.6	5	ISCP = 50%	296.53	OSP=70F/KN

Note: DS = Duty suspended; EX = Exempted

Calculation of Total advalorem tax = DD+DFI + (100+DD+DFI)IAS + CPS

SOURCE: Ministere des Finances, Direction Nationale des Douanes, Tariff Code (SYDONIA - Systeme Douanier Automatise), January 19, 1985 edition.

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TABLE A2: Nominal Tariff Rates for Selected Products Source CEAO (percent)

A. Agreed Products	Droit de Douane (DD)	Taxe à L'importation	TCR (Import Duties)	IAS	CPS	Other Advalorem (Taxes on Imports)	Total Advalorem Tax (Pression Fiscale)	Specific Taxes
Live Cattle	-	-	-	25	5		30	
Maize	-	-	-	25	5		30	
Rice	-	-	-	11.1	5		16.1	
Canned Milk (Sweetened)	-	-	-	11.1	-		11.1	ISCP 44 FCFA/KN
Millet	-	-	-	11.1	5		16.1	
Sugar	-	-	-	11.1	-		11.1	ISCP 20 FCFA/KN
Peanut Oil	-	-	28	25	5		65	ISCP 25 FCFA/KN
Macaroni	-	-	20	25	5		61.25	
Cigarettes	-	-	18	66.6	5		101.588	
Beer	-	-	17	25	5	ICPS 43%	94.25	
Salt	-	-	-	11.1	-		11.1	175 FCFA/KN
Cement	-	-	-	11.1	5		16.10	
Fertilizers	-	-	-	-	5		5	
Soap	-	-	27	25	5		63.75	
Cycle Tyres	-	-	15	25	5		48.75	
Wood	-	-	-	11.1	5		16.10	
Kraft Paper	-	-	-	25	5		30	
Printed Fabrics	-	-	20	25	5		55	
Clothing Woven	-	-	-	25	5		30	
Leather Shoes	-	-	35	25	5		73.75	
G.I. Sheets	-	-	-	11.1	5		16.1	
Nails	-	-	18	25	5		52.5	

B. Non Agreed Products	Droit de Douane (DD)	Taxe à L'importation	Sub Total (Import Duties)	(TUA) IAS	CPS	Other Advalorem (Taxes on Imports)	Total Advalorem Tax (Pression Fiscale)	Specific Taxes
Flour	-	5	5	11.1	5		22.21	
Green Tea	-	10	10	25	5		43.75	
Canned Tomatoes	-	50	50	25	5		93.75	
Sack New Jute	-	20	20	25	5		56.25	
Plastic Shoes	-	50	50	25	5		93.75	
Household Ceramics	-	50	50	25	5		93.75	
Concrete R. Bars	-	20	20	11.1	5		38.875	
Weaving Machinery	-	10	10	25	5		43.75	
Batteries	-	10	10	25	5		43.75	
Radios	-	20	20	11.1	5		38.875	
Passenger Cars	-	27	27	25	5		65	
Cycles & Motorcylces of less than 50cc	-	10	10	25	5		43.75	
Enamelled Houseware	-	50	50	25	5		93.75	
Whisky	-	100	100	66.6	5		288.2	

Note: Calculation of Total advalorem tax = DD+DFI + (100+DD+DFI)IAS + CPS

Source: same as A.1

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TABLE A3: Tariff Rates for Selected Products from CEAO and Other Countries (percent)

SUMMARY TABLE

	Import Duties (DD+DFI)		Total Advalorem Taxes on Imports (Pression Fiscale)		Valeur Mercuriale as Percentage of Actual 1986 Price[1)]
	CEAO	Other Countries	CEAO	Other Countries	
A. Produits Agrées			Produits Agrées		
Live Cattle	-	25	30	61.25	VM
Maize	-	15	30	51.25	
Hulled Rice	-	15	16.1	8.75	
Canned Milk (Sweetened)	-	5	11.1	2.765	27.5
Millet	-	15	16.1	2.765	
Sugar	-	-	11.1	1.1	Cubes = 97.5 ; Powder = 73
Peanut Oil	8	35	65	8.75	
Macaroni	0	35	61.25	3.75	
Cigarettes	18	85	101.588	3.21	
Beer	17	40	94.25	3.	
Salt	-	15	11.10	2.21	
Cement	-	5	16.10	21.66	14
Fertilizers	-	5	5	5	
Soap	27	45	63.75	86.25	
Cycle Tyres	15	25	48.75	61.25	
Wood	-	15	16.10	32.765	
Kraft Paper	-	25	30	61.25	
Printed Fabrics	20	25	55	86.25	35
Clothing Woven	-	45	30	86.25	25

	Import Duties (DD+DFI)		Total Advalorem Taxes on Imports (Pression Fiscale)		Valeur Mercuriale as Percentage Actual of 1986 Price[1]
	CEAO	Other Countries	CEAO	Other Countries	
Leather Shoes	35	55	73.75	98.75	
G.I. Sheets	-	10	16.1	27.21	
Nails	18	40	52.5	80	51
Unweighted Average produits agrées	9	27.28	38.847		
		Not Applicable		Not Applicable	
	B. Produits Non-agrées		Produits Non-agrées		
Flour	5	10	22.21	27.21	
Green Tea	10	15	43.75	48.75	
Canned Tomatoes	50	55	93.75	98.75	36
Sacks new jute	20	25	56.25	61.25	
Plastic Shoes	50	55	93.75	98.75	
Household Ceramics	50	55	93.75	98.75	
Concrete R. Bars	20	25	38.875	43.875	
Weaving Machinery	10	15	43.75	48.75	
Batteries	10	15	43.75	48.75	
Radios	20	25	38.875	43.875	
Passenger Cars	27	32	65	70.	
Cycles & Motorcycles of less than 50cc	10	15	43.75	48.75	
Enamelled Houseware	50	55	93.75	98.75	
Whisky	100	105	288.2	296.53	
Unweighted average produits non-agrées	30.86	Not Applicable	75.672	Not Applicable	
Unweighted average all products in sample	17.5	30.6	53.168	71.06	

1) Products with valeurs mecuriales whose figures are not available are indicated in this column as VM.
Source: same as A.1

(3)

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TABLE A.4. FREQUENCY DISTRIBUTION OF TOTAL TARIFF RATES (PRESSION FISCALE) SIX DIGIT PRODUCT CATEGORIES

Pression Fiscale %	No. of Product Categories	Pression Fiscale %	No. of Product Categories	Pression Fiscale %	No. of Product Categories
5	2	41.11	1	106.25	26
9	2	42.50	7	111.25	12
10	125	43.88	56	130	2
11	1	46.50	3	136.25	1
12	6	47.36	22	179.89	2
13	2	47.50	2	204.89	15
14	2	48.75	251	209.89	12
15	1	52	4	214.89	3
16.66	13	54.99	41	224.57	2
17	1	55	142	229.89	6
20	2	59.25	7	291.21	11
21	1	59.86	3	296.53	8
21.50	2	60	22		
21.66	62	61.25	466		
22.22	3	65.50	16		
26.11	6	67.25	16		
26.51	1	67.50	332		
27.22	108	71.75	4		
27.66	2	73.50	1		
27.77	4	73.75	411		
30.77	3	80	193		
32.25	1	86.25	263		
32.33	2	87.22	1		
32.77	322	92.50	219		
38.33	55	92.75	6		
38.55	2	98.75	122		
40.50	2	105	20		

Source: same as A.1

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TABLE A5 - Frequency Distribution of Sum of Droit de douane and Droit fiscal d'importation

(Eight digit product categories)

DD+DFI (%)	No of Product Categories	DD+DFI (%)	No of Product Categories
0	70	85	15
2	1	105	15
3	2		
4	10		
5	151		
6	1		
7	1		
10	170		
11	9		
12	1		
14	2		
15	540		
17	3		
20	281		
22	8		
25	653		
30	481		
35	544		
40	289		
45	374		
50	304		
55	198		
60	11		
65	125		
80	2		

Source: same as A1

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TABLEAU A6: Impôt Spécial Sur Certains Produits (ISCP)

	NOMENCLATURE	ORIGINE	ISCP TAUX
	0402: LAIT ET CREME DE LAIT		
1.	040220P20	P. Tiers	55F/KN
		CEE	55F/KN
		CEAO	55F/KN
2.	040225L20	P. Tiers	55F/KN
		CEE	55F/KN
		CEAO	55F/KN
3.	040230N20	P. Tiers	55F/KN
		CEE	55F/KN
		CEAO	55F/KN
4.	040240F20	P. Tiers	55F/KN
		CEE	55F/KN
		CEAO	55F/KN
5.	040250H30	P. Tiers	44F/KN
		CEE	44F/KN
		CEAO	44F/KN
6.	040260K30	P. Tiers	44F/KN
		CEE	44F/KN
		CEAO	44F/KN
		CEAO TCR	44F/KN
	0805: NOIX DE COLA		
7.	080530J00	P. Tiers	26.50F/KN
		CEAO	26.50F/KN
	0902: THE		
8.	090210R00	P. Tiers	250F/KN
		CEAO	250F/KN
9.	090220L00	P. Tiers	250F/KN
		CEAO	250F/KN
10.	090230X00	P. Tiers	250F/KN
		CEAO	250F/KN
11.	090240J00	P. Tiers	250F/KN
		CEAO	250F/KN

	NOMENCLATURE	ORIGINE	ISCP TAUX
	1701: SUCRE RAFFINES EN POUDRE CRISTALISES OU GRANULES		
12.	170130H00	P. Tiers	20F/KN
		CEE	20F/KN
		EEAO	20F/KN
		CEAO TCR	20F/KN
13.	170140K00	P. Tiers	25F/KN
		CEE	25F/KN
		CEAO	25F/KN
		CEAO TCR	25F/KN
	2102: EXTRAITS OU ESSENCES DE THE		
14.	210230R10	P. Tiers	250F/KN
		CEAO	250F/KN
	2201: EAU, EAUX MINERALES, EAUX GAZEUSES		
15.	220170W10	P. Tiers	2.50F/BT
		CEAO	2.50F/BT
16.	220170W20	P. Tiers	4F/BT
		CEAO	4F/BT
17.	220180R10	P. Tiers	2.50F/BT
		CEAO	2.50F/BT
18.	220180R20	P. Tiers	4F/BT
		CEAO	4F/BT
	2202: LIMONADES EAUX GAZEAUSES AROMATISEES		
19.	220210P10	P. Tiers	2.50F/BT
		CEAO	2.50F/BT
		CEAO TCR	2.50F/BT
20.	220210P20	P. Tiers	4F/BT
		CEAO	4F/BT
		CEAO TCR	4F/BT
21.	220220M10	P. Tiers	2.50F/BT
		CEAO	2.50F/BT
		CEAO TCR	2.50F/BT
22.	220220M20	P. Tiers	4F/BT
		CEAO	4F/BT
		CEAO TCR	4F/BT

	NOMENCLATURE	ORIGINE	ISCP TAUX
	2203: BIERES		
23.	220310W00	P. Tiers	43%
		CEAO	43%
		CEAO TCR	43%
24.	220320R00	P. Tiers	43%
		CEAO	43%
		CEAO TCR	43%
25.	220380L00	P. Tiers	43%
		CEAO	43%
		CEAO TCR	43%
26.	220390X00	P. Tiers	43%
		CEAO	43%
		CEAO TCR	43%
	2204: MOUTS DE RAISINS PARTIELLEMENT FERMENTES		
27.	220410N00	P. Tiers	25%
		CEAO	25%
28.	220420F00	P. Tiers	25%
		CEAO	25%
29.	220430H00	P. Tiers	25%
		CEAO	25%
30.	220440K00	P. Tiers	25%
		CEAO	25%
31.	220450P00	P. Tiers	25%
		CEAO	25%
32.	220460N00	P. Tiers	25%
		CEAO	25%
33.	220470F00	P. Tiers	25%
		CEAO	25%
34.	220480H00	P. Tiers	25%
		CEAO	25%
	2205: VINS DE RAISINS FRAIS, MOUTS DE RAISIN FRAIS MUTES A L'ACOOL		
35.	220510R00	P. Tiers	30%
		CEAO	30%
36.	220520L00	P. Tiers	30%
		CEAO	30%

	NOMENCLATURE	ORIGINE	ISCP TAUX
37.	220530X00	P. Tiers	25%
		CEAO	25%
38.	220540J00	P. Tiers	25%
		CEAO	25%
39.	220550M00	P. Tiers	25%
		CEAO	25%
40.	220560R00	P. Tiers	35%
		CEAO	35%
41.	220570L00	P. Tiers	35%
		CEAO	35%
	2206: VERMOUTHS ET AUTRES VINS DE RAISINS FRAIS		
42.	220610F00	P. Tiers	30%
		CEAO	30%
43.	220620H00	P. Tiers	30%
		CEAO	30%
44.	220630K00	P. Tiers	30%
		CEAO	30%
45.	220640P00	P. Tiers	30%
		CEAO	30%
	2207: CIDRE, POIRE, HYDROMEL ET AUTRES BOISSONS		
46.	220710L00	P. Tiers	25%
		CEAO	25%
47.	220720X00	P. Tiers	25%
		CEAO	25%
48.	220730J00	P. Tiers	50%
		CEAO	50%
49.	220740W00	P. Tiers	50%
		CEAO	50%
50.	220750R00	P. Tiers	50%
		CEAO	50%
51.	220760L00	P. Tiers	50%
		CEAO	50%

	NOMENCLATURE	ORIGINE	ISCP TAUX
	2208 AND 2209: ALCOOL ETHYLIQUE		
52.	220890N10	P. Tiers CEAO	50% 50%
53.	220915N00	P. Tiers CEAO	50% 50%
54.	220920J00	P. Tiers CEAO	50% 50%
55.	220925F00	P. Tiers CEAO	50% 50%
56.	220930W00	P. Tiers CEAO	50% 50%
57.	220935H00	P. Tiers CEAO	50% 50%
58.	220940R00	P. Tiers CEAO	50% 50%
59.	220945K00	P. Tiers CEAO	50% 50%
60.	220950L00	P. Tiers CEAO	50% 50%
61.	220955P00	P. Tiers CEAO	50% 50%
62.	220950X00	P. Tiers CEAO	50% 50%
63.	220970J00	P. Tiers CEAO CEAO TCR	50% 50% 50%
64.	220980W00	P. Tiers CEAO	50% 50%
65.	220990R00	P. Tiers CEAO	50% 50%
	2401: TABACS		
66.	240120R00	P. Tiers CEAO	78% 78%
67.	240140X00	P. Tiers CEAO	78% 78%

	NOMENCLATURE	ORIGINE	ISCP TAUX
68.	240160W00	P. Tiers	78%
		CEAO	78%
69.	240180L00	P. Tiers	78%
		CEAO	78%
70.	240210N10	P. Tiers	78%
		CEAO	78%
		CEAO TCR	78%
71.	240210N20	P. Tiers	78%
		CEAO	78%
		CEAO TCR	78%
72.	240220F20	P. Tiers	78%
		CEAO	78%
		CEAO TCR	78%
73.	240225J20	P. Tiers	78%
		CEAO	78%
		CEAO TCR	78%
74.	240230H20	P. Tiers	78%
		CEAO	78%
		CEAO TCR	78%
75.	240240K00	P. Tiers	78%
		CEAO	78%
76.	240250P00	P. Tiers	78%
		CEAO	78%
77.	240260N00	P. Tiers	78%
		CEAO	78%
78.	240270F00	P. Tiers	78%
		CEAO	78%
79.	240280H00	P. Tiers	78%
		CEAO	78%
80.	240290K00	P. Tiers	78%
		CEAO	78%
	2501: SEL		
81.	250120F10	P. Tiers	7.50F/KN
		CEE	7.50F/KN
		CEAO	7.50F/KN

	NOMENCLATURE	ORIGINE	ISCP TAUX
82.	250120F20	P. Tiers	7.50F/KN
		CEE	7.50F/KN
		CEAO	7.50F/KN
	27: COMBUSTIBLES MINERAUX, HUILES MINERALES		
83.	271010L00	P. Tiers	5F/L
		CEAO	5F/L
84.	271015P00	P. Tiers	18.50F/L
		CEAO	18.50F/L
85.	271017N00	P. Tiers	18.50F/L
		CEAO	18.50F/L
86.	271019F00	P. Tiers	18.50F/L
		CEAO	18.50F/L
87.	271029H10	P. Tiers	10F/L
		CEAO	10F/L
88.	271029H20	P. Tiers	4F/L
		CEAO	4F/L
89.	271035F00	P. Tiers	5F/L
		CEAO	5F/L
90.	271039K00	P. Tiers	4F/L
		CEAO	4F/L
91.	271040W00	P. Tiers	12.50F/L
		CEAO	12.50F/L
92.	271045H00	P. Tiers	4F/L
		CEAO	4F/L
93.	271050R00	P. Tiers	4F/L
		CEAO	4F/L
94.	271060L00	P. Tiers	4F/L
		CEAO	4F/L
95.	271070X00	P. Tiers	4F/L
		CEAO	4F/L
96.	271080J00	P. Tiers	10F/L
		CEAO	10F/L
97.	271090W10	P. Tiers	10F/L
		CEAO	10F/L

	NOMENCLATURE	ORIGINE	ISCP TAUX
98.	271090W20	P. Tiers	10F/L
		CEAO	10F/L
		CEAO TCR	10F/L
99.	271090W20	P. Tiers	10F/L
		CEAO	10F/L
100.	271095H00	P. Tiers	10F/L
		CEAO	10F/L
	9307: MUNITIONS		
101.	930710P11	P. Tiers	12.50F/KN
		CEAO	12.50F/KN
		CEAO TCR	12.50F/KN
102.	930710P12	P. Tiers	12.50F/KN
		CEAO	12.50F/KN
		CEAO TCR	12.50F/KN
103.	930710P13	P. Tiers	12.50F/KN
		CEAO	12.50F/KN
104.	930790H20	P. Tiers	12.50F/KN
		CEAO	12.50F/KN

NOTE: F = FCFA

Source: same as A1

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TABLEAU A7: EVOLUTION DES VALEURS "MERCURIALES" A L'IMPORTATION

Tableau Détaillé

	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Animaux Vivants												
01-01-10 ou 29	tête	75,000	100,000	100,000	100,000	100,000	100,000	100,000	200,000	01-01F-10		200,000
01-01-29	tête	50,000	75,000	75,000	75,000	75,000	75,000	75,0000	125,000	01-30F-20		125,000
01-01-30	tête	10,000	30,000	20,000	20,000	20,000	20,000	20,000	30,000	01-40P-00		30,000
01-02-01 à 19	tête	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000			
01-03-10 à 90	tête	15,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000			
01-04-01 à 10	tête	7,500	10,000	10,000	10,000	10,000	10,000	10,000	10,000			
01-05-90	Pièce	300										
01-05-90	Pièce	350										
01-05-90	Pièce	3,000										
01-05-90	Pièce	300										
01-06-01 et 09	Pièce	375										
01-06-10	Pièce	100										
01-06-29	Pièce	,25										
01-06-90-91	Pièce	35,000	35,000	35,000	35,000	35,000	35,000	35,000	50,000			
01-06-99	Pièce	2,500										

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Viandes et Abats Comestibles												
02-06-90	KN	250	250		250	250	250	250				
Poissons Séchés et Fumés												
03-02-01	KN	300	300		300	300	300	300				
03-02-11	KN	150	150		150	150	150	150				
03-02-11	KN	250	250		250	250	250	250				
03-02-20	KN	200	200		200	200	200	200				
03-02-41												
03-02-41												
Lait et Produits Laitiers												
04-02-21 et 29	K1/2N		30	30	40	40	40	40	40	04-02-20P 10 à 30 04-02-25L 10 à 30		65
04-02-31 et 39	K1/2N		25	25	65	40	40	40	40	04-02-30N 10 à 30 04-02-40F 10 à 30		

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
04-02-51 à 90	K1/2N		55	55	65	65	65	65	65	04-02-50H 20 à 30,40 04-02-60K 20 à 40		

Légumes et Racines Alimentaires

07-01-09	KN	75
07-01-39	KN	75
07-01-45	KN	125
07-06-10	KN	50
07-05-21	KN	150
07-06-30	KN	50
07-06-40	KN	100

Matières à Tresser

14-02-21 et 22	KN	50
14-05-90	Pièce	50
14-05-90	Pièce	25

	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Huiles Végétales												
15-07-88	KN	300										
15-15-00	KN	200										
Sardines;												
16-04-21	K1/2N						87.5					
16-04-29	K1/2N						87.5					
Sucre Raffiné												
17-01-21	KN		90	90	90	90	90	90	150	17-01-30K00		150
17-01-22	KN		85	85	85	85	85	85	250	17-01-40K00		
										17-01-90K00		
Purée de Tomates												
20-02-11								125	165	20-02-40F00		180
20-02-19								125	165	20-02-50H00		180
Extrait et Essence de Café												
21-02-10									1,500	21-02-10J10		1,500

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Tabacs												
24-01-10 et 20	KN	150										
24-01-61 et 62	KN	200										
Sel												
25-01-29	KN	50				3,750						
Ciment												
25-23-10 à 90	TN		5,000	3,500	3,750		3,750	3,750	3,750	25-2310-K00	3,750	3,750
										25-23-10P00		
										25-23-30N00		
										25-23-40F00		
										25-23-90F00		
Huiles Légères												
27-10-32 et 33					55,000	55,000	55,000	55,000	55,000	27-10-15P00	55,000	55,000
										27-10-17M00	55,000	55,000
										27-10-19F00	55,000	55,000
27-10-32 à 39	TN		4,250	4,250	200,000	200,000	200,000	200,000	200,000	27-10-29N10		200,000
										27-10-35F00		62,500
27-10-42	TN		3,650	3,650	62,500	62,500	62,500	62,500	62,500			

	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Huiles Lourdes												
27-10-51	TM		3,500	3,500	49,200	49,200	49,200	49,200	49,200	27-10-40W00	49,200	49,200
27-10-52	TN		3,250	3,250	50,500	50,500	50,500	50,500	50,500	27-10-45H00	50,500	50,500
27-10-53	TN		3,250	3,250	53,000	53,000	53,000	53,000	53,000	27-10-50R00	53,000	53,000
27-10-54 et 55	TN		2,000	2,000	52,000	52,000	52,000	52,000	52,000	27-10-60L00	52,000	52,000
										27-10-70X00	52,000	52,000
27-10-61 et 69	TN		26,650	26,650	191,750	191,750	191,750	191,750	191,750	27-10-90Y10	191,750	191,750
										27-10-90Y20	191,750	191,750
27-14-10	TN		3,000	3,000	76,700	76,700	76,700	76,700	76,700	27-14-10J00		191,750
										27-16-20R00		69,550
27-14-20	TN		3,000	3,000	97,500	97,500	97,500	97,500	97,500			
										27-16-20X		63,050
27-16-10	TN		3,500	3,500	32,500	32,500	32,500	32,500	32,500	27-16-10W		325,000
27-16-20	TN			3,500	69,550	69,550	69,550	69,550				
27-16-30	TN					69,550	69,550	69,550	69,550	27-14-90L10		76,700
										27-14-90L20		27,500
27-16-90	TN		3,500	3,500			6,350	6,350	63,050			
Medicament												
30-03-92	CN						300					

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Peinture												
32-07-01	TN		200	200	250	250			780			
32-09-51							300					
Savons												
34-01-02 à 03	KN						85		150			
34-01-11 à 20	KN						175					
34-02-32 à 42	KN						275					
Insecticides												
38-11-21	KN						175					
Tuyaux en Caoutchouc												
40-09-10	La Pièce								140			
40-11-51 (pour velocipèdes)	Unité								250			
40-11-51 (pour velomoteurs)	Unité								500			

	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Peaux Brutes												
41-01-10 à 50	KN											
Bois Sciés												
44-05-01 à 50												
44-05-01 à 90 (Bois blanc)	TN	25,000	25,000	25,000	25,000	25,000						
44-05-01 à 90 (Bois rouge)	TN	30,000	30,000	25,000	25,000	25,000						
44-05-01 à 90 (Bois rouge)	TN		30,000	35,000	35,000	35,000						
44-15-10 à 90	TN		40,000	35,000	35,000	35,000						
44-23-40 (Bois blanc)	TN		20,000	25,000	25,000	25,000						
44-23-40 (Bois rouge)	TN		30,000	25,000	25,000	25,000						
44-23-90 (Bois blanc)	TN		100,000	100,000	100,000	100,000						
44-23-90 (Bois rouge)	TN		150,000	100,000	100,000	100,000						
44-27-40	Pièce	2,500										
Fils et Tissus de Coton												
55-06-90 (Fils à coudre)	KN		1,750	1,750	2,000	1,750	1,750	2,000	2,640	55-06-10R00		3,465
55-06-90 (Fils à tisser)	KN		750	400	500	400	400	400	750	55-06-90J00		990
55-09-01 à 16	KN		500	150	250		200	300	396	55-09-01L 10-20	475	520

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
55-09-21 à 22	KN		750		250		400	600	792			
55-09-24	KN		1,500	750	1,100	650	700	1,000	1,492			
55-09-28	KN		750		500		400		792			
55-09-29	KN		750		500		400	600	792			
55-09-31	KN		500	400	500	400		400	480			
55-09-41	KN						650	1,000				
55-09-32 à 46	KN		1,150	600	1,100							
55-09-34 à 38 et 43	KN					400		500	1,300			
55-09-51 à 59	KN		1,250	675	1,100	600	625	900	1,300	55-09-44H 10 et 20	1970	1970
55-09-61 à 65	KN			150	250		200	400	528			
55-09-66 à 69	KN		750	400	500		400	600	792			
55-09-71 à 79	KN		1,150	400	1,100	400	400	500	1,300			
55-09-81 à 89	KN		1,250	675	1,100	400	625	900	1,300			
55-09-90	KN		1,500	750	1,100	650	750	1,250	1,650			
Tissus de Fibres Textiles												
56-07-20 à 92	KN		2,500	650	1,100	650	650	800	1,056			

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Velours, Peluches												
58-04-10 à 30					1,100		650	1,000				
58-08-10 et 90							400	600	792			
58-09-00							400	600	792			
58-10-10 et 20									4,800			
Filets												
59-05-01 et 09	KN		500	500	500	400	400	400	528	59-05-10H00		700
										59-05-20K00		700
Etoffe												
60-01-10 à 90						400	400	600	792	60-01-10L00		1,045
Vêtements en Tissus												
61-01-90 à												
61-02-90												

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	Unite de Valorisation	Jan. 1977	Jan. 1978	Aout 1978	Fev. 1980	Oct. 1980	Juil. 1981	Mars. 1982	Nov. 1984	MTS CEDEAO	Juil. 1985	Mars 1986
Articles en Tissus												
62-01-10 et 90	KN						400	600	792			
62-02-90												
62-03-01 à 29	KN		150	150	150	150						
62-03-31 à 59	KN		100	100	100	100						
62-03-61 à 69	KN		50	50	50	50						
Friperie												
63-01	KN			100	150	100						
63-02	KN		100									

Source: Data provided by D.N. Douanes.

MALI

TABLE A8 : Comparison of Products Under Price Controls (Before 1986 and 1986)

BEFORE 1984-85			1986		
Category/Product	Type of Price Control	Characteristics of Production/ Distribution System	Category/Product Agricultural Products	Type of Price Control	of Production (Distribution System)
Agricultural Products:			**Agricultural Products:**		
millet maize paddy rice	(government sets (producer and retail (prices (	(OPAM has official monopoly (of purchase from farmers and (of wholesale sales (	cotton fiber rice paddy maize millet	Government sets Government sets Government sets Government sets Government sets	All OPAM and SOMIEX monopolies abolished
cotton fibers	government sets producer prices	(CMDT has domestic marketing (monopoly. SOMIEX has export	dah (kehaf)	Government sets	
groundnuts	government sets producer price	(monopoly. SEPOM have (domestic marketing monopoly.	groundnut	Government sets	
dah (kehaf)	government sets producer price	(CMDT has marketing monopoly. (			
sheanuts kapok					
"Essential Goods" (locally consumed):			**"Essential Goods"** (locally consumed):		
a) locally produced:					
refined groundnut oil	("cost-plus" in (principle	(Producers are public (enterprises; SOMIEX has			
soap	("cost-plus" in	(wholesale marketing monopoly (produced by a public			
cement	principle	(enterprise producer is a (public enterprise, SOMIEX			
reconstituted milk	"cost-plus" in principle	(has wholesale marketing (monopoly			
sugar					

BEFORE 1984-85

Category/Product	Type of Price Control	Characteristics of Production/ Distribution System
b) imported foodstuff:		
sugar	(government sets	(SOMIEX monopoly up to
table salt	price	(wholesale
wheat flour	(	
cereals	(	OPAM monopoly up to wholesale
processed milk	government sets price	SOMIEX monopoly up to
pharmaceutical products	government sets price	wholesale
cement	government sets price	SOMIEX distribution monopoly
c) energy and chemical products:		
petroleum products	government sets price	distributed by private
electricity	"cost-plus" in	companies produced by state
fertilizer, pesticide	(principle subsidy	enterprise SCAER has
agricultural equipment	(	distribution monopoly
d) services:		
transport tariffs		road transport is partly publicly-owned
Other Industrial Products, Foodstuffs, and Services:		
other local manufactures	"cost-plus"	mixture of private and public ownership
butchers meat	government sets price	mostly private ownership
tea	government sets price	
bread	government sets price	private ownership
cinema tickets	government sets price	mostly private ownership
garage charges	government sets price	private ownership
taxis	government sets price	private ownership
car hire	government sets price	private ownership
hotel rooms	government sets price	private ownership
fees of transitaires	government sets price	private ownership

1986

Category/Product Agricultural Products	Type of Price Control	of Production (Distribution System)
b) imported foodstuff:		
tomato paste	Homologation souple	
noodles	Homologation souple	
sardines in oil	Homologation souple	
broth in cubes	Homologation souple	
soap	Homologation souple	
cement	Homologation souple	
sugar	Government sets	
milk	Government sets	
table salt	Government sets	
cereals	Government sets	
refined groundnut oil	Government sets	
c) energy and chemical products:		
petroleum products	Government sets	
electricity	Homologation souple	
agricultural equipment	Government sets	
medical treatment	Government sets	
d) services:		
transportation	Government sets	
Other Industrial Products, Foodstuffs, and Services:		
local manufactures	"cost-plus" margin/ Government approval	
tea	Government sets	
movie tickets hotel	Government sets	
rooms taxis hardware	Government sets	
candle lanterns iron	Government sets	
limestone	Homologation souple	
	Homologation souple	
	Homologation souple	
	Homologation souple	
	Homologation souple	

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BEFORE 1984-85			1986		
Category/Product	Type of Price Control	Characteristics of Production/ Distribution System	Category/Product Agricultural Products	Type of Price Control	of Production (Distribution System)
Other Imports			Other Products		
all other imports	mark-up	importing is in public and private hands	Most other products are liberalized		

Sources: Decret No. 188 of 1975 and various other sources.

Note: Homologation souple = price subject to present profit margin. This is equivalent to "cost-plus" on left handside.

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TABLEAU A9: Summary of the Tax System, 1985

(In CFA Franc)

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
Taxes on Income and Profits				
1.1	Tax on industrial and commercial profits BIC	Tax on the net income of enterprises, whether set up as companies or not, of some cooperatives and liberal and other professions. Public or sector enterprises are liable unless specifically exempted. Companies whose headquarters are outside Mali are taxed on that part of their net income regarded as being earned in Mali. There are special provisions for the extractive industries. Losses in deficit years may be carried forward and deducted from the results of the three following fiscal years. Enterprises not set up as companies whose annual turnover does not exceed CFAF 10 million (CFAF 5 million for some enterprises in the service sector) are taxed on a flat-rate basis. Enterprises taxed on their actual profits are liable to a minimum 1 percent flat-rate tax, the amount of which may not be less than that of the business license to which enterprises are subject if they are liable to the flat-rate tax.	Exemptions: nonprofit consumer cooperative without sales outlets, rural production and development enterprises, mutual agricultural credit funds, net profits from approved investments, or from the operation of new factories conforming to the provisions of the investment Code up to five years. Income is liable to IRF and CIRM. Special deductions: under certain conditions, investment expenditure of up to 50 percent of profits.	Companies: 50 percent Enterprises not set up as companies: 30 percent Craftsmen: 15 percent

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
1.2	Tax on the wage bill	Flat-rate tax on the wage bill which must be paid by all employers subject to the tax on industrial and commerce profits (excluding employer social security contributions.		15 percent
1.3	Tax on income from floating capital (ICRO)	Tax on dividend payments, interest-bearing deposits and some other interest payments. Foreign enterprises are regarded as distributing as dividends the portion of their net income derived from their activities in Mali. Companies must withhold the tax at source.	Exemptions: cooperatives, mutual agriculture credit funds, savings bank accounts, agricultural cooperatives, interest on government bonds, commercial bank loans.	Standard rate: 18 percent; Special rate: 25 percent for premiums paid to bond bearers; reduced rate: 9 percent for interest on deposits and interest on bearer bonds issued by Malian companies and on dividend distributions by all companies during the first 42 months of operations.
1.4	General income tax (IGR)	Annual progressive tax on household from all sources. Benefits in kind are included in taxable income. The family situation is taken into account using the income splitting system. The tax is withheld at source for wares and salaries, and for nonexempt pensions.	Exemptions: premiums and remuneration paid on bonds issued iwth authorization by the Minister of Finance, interest on Treasury bonds, income from owner-occupied buildings, some capital gains, war veterans' pensions, disability pensions. Deductions: family allowances, pension plan contributions of employees up to 4 percent of gross income. Employees are allowed a flat-rate abatement of 20 percent on th taxable income. Expatriates are allowed an additional 35 percent deduction. Expatriates' benefits in kind are appraised at 20 percent of their intrinsic value for tax purposes. A flat-rate abatement of CFAF 100,00 is allowed on	eir	Schedule Income Tax Brackets (in CFA francs) — Rates in Percent 0- 25,000: 0 25,0001- 100,000: 8 100,0001- 200,000: 12 200,0001- 325,000: 18 325,0001- 500,000: 25 500,0001- 750,000: 30 750,0001-1,000,000: 35 1,000,0001-1,500,000: 40 1,500,0001-2,000,000: 45 over-2,000,000: 50

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
			net household income. of their intrinsic value for tax purposes. A flat-rate abatement of CFAF 100,00 is allowed on net household income.	eir
1.5	Poll taxes			
(a)	Minimum fiscal tax (IMF)	Annual tax to which most settled Malian citizens over 14 years of age are liable. Rate varies by region.	Exemptions: military personnel, students, persons age 60 and above, mothers having more than four children, and sick persons being treated for the major endemic diseases.	Varies from CFAF 250 to CFAF 1,600.
(b)	Development tax	Identical to (a) but rate is uniform. Residence of some regions pay the tax only if they own livestock; the tax depends on the size of the herd.	Same exemptions as for the IMF, for residents of Gao and Timbuktu; this tax is based on livestock.	CFAF 100-115 per person
(c)	Tax on the migrant population (IPF)	Tax on the migrant population.	None	CFAF 1,500
2.	Social security contribution			
(a)	Family allowance	Employer contribution.		
(b)	Sickness and occupational accidents	Employer contribution.	80 percent	
3.	Taxes on property	Tax on real or fictional income from real property (excluding unimproved or cultivated land).		
3.1	Tax on rental income (IRF)	Taxable objects are determined using three different methods: a. (rented buildings) actual rental value; b. comparison with the actual income form similar buildings; c. determination of net	Agricultural buildings; State-owned buildings, buildings used for education purposes, buildings used for religious purposes, medical facilities. New rental buildings for the first five years. Buildings	30 percent

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	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
		rental income by appraisal of market value of the building and application of estimated rate of return on property investments to the estimated value of the property. If possible, method 1 should be used before method 2, and method 2 before method 3. Estimated rental income may not be lower than the flat-rate progression given in the schedule. The schedule is only applied to residential buildings. Appraisals resulting from application of method 2 remain unchanged for five years.	owner-occupied for residential purposes.	
3.2	Real estate tax	Tax applicable to company-owned buildings, including those owned by religious missions and educational institutions. The tax base is the same as that for the IRF. This only applies to limited liability public companies.	Public buildings: real estate companies, charitable organizations; rural production and development companies; cooperatives; mutual agricultural credit funds; medical institutions; religious mission buildings used for teaching purposes, health care and religious activities.	Religious missions: 0.5 percent Other: 20 percent
4.	Tax on Goods and Services			
4.1	Sales tax (IAS)	Tax on commercial, industrial, craft activities, sale of services or imports based on the amount of sales, value of service or imports, all costs and duties included. Same limits as for flat-rate BIC.	Exemptions: export operations, sales of local agricultural products for consumption, commercial activities involving exempt products, some imported products (petroleum products and capital goods). Social credit companies carried out by state companies. Printing houses and newspaper sales, insurance contracts.	Reduced rate: 6 percent (transportation, public works) Imported goods Reduced rate: 10 percent Normal rate: 20 percent Higher rate: 40 percent Specific rates Water: CFAF 10/m3 Electricity: CFAF 7/kw Manufactures: 20 percent (except oil, soap: 10 percent) Bank: 20 percent Other services: 15 percent

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
			Deductions: for producers who import or purchase raw materials for local processing into finished products, providing IAS has been paid on such raw materials.	
4.2	Single tax on consumption	Tax on goods manufactured in Mali, on the basis of ex-factory price. Assessed by the tax department and collected by the Treasury.	Exemptions: exports	Ad valorem 3-5 percent Specific: Groundnut oil: CFAF 0.5/1 Soap: CFAF 1/kg Matches: CFAF 3.5/box Soft drinks: 5 percent Soda water: 3 percent Tomato concentrate and tomato juice: 3 percent Ceramic products: 5 percent
4.3	Selective excise	Taxes on specific imported products or local manufactures based on the selling price and including costs and duties except IAS, c.a.f. at customs or amounts released to the market.		
4.4	Business license tax	All individuals or legal entities engaged in commerce, industry, or a profession in Mali are liable to the business license tax. Proportional fee based on tax-payer contracts or allocations. Fixed fees established by area and type of activity.	Exemptions: sport, cultural, and recreational association, and other non-profit activities.	
4.5	Motor vehicles tax	Tax on vehicles in use.		Based on vehicle power.

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
Taxes on international trade				
5.1	Customs duties at import.	Levied on goods on non-WAEC origin according to the common external tariff WAEC members; either the minimum tariff or general tariff is applicable to goods depending on their country of origin.	Exemptions: capital goods, ordinary consumer goods, and pharmaceutical goods.	Ad valorem duties based on the customs tariff.
5.2	Sales tax on imports	Like the IAS, levied by customs department.		
5.3	Regional cooperation tax (TCR)	Entry tax levied on imports of industrial products originating in a WAEC number country if the product is covered by the TCR Agreement.	Exemptions: some nonprocessed local products.	Duties collected in accordance with TCP tariff.
5.4	Levies for Price Stabilization Fund (ORSP)	Import tax levied for the ORSP on imported goods regardless of origin or provenance except SOMIEX monopoly products.		Cigarettes: CFAF 1500/t Cotton aceds: CFAF1500/t Rice: Varies according to scale
5.5	Levy for the Highways Fund	Tax or levy on petroleum products.		CFAF 1000 cu.m
5.6	Levy for the Amortization Fund (CAA) (CPS)	Levy on private services, based on their value at the Mali border, and on imported and exported goods regardless of origin.	Exemptions: goods in transit and essentials.	Petroleum products: 3 percent Other: 5 percent
5.7	Tax on exports	Levied ad valorem on the official value of exported products.		
5.8	Other export taxes	Interest on credit, storage and warehousing fees, seals and forms, fines and confiscation, sales et customs.		

	TAX	NATURE OF THE TAX	EXEMPTIONS AND DEDUCTIONS	RATES
6.1	Registration fees	Applies among others to sales of buildings, business capital, lease fees, and contract fees.		Sale of buildings: 20 percent Contract Fees: 3 percent Tax on assets invested in companies: 0.5 to 2 percent
6.2	Stamp duties	Applies to legal instruments, correspondence with the Government, driver's licenses, and import and export licenses.		Ad valorem rate: 0.6 percent Fixed rates according to the nature of the legal document.
6.3	Livestock tax	Levied by regional tax offices according to the herd size.		Tax varies according to kind.

SOURCE: IMF.

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TABLEAU A10 - CODE DES INVESTISSEMENTS DE 1976 ET 1986

CARACTERISTIQUES	ANCIEN CODE DES INVESTISSEMENTS	NOUVEAU CODES DES INVESTISSEMENTS
Textes	Ordonnance 76-31, décret 128	Loi 86-39, décret 93
Dates	30 mars 1976 et 7 mai 1976	8 mars 1986 et 29 mars 1986
Objectifs de développement	Non précisés.	a) Mobilisation de l'épargne b) Mobilisation du capital extérieur c) Création d'emplois d) Formation de cadres nationaux e) Création et extension d'industries d'infrastructure f) Encouragement des investissements valorisant les resources locales g) Création de PMI nationales h) Transfert de technologies adaptées et nécessaires i) Décentralisation industrielle j) Encouragement et promotion d'un tissu économique complémentaire
Définition de l'investissement	Immobilisations	inclut le fonds de roulement
Déf. des entreprises prioritaires	Nouvelles Concourant au développement S'insérant dans les programs et plans de développement Exclut montage et conditionnement agro-industrie, métal-mécanique-entretien, eau-énergie, tourisme, immobilier, TP et transport, travaux agricoles/hydraulique, fabrication.	Les critères du code précédent sont repris, mais on ajoute les secteurs de travaux agricoles/hydraulique, bureaux de promotion de l'investissement. On permet exceptionnellement le montage ou le conditionnement.
Critères de valeur ajoutée	Valeur ajoutée minimum 40% ou, pour les Maliens, 30%. Eléments de la VA sont ceux de la VA nationale.	VA NATIONALE minimum abaissée à 20% pour les Maliens.
Principaux avantages accordés:		

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CARACTERISTIQUES	ANCIEN CODE DES INVESTISSEMENTS	NOUVEAU CODES DES INVESTISSEMENTS
- Régime commun dit A:	Jusqu'à 3 ans exonération des droits et taxes à l'importation sur le matériel les machines, outillages, materiaux et pièces nécessaires à la réalisation du programme agréé. Jusqu'à 10 ans exonération des droits et taxes à l'importation sur les constituants et conditionnements des produits. Articles exonérés selon liste annexée au décret d'agrément. CPS non exonérée. Jusqu'à 5 ans exonération sur l'impot sur les BIC et la contribution des patentes. Les exonérations courent dès livraison. Investissement minimum: 75 millions FCFA. Transfert garanti pour la valeur des investissements nouveaux, le bénéfice net et les salaires "raisonnables" d'expatriés.	Même durée d'exonération sur les matériels etc. Elle ne s'applique que si ces articles ne sont pas produits localement. L'Exonération sur les constituants etc. est dégressive et ramenée à 8 ans; 100% pendant les 5 premières années, 66% pendant les 2 années suivantes, 35% pendant une année. Elle ne s'applique que si ces articles ne sont pas produits localement. Les exonérations courent à l'achèvement des immeubles. Investissement minimum: 150 millions FCFA. Reprend la garantie de transfert mais limite les investissements nouveaux à leur valeur amortie et à la part financée de l'extérieur.
- Régime particulier dit B:	Accordé aux entreprises d'une importance capitale pour le développement. Investissement minimum en millions FCFA: 300 pour agro-industrie/transport, 375 pour métallurgie/fabrication/tourisme/immobilier, 750 pour la production d'énergie. En plus des avantages du Régime A: La conventien stabilise le régime fiscal et douanier, accorde des garanties en matière de crédit bancaire et de modalités d'utilisation d'eau et d'énergie. La convention dure au plus 20 ans et peut être prorogée au plus 5 ans.	Conserve les avantages du code précédent mais la durée est determinée sur la base des délais retenus de réalisation et des avantages maximum et spécifiques. La stabilisation du régime fiscal est plus précise. L'investissement minimum est de 500 millions FCFA.

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CARACTERISTIQUES	ANCIEN CODE DES INVESTISSEMENTS	NOUVEAU CODES DES INVESTISSEMENTS
- Régime spécial dit C:	Pour les PME qui sans réunir les conditions d'importance des régimes A ou B présentent un intérêt pour le développement: Certainess exonérations totales ou partielles de certains impôts, droits et taxes a l'importation de materiel, impôts sur le BIC.	Pour les entreprises MALIENNES répondant aux critères du code précédent: Ajoute au bénéfices précédents ceux sur les matières premières, l'impôt sur les revenus fonciers et la taxe sur les biens de main morte: - jusqu'à 2 ans sur les matières et conditionnements importés; - jusqu'à 4 ans à l'exportation de produits (CPS exclue).
	Investissement minimum: 10 millions FCFA.	Investissement minimum: 25 millions FCFA.
Dispositions particulières:	Voir "dispositions spéciales" ci-après.	Pour les entreprises des Régimes A, B et C: - exportant 40% au moins et important 40% au plus de la valeur de la production, les avantages sont augmentés d'un an sur le BIC et la patente, de 2 ans au plus sur les articles importés. L'exonération à l'exportation est de 5 ans. - intensives en main d'oeuvre: même accroit que ci-dessus sur le BIC et l'importation et en plus: IAS réduit, participation possible de l'Etat au cout infrastructurel - satisfaisant les DEUX critères ci dessus; les avantages supplémentaires sont portés - à 3 ans maximum sur le BIC et la patente, - à 10 ans sur les exportations, - jusqu'à 2 ans sur les articles importés.

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CARACTERISTIQUES	ANCIEN CODE DES INVESTISSEMENTS	NOUVEAU CODES DES INVESTISSEMENTS
		- installées dans des zones encore peu industrialisées, les avantages augmentent de 2 ans sur le BIC et la patente. Elles bénéficient en outre d'un IAS à taux réduit et d'une participation possible de l/Etat au cout infrastructurel - satisfaisant à 2 des 3 critères précédents les avantages sur le BIC, la patente et l'importation d'articles reçoivent un second accroissement d'un an. Les entreprises des régimes A et B peuvent bénéficier d'une participation possible de l'Etat au cout infrastructurel.
Entreprises artisanales produisant des biens utilitaires ou services:	Non prévu	Pour autant qu'elles indiquent le lieu d'utilisation des équipments, s'engagent à ne pas les vendre pendant 5 ans sauf force majeure et à les utiliser pour l'activité indiquée: Exonération sur les équipments importés. De plus les associations et regroupements d'artisans peuvent bénéficier du régime C.
Disposition spéciales	Avantages particuliers aux industries installées dans des zones encore peu industrialisées peuvent inclure participation possible de l'Etat au coût des accès et de l'électrification, terrain gratuit, IAs réduit, allongement sélectif de durée d'exonération.	L'Etat s'engage à la protection du marthé dans le respect de ses engagements internationaux et dans le cadre d'une concurrence loyale et de bonne foi.

CARACTERISTIQUES	ANCIEN CODE DES INVESTISSEMENTS	NOUVEAU CODES DES INVESTISSEMENTS
Niveau de décision d'agrément	Régimes A et B: Décret en Conseil des Ministres sur avis de la Commission Nationale des Investissements. Régime C: Arreté interministériel du MEDIT et du MFC.	Régimes A et B: Même disposition qu'au code précédent mais la CNI est alourdie de 15 à 22 membres. Régime C: Même disposition qu'au code précédent.
Regimes A et B:	Aucun délai	Instruction du dossier: 90 jours Concovation de la CNI: 30 jours Délibération de la CNI pour avis au Conseil des Ministres: 45 jours Notification au promoteur par le MEDIT: 15 jours TOTAL, hormis Conseil des Ministres au plus: 180 jours
Regime C:	Instruction et transmission au MFC: 45 jours Arreté interministériel: 30 jours TOTAL au plus: 75 jours	Retour au promoteur si dossier non conforme: 15 jours Si conforme: Instruction du dossier: 15 jours et transmission au MFC: 30 jours Arreté interministériel: 15 jours TOTAL au plus: 60 jours.

SOURCE: DNI Report.

MALI

TABLE A11 -DELAI POUR OBTENIR LE FINANCEMENT D'UN PROJET A BDM/SRIFI

Sommaire:

Echantillon, nombre de dossiers:	6	
Délai Moyen en Mois:		15
Délai Maximum en Mois:		25
Délai Minimum en Mois:		5

DETAIL	Demandé	Obtenu	Délai en Mois
Pr. Impl. BOULANGERIE MODERNE Tombouctou, Abderramane H.S.	12 84	4 85	5
Boulangerie Moderne SEVARE, Amadou S. SOW, ing, chim. Bko	11 84	4 85	6
Fabrique de boissons gazeuses, Mamandou Garba TAPO, MOPTI	11 83	1 85	15
Ferme avicole "MALI VOLAILLE" d'Alfred BOCOUM	11 83	7 85	21
Atelier moderne de travail des métaux précieux, Demba DIAW	1 84	6 85	18
Extension de la Sociéte de Détergents du Mali, SODEMA	12 83	12 85	25

SOURCE: DNI.

MALI

TABLE A12 Protection nominale des industries Manufacturières locales sur les importations en provenance des pays tiers (y inclus la CEE)

Produits	(DD+DFI) (%)	IAS au cordon douanier (%)	Protection ajustée de la diffrence entre les produits IAS importé et IAS local
INDUSTRIES AGRICOLES ET ALIMENTAIRES			
Abattoirs, boucheries, charcuteries	25	25	1.302
Café	25	25	1.302
Thé	15	25	1.1979
Conserves de Poissons	45	25	1.510
Sucreries	5	11.1	.972
Chocolateries	55	25	1.615
Pâtes alimentaires (macaroni, etc...)	45	25	1.510
Boulangéries, biscuiteries Patisseries (biscuits de mer, etc...)	45	25	1.510
Vinaigre comestible	35	25	1.406
Jus de fruits (conserves de tomates)	50	25	1.563
Conserves de fruits et légumes, confitures	55	25	1.615
Condiments	50	25	1.563
Levureries	30	25	1.354
Boissons gazeuses	20	25	1.250
Brasseries	40	25	1.458
Distilleries, appéritifs liqueurs (Vermouths)	65	56.6	2.291
Tabac			
- Tabacs bruts	45	56.6	2.013
- Tabacs fabriqués (cigarettes ordinaires)	85	56.6	2.568
MATERIAUX DE CONSTRUCTION ET VERRE			
Ciment	Ø	11.1	0.926
Chaux, plâtres artisanaux et marbre	30	25	1.354

MINERAIS DE FER ET PRODUITS SIDERURGIQUES			
Minerai de fer	20	25	1.250
Cuivre, aluminium, plomb, zinc	20	20	1.250
PETROLE, GAZ NATUREL ET CARBURANTS			
Pétrole brut	30	25	1.354
Gaz naturel	20	20	1.20
PRODUITS DES INDUSTRIES CHIMIQUES			
Eau de javel	30	25	1.354
Engrais	Ø	Ø	0.833
Savon	45	25	1.510
Explosifs	30	25	1.354
Goudron de bois	35	25	1.406
Insecticides	15	25	0.1197
Articles ménagers en plastiques	45	25	1.510
- bouteilles			
- sacs d'emballage			
PEAUX ET CUIR			
Cuir	30	25	1.354
Vêtements en cuir	55	25	1.615
BOIS, PAPIERS ET INDUSTRIES DIVERSES			
Bois bruts	15	11.1	1.064
Ouvrages en bois	35	25	1.406
Pâtes à papier	5	11.1	0.972
Cartonnages de bureau	30	25	1.354
Journaux, Imprimés	Ø	11.1	0.926
MATIERES TEXTILES			
Fils de fibres textiles synthétiques	35	25	1.406
Laine	35	25	1.406
Coton	15	25	1.198

Fils de coton	30	25	1.354
Fibres textiles artificielles	25	25	1.302
Tissues de jute	35	25	1.406
Tissus non tissés	30	25	0.1354
Tissus imprégnés	35	25	1.406
Etoffes de bonneterie	65	25	1.719
Vêtements en tissu	65	25	1.719
Couvertures	65	25	1.719
Friperie	45	11.1	1.341
HABILLEMENT ET CHAUSSURES			
Chaussures à semelles extérieures en cuir naturel	55	25	1.615
MEUBLES-ARTICLES DE LITERIE			
Articles de literie - lit métallique - sommur métallique	40	25	1.458
CORPS GRAS			
Huile d'arachide	45	25	1.510
Huile de coton	45	25	1.510
Huile de karité	35	25	1.406

SOURCE: same as A1.

MALI

TABLE A13 Protection nominale des industries Manufacturières locales sur les importations en provenance des CEAO

Produits	(DD+DFI) (%)	IAS au cordon douanier (%)	Protection ajustée de la difference entre IAS des produits importé et IAS des produits locaux
INDUSTRIES AGRICOLES ET ALIMENTAIRES			
Abattoirs, boucheries, charcuteries	Ø	25	1.042
Café	Ø	25	1.042
Thé	Ø	25	1.042
Conserves de Poissons	(DD+DFI)=50 TCR = Ø	25	PNA = 1.562 PA = 1.042
Sucreries	Ø	11.1	0.556
Chocolateries	(DD+DFI)=50 TCR = Ø	25	PNA = 1.563 PA = 1.042
Pâtes alimentaires (macaroni, etc...)	(DD+DFI)=40 TCR = Ø	25	PNA = 1.458 PA = 1.042
Boulangéries, biscuiteries Patisseries (biscuits de mer, etc...)	(DD+DFI)=40 TCR = Ø	25	PNA = 1.458 PA = 1.042
Vinaigre comestible	(DD+DFI)=30 TCR = Ø	25	PNA = 1.354 PA = 1.042
Jus de fruits (conserves de tomates)	(DD+DFI)=45 TCR = Ø	25	PNA = 1.510 PA = 1.042
Condiments	(DD+DFI)=45 TCR = Ø	25	PNA = 1.510 PA = 1.042
Levureries	(DD+DFI)=25 TCR = Ø	25	PNA = 1.302 PA = 1.042

Boissons gazeuses	Ø	25	1.042
Brasseries	(DD+DFI)=35 TCR = Ø	25	PNA = 1.406 PA = 1.042
Distilleries, appéritifs liqueurs (Vermouths)	(DD+DFI)=60 TCR = Ø	66.6	PNA = 1.67 PA = 1.388
Tabac - Tabacs bruts - Tabacs fabriqués (cigarettes ordinaires)	Ø	66.6	1.383
MATERIEUX DE CONSTRUCTION ET VERRE			
Ciment	Ø	11.1	0.926
Chaux, plâtres artisanaux et marbre	(DD+DFI)=25 TCR = Ø	25	PNA = 1.302 PA = 1.042
MINERAIS DE FER ET PRODUITS SIDERURGIQUES			
Minerai de fer	(DD+DFI)=15 TCR = Ø	25	PNA = 1.198 PA = 1.042
Cuivre, aluminium, plomb, zinc	(DD+DFI)=15 TCR = Ø	25	PNA = 1.198 PA = 1.042
PETROLE, GAZ NATUREL ET CARBURANTS			
Pétrole brut	Ø	25	1.042
Gaz naturel	(DD+DFI)=15 TCR = Ø	20	PNA = 1.198 PA = 1.042
PRODUITS DES INDUSTRIES CHIMIQUES			
Eau de javel	(DD+DFI)=25 TCR = Ø	25	PNA = 1.302 PA = 1.042
Engrais	Ø	Ø	0.833
Savon	(DD+DFI)=40 TRC = Ø	25	PNA = 1.458 PA = 1.042

Explosifs	(DD+DFI)=25 TRC = Ø	25	PNA = 1.302 PA = 1.042
Goudron de bois	(DD+DFI)=30 TRC Ø	25	PNA = 1.354 PA = 1.042
Insecticides	(DD+DFI)=10 TRC = Ø	25	PNA = 1.146 PA = 1.042
Articles ménagers en plastiques TRC = Ø - bouteilles - sacs d'emballage	(DD+DFI)=35 TCR = Ø	25	PNA = 1.406 PA = 1.042
PEAUX ET CUIR			
Cuir	(DD+DFI)=30 TRC = Ø	25	PNA = 1.354
Vêtements en cuir	(DD+DFI)=25 TRC = Ø	25	PNA = 1.563 PA = 1.042
BOIS, PAPIERS ET INDUSTRIES DIVERSES			
Bois bruts	Ø	11.1	0.9258
Ouvrages en bois	(DD+DFI)=30 TRC = Ø	25	PNA = 1.354 PA = 1.042
Pâtes à papier	Ø	11.1	0.9258
Cartonnages de bureau	(DD+DFI)=10 TCR = Ø	25	0.9258
Journaux, Imprimés	Ø	11.1	0.9258
MATIERES TEXTILES			
Fils de fibres textiles synthétiques	(DD+DFI)=30 TCR = Ø	25	PNA = 1.354 PA = 1.042
Laine	(DD+DFI)=30 TCR = Ø	25	PNA = 1.354 PA = 1.042
Coton	Ø	25	1.042
Fils de coton	(DD+DFI)=25 TRC = Ø	25	PNA = 1.302 PA = 1.042

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Fibres textiles artificielles	(DD+DFI)=25 TRC = Ø	25	PAN = 1.25 PA = 1.042
Tissus de jute	(DD+DFI)=30 TRC = Ø	25	PNA = 1.354 PA = 1.042
Tissus non tissés	(DD+DFI)=25 TRC = Ø	25	PNA = 1.302 PA = 1.042
Tissus imprégnés	(DD+DFI)=30 TRC = Ø	25	PNA = 1.354 PA = 1.042
Etoffes de bonneterie	(DD+DFI)=60 TRC = Ø	25	PNA = 1.667 PA = 1.042
Vêtements en tissu	(DD+DFI)=60 TRC = Ø	25	PNA = 1.662 PA = 1.042
Couvertures	Ø	25	1.042
Friperie	(DD+DFI)=45 TRC = Ø	11.1	PNA = 1.342 PA = 0.926
HABILLEMENT ET CHAUSSURES			
Chaussures à semelles extérieures en cuir naturel	(DD+DFI)=50 TRC = Ø	25	PNA = 1.562 PA = 1.042
MEUBLES-ARTICLES DE LITERIE			
Articles de literie - lit métallique - sommur métallique	(DD+DFI)=45 TRC = Ø	25	PNA = 1.510 PA = 1.042
CORPS GRAS			
Huile d'arachide	(DD+DFI)=40 TRC = Ø	25	PNA = 1.458 PA = 1.042
Huile de coton	(DD+DFI)=40 TRC = Ø	25	PNA = 1.458 PA = 1.042
Huile de karité	(DD+DFI)=30 TCR = Ø	25	PNA = 1.354 PA = 1.042

NOTES: PNA = Produit Non agrée
PA = Produit agrée

Source: same as A1.

MALI

TABLE A14 COMPARAISON DES TAUX DE TAXES ENTRE LE MALI ET LE SENEGAL

Sommaire des données

MALI

Taxe	Taux Unique	Min.	Max.	Moyen
DD = 5%				
DFI		0	100%	30%
	Produit Importé		**Produit Local**	
IAS	Reduit 11% Normal 25% Majoré 66.5%		20%	
CPS	à l'importation 5% à l'importation 3%			
ISCP[1]	ad valorem 0%		78%	
	specifique 0%		250 FCFA/KN	

SENEGAL

Taxe	Taux Unique	Min.	Max.	Moyen
DD = 15%				
DFI[2)]		40	75	
	Produit Importé		**Produit Local**	
IAS	Reduit[3)] 7% Normal 20% Majoré[4)] 50%		Réduit 7% Normal 20% Majoré 50%	
	Taxe sur prestation de service (taxe interieure)		7% 12.5% 17% 50%	

1. Au Mali ISCP est appliqué aux boissons alcoolisées et non alcoolisées, tabac, cola, thé, sucre, lait, sel, produits petroliers et munitions.

2. Au Senegal, DFI est suspendu pour certains produits tels que animaux vivants, maïs, riz et fertilisants.

3. Produits avec taux réduit à 7% au Sénégal, incluant, lait, sel, huile de cuisine, farine.

4. Produits avec taux majoré au Sénegal, incluant tapis, chapeau, or, métaux précieux, bijoux.

SOURCES: Computed from tariff codes of Mali and Senegal.

MALI

TABLE A15 : Comparison of Tariff Rates on Imports from Countries Other than CEAO in MALI and Senegal

Specific Products
(Percentages)

MALI						SENEGAL			
DD+DFI	IAS[2]	DD+DFI WITH ADJUSTMENT FOR DIFFERENCES IN IAS ON IMPORTS & IAS ON DOMESTIC PRODUCTION[3]	CPS	PRESSION FISCALE	PRODUCTS	DD+DFI	IAS[2]	DD+DFI WITH ADJUSTMENT FOR DIFFERENCES IN IAS ON IMPORTS & IAS ON DOMESTIC PRODUCTION[3]	PRESSION FISCALE
25	25	35.2	5	61.25	Cattle	15[1]	20	15	35
15	25	24.8	5	61.25	Maize	15[1]	EX	15	15
15	11.1	11.5	5	48.75	Rice	15[1]	EX	15	15
5	11.1	2.2	5	32.765	Canned Milk	50	7	50	57
15	11.1	11.5	5	32.765	Millet	50	EX	50	50
-	11.1	-2.5	5	11.1	Sugar	55	20	55	75
55	25	66.5	5	98.75	Peanut Oil	60	7	60	67
35	25	45.6	5	73.75	Macaaroni	60	20	60	80
85	66.6	61.8	5	213.21	Cigarette	85	20	85	105
40	25	93.8	5	123	Beer	60	20	60	80
15	11.1	27.65	5	32.765	Salt	50	7	50	57
-	11.1	-2.8	5	21.66	Cement	50	20	50	70
Free	Free	-7.5	5	5	Fertilizers	15[1]	20	15	35
45	25	56.0	5	86.25	Soap	60	20	60	80
25	25	35.2	5	86.25	Printed Fabrics	60	20	60	80
45	25	56.0	5	86.25	Clothing, Woven	60	20	60	80
55	25	60.1	5	98.75	Leather Shoes	60	20	60	80
10	11.1	6.8	5	27.21	G.I. Sheets	50	20	50	70
40	25	50.8	5	80	Nails	50	20	50	70
85	25	92.8	5	-	Matches	85	20	85	105
10	11.1	6.8	5	27.21	Flour	50	7	50	57
15	25	24.8	5	48.75	Green Tea	50	20	50	70
55	25	66.5	5	98.75	Canned Tomatoes	60	20	60	80
55	25	66.4	5	98.75	Plastic Shoes	60	20	60	80

MALI						SENEGAL			
DD+DFI	IAS[2]	DD+DFI WITH ADJUSTMENT FOR DIFFERENCES IN IAS ON IMPORTS & IAS ON DOMESTIC PRODUCTION[3]	CPS	PRESSION FISCALE	PRODUCTS	DD+DFI	IAS[2]	DD+DFI WITH ADJUSTMENT FOR DIFFERENCES IN IAS ON IMPORTS & IAS ON DOMESTIC PRODUCTION[3]	PRESSION FISCALE
15	25	24.8	5	48.75	Batteries	25	20	25	45
-	-	-	-	-	(Electric)	50	20	50	70
32	25	42.5	5	70.0	Passenger Cars	25	20	25	45
15	25	24.8	5	48.75	Motorcylces & Cycles <50cc	60	20	60	80

1. DFI at 10% is suspended and therefore not included.
2. IAS on imports in Senegal is based on CIF price, whenever in Mali the base is CIF price plus DD and DFI.
3. Calculated as (1+DD+DFI) x (1+IAS on imports) ÷ (1+IAS on domestic production.)

SOURCES: Computed from tariff codes of Mali and Senegal.

TABLE A16 -MALI

Relations Artisanat/Industrie, Par Catégorie D'Activité

Catégorie d'activité	Complémentarité	Concurrence	Indifférence
Artisanat de production			
Tisserands	X	X	
Tailleurs	X	X	
Fabricants de chaussures	X	X	X
Menuisiers, fabricants de meubles	X	X	
Forgerons	X	X	X
Bijoutiers			X
Brodeurs			X
Artisans de secco			X
Soudeurs	X	X	
Fabricants de pirogues			X
Filateurs		X	
Fabricants de matelas			X
Fabricants de coiffures			X
Cordiers		X	
Vanniers, fabricants de nattes			X
Bourreliers	X		X
Fabricants de tamis			X
Fabricants d'agglo, de banco	X	X	X
Fabricants autres matériaux de construction	X	X	X
Extraction gravier sable		X	
Menuiserie métallique	X	X	
Fondeurs d'aluminium	X		X
Tanneries			X
Fabricants de bracelets, perles			X
Teinture indigo			X
Fabricants de savon	X	X	
Imprimeurs		X	
Artisanat de service			
Cordonniers			X
Réparateurs de cycles			X
Réparateurs auto		X	
Meuniers			X
Repasseurs			X
Réparateurs radio			X
Carrosserie auto		X	
Electriciens auto		X	
Ferrailleurs (récupération)			X
Vulcanisateurs		X	
Horlogers			X
Photographes		X	
Blanchisseurs			X
Artisanat de la construction	X	X	

SOURCE: See Table A17.

MALI

TABLEAU A17: Delais D'Agrément au Code Des Investissements

SOMMAIRE:

DELAI MOYEN EN MOIS	7,65
NOMBRE DE PROJETS AGREES PAR MOIS	1,875
DELAI MINIMUM EN MOIS	26

PROJET/PROMOTEUR	Demandé	Agrée	Délais en mois
Exploitation agricole à TOUELA TALL Sékou oumar	11 84	4 85	6
Boulangerie DECINGUE Fadoko DOUMBIA	9.84	4 85	8
MOUSSE POLYURETANE, SEGOU, Ibrahima Traoré Bko	9 84	4 85	8
Boulanerie industrielles, BLA et BANAMBA	12 84	4 85	5
BOULANERIE INDUSTRIELLE SOKONIKO, C. VI, Marc TRAORE	11 84	4 85	6
Fabr. Glace Alim. El Hadj Kadoun SOUMARE Commercant RCI	4 84	8 84	5
Atelier Confection Moderne ACDM, Bamako, Bakoroba KONE	4 84	8 84	5
Projet PATISSERIE MODERNE SABBAGUE	6 84	8 84	3
Pr. Impl. BOULANGERIE MODERNE Tombouctou, Abderramane H.S.	5 84	8 84	4
Fabrique glace alimentaire COMMUNE V BAMAKO Issa TRAORE	2 85	8 85	6
Fabr. glaces "SUCETTES" S. BAGAYOKO, COGEXI	4 84	8 84	5
Fabrique de Parfums et Cosmétiques de Sidibé SIMPARA	12 83	8 84	9
Projet implant. GARAGE MODERNE BAMOU TOURE en ZI de BAMAKO	12 83	8 84	9
Agence de Voyage AFRICA TOUR, Adolfo BARTOLOMUCCI	3 84	8 84	6
Proj. Impl. BOULANGERIE MODERN Torokorobougou Lassana DIAKITE	5 84	8 84	4
Sté Elevage & Biotechnologie Appliquée Kaka KONE	4 85	12 85	9
Boulangerie KADIOLO, El Hadj Kassoum KONE	8 84	12 84	5
Unité Conditionnement Condiments Mme Mariko FADUMA	10 84	12 84	3
BOULANGERIE MODERNE, Djikoroni MIRCO	10 84	12 84	3
Forage Ets DARMAT BAMAKO	10 85	2 86	5
Laboratoire développement photo, Abdouramane SAKAY	7 84	2 85	8
Ind. Mal. Réfrigétrs & Congélatrs IMAREC, S.A. de Ganda KEITA	8 84	2 85	7
Ferme production poulets de chair BAMAKO Sékou DIAKITE	10 85	2 86	5

PROJET/PROMOTEUR	Demandé	Agreé	Délais en mois
Mini agroindustie prod/tranf manioc NAYAMNA Sidik KONE, Ingta	10 85	2 86	5
Ferme avicole "MALI VOLAILLE" d'Alfred BOCOUM	9 83	1 84	5
Entr, Malienne de Tux Hydrauliques, BAMAKO Mamadou BALLo	7 85	1 86	7
BOULANGERIE MODERNE, KALAMBA-KOURA, Cherif Fousseyn & al.	7 84	1 86	19
Gaz domestiique TOTAL/TEXACO MALI	4 85	1 86	10
Fabrique de savon, Cheick Hamadou BATHILY	10 84	1 86	16
Entr. d'expl. des Sables & Graviers SABLE NIGER, A. SIDIBE	1 84	7 84	7
Atelier transf. papier SEGOU, Sté DEMBELE FAFA & Fr.	8 84	7 85	12
Boulangerie NIARELA Karamoko KONE	2 85	7 85	6
Fabrique glace alimentaire marché MEDINA Gaoussou KEITA,	1 85	6 85	6
Atelier Entretien Auto, BAMAKO, Adama DIARRA	10 84	6 85	9
Centre Production Artisanale et Industrielle INAM	1 84	3 85	15
Boulangerie Moderne Gaoussou KOITA au marché MEDIAN Corro	10 83	3 84	6
Prod-transf-conserv aliments bétail COOP LAITIERE BAMAKO	1 86	3 86	3
Glace alimentaire SOGONOIKO Sékou CAMRA	1 85	5 85	5
GARAGE Cheickna SAMAKE	7 84	5 85	11
Atelier réparation froid-élecéméca TELEMALI TIM MinInformatn	1 85	5 85	5
Renouvellement convention d'établissement TIM MinInformation	1 85	5 85	
BOULANGERIE INDUSTRIELLE, KITA, B. Sacko et Ets NAJA & Fr.	7 84	11 84	5
Boulangerie Moderne SEVARE, Amadou S. SOW, ing. chim. Bko	7 84	11 84	5
Boulangerie FANA Nouhoum G. DIALLO BKO	6 85	11 85	6
Projet de Transport Fluvial d'Anadou Aly Niangado	1 84	11 84	11
Fabrique imprimés adm. & fiduc., BAMAKO, Almanmy 1. NAFO	3 85	11 85	9
EMBOUCHE INDUSTRIELLE, Mamadou Diallo	9 84	11 85	15
Usine LEVURE INSTANTANEE ULIMA, BAMAKO	8 84	11 85	16
Projet Boulangerie Moderne KANGABA, Tenekoman KEITA & Fr.	4 84	10 84	7
Village Touristique Kéniéoba, Sté TOGUNA	2 84	10 84	9
GLACE ALIMENTAIRE, Nioro du Sahel, Kandrona TOURE	6 84	10 84	4
GLACE ALIMENTAIRE KATI, Daouda DIARRA	6 84	10 84	5
Prorogation A/M Ferme Industrielle Manamou KONATE	4 85	9 85	6

PROJET/PROMOTEUR	Demandé	Agreé	Délais en mois
Fabrique chaussure plastique Souleymane DOUMBIA	8 83	9 85	26
Boulangerie Moderne SEVARE de Said A. DEME	12 83	9 84	10
Modernisation installations SOMALIBO	5 85	9 85	5
Labo, développement photocouleurs BAMAKO Siroman DEMBELE	3 85	9 85	7
Projet de LEVURERIE au Mali	5 84	9 85	17

SOURCE: J.C.Woillat, L'artisanat Urbain au Mali: Choix des produits et politiques visant a l'amelioration du Secteur Non-structure Urbain du Mali. World Employment Programme, ILO, WEP 2/33/DOC20, February 1985.

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TABLEAU A18 : Droits et Taxes à l'exportation
(FCFA et pourcentage)

Désignation des produits	Unité de perception	Droits et taxes de sortie			
		taxe d' exportation	Taxe OSP	CPS	TC
Chevaux reproducteurs de race pure	Tête	4,000F	Ex	3%	Ex
Chevaux destinés à la boucherie	Tête	4,000F	Ex	3%	Ex
Autres chevaux	Tête	4,000F	Ex	3%	Ex
Anes, mulets, bardots	-	4,000F	Ex	3%	Ex
Zébus, reproducteurs de race pure	Tête	2,000F	Ex	3%	Ex
Taurins ou mérès, reproducteurs de race pure	Tête	2,000F	Ex	3%	Ex
Autres animaux de l'espèce bovine ou du genre buffle, reproducteurs de race pure	Tête	2,000F	Ex	3%	Ex
Autres zébus	Tête	2,000F	Ex	3%	Ex
Autres taurins ou mérès	Tête	2,000F	Ex	3%	Ex
Autres bovins	Tête	2,000F	Ex	3%	Ex
Porcins reproducteurs de race pure	-	5%	Ex	3%	Ex
Autres porcins	-	5%	Ex	3%	Ex
Ovins reproducteurs de race pure	Tête	500F	Ex	3%	Ex
Autres ovins	Tête	500F	Ex	3%	Ex
Caprins	Tête	500F	Ex	3%	Ex
Volailles vivants reproducteurs de race pure	-	5%	Ex	3%	Ex
Poussins dits "d'un jour"	-	5%	Ex	3%	Ex
Autres volailles vivantes	-	5%	Ex	3%	Ex
Lapins domestiques, reproducteurs de race pure	-	5%	Ex	3%	Ex
Autres lapins domestiques	-	5%	Ex	3%	Ex
Pigeons	-	5%	Ex	3%	Ex
Autres animaux destinés principalement à l'alimentation humaine (y compris le gibier):					
petits oiseaux	-	10%	Ex	3%	Ex
autres	-	5%	Ex	3%	Ex
Camelins	Tête	2,500F	Ex	3%	Ex
Autres animaux vivants	-	5%	Ex	3%	Ex

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Désignation des produits	Unité de perception	Droits et taxes de sortie			
		taxe d' exportation	Taxe OSP	CPS	TC
Viandes et abats comestibles des animaux repris aux Nos 01.01 à 01.04 inclus, frais, réfrigérés ou congelés. (Toutes sous-postions)	-	2%	Ex	3%	Ex
Viandes et abats comestibles ...	-	5%	Ex	3%	Ex
Poissons d'eau douce, séchés, salés ou en saumure	TN	20,500F	Ex	3%	Ex
Poissons d'eau douce, fumés, même cuits avants ou pendant le fumage	TN	20,500F	Ex	3%	Ex
Poissons, crustacés et mollusques	-	5%	Ex	3%	Ex
Lait frais complet ou écrémé ...	-	5%	Ex	3%	Ex
Oeufs d'oiseaux en coquilles, frais conservés	-	5%	Ex	3%	Ex
Miel naturel, de table	-	5%	Ex	3%	Ex
Autres produits d'origine animale non dénommés ni compris ailleurs	-	5%	Ex	3%	Ex
Plantes vivantes et produits de la floriculture	-	5%	Ex	3%	Ex
Légumes, plantes, racines et tubercules alimentaires	-	5%	Ex	3%	Ex
Mangues greffées	TN	1,000F	Ex	3%	Ex
Mangues non greffées	-	2%	Ex	3%	Ex
Fruits comestibles	-	5%	Ex	3%	Ex
Café vert	-	5%	Ex	3%	Ex
Café torréfié non moulu	-	5%	Ex	3%	Ex
Poivre non broyé ni moulu	-	5%	Ex	3%	Ex
Piments non broyés ni moulus ...	-	5%	Ex	3%	Ex
Céréales	-	5%	Ex	3%	Ex
Arachides décortiquées, d'huilerie	TN	2,025F	Ex	3%	Ex

Désignation des produits	Unité de perception	Droits et taxes de sortie: taxe d'exportation	Taxe OSP	CPS	TC
Arachides décortiquées, de bouche	TN	2,025F	Ex	3%	Ex
Arachides décortiquées, autres	TN	2,050F	Ex	3%	Ex
Graines de coton	TN	50F	Ex	3%	Ex
Graines de ricin	TN	2,750F	Ex	3%	Ex
Graines (amandes) de karité	TN	1,450F	Ex	3%	Ex
Autres graines et fruits oléagineux	-	5%	Ex	3%	Ex
Graines, spores et fruits à ensemencer	-	5%	Ex	3%	Ex
Plantes, parties de plantes, graines et fruits des espèces utilisées principalement en parfumerie, en médecine ou à usages insecticides, parasiticides et similaires, frais ou secs, même coupés, concassés ou pulvérisés	-	5%	Ex	3%	Ex
Gomme laque	-	15%	Ex	3%	Ex
Gommes arabiques:					
- qualité Ferlo	TN	2,250F	Ex	3%	Ex
- qualité Kaedi	TN	2,000F	Ex	3%	Ex
- qualité Galam	TN	2,000F	Ex	3%	Ex
- qualité Salabridas (Tombouctou)	TN	1,300F	Ex	3%	Ex
- qualité Bamako/Ségou	TN	850F	Ex	3%	Ex
Résines et autres sucs; extraits végétaux		-	15%	Ex	3%
Kapok égrené de qualité supérieure	TN	500F	Ex	3%	Ex
Autres produits d'orgine végétale non dénommés ni compris ailleurs:					
- calebasses	-	10%	Ex	3%	Ex
- autres	-	5%	Ex	3%	Ex
Huile brute de coton	TN	Ex	Ex	3%	Ex
Huile brute d'arachide	TN	6,000F	Ex	3%	Ex
Huile de karité épurée ou raffinée	TN	5,000F	Ex	3%	Ex
Tourteau d'arachides	TN	1,345F	Ex	3%	Ex
Autres - Tourteau de coton	TN	Ex	Ex	3%	Ex
Tabacs bruts en feuilles ou en côtes	TN	Ex	Ex	3%	Ex

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Désignation des produits	Unité de perception	Droits et taxes de sortie			
		taxe d' exportation	Taxe OSP	CPS	TC
Sel propre à l'alimentation humaine, autre	-	5%	Ex	3%	Ex
Peaux brutes (fraîches, salées, séchées, chaulées, picklées) y compris les peaux d'ovins lainées	-	5%	Ex	3%	50%
Cuirs et peaux	-	EX	Ex	3%	50%
Tresses et articles similaires en matières à tresser, pour tous usages, même assemblés en bande	-	10%	Ex	3%	Ex
Laines en masse, en suint ou lavées à dos	-	5%	Ex	3%	Ex
Poils fins en masse (bottes ou torsades) bruts	-	5%	Ex	3%	Ex
Poils grossiers en masse (bottes ou torsades) bruts	-	5%	Ex	3%	Ex
Coton en masse non égrené	-	5%	Ex	3%	Ex
Coton en masse, égrené, hydrophile ou blanchi	TN	20,000F	Ex	3%	Ex
Coton en masse, égrené, autre ..	TN	20,000F	Ex	3%	Ex
Vêtements de dessus pour hommes et garçonnets en matières textiles autres que les fibres textiles synthétiques (fabrication locale)	-	10%	Ex	3%	Ex
Vêtements de dessus pour femmes et fillettes en matères textiles autres que les fibres textiles synthétiques (pagnes de fabricaton locale)	-	5%	Ex	3%	Ex

Désignation des produits	Unité de perception	Droits et taxes de sortie			
		taxe d' exportation	Taxe OSP	CPS	TC
Couvertures de coton (fabrication locale)	-	10%	Ex	3%	Ex
Couvertures de laine ou de poils fins (fabarication locale) ...	-	10%	Ex	3%	Ex
Couvertures d'autres matières textiles (fabrication locale)	-	10%	Ex	3%	Ex
Tous autres produits et marchandises non repris ci-dessus (produits maliens exportés ou produits étrangers réexpédiés à l'étranger après avoir été mis à la consommation au Mali	-	Ex	Ex	3%	Ex

SOURCE: same as A1.

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Table A19 - Distribution d'un Echantillon de Sociétés Selon l'Exonération de IAS, Taxe Spéciale, TUC, CF et IGR à Partir du Code D'Investissement et du Code de Taxe

Sociétés bénéficiant des réductions de IAS du Code général des Impôts	Type d'exonération
SIKAMALI	pour ses exportations
OPAM	produits agricoles
OFFICE DU NIGER	uniquement la production agricole
SOMIEX	pour ses exportations
CMDT	produits agricoles
Sous-Total: 5	

Sociétés bénéficiant d'exonérations du Code des Investissements	Type d'exonération
SOMACI	IAS normal, CFà2.5% au lieu de 6.5%
ITEMA	IAS de 10% au lieu de 20%
HUICOMA	IAS de 10% au lieu de 20%
SATOM	arrêté no. 6784 du 27/12/1984 Marché exonére de IAS, CF et IGR
BRGM	accord OR, Diamant du 26/06/79 et avenant (Exonéré de IAS, CF et IGR)
FORACO-MALI	CEAOn=19 exonéré de IAS, CF et IGR
Entreprise SAUNIER DUVAL	Projet IDAMC 4688
HYDROSAHEL	bénéficiant de plusieurs marchés exonérés de IAS, CF et IGR
Société FRANZETTI	marché AID (adduction ville de Bamako) exonéré de CF
GERC (SATOM, SODETEG, SNED)	arrête exonéré de CF et IGR
SNED	
Sous-Total: 11	

Sociétés bénéficiant des réductions de IAS du Code général des Impôts	Type d'exonération
SONATAM	taux normal
Société de Livry (LIDO)	taux normal
SOMALIBO	taux normal
UCEMA	taux normal
SOCAM	taux normal
Sous-Total: 5	

TOTAL: 21

Note: Source: Direction des Impôts

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Table A20. Prix Comparé de L'Electricité Entre les Différents Types D'Abonnés (Année 1983)

A.	TARIF MOYENNE TENSION:	Ensemble Electricité de Mali	
	Prix moyen de vente	FCFA/KWH	40.8
		Réseau Interconnecté	
	Prix moyen de vente	FCFA/KWH	40.1

B.	TARIF BASSE TENSION	Ensemble Electricité de Mali					
	Abonnement	E1	E2	E3	E4	E5	Ensemble
	Prix moyen de vente	44.9	54.1	45	56.3	28.9	50.9
		Réseau Interconnecté					
	Prix moyen de vente	46	53.7	45.4	55.7	29.9	51.2

Source: Commercialisation et distribution des produits de grande Consommation au Mali.
Par Yves Biry (Etude de la CNUCED et PNUD)

Notes: Structure de la tarification

Il existe des charges non proportionnelles dont

- la redevance mensuelle pour location et entretien de compteurs et;
- une avance sur la consommation électrique au moment de la signature du contrat d'abonnement.

Tarification moyenne tension MT: on distingue deux tarifs:

- Le tarif binome qui intéresse 90% des abonnés MT et lequel comporte:
  - une prime fixe
  - une prime d'énergie variable selon l'heure de consommation
  - un prix majoré ou minoré selon que l'énergie réactive excède ou non 60% de l'énergie électrique appelée.

- Le tarif monome qui intéresse 10% des abonnés MT

  - conporte un prix proportionnel unique durant la journée, calculé sur le prix de pointe de tarif binome.

  - s'applique aux abonnés souscrivant moins de 25KW.

Tarification basse tension BT: Elle intéresse 97% des abonnés mais seulement 50% de l'énergie livrée. On distingue cinq tarifs:

E1: abonné 5 Ampères, électricité à usage domestique tarif social

E2: tarif à tranches, électricité à usage domestique, tarif général

E3: éclairage public

E4: force motrice pour la petite entreprise

E5: personnel EDM, tarif également à caractère social.

Les tarifs E1 et E2 ne comportent pas de prime fixe.

Le tarif E4 présente la même structure que le tarif monome MT mais le prix du KWH est plus élevé.

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TABLE A21. DELAIS D'OBTENTION D'UN TERRAIN INDUSTRIEL

Sommaire:

Delai Moyen en Mois:	16.8
Delai Maximum en Mois:	48
Delai Minimum en Mois:	6

Detail:

PROJET/PROMOTEUR	Demandé	Reçu	Délai en Mois
CONTINENTAL PAPYCRATE, Fabrique de craies	1 81	4 82	16
Sékou TANDIA, Fabrique de glace alimentaire et de limonade	5 79	4 83	48
SICOPAR, Fabrique de parfums et cosmétiques	10 84	4 85	7
SOMAKOF, Fabrique de chaussures et d'articles en plastique	7 83	12 83	6
SOMEA, Fabrique de matériels et d'équipements agricoles	2 83	2 84	13
SOMAPIL, Fabrique de piles sèches	9 72	1 74	17
SOCOM, Sté de construction métallique	11 80	1 83	27
PRIMA, Fabrique de produits insecticides	10 79	3 80	6
SOMACUB, Fabrique de bouillons cubes VIANDOX	12 81	5 83	18
Sté NIMAGA & Frères, Fabrique de bouillons cubes JUMBO	8 83	5 84	10

SOURCE: Y. Biry.

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TABLE A22. DELAI POUR OBTENIR UN PERMIS DE CONSTRUIRE

PROJET/PROMOTEUR	Région	Demandé	Agréé	Délai en Mois
Sommaire: Echantillon:		8 dossiers		
Délai moyen:				5.125
Délai max.:				11
Délai min.:				1
DETAIL:				
Atelier de montage de cycles	BAMAKO	11 85	1 86	3
CUBES PIQUANTS STARLUX, Bamako, Manadou Diarra SOCOGIEX	BAMAKO	2 85	2 85	1
Fabrique chaussure plastique Soyleymane DOUMBIA	BAMAKO	6 84	7 84	2
Fabrique de matériels agricoles	BAMAKO	6 84	12 84	7
Fabrique de pierres à lécher	BAMAKO	7 84	2 85	8
Usine de boissons	BAMAKO	12 85	2 86	3
Usine de bouillons cubes	BAMAKO	3 85	8 85	6
Fabrique de baguettes de soudure, Kati	KOULIKORO	5 83	3 84	11

SOURCE: Y. Biry.

of last resort for farmers when market producer prices were low."[80] There was no quantitative analysis, however, to determine how this was to be accomplished, including the magnitude of stocks, storage facilities, financial resources, management skills, and recurrent subsidies that would be required.

OPAM's inability to stabilize prices was clearly visible by mid-1986, when record harvests forced grain prices to very low levels -- far below official producer prices. There was no evidence, moreover, that OPAM was in any way seriously affecting regional price differences. Finally, OPAM's financial difficulties continued because it purchased grain at official producer prices but was unable to sell it at official consumer prices, which were substantially in excess of those on the open market. In the meantime, of course, its storage and interest costs continued to mount.

In the face of these difficulties, the Malian government formally requested to the PRMC donors a three-year extension (1986/87 to 1988/89) in order to pursue the reforms initiated during the first phase (1981/82 to 1985/86). The donors agreed in principle. There has been little agreement, however, on Mali's cereals policy over the longer term. The rest of this section examines some of these issues in the light of the EPC/DRC analysis presented earlier.

Comparative Advantage and Incentives in Cereals Production

The analysis in this report suggests that Mali has a significant comparative advantage in coarse grains but, does not have a comparative advantage in rice. This does not imply, however, that Mali should not be producing rice. The analysis thus far has assumed that domestically produced rice is transported to Bamako, where it competes with imported rice. If the rice is consumed, instead, in the region in which it is produced, the increased transport costs for imported rice and the decreased costs for domestic rice are such that the DRC is less than one. As an example, the DRCs for rice produced and consumed in the Mopti region are 0.79 for the traditional flooded technique and 0.75 for controlled flooding, using the 1995 projected world prices in constant 1985 prices.[81]

Despite the fact that rice produced in the Office du Niger is slightly unprofitable economically, the security of this source of food supply implies that rice will probably continue to be cultivated there for sale in Bamako. Nevertheless, if the only major domestic source of supply for that market is the Office du Niger, this implies a considerable dependence on

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[80] Charles P. Humphreys. "Cereals, Policy Reform in Mali," May 1986, p.9.

[81] These results are calculated using a shadow exchange rate of 460 CFAF/$. See Annex B for other examples and details.

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Stabilization

As noted earlier, a major concern of the Malian government over the past few years has been the stabilization of domestic cereals prices to producers and consumers. Of equal importance have been fluctuations in the world market price of cotton, Mali's major export. The sources of instability in grain prices have been twofold. First, large fluctuations in international prices have taken place during the past two decades under the influence of broad structural changes in the pattern of world production and consumption and the vicissitudes of agricultural policies in the major producing and consuming countries. Second, Mali is subject to recurrent drought that influences both rainfed crops and flooded rice production. Only rice produced in the Office du Niger is relatively immune to changes in weather because of the Office's irrigation system. Elsewhere, fluctuations in rainfall lead to large price changes. Because Mali can ill afford massive commercial imports during years of bad harvests, food aid is required in large quantities. This, in turn, is itself a source of instability since deliveries are often late and arrive after the critical moment when the food is most urgently needed.

There are a few policy actions which the Malian government clearly cannot take to ease this situation. Beyond timing its purchases and sales of security stocks so as to even out excessive fluctuations in cereal prices over short periods, there is little it can do domestically to promote price stability through buffer stock operations. Given very serious financial and managerial constraints, the task of buying, selling, and storing quantities of cereals sufficient to seriously influence prices is far too costly and vast to be contemplated as a policy alternative. Experience in Mali and other Sahelian countries provides abundant evidence of this and suggests that efforts in this direction are likely to be counterproductive.

A more practicable approach is to stabilize grain prices through imports. In some countries, this is coupled with the use of stabilization funds that avoid passing fluctuations in world prices fully on to the domestic economy. Even assuming that such a scheme could function effectively in Mali, however, there are several major difficulties associated with its use.

First, as shown in Table 16, imported cereals in most years account for less than 15 percent of total availability. Only in the case of rice do imports amount to 50 percent of total consumption. This implies that the ability to stabilize domestic prices through imports depends to a large extent on the elasticity of substitution in consumption between rice and coarse grains. Little is known about this parameter.

The second limitation is that, during drought years, one of the important causes of malnutrition is the lack of effective demand. There is a loss of purchasing power in the economy as a whole and on the part of individual farmers and herders whose crops and livestock have been destroyed by the drought. The ability of the government to handle this problem by

Trade Policy and Protection

Earlier it was shown that, except for rice, tariff protection in 1985 did not adequately compensate for overvaluation of the exchange rate. Compensation for rice occurred principally because of the subsidy to producers. Trade policy, in this case, would have been a more appropriate means of offsetting the overvaluation of the currency because it would have affected both consumers and producers.

The import tariff on cereals, which was suspended in 1981 during the drought years, was reestablished in January 1986. The ad valorum tariff for rice then was fixed at 27.2 percent.[84] This tax rate is reflected in the NPC shown in Table 12 and is consistent with the official producer price and distribution subsidy used to calculate the NPC. In July 1986, the government accepted the recommendation of the IMF to increase the tariff rate on rice to 32.76% and to fully apply similar import duties and taxes shown in the tariff code for coarse grains.[85] The rationale for such a decision was apparently twofold. First, the CFA franc was known to be overvalued for Mali. Second, the tariff was seen as a means of increasing government revenue.

On the basis of the calculations made earlier of the extent of overvaluation in Mali, this tariff level appears to be a minimum given the official exchange rate that prevailed in 1986 and the inability of Mali to alter this rate because of its membership in the West Africa Monetary Union. A more careful estimation of the shadow exchange rate could well suggest the desirability of a higher tariff rate. As the exchange rate and balance of payments situations change, moreover, the tariff on cereals should be reviewed, as should tariff rates for all products in order to assure reasonably uniform protection across industries.

To the extent that there is some weight attached to national objectives other than economic efficiency, an argument can be made for varying the tariff rate across products. In particular, the security attached to rice production in the Office du Niger could justify raising the tariff rate on rice sufficiently to make production there privately profitable. This assumes, of course, that the producer subsidy would be eliminated so that consumers would pay part of the cost of increased food security. The DRC results in Table 14 indicate the extent to which effective protection would have to be increased beyond that required to offset the effects of different degrees of overvaluation.

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[84] This tax rate included a 10 percent DFI, a 11.1 percent IAS on the CIF plus DFI price, and a 5 percent CPS on the CIF price. There was also a 5 CFAF/kg specific OSRP tax.

[85] Letter of Intent of the Minister of Finance of Mali to the IMF, July 11, 1986.

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channeled to the Treasury, but the rest of the difference between the domestic price of rice and its border price would go into the stabilization fund and be used, if necessary, to subsidize cotton exports. The subsidy on rice production, as mentioned earlier, could be eliminated since producer prices would be increased indirectly through import taxation.

An alternative to a stabilization fund for Mali would be a variable levy on rice imports. This levy would equal the difference between a target price established domestically and the CIF border price. Since rice is imported in every year in considerable quantities, the target price could be effectively maintained through use of this trade policy. Taxes on rice imports would go directly to the Treasury and would not be used to finance a subsidy on cotton exports when world cotton prices are at low levels. Although this would expose cotton farmers to the vagaries of the world market for cotton and would prevent them from being compensated for overvaluation of the exchange rate, these disincentives could partially be offset by eliminating all export taxes on cotton and by financing CMDT's development activities out of general revenues, including the duty on imported rice. This would be administratively simpler and would eliminate the temptation to keep cotton prices low in order to boost government revenues. Although cotton farmers would face some increased risks, capital invested in production consists chiefly of oxen and equipment that can also be used to produce cereals, allowing them to shift efficiently between crops in response to short-run price changes.

Stabilization of rice prices through the use of trade policy would eliminate the need for seasonal variation in the price of rice since imports would replace storage as the means of supplying consumers during much of the year. Mali's comparative advantage in coarse grains, though not very great, is such that commercial imports of these cereals would not be competitive with domestic production if tariff protection were sufficient to offset the effects of the overvalued exchange rate. Prices of coarse grains would continue to vary seasonally, encouraging private storage, as long as the elasticity of substitution in consumption between rice and these cereals is not infinite. The greater is the elasticity, the more useful stabilization of rice prices would be in reducing fluctuation in prices of other cereals, but if the elasticity were too great, some seasonal movement in the price of rice might be necessary to encourage economically efficient storage of coarse grains. The magnitude of this elasticity, then, is an important policy parameter that needs to be estimated before the recommendations presented here are implemented.[88]

Price policy is, of course, no substitute for disaster relief in bad years. Stabilization of prices for commercial imports would, therefore,

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[88] This estimation is currently taking place as part of the analysis of a consumption survey recently undertaken by the DNSI in Bamako and the regional capitals that is being financed by USAID with technical assistance from Tufts University.

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TABLE A23: Estimates of Ratios of Capital/Labour Intensities[1)]
(Estimates are for 1977-81 Except Where Indicated)

FIRM	CAPITAL/ OUTPUT-RATIO	CAPITAL/ LABOUR RATIO (FCFA /PERSON)	LABOUR/ OUTPUT RATIO (Persons/ Million FCFA)	CAPITAL/ SALARIES RATIO	TOTAL ASSETS (in Million FCFA)	CAPITAL UTILI-ZATION 1985 (Percent)
SOMASAC	0.8392	1,617.42	0.580	6.3256	1.07	14%
COMATEX	0.448 (1985)	197000 (1985)	1.060	1.262 (1985)	451.72 (1985)	62.5% (1980)
SMECMA	0.154 (1984)	563,755 (1984)	0.274 (1980-84)	1.598 (1984)	2161.85 (1984)	42%
TOLMALI			0.053			92.2%[2)]
TIDON KANTE	1078.317	2,149,981.1	0.540	16.8212	30.45	10%
SOMAPAC	8.862833	7,326.77	0.946	55.4596	.960	13.3%
SIKA MALI	0.84 (1984-85)			37.325 (1984-85)	3346.1 (1984-85)	35%
ITEMA			0.440			70%
SOMABIPAL	212.443	3696.99	0.200	1331.6892	1,392.21	(Bicuits 54%) (Macroni 24%)
FAMAC	2.616475	5761.02	0.226	18.96875	320	25%
SADA DIALLO	2.1189	8233.87	0.260	22.7995	1,480.0	73.3% (Vinegar)

1) It should be noted that these estimates are partly due to the low capacity utilization.

2) Based on 1 shift. Based on 2 shifts it is 46.2%.

SOURCE: Computed from firm data.

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Table A24 - Nombre d'entreprises dans les secteurs différents et leur répartition en nature juridique

Branches et Sous Branches	Total Nombre (Percent)	Reparition en Nature Juridique d'Etat	Mixtes	Privées
A. INDUSTRIES AGRICOLES ET ALIMENTAIRES	53 (45%)	17 (32%)	4 (8%)	32(60%)
1) Abattoirs, boucheries charcuteries	3 (3%)	3 (100%)	-	-
2) Industries Alimentaires sucre	4 (3%)	3 (75%)	-	1 (25%)
3) Industries de Conserves Froides	2 (2%)	1 (50%)	1 (50%)	-
4) Corps gras, Produits Huiliers	4 (3%)	1 (25%)	3 (75%)	-
5) Travail des Graines & Farines	33 (28%)	7 (21%)	-	26 (79%)
6) Boissons, Glaces, Tabac	7 (6%)	2 (29%)	-	5 (71%)
B. ELECTRICITÉ et DIVERS	9 (7%)	7 (78%)	1 (11%)	1 (11%)
1) Electicité	8 (6%)	7 (88%)	1 (12%)	-
2) Gaz	1 (1%)	-	-	1 (100%)
C. MATÉRIAUX DE CONSTRUCTION ET VERRE	2 (2%)	2 (100%)	-	-
1) Marbre	1 (1%)	1 (100%)	-	-
2) Ciment	1 (1%)	1 (100%)	-	-
D. MIMERAIS ET METAUX NON FERREUX	2 (2%)	2 (100%)	-	-
1) Phosphates	1 (1%)	1 (100%)	-	-
2) Or	1 (1%)	1 (100%)	-	-
E. PRODUITS DES INDUSTRIES MÈCHANIQUES ET ELECTRIQUES	20 (18%)	3 (15%)	2 (10%)	15 (75%)
1) Produits de la 1ère transformation et du travail des metaux ferreux	3 (3%)	-	-	3 (100%)
2) Produits de la 1ère transformation et du travail des metaux non ferreux, affineurs d'or	1 (1%)	-	-	1 (100%)

Branches et Sous Branches	Total Nombre (Percent)	Reparition en Mature Juridique d'Etat	Mixtes	Privées
3) Machines et Appareils Mecaniques	1 (1%)	1 (100%)	-	-
4) Automobiles	6 (5%)	1 (17%)	1 (17%)	4 (66%)
5) Cycles	2 (2%)	-	-	2 (100%)
6) Constructions Navales	1 (1%)	1 (100%)	-	-
7) Métaux, biens de consomation	2 (2%)	-	-	2 (100%)
F. INDUSTRIES PARACHIMIQUES ET PHARMACEUTIQUES	5 (4%)	-	-	5 (100%)
G. TEXTILES HABILLEMENT				
1) Textiles	7 (6%)	1 (14%)	6 (86%)	-
2) Habillement	1 (1%)	-	-	1 (100%)
3) Cuir	2 (2%)	1 (50%)	-	1 (50%)
4) Chaussures	1 (1%)	-	-	1 (100%)
5) Sacheries	1 (1%)	-	-	1 (100%)
H. BOIS, PAPIERS ET INDUSTRIES DIVERSES	13 (11%)	2 (15%)	-	11 (85%)
1) Bois ameublement di-divers	2 (2%)	-	-	2 (100%)
2) Papiers, Cartons Fournitures de bureau	1 (1%)	-	-	1 (100%)
3) Presse, edition imprimeries	9 (7%)	1 (11%)	-	8 (89%)
4) Ceramiques et Verres	1 (1%)	1 (100%)	-	-
TOTAL	116 (100%)	35 (30%)	13 (11%)	68 (59%)

Source: Resultats d'un recensement industriel realisé en 1982-1983 Direction nationale des industries, Direction nationale de la statistique et de l'informatique et Centre d'études et de promotion industrielles.

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Table A25 - LISTE DES ENTREPRISES PAR SECTEUR, 1982/83

Notes Explicatives

N = Etat 100%

M = Maliens 100%

E = Etat plus 50% du Capital
Maliens moins 50% du Capital

nM = Etat plus 50% du Capital
Maliens moins 50% du Capital

Nm = Maliens plus 50% du Capital
Etat plus 50% du Capital

Ne = Etat plus 50% du Capital
Etrangers moins 50% du Capital

Me = Maliens plus 50% du Capital
Etrangers moins 50% du Capital

ME = Etrangers plus 50% du Capital
Maliens moins 50% du Capital

nmE = Etat et Maliens moins 50% du Capital
Etrangers plus 50% du Capital

NE = Etat 50% du Capital
Etrangers 50% du Capital

Nme = Etat plus 50% du Capital
Etrangers et Maliens moins 50% du Capital

* = Entreprise en stade de projet
*** = Entreprise en arrêt
** = Entreprise agréées, mais non realisée

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
1.	ABATTOIRS, BOUCHERIES, CHARCUTERIES			
1.	Abattoir Frigorifique de Bamako	1965	Bamako	N
2.	Abattoirs	1980	Kayes	N
	Abattoir Frigorifique	1980	Sévaré -Odem	N
3.	Solima ***	1964	Bamako	nE
2.	INDUSTRIES ALIMENTAIRES SUCRE			
	2.1 SUCRERIES			
1.	Fabriques de crême alimentaire de la Société Aigle-Indus **		Bamako	
2.	Ferme Agricole **		Baguineda	
3.	Sucrerie Dougabougou	1967	Dougabougou	N
4.	Sucrerie Séribala	1976	Seribala	N
5.	Rassembléés dans le questionnaire de l'office du Niger			
	2.2 CONFISERIES			
1.	Grandes Confiseries de Mali	1971	Bamako	E
	2.3 THE			
1.	Usine de thé	1967	Sikasso	N
	SO.A.TO (Torréfaction) ***	1977	Bamako	
3.	INDUSTRIES DE CONSERVES, FROID			
	3.1 CONSERVES DE POISSONS, POISSONS FUMES			
1.	Unité de Conserves de Poissons	1970	Mopti	N
	3.2 JUS DE FRUITS			
1.	Sociéte de Conserves Alimentaires du Mali	1978	Baguineda (Bamako)	Ne

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DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
3.3 ALIMENTS DU BETAIL			
1. Fabrique d'Aliments de Bétail de la SOMATEC *		Koulikoro	
3.4 BOUILLONS ET POTAGES			
1. Fabrique de bouillon a Cube SOMACUB *		Bamako	
4. CORPS GRAS, PRODUITS HUILLIERS			
4.1 HUILERIES			
1. Sepama (huile et tourtaux d'arachide)	1976	Kita	nE
2. Huicoma (huile et tourtaux de coton)	1980	Koutiala	Nm
3. S.e.p.o.m. (Rafinage huile et tourtaux d'arachide et coton)	1962	Koulikoro	N
4. Silca-Mali Ste. Induside Karité (huile et tourtaux) *		Koulikoro	
4.2 INDUSTRIE DU LAIT			
1. U.L.B. Union Laitière du Bamako	1969	Bamako	Nm
5. TRAVAIL DES GRAINES ET FARINES			
5.1 RIZERIES			
1. Rizerie de Konlogotomo	1948	Konlogotomo	N
2. Rizerie de Molodo	1952	Molodo	N
3. Rizerie de Nantaka ***		Nantaka	N
4. Rizerie de M'Debougou	1977	M'Debougou	N
5. Rizerie de Tamani ***	1952	Tamani	
6. Rizerie de Diafarabé	1977	Dimfarabé	N
7. Rizerie de Dioro	1981	Dioro	N
8. Rizerie de Dogofri	1968	Dogofri (Kourouma)	N
9. Rizerie de Tienfala ***		Tienfala	N
10. Rizerie de Sévaré	1972	Sévaré	N

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
5.2	**PATES ALIMENTAIRES**			
1.	Somubipad	1970	Bamako	N
5.3	**BOULANGERIES PÂTISSERIES BISCUITERIES**			
1.	Boulangerie Sidibé & Frères *		Kayes	M
2.	Boulangerie Dossolo & Frères	1970	Kayes	M
3.	Boulangerie Moderne	1971	Koutiala	M
4.	Sté. Boulangerie Moderne Ben Kady	1979	Koutiala	M
5.	Société Commerciale Africaine	1974	Mopti	M
6.	Boulangerie Pâtisserie *	1981	Mopti	M
7.	Boulangerie Cheikna Doukara		Nara	M
8.	Boulangerie Industrielle ***		Niono	M
9.	Boulangerie Industrielle du Sahel		Niono	M
10.	Boulangerie Mamedon Tidie Koné **		San	M
11.	Boulangerie Sessine Moukarzel	1971	Segou	E
12.	Boulangerie Industrielle Adama Kansaye	1970	Sévaré	M
13.	Boulangerie Nouvelle	1978	Sikasso	M
5.3	**BOULANGERIES PATISSERIES, BISCUITERIES**			
1.	Boulangerie du Centre	1980	Sikasso	M
2.	Boulangerie Moderne **		Tombouctou	M
3.	Boulangerie Dossolo Traoré & Frères DTF		Bameko	M

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
4.	Boulangerie Moderne Issa Traore		Dioila	M
5.	Boulangerie Yacouba Bengaly **		Bamako	M
6.	Boulangerie du Carrefour	1980	Bamako	M
7.	Boulangerie Dergam	1971	Bamako	E
8.	Boulangerie Faddoul	1972	Bamako	M
9.	Nouvelles Boulangeries Maliennes E. Farhat	1979	Bamako	E
10.	Boulangerie Kamouh ***		Bamako	M
11.	Boulangerie Mavromatis & Fils	1938	Bamako	E
12.	Boulangerie du Niger	1970	Bamako	M
13.	Boulangerie Sabbague	1970	Bamako	E
14.	Boulangerie Sekou Tandia ***		Bamako (Coura)	M
15.	SOMAPRIM	1973	Bamako	M
16.	Boulangerie Sekou Tandia ***		Bamako (Djoli)	M
17.	Boulangerie Sekou Tandia ***		Bamako (Lafia)	M

5.3 BOULANGERIES, PATISSERIES BISCUITERIES

1.	Boulangerie Sekou Tandia ***		Bamako (Sogani)	M
2.	Boulangerie Abdoul Karim Touré **		Bamako	M
3.	Boulangerie Dramane Traoré	1978	Bougouni	M

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
4.	Boulangerie Industrielle *		Gao	M
5.	Boulangerie "La Bonne Miche"	1976	Bamako	M
6.	Boulangerie Korofina Nord	1981	Bamako	M
7.	Boulangerie Industrielle (SOICDIC)	1980	Bamako (Coura)	ME
8.	Boulangerie Alon Haidera		Sikasso	M
6.	BOISSONS, GLACES, TABAC			
1.	Fabrique de Boissons Gazeuses et Glace Alimentaire *		Gao	M
2.	Semiko-Kolaba-Koro **		Bamako	M
	6.2 BOISSONS GAZEUSES			
1.	Fabrique de boissons gazeuses (Tricon & Sutry)	1958	Segou	M
2.	Boissons gazeuses de Sévaré *		Mopti	M
3.	Ste. Issa & Dramane Keita de Boissons Gazeuses **		Bamako	M
4.	Ste. des Ets Robert de Livry (LIDO)	1957	Bamako	E
5.	SO.MA.PRA *		Koutiala	M
6.	FAMABO **		Bamako	M
7.	SOMALIBO	1963	Bamako	E
	6.3 GLACES ALIMENTAIRES			
1.	Fabrique de glace alimentaire AFRIMEX **		Bamako	M
2.	Fabrique de glace alimentaire ***		Kayes	M
3.	Fabrique de glace alimentaire *		Mopti	M

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
4.	Glace alimentaire & chambres froides *	1981	Gao	M
5.	Fabrique de glace alimentaire *		Sévaré	M
6.	Unité de glace alimentaire SIGMA	1980	Bamako	M
7.	Ste. Malienne de glace alimentaire SOMAGAL ***		Bamako	M
	6.3 TABAC			
1.	Fabrique de cigarettes DJOLIBA	1965	Bamako	M
	6.4 ALUMETTES			
1.	Fabrique d'allumettes ECLAIR (F.A.E.) SOMATAM	1967	Bamako	M
	6.5 DISTILLERIES APERITIFS ET LIQUEURS			
1.	Ste Azar & Frères		Bamako	E
7.	ELECTRICITE			
1.	Exploitation EDM	1976	Bougouni	M
2.	Exploitation EDM	1980	Fang	M
3.	Exploitation EDM	1962	Kayes	M
4.	Exploitation EDM	1972	Koutiala	M
5.	Barrage de Selingué (O.E.R.H.M.)	1976	Selingué	M
6.	Exploitation EDM	1961	Ségou	M
7.	Exploitation EDM	1963	Sigasso	M
8.	Exploitation EDM	1961	Bamako	Mne
8.	GAZ			
1.	Ste. Malienne des Gaz industrielles MALIGAZ	1965	Bamako	E

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
9.	MARBRE (EXTRACTION ET TRAVAIL)			
	1. SOCIMA	1964	Bamako	M
10.	CIMENT			
	1. SOCIMA	1969	Diamou	M
	2. Unité le préfabriques en ciment *		Bamako	
11.	CHAUX ET PLATRES ARTISAMAUX			
	1. Fabrique de Craies *		Bamako	
12.	BRIQUES			
	1. Ste. Nouvelle d'exploitation des briqueteries du Mali NOSEBRIMA *		Bamako	
13.	PHOSPHATES			
	1. Unité de broyage et d'ensachage de phosphates SONAREM	1980	Bourem	N
14.	OR			
	1. Exploitation Or de Kalana	1975	Kalana	M
15.	AUTRES MINERAIS NON FERREUX			
	1. Somamir Ste Malienne de Miroir *		Bamako	
16.	PRODUITS DE LA 1ERE TRANSFORMATION ET DU TRAVAIL DES METAUX FERREUX			
	1. Enterprise Malienne de Fonderie E.M.A.F. *		Bamako	
	2. METAL-SOUDAN	1955	Bamako	E
	3. SEGMA	1972	Bamako	E
	4. Ste. Tomali	1978	Bamako	ME

DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
17. PRODUITS DE LA 1ERE TRANSFORMATION ET DU TRAVAIL DES METAUX FERREUX			
1. Enterprise Malienne de Fonderie E.M.A.F.		Bamako	
2. METAL-SOUDAN	1955	Bamako	E
3. SEGMA	1972	Bamako	E
4. Ste. Tomali	1978	Bamako	ME
18. PRODUITS DE LA PREMIERE TRANSFORMATION ET DU TRAVAIL DES METAUX NON FERREUX, AFINEUES D'OR			
1. Fonderie Cooperative du Mali FONCOMA	1963	Bamako	M
2. Societé Familiale de Fonderie *		Bamako	
19. MACHINES ET APPAREILS MACANIQUES			
19.1 FABRICATION DE MACHINES AGRICOLES			
1. S.M.E.C.M.A.	1973	Bamako	N
20. MACHINES ET APPAREILS ELECTRIQUES ET ELECTRONIQUES			
1. Atelier de rebobinage	1971	Bamako	M
20.1 RADIO, CASSETTES			
1. SOCORA'	1966	Bamako	Ne
20.2 PILES ET ACCUS			
1. SOMAPIL	1976	Bamako	Me
2. FAMAC	1977	Bamako	M
21. AUTOMOBILES			
21.1 REPARATION ET FABRICATION DES PIECES DE RECHANGE			
1. Garage Auto-Sport	1981	Bamako	M
2. Garage REMOV-AUTO	1977	Bamako	M
3. Scierie Atelier Garage (S.A.G.)	1969	Bamako	M

	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
4.	Garage Moderne de Sogoniko (G.M.S.)	1980	Bamako	M
5.	Entreprise Malienne de Maintenance EMAMA	1979	Sikasso	Nm
6.	Base pour l'équipment des transports du Mali BETRAM	1978	Bemako (Sogo)	N
22.	CYCLES			
1.	IMACY	1969	Bamako	E
2.	SOMAFAM	1967	Bamako	E
23.	CONSTRUCTIONS NAVALES			
1.	Compagnie Malienne de la navigation COMANAV	1961	Koulikoro	N
24.	METAUX, BIENS DE CONSOMMATION			
1.	EFFICA		Bamako	
	24.1 MOBILIER METALLIQUE			
1.	Fabrique de lits métalliques Tidon KAHTE	1971	Bamako	M
2.	Metal-Mali	1953	Bamako	M
25.	INDUSTRIES PARACHIMIQUES ET PHARMACEUTIQUES			
	25.1 LESSIVES ET PRODUITS D'ENTRETIEN			
1.	Ste. Mamadou Sada Diallo & Frères	1970	Bamako	M
2.	SO.DE.MA	1980	Bamako	E
	25.2 PEINTURES, VERNIS ET COLLES			
1.	Generale Malienne de la Peinture (G.M.P.)	1977	Bamako	Me
2.	SOMEPEC	1977	Bamako	M

DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
25.3 PARFUMERIES, SAVONNERIES STEARIMERIES			
1. SOMAPA ***		Bamako	
2. SOPARCO	1972	Bamako	ME
26. CAOUTCHOUC			
1. Industrie Malienne Pneumatiques IMAP *		Ségou	M
27. TEXTILES			
1. Compagnie Malienne de Textiles	1968	Ségou	N
2. ITEMA	1972	Bamako	nM
27.1 COTON			
1. Usine d'egrenage de coton CMOT	1974	Bamako	Ne
2. Usine d'egrenage de coton CMOT	1977	Bougouni	Ne
3. Usine d'egrenage CMOT	1969	Fana	Ne
4. Usine d'egrenage I, II, III, CMOT	1971	Koutiula	Ne
5. Usine d'egranage de coton CMOT	1978	Sikasso	Ne
28. HABILLEMENT			
28.1 CONFECTION, CHEMISERIE			
1. Societe Malienne de Friperie SOMATRI	1973	Bamako	M
29. CUIR			
1. Fabrique de valises (articles de voyage) *		Bamako	
2. Agence Malienne de voyage *		Bamako	

DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
29.2 TANNERIES INDUSTRIELLES			
1. Tannerie du Mali Tamali	1969	Bamako	M
2. Tanneries Providence Maliennes TOPROMA	1977	Kayes	M
29.3 MAROQUINERIE INDUSTRIELLE			
1. Maroquinerie du Mali **		Bamako	
30. CHAUSSURES			
30.1 CHAUSSURES EN CAOUTCHOUC, TOILE, PLASTIQUE			
1. Ste. Industrielle des Plastique SIP	1967	Bamako	E
2. SOUEA MALI * (plastique)		Koulikaro	
3. Fabrique de chaussures BABY *		Kati	
31. SACHERIE			
Societé Malienne de Sacherie SOMASAC	1971	San	Me
32. BOIS, AMEUBLEMENT DIVERS			
32.1 AMEUBLEMENT ET LITERIE			
EMAB Entreprise Malienne de Bois	1968	Bamako	M
COMAFRIQUE	1969	Bamako	M
33. PAPIERS CARTONS FOURNITURES DE BUREAU			
Fabrique de Cahiers *		Fana	
Fabrique de Cahiers L.P.M. ***	1972	Bamako	N
33.1 PAPIERS ET CARTONS			
SOMEPAC Ste Malienne d'emballage en papier carton	1979	Bamako	M

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	DESIGNATION	ANNEE D'INSTALLATION	LOCALITE	NATURE JURIDIQUE
34.	PRESSE, EDITIONS, IMPRIMERIES			
1.	Imprimerie Niambélé	1962	Bamako	M
2.	E.D.I.M.	1950	Bamako	M
3.	Imprimerie Mounkoro ***		Bamako	
4.	Imprimerie Papeterie du Mali			
5.	Imprimerie Papeterie MALI-OFFSET	1973	Bamako	M
6.	Ste. Industrielle des Arts graphiques et du papier SIPAG ***		Bamako	M
7.	Ste. d'imprimerie Semi-Artisanale SISA	1970	Bamako	M
8.	Lino Imprimerie Nouvelle	1977	Bamako	M
9.	Imprimerie OFFSET de Medina-Coura		Bamako	M
10.	Imprimerie Bakary Samake	1970	Bamako	M
11.	Imprimerie Mankela Coulibaly	1969	Bamako	M
35.	CERAMIQUES ET VERRES			
1.	UCEMA Usine de Ceramique du Mali	1966	Bamako	N
2.	Fabrique de Carreau et de Ciment *		Bamako	

SOURCE: same as A24.

ANNEX B.

EFFECTIVE PROTECTION AND DOMESTIC RESOURCE COSTS IN MALIAN AGRICULTURE.

I. Introduction

The first part of this annex discusses the methodological framework for domestic resource cost (DRC) and effective rate of protection (ERP) analysis and the empirical assumptions that underlie its application to Malian agriculture.[1] The second part presents the results for nine crop/techniques and explores the sensitivity of these results to changes in the key parameters.

II. Methodology for DRC and ERP Analysis

This section discusses the basic methodology of the DRC and ERP analysis, including its conceptual framework and the method of calculation. It is followed by a discussion of the estimation and pricing of inputs and the determination of border and domestic prices.

A. Conceptual Framework

The conceptual framework presented here involves both domestic resource cost and effective protection analysis.

1. DRC Analysis

Domestic resource cost analysis in based on the theory of comparative advantage that states that a country should produce and export goods in which it has a relative productivity advantage and that it should import goods in which it does not have this advantage. Productivity, in

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[1] The methodological discussion presented here draws on J. Dirck Stryker and Lewis E. Brandt, "Methodology of Domestic Resource Cost Analysis," Background Paper prepared for the World Bank Nigeria Agricultural Sector Review by Associates for International Resources and Development, July 30, 1986. For a more detailed discussion of the methodology see John M. Page, Jr. and J. Dirck Stryker, "Appendix A: Methodology for Estimating Comparative Costs and Incentives," and J. Dirck Stryker, John M. Page, Jr., and Charles P. Humphreys, "Appendix B: Shadow Price Estimation." in Scott R. Pearson, J. Dirck Stryker, Charles P. Humphreys, et al, Rice in West Africa: Policy and Economics, Stanford, California: Stanford University Press, 1981.

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this sense, is defined as the efficiency with which a country's factors of production are converted into useful output. That output is measured in economic terms by value added expressed in world prices. The ratio of value added, measured in this way, for any particular activity to the economic cost of the factors of production used in that activity is an indicator of comparative advantage.

More precisely, we define the reciprocal of this ratio as the domestic resource cost for the economic activity producing output j

$$DRC_j = \frac{f_{sj} P_s^*}{P_j^* - a_{ij} P_i^*} \qquad (1)$$

where f_{sj} is a coefficient relating primary factor input s (land, labor, capital) to output j,

P_s^* is the efficiency price of input s,

P_j^* is the efficiency price of output j,

P_i^* is the efficiency price of input i,

a_{ij} is an input/output coefficient relating intermediate input i to output j.

Outputs and intermediate inputs in expression (1) are all tradable. If there are intermediate inputs that are nontradable, these are broken down into their tradable intermediate input and nontradable primary factor components. Both numerator and denominator are expressed in terms of the same currency by multiplying the latter by the efficiency price of foreign exchange (shadow exchange rate or reciprocal of the standard conversion factor).

The shadow exchange rate expresses the marginally efficient rate of transformation for converting nontradable factors of production into tradable value added. Multiplying the denominator of the DRC by this rate converts tradable output and input efficiency prices, expressed in terms of foreign currency, into their opportunity cost at the margin in terms of domestic factors of production. Once this is done, the numerator and denominator of the DRC may be compared to see whether activity j is more or less efficient than the activity that at the margin is just efficient. If the DRC is less than one, the domestic resource cost per unit of value

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added is less for activity j than for the marginally efficient activity so that the country has a comparative advantage in activity j. If the DRC is greater than one, the opposite is true and the county does not have a comparative advantage in activity j.

2. ERP Analysis.

While DRC analysis is related to the theory of comparative advantage, ERP analysis is concerned with economic incentives. The effective protection coefficient (EPC), for example, measures value added in domestic prices relative to value added in world prices,

$$EPC_j = \frac{P_j - a_{ij} P_i}{P_j^* - a_{ij} P_i^*} \qquad (2)$$

where P_j is the domestic price of output j, and P_i is the domestic price of input i. This measures the extent to which government policy offers positive or negative protection to a given activity, depending upon whether the EPC is greater or less than one.

Domestic prices differ from world prices at the border because of trade taxes or subsidies, trade restrictions, and officially imposed or administered prices. In Mali's case, agricultural exports such as cotton and livestock are taxed so that their domestic prices are lower than their FOB border prices. Cereal imports, on the other hand, are often either taxed or restricted in supply, causing their domestic prices to be higher than their CIF border prices. This price relationship is the nominal protection coefficient (NPC),

$$NPC_j = \frac{P_j}{P_j^*} \qquad (3)$$

and applies to both outputs and inputs.

Since producers are concerned with each of these sets of prices, it is the EPC which is the best indicator of producer incentives. The

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consumer, on the other hand, is influenced only by output prices so that the NPC is most appropriate for measuring consumer incentives.[2]

The EPC and DRC are closely related, both having the same denominator. The numerator of the EPC shows the scope provided by world prices and trade and price policy for some combination of domestic resource costs, rents, profits, taxes, and subsidies. The numerator of the DRC, on the other hand, consists only of domestic resource costs. The EPC thus indicates the potential for incurring domestic resource costs, whereas the DRC measures the extent to which these costs are actually incurred.

B. Method of Calculation

The method employed to calculate DRCs for various agricultural activities in Mali involves using a template developed by Associates for International Resources and Development for the Lotus 1-2-3 electronic spreadsheet. The template is divided into five basic parts.

The first part provides a number of key indicators, including NPC on outputs and inputs, EPC, ESC, and DRC without adjustment for the ratio of the shadow exchange rate to the official exchange rate. In addition, "net" indicators are also presented for which such an adjustment is made. Each of these indicators, plus measures of financial profitability (with and without the imputed cost of family labor) and economic profitability, is given at the farm, rural market (ex-mill), and wholesale levels for import substitution activities and at the farm, rural market, and frontier for export activities. The major parameters -- yield, world price, producer price, etc. --- are listed beneath the indicators, and sensitivity analysis can easily be performed by varying these to obtain a series of optional indicators.

The second part of the template provides data on quantities of inputs and outputs, their unit prices, expenditures on inputs by the producer, the financial cost of the inputs delivered to the producer, and the breakdown of these costs into the economic cost of the inputs and taxes and subsidies on tradables and nontradables. The economic cost is, in turn, divided into its tradable and nontradable components, the latter including family labor, wage labor, capital, and land. Taxes and subsidies are calculated at two levels: (1) direct taxes and subsidies paid or received by the producer and (2) indirect taxes and subsidies paid at various stages on inputs delivered to the producer. Each of these variables is added across inputs to derive total costs and its components at the farm, collection, processing, and distribution stages.

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[2] A third indicator is the effective subsidy coefficient (ESC), obtained by subtracting net taxes (adding net subsidies) on nontradable factors of production from (to) the numerator of the EPC. This indicator also measures producer incentives.

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The breakdown of financial costs into taxes, subsidies, and various economic costs is accomplished by multiplying financial costs by a set of coefficients contained in a third part of the template. These coefficients are national in scope and are common to all crops and techniques. The coefficients are obtained by breaking standardized inputs delivered to the producer down into their tax/subsidy and tradable/nontradable components using the input-output structure of the supplying sector of the economy.

A fourth part of the template is used to calculate the parity price of tradable outputs. Starting with the world price, adjustment is made for quality differences and for freight, insurance, handling, and other costs to obtain the relevant border price, either FOB or CIF. Conversion to local currency is made at the official exchange rate. The border price is then adjusted for delivery charges to the point at which the DRC calculation is to be made. For imports, this may be the wholesale market in Bamako, a rural market in the interior (Sikasso, Segou, Mopti), or the farm. In calculating the DRC for an import substitution activity, adjustment is made for the savings not only in the CIF value of imports but also in the cost of delivering those imports to the point of consumption. This adjustment consists of adding the tradable component of these costs to the denominator and subtracting the nontradable cost from the numerator of the DRC. For exports, on the other hand, the frontier is the point at which domestic production competes with the world market, and DRC calculations in the rural market (ex-mill) and at the farm gate are made simply by subtracting the cost of distribution, processing, and collection from both the FOB border price and the domestic price of local production delivered to the border.

A fifth part of the template consists of details concerning the calculations of financial and economic profitability, as well as the indicators of protection and comparative advantage. Here it is possible to allow for variations in the shadow prices of different factors of production.[3] Calculations are made at the farm, rural market, and wholesale levels for import-substitution activities and at the farm, rural market, and frontier for exports.

C. Input Costs

Data on input costs were updated from information contained in the World Bank's West African Research Project on Incentives and Comparative

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[3] For two recent discussions of shadow prices of factors of production involving distortions elsewhere in the economy, see Edward Tower, "Effective Protection, Domestic Resource Costs, and Shadow Prices: A General Equilibrium Perspective," World Bank Staff Working Paper No. 664, 1984, and Edward Tower and Garry Pursell, "On Shadow Pricing," World Bank Staff Working Paper No. 792, 1986.

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Advantage in Agriculture and Industry based on 1975 costs. These costs were updated using production data and input prices from Malian government publications, official baremes and the CMDT budget. In most cases, the recent data refer to the crop year 1985/86.

The most complete source for farm production costs is the publication of the Institut d'Economie Rurale (IER) of the Ministry of Agriculture, "Determination des Couts Moyens de Production des Principaux Produits Agricoles pour la Fixation des Prix aux Producteurs de la Campagne 1986/87". These costs are estimates for the 1985/86 crop year and are based on an average farm size between 4 to 5 hectares. Comparison of production data from the West African Research Project and the IER study gives consistent figures for labor times, and in most cases, seeding rates and fertilizer and insecticide application rates. While the cost of seed, fertilizer, insecticides, and extension vary depending on the crop and specific technique, a wage rate of 600 CFAF per workday for labor is applied across all production techniques and crops. Land costs are assumed to be zero.

Capital input data are available from several different sources. For cotton, maize, and millet/sorghum, the costs for capital equipment are provided by CMDT, while for the rice technologies, these costs are from the IER study. Capital inputs are included in the cost calculations by applying a capital recovery factor to the value of the capital asset. The capital recovery factor yields a present value equal to the initial investment cost when discounted over the economic lifetime of the asset at the relevant interest rate. This covers both the interest rate and depreciation of the asset.[4]

For equipment provided by CMDT and the Office du Niger, the farmer receives subsidized credit. In such cases, a lower interest rate is offered to the farmer and the repayment period is shorter than the service life of the capital asset. To avoid underestimating the subsidy to the farmer, all credit payments are discounted by the market rate of interest back to the year the asset was purchased. The sum of these discounted payments is the present value of the asset, measured in terms of the cost to the farmer.

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[4] The capital recovery cost is calculated in the following manner:

$$\text{investment cost} * i/1-(i+1)^{-n}$$

where, investment cost = the cost of the equipment on a per hectare basis

i = the interest rate

n = the expected life of the equipment

For example, a harrow costs 11,250 CFAF and will be used on 4.5 hectares of paddy cultivation. The interest rate is 10 % and the lifetime of the implement is 10 years. Then the investment cost is 2500, the annuity coefficient is .16, and the capital recovery cost is 400 CFAF/ha.

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Then the capital recovery factor is calculated at the market rate of interest based on the service life of the asset to show the annual cost to the farmer.

Operating expenses are those costs, other than financing, necessary for carrying on the normal activities of crop production. For the production techniques using animal traction, operating costs include maintenance, feed, and veterinarian care for a pair of oxen. These also include the cost of spare parts for equipment used with the oxen. This is estimated at 6 percent of the investment cost of each implement used in production. Other operating expenses are irrigation fees (Office du Niger), estimated at 400 kg of paddy valued at the producer price. Finally, operating fees must include threshing costs, which will vary depending on the particular rice technique. At the Office du Niger, threshing costs are 12 percent of the yield (80 percent of production is threshed) valued at the producer price.

D. Border and Domestic Prices

World prices at the border are calculated by adjusting an international reference price for the costs of freight, insurance, port charges, handling, commissions, etc. up to the Malian frontier. A quality adjustment is also made for rice and cotton. The most recent world prices projected for 1990 and 1995 (in 1985 constant dollars) by the Commodities Projections Division of the World Bank are used along with the 1986 price to test the sensitivity of the results. Costs between the Malian frontier and the overseas reference market are subtracted from the CIF reference price for cotton exports and added to the FOB reference price for cereals imports.

Domestic prices are built up, in the base 1986 case, from the official producer price by adding financial expenditures for collection, processing, and distribution. These expenditures are derived from the official price structures (<u>bareme</u>) and differ from financial costs where there are taxes, subsidies, and transfers. The subsidy added as the final line item to the official price structure for rice and other cereals is a producer subsidy and is treated as a negative financial expenditure.* For cotton, there are a number of line items that are included in the <u>bareme</u> to compensate CMDT, the cotton development agency, for the costs of its extension services, input subsidies, and other activities not directly related to the processing and marketing of cotton. These items are similar to an export tax that is earmarked for CMDT, and are therefore <u>excluded</u> from the calculation of the domestic price, which is compared with the FOB border price to determine the magnitude of the overall export tax.

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* This is a subsidy to producers rather than to consumers since consumer prices are determined by trade taxes and other policies effecting rice in most years, and other cereals at least in some years.

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Although the official price structure aligns the consumer prices of rice and other cereals from both the import and domestic sides, this structure is based on a hypothetical international reference price that seldom pertains. There is no explicit institutional mechanism for regulating domestic prices in the face of fluctuating world market prices in the absence of a state trading monopoly, such as OPAM, which in the past performed this task through fluctuations in its profits and losses. With cereals trade increasingly in private hands, however, domestic prices of imported cereals should more nearly reflect world prices, plus trade taxes, as long as excess demand is supplied freely by the import sector. Since it is useful to consider both the official price structure and free market prices in relation to world prices, the former are assumed for the base case and the latter are used in an alternative simulation. In the latter instance, the wholesale price in Bamako is incorporated directly into the template, and rural market and farm-level producer prices are derived from this by adjusting for costs of distribution, processing, and collection, as well as for the subsidy paid on domestic production.

One issue associated with this procedure merits some discussion. Costs of marketing and processing are only available from the <u>barème</u> for the public sector. These may be somewhat inflated vis-a-vis private sector costs. A subsidy is paid to OPAM, partially to compensate for these costs, but also to permit a higher price to be paid to producers. If the subsidy were omitted from the calculation of the producer price obtained by subtracting official marketing and processing costs from the Bamako wholesale price, this producer price might be underestimated in relation to that which would exist if only private sector costs were considered.

III. Results of the Analysis

Details concerning the calculations are contained in the tables included in this annex, which present key portions of the template for each of nine crop/techniques:

- rice: traditional flooded, animal traction, Mopti
- rice: controlled flooded, animal traction, Mopti
- rice: gravity irrigation, animal traction, Office du Niger
- maize: improved manual, Mali-Sud
- maize: improved animal traction, Mali-Sud
- millet/sorghum: improved manual, Mali-Sud
- millet/sorghum: improved animal traction, Mali-Sud
- cotton: improved manual, Mali-Sud
- cotton: improved animal traction, Mali-Sud

The tables give the detailed breakdown of input costs and the establishment of reference parity prices. Detailed sources and references for the data are also presented in a series of notes to the tables explaining individual line items. Tables B1-B9, at the beginning of these detailed tables, give

the main parameters and results in the base case using projected 1995 world prices, plus sensitivity analysis allowing a few of these parameters to vary.

A. Traditional Flooded Rice

Traditional flooded rice, using floating rice varieties, is a common crop grown in the Interior Delta of the Niger River. Total area under cultivation may be as much as 100,000 hectares.* The technique is relatively extensive, and yields average only .5 to .7 tons per hectare. Most cultivation involves the use of animal traction. Risks associated with variable flooding and the timing of early rains, necessary to soften the heavy soils, are fairly high.

As shown in Table B1, the DRC's for this crop-technique in the base case are below unity at the level of the farm or local rural markets but are above one when rice output competes with imports in Bamako. This reflects the double influence of transport and marketing costs, which raise the cost of local rice delivered to the major center of consumption and lower the cost of imported rice delivered there in comparison with the farm. The results are not very sensitive to the distance that the rice is transported, however, as shown by Option 1 of the simulation analysis, where the distance from the wholesale point (Bamako) to the rural market is changed from 620 km (Mopti) to 240 km (Segou).

The yield of 700 kg/ha assumed in the base case may be fairly high for this extensive production technique. Consequently, an alternative yield of 500 kg/ha was also tried. This results in much higher DRC s, with production being profitable only for on-farm consumption.

Finally, in Option 3 a shadow exchange rate of 612 CFAF/$ was assumed instead of 460 CFAF/$. At this exchange rate, the DRC at the farm and the rural market is less than unity, but production for sale in Bamako remains unprofitable.

As far as incentives to traditional flooded rice production are concerned, Table B1, which is based on the official producer price of 70 CFAF/kg of paddy, shows negative financial profitability when the going wage rate of 600 CFAF/day is imputed to family labor. This is substantiated by the fact that the NEPC and the NESC, which have the same denominator adjusted for the shadow exchange rate as the DRC, are each less than the DRC.

2. Controlled Flooded Rice

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* John McIntire, "Rice Production in Mali," in Pearson, Stryker, and Humphreys, Rice in West Africa, pp.331-60.

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To raise yields and reduce some of the risks associated with traditional flooded rice cultivation, polders have been constructed in the Segou and Mopti regions to control the timing and extent of flooding and drainage. Land is not leveiled, and irrigation works are very rudimentary. Water control is sufficient, however, to allow some improved standing varieties to be cultivated, though variations in water depth limit the potential for obtaining high yields in response to fertilizer. Animal traction is used for plowing and allows farmers to cultivate 2.5 to 3.0 hectares of rice along with similar areas of millet or sorghum.

Table B2 suggests that the increase in yields obtained from flood control does not offset its costs, resulting in DRC's that are somewhat greater than those for traditional flooded rice. The same pattern also persists with regard to market location. Even if yields are increased from 1.2 to 1.4 mt/ha and if Segou, rather than Mopti, is the zone of production, the DRC's are still greater than one as long as the rice is sold in Bamako. Production for sale in Bamako is unprofitable only if these conditions exist and the higher exchange rate of 612 CFAF/$ applies.

As with traditional flooded rice, the official producer price of paddy is inadequate to cover all farmer costs when the implicit value of family labor is included. This is supported by the fact that the NEPC and the NESC are less than the DRC when the domestic price of rice is determined by the official producer price.

3. Gravity Irrigation Rice

Rice is grown using gravity irrigation in the Office du Niger, which supplies most of the paddy that is marketed through the official network. Water control is maintained by a diversion dam at Markala and a system of sluice gates and primary, secondary, and tertiary canals. Total area cultivated is about 40,000 hectares, and most holdings are quite large--approximately 7 hectares. Use of oxen draft power is universal. Water control, despite the deteriorated condition of the irrigation system, is adequate to obtain yields of about 2.5 mt/ha with moderate levels of fertilization.

The results of the analysis presented in Table B3 suggest that the Office du Niger is Mali's most profitable source of rice. Yet at the projected world price for 1995 and a shadow exchange rate of 460 CFAF/$ production is still marginally unprofitable when sold in the Bamako market. Above all, this reflects the large decline that has taken place in the real value of the world price of rice during the past 5 years. In the base case, with yields at 2.5 mt/ha, and a projected world price of $212/mt, the DRC for sale in Bamako equals 1.14. On the other hand, it is well below one when this rice is for sale in the Segou market or for consumption on the farm. If the world price is raised to $300/mt, the DRC for sale in Bamako falls to 0.85. Similarly, if the world price of $212 prevails but

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the shadow exchange rate equals 612 CFAF/$, the DRC for Bamako is less than one. As shown in Table B3, these results are not very sensitive to variations in yield.

In contrast to the previous two cases, irrigated cultivation in the Office du Niger is financially profitable even at the official producer price. This is because of the higher yields that are obtained at little cost to the farmer since most investment costs are already sunk. Although the net effective protection coefficient (NEPC) in Table B3 is less than the DRC, the net effective subsidy coefficient (NECS) is slightly greater than it. This is because of the 39.54 CFAF/kg subsidy paid to OPAM that allows a relatively high price to be paid to producers.

4. Improved Manual Millet/Sorghum

The millet/sorghum techniques considered here involve rotation with cotton in the Mali-Sud zone in which CMDT is the regional development agency. Traditional seed varieties are used, and the residual effects of fertilizers applied to cotton the previous year add supplementary nutrients. Yields average about 600 kg per hectare for manual cultivation.

As shown in Table B4, production in the base case is economically very profitable for consumption on the farm and for sale in the rural market, but is marginally unprofitable for shipment to Bamako. Raising the world price from $90/ton to $130/ton, increasing yields by 200 kg/ha, or using a shadow exchange rate of 612 CFAF/$ each results in all DRCs being substantially less than unity. Production is financially unprofitable at the official producer price of 55 CFAF/kg, and the NEPC and NESC indicators are less than the DRC. This situation is reversed, however, if yields increase from 600 kg/ha to 800 kg/ha.

5. Improved Animal-Traction Millet/Sorghum

The improved animal-traction millet/sorghum technique is similar to that using manual methods of cultivation, except that oxen are used for plowing, seeding, weeding, and transporting the harvest. No fertilizer is used, but the crop benefits from the residual effects of cotton fertilization. Better land preparation results in somewhat higher yields than for the manual technique.

Table B5 presents the results. In contrast to manual cultivation, the DRC for the base case is less than one for distribution to Bamako, as well as for on-farm consumption and sales to the rural market. An increase in the world price from 90 to 130 $/ton, in yields from 800 to 1000 kg/ha, or in the shadow price of foreign exchange from 460 to 612 CFAF/$, results in the Bamako DRC decreasing to substantially less than one. As with manual cultivation, financial profitability is negative at the official producer price. This explains way OPAM had diffifulty until recently purchasing coarse grains at the official price.

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6. Improved Manual Maize

Maize is also grown in rotation with cotton in the Mali-Sud area, but selected varieties and fertilizers are used and yields are correspondingly higher than for sorghum. Nevertheless, the yield of 1.6 mt/ha for this maize technique is still comparatively low in relation to the crop's potential.

Because of higher labor and intermediate input costs, the DRC results for maize are similar to those for sorghum despite higher yields. The sensitivity analysis employed in Table B6 suggests, however, that increases in yield have a significant effect on the DRC -- at 1.8 mt/ha, for example, the DRC for sale in Bamako is well below unity. The introduction of a higher world market price or shadow exchange rate gives a similar result.

As long as farmers are paid the official producer price of 55 CFAF/$, financial profitability is negative. Effective protection against imports is negative, and the NEPC and NESC are less than the DRC.

7. Improved Animal-Traction Maize

As with millet/sorghum, the use of oxen for maize production involves plowing, seeding, weeding, and transporting the harvest. Yields are slightly higher than for manual cultivation because of somewhat better land preparation.

The results in Table B7 suggest that the decline in costs associated with the increase in yields and the reduction of labor resulting from the use of animal traction more than offset the cost increase due to the purchase of oxen and equipment. An increase in yields to 2 mt/ha results in appreciable decrease in the DRC. This appears to be quite feasible given the levels of labor, fertilizers, and other inputs being used.[7] The DRC also falls substantially if the world price is $135/ton or the shadow exchange rate is 612 CFAF/$. As with manual production, financial profitability is negative at the official producer price even at the higher yield.

8. Improved Manual Cotton

Cotton, grown under the supervision of CMDT in the Mali-Sud region, is the major export crop for Mali. Until recently, it was

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[7] A similar technique in northern Nigeria, for example, results in yields of 2.5 mt/ha.

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considered to be quite profitable. A sharp decline in world market prices, however, called this profitability into question.

Cultivation in Mali is quite intensive. Substantial quantities of fertilizer and insecticides are employed along with fairly heavy use of labor. This makes cotton somewhat risky in the face of fluctuating world prices.

As shown in Table B8, with yields of 1 mt/ha and a projected world price for 1995 of $1640/mt, the DRC for cotton is much less than one, implying high profitability over the longer run. An increase in yields to 1.2 mt/ha results in considerably higher profitability. At a lower world price of $1400/ton, moreover, cotton would still be quite profitable.

Allowing for greater overvaluation of the exchange rate, the DRC falls to 0.53 or the 1995 projected world price of $1640/ton. It is disturbing to note, however, that cotton is financially very unprofitable at the existing producer price of 85 CFAF/kg. Sensitivity analysis indicates that the price would have to be raised to 122 CFAF/kg, at a yield of 1 mt/ha, if cotton were to be financially profitable.

9. Improved Animal-Traction Cotton

As with the coarse grain crops, animal traction for cotton involves plowing, seeding, weeding, and transport. This lowers labor requirements and raises yields in the base case to 1.2 mt/ha.

As shown in Table B9, cotton cultivated with oxen is somewhat more profitable than by hand, but the results are sensitive to the world price and whether or not there is substantial overvaluation of the currency. Cultivation remains financially unprofitable at the existing official producer price for all forseeable yields.

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APPENDIX B TABLES,
NOTES, AND SOURCES.

REFERENCES FOR SOURCES TO DRC TABLES.

LIST OF ABBREVIATIONS.

JM McIntire, John. 'Rice Policy in Mali', in (ed.) Pearson, Stryker, et al., Rice in West Africa. Stanford Universiy, 1981.

JDS World Bank. West Africa Research Project on Incentives and Comparative Advantage in Agriculture and Industry, Economic Incentives and Costs in Agriculture, chapter by J.D. Stryker, mimeo, revised 1978, (includes manuscript coefficient tables).

IER Mali, IER, Determination des couts moyens de production des principaux produits agricoles pour la fixation des prix aux producteurs de la campagne 1986/87. Fevrier 1986.

OSRP Mali, OSRP, Etude sur l'avenir de la Filiere Coton au Mali: Phase 1. Prepared by J. Cantournet and A. Waddell. Mai 1986.

CMDT Mali, CMDT, Consolidated Budget and miscellaneous documents received for the 1985/86 season.

WAPA World Bank. Ivory Coast: Agricultural Sector Review , WAPA, Abidjan, October 1985.

CPD World Bank. Primary Commodity Price Forecasts. EPDCS Memorandum. August 18, 1986.

IMF International Monetary Fund, Mali: Recent Economic Developments, prepared by a staff mission (Nsouli, Faria, Schmitz, Clement, Enders), March 1986.

PRMC Coelo, Serge. Assistance Technique au Programme de Restructuration du Marche Cerealier au Mali - Rapport Annual, Bamako, July 1986.

ON Bareme Riz Office du Niger 1985/86

OPAM Bareme Mil-Sorgho-Mais OPAM 1985/86

A1 Arrete no. 1421/ MFC-DNAE-CIP portant fixation des prix des intrants agricoles en zone CMDT pour la campagne 1986/87.

DJ David Jarvis, World Bank, Western Africa-Projects Department, Agricultural Division, personal communication, August 1986.

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SOURCES TO DRC TABLES

CROP: Rice
TECHNIQUE: Traditional Flooded, Animal Traction - Mopti

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1. Yield - IER 1986. McIntire's report in 1981 gives yields at a lower rate of 500 kg/ha.
2. Processing conversion factor - Bareme Riz Office du Niger 1985/86.
3. World FOB price - World Bank CPD price projections for 1990. Constant 1985 dollars.
4. Farmgate Price - Official government price for 1985/86
5. Official exchange rate - World Bank, IMF
6. Transport distances - JM 1981. Farm to mill transport - by 12-ton truck over 35 km of poor paved road to mill at Sevare Operation Riz Mopti to Bamako - 620 km by 12-ton truck over paved roads
7. Transport rate - OSRP 1986, P.106
   Transport rate is for paved road. D. Jarvis gives a rate of 1 CFAF (average) for transport from field in ORM to processing point. This is the farmer's cost.
8. Labor wage rate -IER 1986. Only hired labor is used at a wage rate of 600 CFAF/manday.
9. Extension costs - no extension is used in this production technique. JM 1981.
10. Fertilizer price - no fertilizer is applied. JM 1981.
11. Labor days - 1) JDS 1981.
    2) IER 1986 gives labor days that agree with JDS figures.
12. Seed - Unimproved, application of 100 kg. given by JDS, valued at paddy market price, IER 1986.
13. Sacks - Bareme Riz Office du Niger 1985/86 - yield *cost/kg
14. Capital Recovery - IER 1986.
    The capital recovery factor is calculated at 10 % interest for a 10 year period. Financial expenditure equals financial cost, as there are no subsidies on credit to the farmer.
15. Operating expenses -1) animals - IER 1986.
    2) implements - these are costs for spare parts, estimated at 6 % of the investment cost of each implement used in production.
    3) threshing - D. Jarvis, 4 CFAF/kg using small in-field threshers
    These costs account for the expenses, other than financing, of carrying on the normal activities of crop production.
16. Working capital - 1) 3 months- this is calculated for labor over 3 months at the discount rate of 10%
    2) 6 months- this is calculated for intermediate inputs over 6 months at the discount rate

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17. Collection -

1) Transport - transport distance and rates are explained in #6 and #7 above.

2) Handling,storage, margins - Bareme Riz Office du Niger 1985/86.

Includes: Frais de marche
Frais de collecte
Frais financiers
Participation aux frais generaus
Protection des cultures

18. Processing - Bareme Office du Niger 1985/86

19. Distribution - Bareme Office du Niger 1985/86

Includes: Transport et manutention carreau-usine quai Segou
Frais financiers
Taxe OPAM
Transport : financial expenditure from Office du Niger Bareme, but financial cost uses transport distance and rates explained in #6 and #7 above.

20. International Reference Price: see gravity irrigated rice.

SOURCES TO DRC TABLES

CROP: Rice
TECHNIQUE: Controlled Flooding, Animal Traction-Mopti and Segou

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1. Yield - IER 1986.
   McIntire's report in 1981 gives yields at a higher rate of 1500 kg/ha.
2. Processing conversion factor - Bareme Riz Office du Niger 1985/86.
3. World FOB price - World Bank CPD price projections for 1990. Constant 1985 dollars.
4. Farmgate Price - Official government price for 1985/86
5. Official exchange rate - World Bank, IMF
6. Transport distances - JM 1981.
   MOPTI:
   Farm to mill transport - by 12-ton truck over 35 km of poor paved road to mill at Sevare Operation Riz Mopti to Bamako - 620 km by 12-ton truck over paved roads .
   SEGOU:
   Farm to mill transport- 45 km by 12-ton truck to small hullers in segou or 80 km to mill on poor paved roads Operation Riz Segou to Bamako - 240 km by 12-ton truck over paved road
7. Transport rate - OSRP 1986, P.106
   Transport rate is for paved road.
8. Labor wage rate -IER 1986. Only hired labor is used at a wage rate of 600 CFAF/manday.
9. Extension costs - no extension is used in this production technique. JM 1981.
10. Fertilizer price - no fertilizer is applied. JM 1981.
11. Labor days - 1) IER 1986
12. Seed - Unimproved, application of 100 kg. given by JDS, valued at paddy market price, IER 1986.
13. Sacks - Bareme Riz Office du Niger 1985/86 - yield *cost/kg
14. Capital Recovery - IER 1986.
    The capital recovery factor is calculated at 10 % interest for a 10 year period. Financial expenditure equals financial cost, as there are no subsidies on credit to the farmer.
15. Operating expenses -1) animals - IER 1986.
    2) implements - these are costs for spare parts, estimated at 6 % of the investment cost of each implement used in production.
    3) threshing - IER 1986, based on 12% of yield valued at producer price
    4) irrigation -IER 1986, based on 180 kg valued at the producer price
16. Working capital - 1) 3 months - this is calculated for labor over 3 months at the discount rate of 10%
    2) 6 months - this is calculated for intermediate inputs over 6 months at the discount rate of 10%

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17. Collection -

1) Transport - transport distance and rates are explained in #6 and #7 above

2) Handling,storage, margins - Bareme Riz Office du Niger 1985/86

Includes: Frais de marche
Frais de collecte
Frais financiers
Participation aux frais generaus
Protection des cultures

18. Processing - Bareme Office du Niger 1985/86

19. Distribution - Bareme Office du Niger 1985/86

Includes: Transport et manutention carreau-usine quai Segou
Frais financiers
Taxe OPAM
Transport : financial expenditure from Bareme, but financial cost uses transport distance and rates explained in #6 and #7 above.

20. International Reference Price: see gravity irrigated rice.

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SOURCES TO DRC TABLES

CROP: Rice
TECHNIQUE: Gravity Irrigation, Animal Traction

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1. Yield - JM 1981.
2. Processing conversion factor - Bareme Riz Office du Niger 1985/86
3. World FOB price- World Bank CPD price projections for 1990. These are given in constant 1985 dollars.
4. Farmgate price - Bareme Riz Office du Niger 1985/86
5. Official exchange rate - World Bank, IMF
6. Transport distances - JM 1981.
   Farm to mill transport - by 12-ton truck over 30 km of poor dirt roads
   Office du Niger to Bamako- 240 km by 12-ton truck over new paved road
7. Transport rates - OSRP 1986, p. 106
   Transport rate of 25 CFAF/tk is for paved road.
   Transport rate of 50 CFAF/tk is for poor dirt road.
8. Labor Wage rate - IER 1986. Only hired labor is used at a wage rate of 600 CFAF/manday. These rates are consistent with JDS study in 1975/76, taking into account inflation, etc.
9. Extension costs - Bareme Riz Office du Niger:
   (paddy yield * cost CFAF/ton)
10. Fertilizer prices to farmers - IER 1986.
    Fertilizer cost to CMDT - CMDT's 'Valorisation des ventes au cout d'achat' 1985/86
11. Labor days - 1) JDS 1981.
    2) IER 1986 study gives labor days that confirms JDS figures.
12. Seed - IER 1986.
13. Sacks - Bareme Riz Office du Niger 1985/86 -yield * cost/kg
14. Capital Recovery - IER 1986. The credit system for the Office du Niger is a repayment period of 5 years at 12 % interest. However, taking into account an inflation rate of 7%, he real interest rate to the farmer is 5%. Thus, for the capital recovery factor for financial expenditures, the appropriate interest is 5% at 5 years, while for financial cost the capital recovery factor is at the discount rate of 10% for 10 years. D. Jarvis gives a figure of 300,000 CFAF for animals and implements, where a pair of animals is between 120,000 to 150,000 CFAF.
15. Operating expenses -1) animals - IER 1986.
    2) implements - these are the costs for spare parts, estimated at 6 % of the investment cost of each implement. Thus the figure is the sum of 6 % of the investment cost of each implement used in production.
    3) threshing- IER study/1986, this approximates D.Jarvis figure of 4 CFAF/kg for threshing with small infield threshers.
    4) irrigation - IER study/1986, based on 400 kg of paddy valued at produce price.

These costs account for the expenses, other than financing, of carrying on the normal activities of crop production.

16. Working capital - 1) 3 months- this is calculated for labor over 3 months at the discount rate
2) 6 months- this is calculated for intermediate inputs at the discount rate

This accounts for the capital tied up in production for the specified time.

17. Collection - Bareme Riz Office du Niger 1985/86
Includes: Transport
Frais de marche
Frais de collecte
Frais financiers
Participation aux frais generaux de la direction
Protection des cultures

18. Processing - Bareme Riz Office du Niger 1985/86

19. Distribution - Bareme Riz Office du Niger 1985/86
Includes: Transport et manutention carreau-usine quai Segou
Frais Financiers
Taxe OPAM
Transport - for financial cost, transport distance (#6) multiplied by transport rate(#7). Financial expenditure given by the Office du Niger Bareme.

20. FOB price (see above # 3)

21. Freight, Insurance, Quality adjustments - from WAPA, Ivory Coast-Agricultural Sector Review, 1985, p. 206. Assume that the costs are the same for Mali as for Ivory Coast, as Abidjan is the appropriate port for Mali.

22. Port Charges, Storage and Handling and Interest and Insurance- from WAPA, Ivory Coast-Agricultural Sector Review, 1985, p,206.

23. Delivery charges, port (Abidjan) -to-Malian border -OPAM/PRMC 1986.

24. Delivery charges, border-to-Bamako - OPAM/PRMC 1986.
- Import Duty on Sacks is the Droite de douane. Rice imports are exempt from this tax, however, they are charged on the value of the sacks (for 10 sacks per ton, the value is 55CFAF/sack.
- Tax on rice is the Taxe d'Importation, levied at 10 % on rice and 5 % on sacks.
- EMACI tax is calculated on a base of 92 CFAF/ton/day (with IAS) for a 40 day period . Without IAS, the base is 80 CFAF/ton/day for commercial

transactions, and 20 CFAF/ton/day for food aid (It is calculated here with IAS).

- Commercial Margin Tax is the Taux de marge brute levied on the CIF price at the frontier, plus the taxes described above and handling and finance charges, at a rate of 13.63%.
- Rebate is a deduction of 6% on the retail sale price at the frontier. This includes all of the above mentioned costs.
- The sales tax is the IAS tax, levied at 11.1 % on the CIF price plus taxes.
- CPS is levied at 5% on the CIF frontier price.
- OSRP is levied at 5 CFAF/kg.

SOURCES TO DRC TABLES

CROP: Millet/Sorghum
TECHNIQUE: Improved Animal Traction and Improved Manual

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1. Yield - IER 1986.
2. World FOB price - World Bank CPD price projections for 1990 for maize. These are given in constant 1985 dollars.
3. Farmgate price - Official government price, Bareme Mil-Sorgho-Mais OPAM 1985/86
4. Official exchange rate - World Bank, IMF
5. Transport distances - JM 1981.
   Farm-to-mill transport - by 12-ton truck over 50 km of poor dirt and paved roads.
   Sikasso to Bamako - 380 km by 12-ton truck over paved roads.
   (rural market to wholesale point)
6. Transport rates - OSRP 1986, p.106
   25 CFAF/tk is for paved road.
   50 CFAF/tk is for poor dirt road.
7. Labor wage rates -IER 1986. Only hired labor is used at a wage rate of 600 CFAF/manday.
8. Extension costs - CMDT 1986. In the Mali Sud Zone, cereals are grown along with cotton, therefore the extension costs (as well as other costs such as fertilizers and animal implements) are the same for maize as they are for cotton.
9. Fertilizer price - no application of fertilizer (JM 1981).
10. Labor days - IER 1986 ; there was a large discrepancy between labor days given by JDS 1981 data and IER. IER is the chosen source for this crop.
11. Seed - IER 1986.
12. Seed dressing - IER 1986.
13. Capital Recovery - CMDT 1986. The choice of implements comes from sales by CMDT, as well as the selection given in IER study.
    The same credit program for cotton is used for millet and sorghum. The farmer purchases the capital asset at 3% interest with repayment over a 4 year period. Thus, to account for the subsidized credit to the farmer , all credit payments are discounted back to the year the asset was purchased by the market rate of interest. The sum of these discounted payments is the present value of the asset measured in terms of the cost to the farmer. Then, the capital recovery factor is calculated at the market rate of interest based on the service life of the asset to show the annual cost to the farmer. For financial cost, the capital recovery factor is based on 10% interest for 10 or 5 years, depending on the lifetime of the asset.

14. Operating expenses -1) animals - IER 1986.
    2) implements - these are the costs for spare parts, estimated at 6 % of the investment cost of each implement used in production.

15. Working capital - 1) 3 months - this is calculated for labor over 3 months at the discount rate
2) 6 months - this is calculated for intermediate inputs for 6 months a the discount rate

16. Collection - Bareme Mil-Sorgho-Mais OPAM 1985/86
Includes: 1) Handling, storage, margins
- frais de collecte et de marche
- commission collecteurs (5%)
2) Losses (1%)

17. Processing - none

18. Distribution - Barene Mil-Sorgho-Mais OPAM 1985/86
Includes: 1) Handling, bulking, other costs
-frais de ramassage et manutention
-commissions collecteurs (5%)
-frais financiers (10%)
-taxe OPAM
2) Transport (weighted)
3) Losses (0.5%)

19. World FOB price of maize (see above, #3)

20. International Reference price. Since millet and sorghum are not usually imported, we have assumed that if it were, it would have an identical price structure as rice. Based on this assumption, we use the same international reference price as for gravity irrigated rice.

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SOURCES TO DRC TABLES

CROP: Maize
TECHNIQUE: Improved Animal Traction and Improved Manual

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1. Yield - IER 1986.
2. World FOB price - World Bank CPD price projections for 1990. These are in constant 1985 dollars.
3. Farmgate price - Official government price, Bareme Mil-Sorgho-Mais OPAM 1985/86
4. Official exchange rate - World Bank, IMF.
5. Transport distances - JM 1981.
   Farm-to-mill- 50 km by 12-ton truck over poor dirt and paved roads.
   Sikasso to Bamako - 380 km by 12-ton truck over paved roads.
6. Transport rates - OSRP/1986
   25 CFAF/km for paved roads.
   50 CFAF/km for poor dirt roads.
7. Labor wage rates -IER 1986. Only hired labor is used at a wage rate of 600 CFAF/manday.
8. Extension costs - CMDT 1986. In the Mali Sud Zone, cereals are grown along with cotton, therefore the extension costs (as well as other costs such as fertilizers and animal implements) are the same for maize as they are for cotton.
9. Fertilizer prices to farmers - 1) Arrete no. 1421
   2) OSRP 1986, p.112
   Fertilizer cost to CMDT - CMDT's 'Valorisation des ventes au cout d'achat 1985/86 (application rates from IER 1986)
10. Labor days - 1) JDS 1981
    2) IER 1986 confirms these figures
11. Seed - IER 1986.
12. Seed dressing - IER 1986.
13. Capital Recovery - CMDT 1986. The choice of implements comes from sales by CMDT, as well as the selection given in IER study. The same credit program for cotton is used for maize. The farmer purchases the capital asset at 3 % interest with repayment over a 4 year period. Thus, to account for the subsidized credit to the farmer, all credit payments are discounted back to the year the asset was purchased by the market rate of interest. Then, the capital recovery factor is calculated at the market rate of interest based on the service life of the asset to show the annual cost to the farmer.
14. Operating expenses -1) animals - IER 1986.
    2) implements - these are the costs for spare parts, estimated at 6 % of the investment cost of each implement used in production.
15. Working capital - 1) 3 months - this is calculated for labor over 3 months at the discount rate.
    2) 6 months - this is calculated for intermediate inputs over 6 months at the discount rate.
16. Collection - Bareme Mil-Sorgho-Mais OPAM 1985/86

Includes: 1) Handling, storage, margins
- frais de collecte et de marche
- commission collecteurs (5%)
2) Losses (1%)

17. Processing - none
18. Distribution - Baremo Mil-Sorgho-Mais OPAM 1985/86
Includes: 1) Handling, bulking, other costs
-frais de ramassage et manutention
-commissions collecteurs (5%)
-frais financiers (10%)
-taxe OPAM
2) Transport (weighted)
3) Losses (0.5%)
19. World FOB price of maize (see above, #3)
20. International Reference price. We have assumed that maize would have an identical price structure as rice. Based on this assumption, we use the same international reference price as for gravity irrigated rice.

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SOURCES TO DRC TABLES.

CROP: Cotton
TECHNIQUE: Improved Animal Traction and Improved Manual

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1. Yield - IER 1986
2. Processing conversion factor - 1) CMDT86 1986
   2) OSRP 1986, p. 68
3. World CIF price - CPD
   World Bank CPD price projections. These are given in constant 1985 dollars. Use price projections for 1990.
4. Farmgate price - CMDT 1986
5. Official exchange rate - World Bank, IMF
6. Transport distances - OPAM/PRMC
7. Transport rates - OSRP 1986, p. 106
   Transport rate of 35 CFAF/TK is for paved road. For exported cotton the transport rate is 75 % of the above cost, thus there is a 25% subsidy.
8. Labor Wage rate - IER 1986. Only hired labor is used at wage rate of 600 CFAF/manday. These rates are consistent JDS 1981 study, taking into account inflation, etc.
9. Extension costs - CMDT 1986
10. Fertilizer prices to farmers - 1) Arrete no. 1421
    2) OSRP 1986, p.112

    Fertilizer cost to CMDT - 1) CMDT's Valorisation des vendues au cout d'achat 1985/86
    2) Subvention and prix de revient, OSRP 1986, p.112

Note: These two sources give different values for the price intervention between the farmer's expenditures and the financial cost to CMDT. The first source is used in the DRC table.

11. Labor days - 1) JDS 1978
    2) IER 1986 data on labor times confirms JDS 1978 figures.
12. Seed - 1) OSRP 1986, p.92;
    2) Arrete 1422 gives cotton seed prices for 1985/86.
13. Insecticides - 1) IER 1986 for cost to farmer.
    2) CMDT 1986 for financial expenditure.

14. Capital Recovery - CMDT 1986. The choice of implements used comes from the CMDT's ' Valorisation des ventes au cout d'achat', as well as the selection given in the IER study. CMDT provides subsidized credit for equipment to the farmer at 10 % with a 4 year repayment period. The normal commercial interest rate is 17 % (BNDA). Taking into account an inflation rate of 7 %, the real interest rate to the farmer is 3 %. Thus, for financial expenditures, the appropriate interest rate is 3 % at 4 years, while for financial cost, it is at the discount rate of 10 % for 10 years (the lifetime of the asset). To account for subsidized credit to the farmer, financial expenditure is calculated

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by discounting the credit payments back to the year the asset was purchased by the market rate of interest. The sum of these discounted payments is the present value of the asset measured in terms of the cost to the farmer. Then, the capital recovery factor is calculated at the market rate of interest based on the service life of the asset to show the annual cost to the farmer.

15. Operating expenses - 1) animals - IER 1986.
    2) implements - these are the costs for spare parts, estimated at 6 % of the investment cost of each implement. These costs account for the expenses, other than financing, of carrying on the normal activities of crop production.
16. Working capital - 1) 3 months - this is calculated for labor over 3 months at the discount rate (10%)
    2) 6 months - this is calculated for intermediate inputs for 6 months at the discount rate (10%)

This accounts for the capital tied up in production for the specified time.

17. Collection - CMDT 1986.
    Includes: Transport
    Frais de marche
    Frais de collecte (except transport)
    Entretien piste
    Assurance coton grain
18. Processing - CMDT 1986.
19. By-Product benefit - This accounts for cotton by-products.
    Given cotton seed value of 16.175 CFAF/KG (see 12 above), by product value is:
    ((1- processing conversion factor)/processing conversion factor) * price of seed
20. Distribution - CMDT 1986.
    Includes: Assurance fibre
    Frais d'evacuation
    Transport (Bamako-to-frontier), for financial expenditure there is a 25% subsidy.
    Finance charge - direct subsidy on non-tradable, (for financial cost, use 10% preferential interest rate - then, 16.8/10 * 15101)
21. CIF price (see above # 3)
22. Freight, insurance, other adjustments - From WAPA , Ivory Coast-Agricultural Sector review, 1985.
23. Port Charges - WAPA, Ivory Coast- Agricultural Sector Review, 1985.
24. Delivery charges, Malian Border-to-port (See #6 and #7 above).

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FILE NAME: IDRCRTF.WK1 CROP: RICE, TRADITIONAL FLOODED

CROP: RICE, TRADITIONAL FLOODED
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table 01
(1995 world prices, official producer prices)

26-May-87 03:44 PM	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	47.55	46.02	46.02	47.55	46.02	46.02	25.13	24.35	24.35	47.55	46.02	46.02
...CFAF/hectare	20970.77	20646.93	20646.93	20970.77	20646.93	20646.93	7916.61	7668.94	7668.94	20970.77	20646.93	20646.93
...CFAF/total labor	349.51	344.12	344.12	349.51	344.12	344.12	131.94	127.82	127.82	349.51	344.12	344.12
...CFAF/total family labor	349.51	344.12	344.12	349.51	344.12	344.12	131.94	127.82	127.82	349.51	344.12	344.12
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-34.08	-34.08	-34.08	-34.08	-34.08	-34.08	-89.15	-89.15	-89.15	-34.08	-34.08	-34.08
...CFAF/hectare	-15029.23	-15029.23	-15029.23	-15029.23	-15029.23	-15029.23	-20083.39	-20083.39	-20083.39	-15029.23	-15029.23	-15029.23
ECONOMIC PROFITABILITY												
...CFAF/kg	74.89	31.81	-52.90	64.93	21.85	-43.45	18.90	-24.18	-108.89	133.02	83.02	-15.78
...CFAF/hectare	33026.77	14028.09	-23328.25	28636.03	9637.35	-19159.82	5952.09	-7617.44	-34300.54	59016.67	36612.04	-6960.38
...CFAF/total labor	1717.29	1371.22	714.77	1637.71	1291.64	808.42	1070.69	823.24	354.34	2404.86	1968.68	1147.78
...CFAF/total family labor	764.91	427.41	-229.05	685.33	347.83	-135.39	118.31	-122.59	-591.49	1452.47	1024.87	203.97
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.58	0.85	1.14	0.62	0.91	1.14	0.58	0.85	1.14	0.58	0.85	1.14
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.43	0.64	0.86	0.47	0.68	0.86	0.43	0.64	0.86	0.33	0.48	0.65
NOMINAL PROTECTION COEFFICIENT, INPUTS	1.12	1.12	0.88	1.12	1.12	1.02	1.10	1.11	0.92	1.12	1.12	0.88
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.94	0.84	0.66	0.84	0.84	0.77	0.83	0.84	0.69	0.63	0.63	0.50
EFFECTIVE PROTECTION COEFFICIENT	0.52	0.80	1.25	0.57	0.86	1.19	0.51	0.79	1.25	0.52	0.80	1.25
NET EFFECTIVE PROTECTION COEFFICIENT	0.39	0.60	0.94	0.43	0.65	0.89	0.38	0.59	0.94	0.30	0.45	0.71
EFFECTIVE SUBSIDY COEFFICIENT	0.51	0.78	1.55	0.55	0.85	1.43	0.49	0.77	1.57	0.51	0.78	1.55
NET EFFECTIVE SUBSIDY COEFFICIENT	0.38	0.59	1.17	0.42	0.64	1.08	0.37	0.58	1.18	0.29	0.44	0.88
DOMESTIC RESOURCE COST	0.58	0.79	1.47	0.62	0.85	1.37	0.89	1.16	2.02	0.44	0.60	1.11
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		700.000			700.000			500.000			700.000	
PROCESSING CONVERSION FACTOR		0.630			0.630			0.630			0.630	
WORLD FOB PRICE ($/ton)		212.000			212.000			212.000			212.000	
FARMGATE PRICE (CFAF/kg paddy)		70.000			70.000			70.000			70.000	
RURAL MARKET PRICE (CFAF/kg rice)		143.393			143.393			143.393			143.393	
WHOLESALE PRICE (CFAF/kg rice)		142.768			142.768			142.768			142.768	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE PORT-TO-WHSALE POINT (km)												
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		620.000			240.000			620.000			620.000	
DISTANCE RURAL MARKET-TO-FARM (km)		35.000			35.000			35.000			35.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		0.000			0.000			0.000			0.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TEMA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

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CROP: RICE, TRADITIONAL FLOODED
FARM BUDGET
a60...p101

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT TRAD.	TAXES/SUBSIDIES INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT TRAD.	TAXES/SUBSIDIES INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		10.00												
nursery														
seeding		1.00												
transplanting														
chem. application		0.00												
manure application														
weeding		10.00												
thinning														
pest control		15.00												
earthing up														
irrigation		0.00												
harvesting		15.00												
threshing		8.00												
uprooting														
transport		1.00												
Sub-total, family labor		60.00	600.00	36000.00	0.00	0.00	36000.00	0.00	0.00	36000.00	0.00	36000.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		60.00		36000.00	0.00	0.00	36000.00	0.00	0.00	36000.00	0.00	36000.00	0.00	0.00
SEED														
improved	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
unimproved	kg	100.00	70.00	7000.00	3.00	0.00	7000.00	70.00	0.00	6930.00	630.00	0.00	4620.00	1680.00
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
ammonia phosphate	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urea	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks	kg			3152.00	0.00	0.00	3152.00	472.92	157.64	2522.24	1734.04	0.00	567.50	220.70
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
sickles			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cutlasses			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart	1696.25	10.00	0.16	276.06	0.00	0.00	276.06	0.00	5.52	270.54	256.73	0.00	13.80	0.00
plow	8736.22	10.00	0.16	1421.78	0.00	0.00	1421.78	0.00	28.44	1393.34	1322.26	0.00	71.07	0.00
pump			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)				12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST														
O+M, irrigation	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha			625.95	0.00	0.00	625.95	75.11	50.08	500.76	250.38	0.00	225.34	25.04
threshing	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha			1645.00	0.00	0.00	1645.00	0.00	32.90	1612.10	1447.60	0.00	82.25	82.25
WORKING CAPITAL														
3-month				900.00	0.00	0.00	900.00	0.00	0.00	900.00	0.00	0.00	0.00	900.00
6-month				507.64	0.00	0.00	507.64	0.00	0.00	507.64	0.00	0.00	0.00	507.64
TOTAL FARM COSTS (raw)	CFAF/ha			64029.23	0.00	0.00	64029.23	693.03	299.57	63036.62	5916.01	36000.00	5669.99	15450.62
Total Value of (By-product)	CFAF/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			64029.23	0.00	0.00	64029.23	693.03	299.57	63036.62	5916.01	36000.00	5669.99	15450.62
YIELD	kg/ha	700.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			91.47	0.00	0.00	91.47	0.99	0.43	90.05	8.45	51.43	8.10	22.07
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			145.19	0.00	0.00	145.19	1.57	0.68	142.94	13.41	81.63	12.86	35.04
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	35.00	25.00	875.00	0.00	0.00	875.00	87.50	43.75	743.75	385.00	0.00	131.25	227.50
Handling, storage, margins	CFAF/ton			10018.00	0.00	0.00	10018.00	300.54	1602.88	8114.58	1101.98	0.00	4207.56	2905.04
Losses (7% /ton prod cost)	% prod cost			4900.00	0.00	0.00	4900.00	0.00	0.00	4900.00	4900.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			15793.00	0.00	0.00	15793.00	388.04	1646.63	13758.33	6386.98	0.00	4338.81	3032.54
TOTAL COLLECTION COSTS (proc)	CFAF/ton			25068.25	0.00	0.00	25068.25	615.94	2613.70	21838.62	10138.06	0.00	6887.00	4813.56
	CFAF/kg			25.07	0.00	0.00	25.07	0.62	2.61	21.84	10.14	0.00	6.89	4.81
TOTAL PRODUCTION + COLLECTION	CFAF/kg			170.26	0.00	0.00	170.26	2.19	3.29	164.78	23.55	81.63	19.74	39.85
PROCESSING														
Milling	CFAF/ton			8825.00	0.00	0.00	8825.00	970.75	441.25	7413.00	2118.00	0.00	3883.00	1412.00
By-Products	CFAF/ton			-1611.00	0.00	0.00	-1611.00	-20.41	-33.59	-1549.00	-230.93	-734.35	-212.54	-371.17
TOTAL PROCESSING COSTS	CFAF/ton			7214.00	0.00	0.00	7214.00	942.34	407.66	5864.00	1887.07	-734.35	3670.46	1040.83
	CFAF/kg			7.21	0.00	0.00	7.21	0.94	0.41	5.86	1.89	-0.73	3.67	1.04
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			177.47	0.00	0.00	177.47	3.13	3.70	170.64	25.44	80.90	23.41	40.89
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28901.00	0.00	0.00	28901.00	840.03	4460.16	22680.81	3090.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	620.00	25.00	10914.00	-2476.44	-2109.56	15500.00	1550.00	775.00	13175.00	6820.00	0.00	2325.00	4030.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (proc)	CFAF/ton			38915.00	-2476.44	-2109.56	43501.00	2390.03	5235.16	35855.81	9910.11	0.00	14085.42	11870.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	-2.48	-2.11	43.50	2.39	5.26	35.86	9.90	0.00	14.09	11.87
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			216.39	-2.48	-2.11	220.97	5.52	8.96	206.50	35.34	80.90	37.50	52.76
PRODUCTION SUBSIDY	CFAF/kg			-39.54	-7.31	-32.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			176.85	-9.79	-34.34	220.97	5.52	8.96	206.50	35.34	80.90	37.50	52.76

CROP: RICE, TRADITIONAL FLOODED INTERNATIONAL REFERENCE PRICE a185...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	212.00	212.00			212.00			212.00	212.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	-20%	1.00	-42.40	-42.40			-42.40			-42.40	-42.40			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			244.60			244.60			244.60	244.60			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			84631.60			84631.60			84631.60	84631.60			
CIF Price in Local Currency	CFAF/kg			84.63			84.63			84.63	84.63			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (3% CIF)	CFAF/ton			4231.50			4231.50			4231.50	4231.50			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			113293.10	0.00	0.00	113293.10	0.00	0.00	113293.10	113293.10	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			11328.32	11328.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EMACI Tax	CFAF/ton			3600.00	3600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			19402.51	19402.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-9705.24	-9705.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			13831.00	13831.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			5664.16	5664.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	620.00	25.00	15500.00	0.00	0.00	15500.00	1550.00	310.00	13640.00	7905.00	0.00	5115.00	620.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			20001.00	0.00	0.00	20001.00	2000.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	35.00	25.00	875.00	0.00	0.00	875.00	87.50	17.50	770.00	446.25	0.00	288.75	35.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10010.00	0.00	0.00	10010.00	1001.00	200.36	8815.04	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHOLESALE (CFAF/ton)				72711.62	49291.62	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHOLESALE (CFAF/kg)				72.71	49.29	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				116212.62	49291.62	0.00	57521.00	5633.10	1126.62	50761.28	28728.81	0.00	18589.23	3443.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				116.21	49.29	0.00	57.52	5.63	1.13	50.76	28.73	0.00	18.59	3.44
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				127105.62	49291.62	0.00	68414.00	6722.40	1344.48	60347.12	34284.24	0.00	22183.92	3878.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				127.11	49.29	0.00	68.41	6.72	1.34	60.35	34.28	0.00	22.18	3.88
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHOLESALE POINT (CFAF/kg)				185.99	49.29	0.00	127.30	1.28	0.26	125.76	119.83	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				229.50	49.29	0.00	170.00	5.63	1.13	164.04	142.01	0.00	18.59	3.44
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				240.39	49.29	0.00	181.70	6.72	1.34	173.63	147.57	0.00	22.18	3.88

CROP: RICE, TRADITIONAL FLOODED
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a209...a310,t310

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	111.11	111.11
TRADABLES, FINANCIAL PRICES	14.99	14.99
VALUE ADDED IN FINANCIAL PRICES	96.12	96.12
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	81.63
HIRED LABOR COSTS	12.06	12.06
CAPITAL COSTS	35.04	35.04
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	0.68	0.68
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	48.57	130.20
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	47.55	-34.08
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (CFAF/kg	147.57	
TRADABLES IN ECONOMIC PRICES @ BER	13.41	
VALUE ADDED IN ECONOMIC PRICES @ BER	134.15	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (CFAF/kg	196.19	
TRADABLES IN ECONOMIC PRICES @ BER	17.83	
VALUE ADDED IN ECONOMIC PRICES @ BER	178.35	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	81.63	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-9.33	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	31.16	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	103.46	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	74.89	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	143.39	143.39
TRADABLES, FINANCIAL PRICES	29.57	29.57
VALUE ADDED IN FINANCIAL PRICES	114.02	114.02
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	80.90
HIRED LABOR COSTS	23.41	23.41
CAPITAL COSTS	40.09	40.09
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	3.70	3.70
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	68.01	148.90
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	46.02	-34.88
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (CFAF/	142.01	
TRADABLES IN ECONOMIC PRICES @ BER	25.44	
VALUE ADDED IN ECONOMIC PRICES @ BER	116.57	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (CFAF/	188.20	
TRADABLES IN ECONOMIC PRICES @ BER	33.82	
VALUE ADDED IN ECONOMIC PRICES @ BER	154.98	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	80.90	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	4.83	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	37.45	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	123.17	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	31.81	

CROP: RICE, TRADITIONAL FLOODED
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	142.77	142.77
TRADABLES, FINANCIAL PRICES	31.07	31.07
VALUE ADDED IN FINANCIAL PRICES	111.70	111.70
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	80.90
HIRED LABOR COSTS	37.50	37.50
CAPITAL COSTS	52.76	52.76
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-25.38	-25.38
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	64.88	145.78
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	46.82	-34.08
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (CFAF/kg)	119.03	
TRADABLES IN ECONOMIC PRICES @ BER	35.34	
VALUE ADDED IN ECONOMIC PRICES @ BER	84.[illegible]	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ BER (c/kg)	159.31	
TRADABLES IN ECONOMIC PRICES @ BER	46.98	
VALUE ADDED IN ECONOMIC PRICES @ BER	112.32	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	80.90	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	33.27	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	51.06	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	165.22	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	-52.90	

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FILE NAME: 3ORCRCF.WK1 CROP: RICE, CONTROLLED FLOODING-MOPTI

CROP: RICE, CONTROLLED FLOODING-MOPTI
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table B2
(1995 world prices, official producer prices)

26-May-87 04:16 PM	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis									
...CFAF/kg	19.73	19.25	14.67	19.73	19.25	24.17	29.80	29.35	34.27	19.73	19.25	14.67	19.73	19.25	14.67
...CFAF/hectare	14912.93	14550.02	11086.79	14912.93	14550.02	18268.79	26207.09	25884.29	30222.84	14912.93	14550.02	11086.79	14912.93	14550.02	11086.79
...CFAF/total labor	222.58	217.16	165.47	222.58	217.16	272.67	392.34	386.33	451.09	222.58	217.16	165.47	222.58	217.16	165.47
...CFAF/total family labor	222.58	217.16	165.47	222.58	217.16	272.67	392.34	386.33	451.09	222.58	217.16	165.47	222.58	217.16	165.47
FINANCIAL PROFITABILITY, imputed value									
...CFAF/kg	-33.45	-33.45	-38.03	-33.45	-33.45	-28.53	-15.77	-15.77	-10.86	-33.45	-33.45	-38.03	-33.45	-33.45	-38.03
...CFAF/hectare	-25287.07	-25287.07	-28750.31	-25287.07	-25287.07	-21548.31	-13912.91	-13912.91	-9574.35	-25287.07	-25287.07	-28750.31	-25287.07	-25287.07	-28750.31
ECONOMIC PROFITABILITY									
...CFAF/kg	76.53	33.44	-51.27	66.57	23.48	-41.02	84.09	41.00	-24.30	127.55	76.00	-22.00	127.55	76.00	-22.00
...CFAF/hectare	57853.20	25277.23	-38762.21	50326.22	17750.25	-31616.32	74163.13	36159.72	-21434.62	96424.36	58063.89	-16631.68	96424.36	58063.89	-16631.68
...CFAF/total labor	2421.01	1091.72	883.95	2298.84	1769.55	1027.72	2018.50	2201.44	1335.97	3334.81	2668.47	1400.24	3334.81	2668.47	1400.24
...CFAF/total family labor	1468.63	947.94	-59.84	1346.46	825.77	83.93	1846.12	1250.60	393.13	2382.43	1724.69	464.46	2382.43	1724.69	464.46
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.58	0.85	1.14	0.62	0.91	1.14	0.62	0.91	1.14	0.58	0.85	1.14	0.58	0.85	1.14
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.43	0.64	0.86	0.47	0.68	0.86	0.47	0.68	0.86	0.33	0.48	0.65	0.33	0.48	0.65
NOMINAL PROTECTION COEFFICIENT, INPUTS	1.11	1.12	0.94	1.11	1.12	0.92	1.11	1.12	0.90	1.11	1.12	0.94	1.11	1.12	0.94
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.84	0.84	0.70	0.84	0.84	0.69	0.84	0.84	0.68	0.63	0.63	0.53	0.63	0.63	0.53
EFFECTIVE PROTECTION COEFFICIENT	0.43	0.74	1.31	0.48	0.81	1.29	0.50	0.82	1.29	0.43	0.74	1.31	0.43	0.74	1.31
NET EFFECTIVE PROTECTION COEFFICIENT	0.32	0.56	0.98	0.36	0.61	0.97	0.37	0.62	0.97	0.24	0.42	0.74	0.24	0.42	0.74
EFFECTIVE SUBSIDY COEFFICIENT	0.37	0.67	1.52	0.42	0.74	1.51	0.44	0.76	1.51	0.37	0.67	1.52	0.37	0.67	1.52
NET EFFECTIVE SUBSIDY COEFFICIENT	0.28	0.50	1.15	0.32	0.56	1.14	0.33	0.57	1.14	0.21	0.38	0.86	0.21	0.38	0.86
DOMESTIC RESOURCE COST	0.50	0.75	1.58	0.55	0.81	1.44	0.44	0.68	1.25	0.38	0.56	1.19	0.38	0.56	1.19
DISCOUNT RATE		0.100			0.100			0.100			0.100			0.100	
YIELD (kg/ha)		1200.000			1200.000			1400.000			1200.000			1200.000	
PROCESSING CONVERSION FACTOR		0.630			0.630			0.630			0.630			0.630	
WORLD FOB PRICE ($/ton)		212.000			212.000			212.000			212.000			212.000	
FARMGATE PRICE (CFAF/kg paddy)		70.000			70.000			70.000			70.000			70.000	
RURAL MARKET PRICE (CFAF/kg rice)		143.393			143.393			143.393			143.393			143.393	
WHOLESALE PRICE (CFAF/kg rice)		142.773			142.773			142.773			142.773			142.773	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			460.000			460.000	
DISTANCE PORT-TO-WHSALE POINT (km)															
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		620.000			240.000			240.000			620.000			620.000	
DISTANCE RURAL MARKET-TO-FARM (km)		35.000			35.000			35.000			35.000			35.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE															
LAND RENTAL COST		0.000			0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		13054.000			13054.000			13054.000			13054.000			13054.000	
NPK FERTILIZER CIF PRICE ($/ton)															
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)															
SULPH AMMONIA CIF PRICE (TENA) ($/ton)															
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)															
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000			0.000	

CROP: RICE, CONTROLLED FLOODING-KEPTI
FARM BUDGET
460...p101

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		10.00												
nursery														
seeding		1.00												
transplanting														
chem. application		0.00												
manure application														
weeding		20.00												
thinning														
pest control		15.00												
earthing up														
irrigation		0.00												
harvesting		15.00												
threshing		4.00												
uprooting														
transport		2.00												
Sub-total, family labor		67.00	600.00	40200.00	0.00	0.00	40200.00	0.00	0.00	40200.00	0.00	40200.00	0.00	0.00
Sub-total, hired labor		0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		67.00		40200.00	0.00	0.00	40200.00	0.00	0.00	40200.00	0.00	40200.00	0.00	0.00
SEED														
improved	kg	120.00	76.60	9192.00	0.00	0.00	9192.00	367.68	367.68	8455.64	2665.68	0.00	4871.76	919.20
unimproved	kg	0.00	70.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
ammonia phosphate	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urea	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks	kg			5404.80	0.00	0.00	5404.80	810.72	270.24	4323.84	2972.64	0.00	972.86	378.34
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	0.00		0.00	-2610.80	-10443.20	13054.00	652.70	2349.72	10051.58	1953.10	0.00	7701.86	391.62
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
sickles			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cutlasses			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart	1768.38	10.00	0.16	287.79	0.00	0.00	287.79	0.00	5.76	282.04	267.65	0.00	14.39	0.00
plow	6239.56	10.00	0.16	1015.46	0.00	0.00	1015.46	0.00	20.31	995.15	944.38	0.00	50.77	0.00
pump			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)	12000.00		[illegible].10	12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST														
O+M, irrigation	cost/ha			12600.00	0.00	0.00	12600.00	756.00	504.00	11340.00	5292.00	0.00	4914.00	1134.00
O+M, implements	cost/ha			480.48	0.00	0.00	480.48	57.66	38.44	384.38	192.19	0.00	172.97	19.22
threshing	cost/ha			10080.00	0.00	0.00	10080.00	0.00	604.80	9475.20	7358.40	0.00	2016.00	100.80
O+M, animal	cost/ha			2085.00	0.00	0.00	2085.00	0.00	41.70	2043.30	1834.80	0.00	104.25	104.25
WORKING CAPITAL														
3-month				1005.00	0.00	0.00	1005.00	0.00	0.00	1005.00	0.00	0.00	0.00	1005.00
6-month				729.84	0.00	-652.70	1382.54	0.00	0.00	1382.54	0.00	0.00	0.00	1382.54
TOTAL FARM COSTS (raw)	CFAF/ha			95580.37	0.00	0.00	109287.07	2719.76	4227.64	102339.67	23760.84	40200.00	20900.87	17469.97
Total Value of (By-product)	CFAF/ha	60.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			95580.37	0.00	0.00	109287.07	2719.76	4227.64	102339.67	23760.84	40200.00	20900.87	17469.97
YIELD	kg/ha	1200.00			0.00	0.00								
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			79.65	0.00	0.00	91.07	2.27	3.52	85.28	19.80	33.50	17.42	14.56
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			126.43	0.00	0.00	144.56	3.60	5.59	135.37	31.43	53.17	27.66	23.11
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton	35.00	25.00	875.00	0.00	0.00	875.00	87.50	43.75	743.75	385.00	0.00	131.25	227.50
Handling, storage, margins	CFAF/ton			10018.00	0.00	0.00	10018.00	300.54	1602.88	8114.58	1101.98	0.00	4207.56	2905.04
Losses (7% /ton prod cost)	% prod cost			4900.00	0.00	0.00	4900.00	0.00	0.00	4900.00	4900.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			15793.00	0.00	0.00	15793.00	388.04	1646.63	13758.33	6386.98	0.00	4338.81	3032.54
TOTAL COLLECTION COSTS (proc)	CFAF/ton			25068.25	0.00	0.00	25068.25	615.94	2613.70	21838.62	10138.06	0.00	6887.00	4813.56
	CFAF/kg			25.07	0.00	0.00	25.07	0.62	2.61	21.84	10.14	0.00	6.89	4.81
TOTAL PRODUCTION + COLLECTION	CFAF/kg			151.50	0.00	0.00	169.63	4.21	8.21	157.21	41.57	53.17	34.54	27.92
PROCESSING														
Milling	CFAF/ton			8825.00	0.00	0.00	8825.00	970.75	441.25	7413.00	2118.00	0.60	3883.00	1412.00
By-Products	CFAF/ton			-1611.00	0.00	0.00	-1611.00	-46.80	-78.06	-1486.14	-394.38	-480.04	-346.91	-264.82
TOTAL PROCESSING COSTS	CFAF/ton			7214.00	0.00	0.00	7214.00	923.95	363.19	5926.86	1723.62	-480.04	3536.09	1147.18
	CFAF/kg			7.21	0.00	0.00	7.21	0.92	0.36	5.93	1.72	-0.48	3.54	1.15
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			158.71	0.00	0.00	176.84	5.14	8.57	163.14	43.29	52.69	38.08	29.07
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28001.00	0.00	0.00	28001.00	840.03	4480.16	22680.81	3080.11	0.00	11760.42	7840.28
Transport	CFAF/ton	620.00	25.00	10919.00	-2473.74	-2107.26	15500.00	1550.00	775.00	13175.00	6820.00	0.00	2325.00	4030.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (raw)	CFAF/ton			38920.00	0.00	0.00	43501.00	2390.03	5255.16	35855.81	9900.11	0.00	14085.42	11870.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	0.00	0.00	43.50	2.39	5.26	35.86	9.90	0.00	14.09	11.87
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			197.63	0.00	0.00	220.34	7.53	13.82	198.99	53.19	52.69	52.17	40.94
PRODUCTION SUBSIDY	CFAF/kg			-39.54	-10.90	-29.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			158.09	-10.90	-29.64	220.34	7.53	13.82	198.99	53.19	52.69	52.17	40.94

CROP: RICE, CONTROLLED FLOODING-HOPTI
INTERNATIONAL REFERENCE PRICE
a185...p245

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	NON-TRADABLE INPUTS FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	212.00	212.00			212.00			212.00	212.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	-20%	1.00	-42.40	-42.40			-42.40			-42.40	-42.40			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			244.60			244.60			244.60	244.60			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			84631.60			84631.60			84631.60	84631.60			
CIF Price in Local Currency	CFAF/kg			84.63			84.63			84.63	84.63			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			4231.58			4231.58			4231.58	4231.58			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			113283.18	0.00	0.00	113283.18	0.00	0.00	113283.18	113283.18	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			11328.32	11328.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENACI Tax	CFAF/ton			3680.00	3680.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			19402.51	19402.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-9705.24	-9705.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			13831.88	13831.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			5664.16	5664.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	620.00	25.00	15500.00	0.00	0.00	15500.00	1550.00	310.00	13640.00	7905.00	0.00	5115.00	620.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			28001.00	0.00	0.00	28001.00	2800.10	560.02	24640.86	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	35.00	25.00	875.00	0.00	0.00	875.00	87.50	17.50	770.00	446.25	0.00	288.75	35.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10010.00	0.00	0.00	10010.00	1001.00	200.36	8815.84	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				72711.62	49291.62	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4733.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				72.71	49.29	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				116212.62	49291.62	0.00	57521.00	5633.10	1126.62	50761.28	28728.81	0.00	18589.23	3443.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				116.21	49.29	0.00	57.52	5.63	1.13	50.76	28.73	0.00	18.59	3.44
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				127105.62	49291.62	0.00	68414.00	6722.40	1344.48	60347.12	34284.24	0.00	22183.92	3878.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				127.11	49.29	0.00	68.41	6.72	1.34	60.35	34.28	0.00	22.18	3.88
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				185.99	49.29	0.00	127.30	1.28	0.26	125.76	119.83	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				229.50	49.29	0.00	170.80	5.63	1.13	164.04	142.01	0.00	18.59	3.44
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				240.39	49.29	0.00	181.70	6.72	1.34	173.63	147.57	0.00	22.18	3.88

CROP: RICE, CONTROLLED FLOODING-HRPTI
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a249...a314,t314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	111.11	111.11
TRADABLES, FINANCIAL PRICES	35.03	35.03
VALUE ADDED IN FINANCIAL PRICES	76.08	76.08
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	53.17
HIRED LABOR COSTS	27.66	27.66
CAPITAL COSTS	23.11	23.11
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	5.59	5.59
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	56.36	169.53
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	19.73	-33.45
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	147.57	
TRADABLES IN ECONOMIC PRICES 0 DER	31.43	
VALUE ADDED IN ECONOMIC PRICES 0 DER	116.14	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	196.19	
TRADABLES IN ECONOMIC PRICES 0 DER	41.79	
VALUE ADDED IN ECONOMIC PRICES 0 DER	154.40	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	53.17	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	5.47	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	19.23	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	77.08	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	76.53	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	143.39	143.39
TRADABLES, FINANCIAL PRICES	48.43	48.43
VALUE ADDED IN FINANCIAL PRICES	94.96	94.96
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	52.69
HIRED LABOR COSTS	30.08	30.08
CAPITAL COSTS	29.07	29.07
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	8.57	8.57
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	75.72	120.41
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	19.25	-33.45
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	142.01	
TRADABLES IN ECONOMIC PRICES 0 DER	43.29	
VALUE ADDED IN ECONOMIC PRICES 0 DER	98.72	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	188.00	
TRADABLES IN ECONOMIC PRICES 0 DER	57.55	
VALUE ADDED IN ECONOMIC PRICES 0 DER	131.25	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	52.69	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	19.49	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	25.63	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	97.81	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	33.44	

CROP: RICE, CONTROLLED FLOODING-HRPTI
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	142.77	142.77
TRADABLES, FINANCIAL PRICES	49.82	49.82
VALUE ADDED IN FINANCIAL PRICES	92.95	92.95
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	52.69
HIRED LABOR COSTS	52.17	52.17
CAPITAL COSTS	40.94	40.94
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-14.82	-14.82
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	78.29	130.98
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	14.67	-38.03
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	119.83	
TRADABLES IN ECONOMIC PRICES 0 DER	53.19	
VALUE ADDED IN ECONOMIC PRICES 0 DER	66.64	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (c/kg)	159.31	
TRADABLES IN ECONOMIC PRICES 0 DER	70.72	
VALUE ADDED IN ECONOMIC PRICES 0 DER	88.59	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	52.69	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	47.93	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	39.24	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	139.86	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	-51.27	

FILE NAME: 5RCRB1.WK1 CROP: RICE, GRAVITY IRRIGATION

CROP: RICE, GRAVITY IRRIGATION
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table 03
(1995 world prices, official producer prices)

26-May-87 05:05 PM	Option 1 ...SENSITIVITY ANALYSIS... FARM LEVEL	RUR MKT	TOTAL	Option 2 ...SENSITIVITY ANALYSIS... FARM LEVEL	RUR MKT	TOTAL	Option 3 ...SENSITIVITY ANALYSIS... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis									
...CFAF/kg	37.16	36.77	36.77	42.08	41.70	41.70	37.16	36.77	36.77
...CFAF/hectare	58528.97	57915.32	57915.32	71583.13	70935.08	70935.08	58528.97	57915.32	57915.32
...CFAF/total labor	616.09	609.63	609.63	753.51	746.69	746.69	616.09	609.63	609.63
...CFAF/total family labor	616.09	609.63	609.63	753.51	746.69	746.69	616.09	609.63	609.63
FINANCIAL PROFITABILITY, imputed value									
...CFAF/kg	0.97	0.97	0.97	0.57	0.57	0.57	0.97	0.97	0.97
...CFAF/hectare	1528.97	1528.97	1528.97	14583.13	14583.13	14583.13	1528.97	1528.97	1528.97
ECONOMIC PROFITABILITY									
...CFAF/kg	95.83	51.89	-13.41	129.84	85.90	20.60	103.99	59.96	-5.34
...CFAF/hectare	150937.91	81731.38	-21115.64	204492.95	135284.42	32439.40	176741.59	101997.08	-9077.71
...CFAF/total labor	3626.68	2030.82	1740.85	4521.50	3725.64	2635.67	4020.51	3161.16	1983.99
...CFAF/total family labor	2674.30	1088.70	798.72	3569.12	2783.52	1693.54	3668.13	2219.60	1042.43
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.62	0.92	1.15	0.53	0.77	0.95	0.62	0.92	1.15
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.47	0.69	0.87	0.40	0.58	0.71	0.47	0.69	0.87
NOMINAL PROTECTION COEFFICIENT, INPUTS	1.19	1.17	0.99	1.19	1.17	0.99	1.19	1.17	0.98
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.90	0.88	0.74	0.90	0.88	0.74	0.90	0.88	0.74
EFFECTIVE PROTECTION COEFFICIENT	0.46	0.80	1.26	0.38	0.63	0.93	0.48	0.81	1.26
NET EFFECTIVE PROTECTION COEFFICIENT	0.35	0.60	0.95	0.28	0.47	0.70	0.36	0.61	0.95
EFFECTIVE SUBSIDY COEFFICIENT	0.47	0.81	1.53	0.38	0.64	1.12	0.48	0.82	1.52
NET EFFECTIVE SUBSIDY COEFFICIENT	0.35	0.61	1.15	0.29	0.48	0.85	0.36	0.61	1.14
DOMESTIC RESOURCE COST	0.36	0.59	1.14	0.29	0.46	0.84	0.31	0.53	1.05
DISCOUNT RATE		9.100			9.100			9.100	
YIELD (kg/ha)		2500.000			2500.000			2700.000	
PROCESSING CONVERSION FACTOR		0.630			0.630			0.630	
WORLD FOB PRICE ($/ton)		212.000			300.000			212.000	
FARMGATE PRICE (CFAF/kg paddy)		70.000			70.000			70.000	
RURAL MARKET PRICE (CFAF/kg rice)		144.385			144.385			144.385	
WHOLESALE PRICE (CFAF/kg rice)		143.765			143.765			143.765	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000	
DISTANCE PORT-TO-WHSALE POINT (km)									612.000
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		240.000			240.000			240.000	
DISTANCE RURAL MARKET-TO-FARM (km)		30.000			30.000			30.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000	
CHILD LABOR WAGE RATE									
LAND RENTAL COST		0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		16317.500			16317.500			16317.500	
NPK FERTILIZER CIF PRICE ($/ton)									
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)									
SULPH AMMONIA CIF PRICE (TEMA) ($/ton)									
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)									
FERTILIZER IMPORT DUTY		0.000			0.000			0.000	

CROP: RICE, GRAVITY IRRIGATION
FARM BUDGET
a40...p181

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		17.00												
nursery														
seeding		1.00												
transplanting														
chem. application		2.00												
manure application														
weeding		20.00												
thinning														
pest control		15.00												
earthing up														
irrigation		12.00												
harvesting		21.00												
threshing		4.00												
uprooting														
transport		3.00												
Sub-total, family labor		95.00	600.00	57000.00	0.00	0.00	57000.00	0.00	0.00	57000.00	0.00	57000.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		95.00		57000.00	0.00	0.00	57000.00	0.00	0.00	57000.00	0.00	57000.00	0.00	0.00
SEED														
improved	kg	120.00	78.00	9360.00	0.00	0.00	9360.00	374.40	374.40	8611.20	2714.40	0.00	4960.80	936.00
unimproved	kg							0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
ammonia phosphate	kg	75.00	195.00	14625.00	1575.77	1180.74	11869.50	1047.44	353.81	10437.24	5493.04	0.00	4151.17	593.03
Urea	kg	100.00	165.00	16500.00	2781.60	2098.40	11620.00	1045.80	348.60	10225.68	5377.60	0.00	4067.00	581.00
sacks	kg			11260.00	0.00	0.00	11260.00	1689.00	563.00	9008.00	6193.00	0.00	2026.00	788.20
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	1.00		0.00	-3263.50	-13054.00	16317.50	815.88	2937.15	12564.48	2447.63	0.00	9627.32	489.53
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
sickles			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cutlasses			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
barrow	2500.00	10.00	0.16	356.24	-47.08	-3.54	406.86	0.00	8.14	398.73	378.38	0.00	20.34	0.00
cart	1696.25	10.00	0.16	241.71	0.00	-34.35	276.06	0.00	5.52	270.54	256.73	0.00	13.80	0.00
plow	8734.22	10.00	0.16	1244.03	-164.52	-12.38	1421.78	0.00	28.44	1393.34	1322.26	0.00	71.09	0.00
pump			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)	12000.00		0.10	12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST														
O+M, irrigation	cost/ha			28900.00	0.00	0.00	28000.00	1680.00	1120.00	25200.00	11760.00	0.00	10920.00	2520.00
O+M, implements	cost/ha			625.95	0.00	0.00	625.95	75.11	50.08	500.76	250.38	0.00	225.34	25.04
threshing	cost/ha			16100.00	1533.00	567.00	14000.00	0.00	840.00	13160.00	10220.00	0.00	2800.00	140.00
O+M, animal	cost/ha			1645.00	0.00	0.00	1645.00	0.00	32.90	1612.10	1447.60	0.00	82.25	82.25
WORKING CAPITAL														
3-month				1425.00	0.00	0.00	1425.00	0.00	0.00	1425.00	0.00	0.00	0.00	1425.00
6-month				2587.25	0.00	-433.65	3020.90	0.00	0.00	3020.90	0.00	0.00	0.00	3020.90
TOTAL FARM COSTS (raw)	CFAF/ha			173471.03	2415.27	-9683.79	180739.55	6822.63	6489.03	167227.88	48536.02	57000.00	39055.93	22635.94
Total Value of (By-product)	CFAF/ha	125.00		0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			173471.03	2415.27	-9683.79	180739.55	6822.63	6489.03	167227.88	48536.02	57000.00	39055.93	22635.94
YIELD	kg/ha	2500.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			69.39	0.97	-3.87	72.30	2.73	2.60	66.89	19.41	22.80	15.62	9.05
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			110.14	1.53	-6.15	114.76	4.33	4.25	106.15	30.82	36.19	24.80	14.37
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	30.00	50.00	1500.00	0.00	0.00	1500.00	150.00	75.00	1275.00	660.00	0.00	225.00	390.00
Handling, storage, cargiss	CFAF/ton			10018.00	0.00	0.00	10018.00	300.54	1602.88	8114.58	1101.98	0.00	4207.56	2805.04
Losses (7% /ton prod cost)	% prod cost			4900.00	0.00	0.00	4900.00	0.00	0.00	4900.00	4900.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			16418.00	0.00	0.00	16418.00	450.54	1677.88	14289.58	6661.98	0.00	4432.56	3195.04
TOTAL COLLECTION COSTS (proc)	CFAF/ton			26060.32	0.00	0.00	26060.32	715.14	2663.30	22681.87	10574.57	0.00	7035.81	5071.49
	CFAF/kg			26.06	0.00	0.00	26.06	0.72	2.66	22.68	10.57	0.00	7.04	5.07
TOTAL PRODUCTION + COLLECTION	CFAF/kg			136.20	1.53	-6.15	140.82	5.05	6.91	128.86	41.39	36.19	31.83	19.44
PROCESSING														
Milling	CFAF/ton			8825.00	0.00	0.00	8825.00	970.75	441.25	7413.00	2118.00	0.00	3883.00	1412.00
By-Products	CFAF/ton			-1611.00	0.00	0.00	-1611.00	-64.79	-79.15	-1467.07	-468.41	-389.62	-384.51	-224.53
TOTAL PROCESSING COSTS	CFAF/ton			7214.00	0.00	0.00	7214.00	905.96	362.10	5945.93	1649.59	-389.62	3498.49	1187.47
	CFAF/kg			7.21	0.00	0.00	7.21	0.91	0.36	5.95	1.65	-0.39	3.50	1.19
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			143.41	1.53	-6.15	148.03	5.95	7.27	136.80	43.04	35.80	35.33	20.63
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28001.00	0.00	0.00	28001.00	840.03	4480.16	22680.81	3080.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	240.00	25.00	10919.00	2656.26	2262.74	6000.00	600.00	300.00	5100.00	2640.00	0.00	900.00	1560.00
losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (proc)	CFAF/ton			38920.00	2656.26	2262.74	34001.00	1440.03	4780.16	27780.81	5720.11	0.00	12660.42	9400.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	2.66	2.26	34.00	1.44	4.78	27.78	5.72	0.00	12.66	9.40
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			182.33	4.19	-3.89	182.03	7.39	12.05	162.59	48.76	35.80	47.99	30.03
PRODUCTION SUBSIDY	CFAF/kg			-39.54	-12.20	-27.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			142.79	-8.01	-31.23	182.03	7.39	12.05	162.59	48.76	35.80	47.99	30.03

CROP: RICE, GRAVITY IRRIGATION INTERNATIONAL REFERENCE PRICE a185...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	212.00	212.00			212.00			212.00	212.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	-20%	1.00	-42.40	-42.40			-42.40			-42.40	-42.40			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			244.60			244.60			244.60	244.60			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			84631.60			84631.60			84631.60	84631.60			
CIF Price in Local Currency	CFAF/kg			84.63			84.63			84.63	84.63			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			4231.58			4231.58			4231.58	4231.58			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			113283.18	0.00	0.00	113283.18	0.00	0.00	113283.18	113283.18	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			11320.32	11320.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EMACI Tax	CFAF/ton			3480.00	3480.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			19402.51	19402.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-9705.24	-9705.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			13831.88	13831.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			5664.16	5664.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	240.00	25.00	6000.00	0.00	0.00	6000.00	600.00	120.00	5280.00	3060.00	0.00	1980.00	240.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			29001.60	0.00	0.00	29001.60	2800.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	30.00	25.00	750.00	0.00	0.00	750.00	75.00	15.00	660.00	382.50	0.00	247.50	30.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10018.00	0.00	0.00	10018.00	1001.80	200.36	8815.84	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				72711.62	49291.62	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				72.71	49.29	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				106712.62	49291.62	0.00	48021.00	4683.10	936.62	42401.28	23883.81	0.00	15454.23	3063.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				106.71	49.29	0.00	48.02	4.68	0.94	42.40	23.88	0.00	15.45	3.06
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				117480.62	49291.62	0.00	58709.00	5759.90	1151.98	51877.12	29375.49	0.00	19007.67	3493.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				117.48	49.29	0.00	58.79	5.76	1.15	51.88	29.38	0.00	19.01	3.49
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				185.99	49.29	0.00	127.30	1.28	0.26	125.76	119.83	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				220.00	49.29	0.00	161.30	4.68	0.94	155.68	137.17	0.00	15.45	3.06
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				230.76	49.29	0.00	172.07	5.76	1.15	165.16	142.66	0.00	19.01	3.49

CROP: RICE, GRAVITY IRRIGATION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a299...a314,t314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	111.11	111.11
TRADABLES, FINANCIAL PRICES	36.68	36.68
VALUE ADDED IN FINANCIAL PRICES	74.43	74.43
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	36.19
HIRED LABOR COSTS	24.00	24.00
CAPITAL COSTS	14.37	14.37
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-1.90	-1.90
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	37.27	73.66
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	37.16	0.77
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	147.66	
TRADABLES IN ECONOMIC PRICES 0 DER	36.82	
VALUE ADDED IN ECONOMIC PRICES 0 DER	111.04	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/kg	189.66	
TRADABLES IN ECONOMIC PRICES 0 SER	40.97	
VALUE ADDED IN ECONOMIC PRICES 0 SER	148.69	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	36.19	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	5.79	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	10.08	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	52.06	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	95.03	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	144.39	144.39
TRADABLES, FINANCIAL PRICES	50.53	50.53
VALUE ADDED IN FINANCIAL PRICES	93.86	93.86
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	35.00
HIRED LABOR COSTS	35.33	35.33
CAPITAL COSTS	20.63	20.63
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	1.12	1.12
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	57.09	92.09
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	36.77	0.97
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	137.17	
TRADABLES IN ECONOMIC PRICES 0 DER	43.04	
VALUE ADDED IN ECONOMIC PRICES 0 DER	94.13	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/	182.36	
TRADABLES IN ECONOMIC PRICES 0 SER	57.22	
VALUE ADDED IN ECONOMIC PRICES 0 SER	125.14	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	35.00	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	19.30	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	17.57	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	73.25	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	51.09	

CROP: RICE, GRAVITY IRRIGATION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	143.77	143.77
TRADABLES, FINANCIAL PRICES	48.15	48.15
VALUE ADDED IN FINANCIAL PRICES	95.62	95.62
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	35.00
HIRED LABOR COSTS	47.99	47.99
CAPITAL COSTS	30.03	30.03
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-19.18	-19.19
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	58.85	94.65
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	36.77	0.97
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	119.83	
TRADABLES IN ECONOMIC PRICES 0 DER	48.76	
VALUE ADDED IN ECONOMIC PRICES 0 DER	71.07	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (c/kg)	159.31	
TRADABLES IN ECONOMIC PRICES 0 SER	64.83	
VALUE ADDED IN ECONOMIC PRICES 0 SER	94.48	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	35.00	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	43.76	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	20.33	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	107.09	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	-13.41	

FILE NAME: 7DRCHSIN.WK1 CROP: MILLET/SORGHUM-IMPROVED-MANUAL

CROP: MILLET/SORGHUM-IMPROVED-MANUAL
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table B4
(1995 world prices, official producer prices)

26-May-87 05:43 PM	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	49.77	49.77	49.77	49.77	49.77	49.77	51.00	51.00	51.00	49.77	49.77	49.77
...CFAF/hectare	29863.95	29863.95	29863.95	29863.95	29863.95	29863.95	40863.95	40863.95	40863.95	29863.95	29863.95	29863.95
...CFAF/total labor	489.57	489.57	489.57	489.57	489.57	489.57	669.90	669.90	669.90	489.57	489.57	489.57
...CFAF/total family labor	489.57	489.57	489.57	489.57	489.57	489.57	669.90	669.90	669.90	489.57	489.57	489.57
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-11.84	-11.84	-11.84	-11.84	-11.84	-11.84	4.87	4.87	4.87	-11.84	-11.84	-11.84
...CFAF/hectare	-7105.34	-7105.34	-7105.34	-7105.34	-7105.34	-7105.34	3894.66	3894.66	3894.66	-7105.34	-7105.34	-7105.34
ECONOMIC PROFITABILITY												
...CFAF/kg	90.92	70.70	-1.75	110.24	90.02	17.57	112.67	92.45	20.00	139.83	116.05	32.01
...CFAF/hectare	54554.19	42421.27	-1048.06	66146.19	54013.27	10543.14	90135.94	73958.73	15990.55	83900.25	69632.77	19207.81
...CFAF/total labor	1454.89	1321.40	860.19	1644.92	1511.43	1050.22	1971.55	1793.56	1178.61	1935.97	1767.49	1192.26
...CFAF/total family labor	848.83	715.34	254.13	1038.86	905.37	444.17	1365.49	1187.50	572.56	1529.91	1161.43	586.21
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.27	0.40	1.01	0.24	0.36	0.87	0.27	0.40	1.01	0.27	0.40	1.01
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.20	0.30	0.76	0.15	0.27	0.66	0.20	0.30	0.76	0.15	0.23	0.57
NOMINAL PROTECTION COEFFICIENT, INPUTS	0.59	0.79	1.03	0.59	0.79	1.03	0.59	0.83	1.07	0.59	0.79	1.03
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.44	0.60	0.78	0.44	0.60	0.78	0.44	0.63	0.80	0.33	0.45	0.58
EFFECTIVE PROTECTION COEFFICIENT	0.26	0.38	1.01	0.23	0.33	0.85	0.26	0.38	1.00	0.26	0.38	1.01
NET EFFECTIVE PROTECTION COEFFICIENT	0.19	0.28	0.76	0.17	0.25	0.68	0.19	0.29	0.75	0.14	0.21	0.57
EFFECTIVE SUBSIDY COEFFICIENT	0.40	0.53	1.19	0.35	0.47	1.09	0.36	0.49	1.13	0.40	0.53	1.19
NET EFFECTIVE SUBSIDY COEFFICIENT	0.30	0.40	0.90	0.26	0.35	0.76	0.27	0.37	0.85	0.22	0.30	0.68
DOMESTIC RESOURCE COST	0.39	0.48	1.02	0.34	0.43	0.86	0.25	0.33	0.81	0.29	0.36	0.76
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		600.000			600.000			800.000			600.000	
PROCESSING CONVERSION FACTOR		1.000			1.000			1.000			1.000	
WORLD FOB PRICE ($/ton)		90.000			130.000			90.000			90.000	
FARMGATE PRICE (CFAF/kg raw)		55.000			55.000			55.000			55.000	
RURAL MARKET PRICE (CFAF/kg proc)		64.169			64.169			64.169			64.169	
WHOLESALE PRICE (CFAF/kg)		97.813			97.813			97.813			97.813	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE PORT-TO-WHSALE POINT (km)												
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		380.000			380.000			380.000			380.000	
DISTANCE RURAL MARKET-TO-FARM (km)		50.000			50.000			50.000			50.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TENA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: MILLET/SORGHUM-IMPROVED-MAKUA
FARM BUDGET
a60...p181

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT TRAD.	TAXES/SUBSIDIES DIRECT NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT TRAD.	TAXES/SUBSIDIES INDIRECT NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	NON-TRADABLE INPUTS FAMILY LABOR	NON-TRADABLE INPUTS HIRED LABOR	NON-TRADABLE INPUTS CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		12.00												
nursery														
seeding		2.00												
transplanting														
chem. application														
manure application														
weeding		22.00												
thinning														
pest control														
earthing up														
irrigation														
harvesting		25.00												
threshing														
uprooting														
transport														
Sub-total, family labor		61.00	600.00	36600.00	0.00	0.00	36600.00	0.00	0.00	36600.00	0.00	36600.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		61.00		36600.00	0.00	0.00	36600.00	0.00	0.00	36600.00	0.00	36600.00	0.00	0.00
SEED														
improved	kg													
unimproved	kg	10.00	55.00	550.00	0.00	0.00	550.00	8.69	28.69	512.62	26.65	349.29	94.15	22.54
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
NPK	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urea	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks	kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams	1.00	25.00	25.00	0.00	0.00	25.00	4.00	0.50	20.50	17.50	0.00	1.75	1.25
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	1.00		0.00	-3130.60	-12522.40	15653.00	782.65	2817.54	12052.81	2347.95	0.00	9235.27	469.59
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar		10.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seeder		10.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart		10.00	0.16	241.71	0.00	241.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
plow				1244.88	1157.74	87.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer		5.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OPERATING COST														
O+M, irrigation	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
threshing	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WORKING CAPITAL														
3-month				915.00	0.00	0.00	915.00	0.00	0.00	915.00	0.00	0.00	0.00	915.00
6-month				20.75	0.00	-782.65	811.40	0.00	0.00	811.40	0.00	0.00	0.00	811.40
TOTAL FARM COSTS (raw)	CFAF/ha			40105.34	-1972.86	-12976.20	55054.40	870.34	2071.73	51312.33	2667.10	36969.29	9421.17	2254.70
Total Value of (By-product)	CFAF/ha	30.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			40105.34	-1972.86	-12976.20	55054.40	870.34	2071.73	51312.33	2667.10	36969.29	9421.17	2254.70
YIELD	kg/ha	600.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			66.84	-3.29	-21.63	91.76	1.45	4.79	85.52	4.45	61.62	15.70	3.76
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			66.84	-3.29	-21.63	91.76	1.45	4.79	85.52	4.45	61.62	15.70	3.76
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	50.00	50.00	2500.00	0.00	0.00	2500.00	250.00	125.00	2125.00	1100.00	0.00	375.00	650.00
Handling, storage, margins	CFAF/ton			6087.00	0.00	0.00	6087.00	182.61	973.92	4930.47	649.57	0.00	2556.54	1704.36
Losses (7% /ton prod cost)	% prod cost			582.00	0.00	0.00	582.00	0.00	0.00	582.00	582.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2351.57	0.00	2931.54	2354.36
TOTAL COLLECTION COSTS (proc)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2351.57	0.00	2931.54	2354.36
	CFAF/kg			9.17	0.00	0.00	9.17	0.43	1.10	7.64	2.35	0.00	2.93	2.35
TOTAL PRODUCTION + COLLECTION	CFAF/kg			76.01	-3.29	-21.63	100.93	1.88	5.89	93.16	6.80	61.62	18.63	6.11
PROCESSING														
Milling	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
By-Products	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PROCESSING COSTS	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CFAF/kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			76.01	-3.29	-21.63	100.93	1.88	5.89	93.16	6.80	61.62	18.63	6.11
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28001.00	0.00	0.00	28001.00	840.03	4189.1[illegible]	22620.81	3080.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	300.00	25.00	10919.00	766.26	652.74	9500.00	950.00	475.00	8075.[illegible]	4180.00	0.00	1425.00	2070.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (proc)	CFAF/ton			38920.00	766.26	652.74	37501.00	1790.03	4955.16	30755.81	7260.11	0.00	13185.42	10310.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	0.77	0.65	37.50	1.79	4.96	30.76	7.26	0.00	13.19	10.31
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			114.93	-2.52	-20.97	138.43	3.67	10.84	123.91	14.06	61.62	31.82	16.42
PRODUCTION SUBSIDY	CFAF/kg			-5.28	-0.68	-4.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			109.66	-3.20	-25.57	138.43	3.67	10.84	123.91	14.06	61.62	31.82	16.42

CROP: MILLET/SORGHUM-IMPROVED-MAMBA INTERNATIONAL REFERENCE PRICE a185...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	90.00	90.00			90.00			90.00	90.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	%	0.00	0.00	0.00			0.00			0.00	0.00			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			165.00			165.00			165.00	165.00			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			57090.00			57090.00			57090.00	57090.00			
CIF Price in Local Currency	CFAF/kg			57.09			57.09			57.09	57.09			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			2854.50			2854.50			2854.50	2854.50			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			84364.50	0.00	0.00	84364.50	0.00	0.00	84364.50	84364.50	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			8436.45	8436.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ENACI Tax	CFAF/ton			3680.00	3680.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			15066.73	15066.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-7536.46	-7536.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			10300.91	10300.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			4218.23	4218.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	380.00	25.00	9500.00	0.00	0.00	9500.00	950.00	190.00	8360.00	4845.00	0.00	3135.00	380.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			28001.00	0.00	0.00	28001.00	2800.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	50.00	25.00	1250.00	0.00	0.00	1250.00	125.00	25.00	1100.00	637.50	0.00	412.50	50.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10018.00	0.00	0.00	10018.00	1001.80	200.36	8815.84	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				62675.85	39255.85	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				62.68	39.26	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				100176.85	39255.85	0.00	51521.00	5033.10	1006.62	45481.28	25668.81	0.00	16609.23	3203.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				100.18	39.26	0.00	51.52	5.03	1.01	45.48	25.67	0.00	16.61	3.20
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				111444.85	39255.85	0.00	62789.00	6159.90	1231.98	55397.12	31415.49	0.00	20327.67	3653.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				111.44	39.26	0.00	62.79	6.16	1.23	55.40	31.42	0.00	20.33	3.65
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				147.04	39.26	0.00	98.38	1.28	0.26	96.84	90.91	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				184.54	39.26	0.00	135.89	5.03	1.01	129.85	110.03	0.00	16.61	3.20
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				195.81	39.26	0.00	147.15	6.16	1.23	139.76	115.78	0.00	20.33	3.65

CROP: MILLET/SORGHUM-IMPROVED-RURAL
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a299...a314,t314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	55.00	55.00
TRADABLES, FINANCIAL PRICES	2.61	2.61
VALUE ADDED IN FINANCIAL PRICES	52.39	52.39
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	61.62
HIRED LABOR COSTS	15.70	15.70
CAPITAL COSTS	3.76	3.76
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-16.04	-16.04
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	2.62	64.23
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	49.77	-11.84
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/kg	115.70	
TRADABLES IN ECONOMIC PRICES @ OER	4.45	
VALUE ADDED IN ECONOMIC PRICES @ OER	111.33	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (CFAF/kg	153.93	
TRADABLES IN ECONOMIC PRICES @ SER	5.91	
VALUE ADDED IN ECONOMIC PRICES @ SER	148.02	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	61.62	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-4.63	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	0.38	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	57.09	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	90.92	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	64.17	64.17
TRADABLES, FINANCIAL PRICES	5.39	5.39
VALUE ADDED IN FINANCIAL PRICES	58.78	58.78
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	61.62
HIRED LABOR COSTS	18.63	18.63
CAPITAL COSTS	6.11	6.11
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-15.74	-15.74
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	9.00	70.62
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	49.77	-11.84
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/	110.63	
TRADABLES IN ECONOMIC PRICES @ OER	6.80	
VALUE ADDED IN ECONOMIC PRICES @ OER	103.24	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (CFAF/	146.29	
TRADABLES IN ECONOMIC PRICES @ SER	9.04	
VALUE ADDED IN ECONOMIC PRICES @ SER	137.25	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	61.62	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	2.02	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	2.91	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	66.55	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	70.70	

CROP: MILLET/SORGHUM-IMPROVED-RURAL
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	97.81	97.81
TRADABLES, FINANCIAL PRICES	14.53	14.53
VALUE ADDED IN FINANCIAL PRICES	83.28	83.28
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	61.62
HIRED LABOR COSTS	31.02	31.02
CAPITAL COSTS	16.42	16.42
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-14.73	-14.73
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	33.51	95.12
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	49.77	-11.84
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/kg)	90.91	
TRADABLES IN ECONOMIC PRICES @ OER	14.06	
VALUE ADDED IN ECONOMIC PRICES @ OER	76.85	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (c/kg)	120.86	
TRADABLES IN ECONOMIC PRICES @ SER	18.69	
VALUE ADDED IN ECONOMIC PRICES @ SER	102.17	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	61.62	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	27.39	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	10.72	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	103.92	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	-1.75	

FILE NAME: BRZCHSIA.WK1 CROP: MILLET/SORGHUM, IMPROVED - ANIMAL TRACTION

Table B5
(1995 world prices, official producer prices)

CROP: MILLET/SORGHUM, IMPROVED - ANIMAL TRACTION
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

26-May-97 06:05 PM	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	32.06	32.06	32.06	32.06	32.06	32.06	36.64	36.64	36.64	32.06	32.06	32.06
...CFAF/hectare	25644.70	25644.70	25644.70	25644.70	25644.70	25644.70	36644.70	36644.70	36644.70	25644.70	25644.70	25644.70
...CFAF/total labor	512.89	512.89	512.89	512.89	512.89	512.89	732.89	732.89	732.89	512.89	512.89	512.89
...CFAF/total family labor	512.89	512.89	512.89	512.89	512.89	512.89	732.89	732.89	732.89	512.89	512.89	512.89
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-5.76	-5.76	-5.76	-5.76	-5.76	-5.76	6.39	6.39	6.39	-5.76	-5.76	-5.76
...CFAF/hectare	-4609.81	-4609.81	-4609.81	-4609.81	-4609.81	-4609.81	6390.19	6390.19	6390.19	-4609.81	-4609.81	-4609.81
ECONOMIC PROFITABILITY												
...CFAF/kg	99.10	78.80	6.43	118.42	98.20	25.75	114.86	94.64	22.19	146.60	122.02	38.78
...CFAF/hectare	79283.01	63105.79	5145.62	94739.01	78561.79	20601.62	114864.77	94643.25	22193.03	117283.22	98259.92	31026.64
...CFAF/total labor	2049.25	1852.11	1101.88	2378.37	2161.23	1411.00	2699.58	2428.15	1499.36	2829.26	2555.19	1619.50
...CFAF/total family labor	1464.16	1247.02	496.79	1773.28	1556.14	805.91	2094.49	1823.05	885.27	2224.17	1950.10	1014.41
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.27	0.40	1.01	0.24	0.36	0.87	0.27	0.40	1.01	0.27	0.40	1.01
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.20	0.30	0.76	0.18	0.27	0.66	0.20	0.30	0.76	0.15	0.23	0.57
NOMINAL PROTECTION COEFFICIENT, INPUTS	0.66	0.79	0.97	0.66	0.79	0.97	0.66	0.81	1.00	0.66	0.79	0.97
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.50	0.59	0.73	0.50	0.59	0.73	0.50	0.61	0.75	0.37	0.44	0.55
EFFECTIVE PROTECTION COEFFICIENT	0.24	0.36	1.02	0.21	0.32	0.85	0.25	0.37	1.01	0.24	0.36	1.02
NET EFFECTIVE PROTECTION COEFFICIENT	0.18	0.27	0.77	0.16	0.24	0.64	0.18	0.28	0.76	0.14	0.21	0.58
EFFECTIVE SUBSIDY COEFFICIENT	0.35	0.48	1.16	0.31	0.42	0.97	0.33	0.46	1.12	0.35	0.48	1.16
NET EFFECTIVE SUBSIDY COEFFICIENT	0.26	0.36	0.87	0.23	0.32	0.73	0.25	0.35	0.84	0.20	0.27	0.66
DOMESTIC RESOURCE COST	0.31	0.41	0.93	0.27	0.36	0.78	0.21	0.30	0.70	0.23	0.31	0.70
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		800.000			800.000			1000.000			800.000	
PROCESSING CONVERSION FACTOR		1.000			1.000			1.000			1.000	
WORLD FOB PRICE ($/ton)		90.000			130.000			90.000			90.000	
FARMGATE PRICE (CFAF/kg raw)		55.000			55.000			55.000			55.000	
RURAL MARKET PRICE (CFAF/kg proc)		64.169			64.169			64.169			64.169	
WHOLESALE PRICE (CFAF/kg)		97.813			97.813			97.813			97.813	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE PORT-TO-WHSALE POINT (km)												
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		380.000			380.000			380.000			380.000	
DISTANCE RURAL MARKET-TO-FARM (km)		50.000			50.000			50.000			50.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TEMA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: MILLET/SORGHUM, IMPROVED - AN
FARM BUDGET
a60...p101

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		6.00												
nursery														
seeding		2.00												
transplanting														
chem. application														
manure application														
weeding		10.00												
ridging		5.00												
pest control														
earthing up														
irrigation														
harvesting		10.00												
threshing		15.00												
uprooting														
transport		2.00												
Sub-total, family labor		50.00	600.00	30000.00	0.00	0.00	30000.00	0.00	0.00	30000.00	0.00	30000.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		50.00		30000.00	0.00	0.00	30000.00	0.00	0.00	30000.00	0.00	30000.00	0.00	0.00
SEED														
improved	kg													
unimproved	kg	10.00	55.00	550.00	0.00	0.00	550.00	10.71	25.92	513.37	51.51	254.51	85.70	121.65
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
NPK	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Urea	kg	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks	kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams	1.00	25.00	25.00	0.00	0.00	25.00	4.00	0.50	20.50	17.50	0.00	1.75	1.25
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lump sum	1.00		0.00	-3130.60	-12522.40	15653.00	772.65	2817.54	12052.81	2347.95	0.00	9235.27	469.59
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar	9555.60	10.00	0.16	1256.79	-151.88	-65.09	1473.76	221.06	73.69	1179.01	810.57	0.00	265.28	103.16
seeder	3228.30	10.00	0.16	448.04	-54.15	-23.21	525.39	78.81	26.27	420.31	288.97	0.00	94.57	36.78
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
barrow		10.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart	1696.25	10.00	0.16	235.42	0.00	-40.64	276.06	0.00	5.52	270.54	256.73	0.00	13.00	0.00
plow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer		5.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)			0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST														
O+M, irrigation	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha			838.81	0.00	0.00	838.81	100.66	67.10	671.05	335.52	0.00	301.97	33.55
threshing	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha			1977.00	0.00	0.00	1977.00	0.00	39.54	1937.46	1739.76	0.00	98.85	98.85
WORKING CAPITAL														
3-month				750.00	0.00	0.00	750.00	0.00	0.00	750.00	0.00	0.00	0.00	750.00
6-month				28.75	0.00	-782.65	811.40	0.00	0.00	811.40	0.00	0.00	0.00	811.40
TOTAL FARM COSTS (raw)	CFAF/ha			48609.81	-3336.62	-13433.98	65380.41	1272.89	3061.08	61026.44	6123.51	30254.51	10187.19	14461.24
Total Value of (By-product)	CFAF/ha	40.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			48609.81	-3336.62	-13433.98	65380.41	1272.89	3061.08	61026.44	6123.51	30254.51	10187.19	14461.24
YIELD	kg/ha	800.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			60.76	-4.17	-16.79	81.73	1.59	3.85	76.28	7.65	37.82	12.73	18.08
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			62.76	-4.17	-16.79	81.73	1.59	3.85	76.28	7.65	37.82	12.73	18.08
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	50.00	50.00	2500.00	0.00	0.00	2500.00	350.00	175.00	2125.00	1100.00	0.00	375.00	650.00
Handling, storage, margins	CFAF/ton			6087.00	0.00	0.00	6087.00	182.61	973.92	4930.47	669.57	0.00	2556.54	1704.34
Losses (7% /ton prod cost)	% prod cost			582.00	0.00	0.00	582.00	0.00	0.00	582.00	582.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2351.57	0.00	2931.54	2354.34
TOTAL COLLECTION COSTS (proc)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2351.57	0.00	2931.54	2354.34
	CFAF/kg			9.17	0.00	0.00	9.17	0.43	1.10	7.64	2.35	0.00	2.93	2.35
TOTAL PRODUCTION + COLLECTION	CFAF/kg			69.93	-4.17	-16.79	90.89	2.02	4.95	83.92	10.01	37.82	15.67	20.43
PROCESSING														
Milling	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
By-Products	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PROCESSING COSTS	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CFAF/kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			69.93	-4.17	-16.79	90.89	2.02	4.95	83.92	10.01	37.82	15.67	20.43
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28001.00	0.00	0.00	28001.00	840.03	4483.16	22680.81	3069.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	380.00	25.00	10919.00	766.26	652.74	9500.00	950.00	475.00	8075.00	4180.00	0.00	1425.00	2470.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (proc)	CFAF/ton			38920.00	766.26	652.74	37501.00	1790.03	4958.16	30755.81	7260.11	0.00	13185.42	10310.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	0.77	0.65	37.50	1.79	4.96	30.76	7.26	0.00	13.19	10.31
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			108.85	-3.40	-16.14	128.40	3.81	9.91	114.68	17.27	37.82	28.85	30.74
PRODUCTION SUBSIDY	CFAF/kg			-5.28	-0.87	-4.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			103.58	-4.27	-20.55	128.40	3.81	9.91	114.68	17.27	37.82	28.85	30.74

CROP: MILLET/SORGHUM, IMPROVED - AN INTERNATIONAL REFERENCE PRICE al85...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	90.00	90.00			90.00			90.00	90.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	%	0.00	0.00	0.00			0.00			0.00	0.00			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			165.00			165.00			165.00	165.00			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			57090.00			57090.00			57090.00	57090.00			
CIF Price in Local Currency	CFAF/kg			57.09			57.09			57.09	57.09			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			2854.50			2854.50			2854.50	2854.50			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			84364.50	0.00	0.00	84364.50	0.00	0.00	84364.50	84364.50	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			8436.45	8436.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ERACI Tax	CFAF/ton			3480.00	3480.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11296.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			15066.73	15066.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-7536.46	-7536.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			10300.91	10300.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			4218.23	4218.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	380.00	25.00	9500.00	0.00	0.00	9500.00	950.00	190.00	8360.00	4845.00	0.00	3135.00	380.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			28001.00	0.00	0.00	28001.00	2800.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	50.00	25.00	1250.00	0.00	0.00	1250.00	125.00	25.00	1100.00	637.50	0.00	412.50	50.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10010.00	0.00	0.00	10010.00	1001.00	200.36	8815.84	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				62675.05	39255.05	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				62.68	39.26	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				100176.05	39255.05	0.00	51521.00	5033.10	1006.62	45481.28	25648.81	0.00	16609.23	3203.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				100.18	39.26	0.00	51.52	5.03	1.01	45.48	25.67	0.00	16.61	3.20
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				111444.05	39255.05	0.00	62789.00	6159.90	1231.98	55397.12	31415.49	0.00	20327.67	3453.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				111.44	39.26	0.00	62.79	6.16	1.23	55.40	31.42	0.00	20.33	3.65
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				147.04	39.26	0.00	98.38	1.28	0.26	96.84	90.91	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				184.54	39.26	0.00	135.89	5.03	1.01	129.85	110.03	0.00	16.61	3.20
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				195.81	39.26	0.00	147.15	6.16	1.23	139.76	115.78	0.00	20.33	3.65

CROP: MILLET/SORGHUM, IMPROVED - ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a249...a314,1314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	55.00	55.00
TRADABLES, FINANCIAL PRICES	5.07	5.07
VALUE ADDED IN FINANCIAL PRICES	49.93	49.93
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	37.02
HIRED LABOR COSTS	12.73	12.73
CAPITAL COSTS	10.00	10.00
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-12.94	-12.94
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	17.07	55.69
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	32.86	-5.76
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	115.78	
TRADABLES IN ECONOMIC PRICES 0 DER	7.65	
VALUE ADDED IN ECONOMIC PRICES 0 DER	108.13	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	153.93	
TRADABLES IN ECONOMIC PRICES 0 DER	10.16	
VALUE ADDED IN ECONOMIC PRICES 0 DER	143.75	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	37.02	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-7.59	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	14.42	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	44.65	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	99.10	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	64.17	64.17
TRADABLES, FINANCIAL PRICES	7.86	7.86
VALUE ADDED IN FINANCIAL PRICES	56.31	56.31
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	37.02
HIRED LABOR COSTS	15.67	15.67
CAPITAL COSTS	20.43	20.43
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-11.04	-11.04
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	24.25	62.07
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	32.06	-5.76
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	110.03	
TRADABLES IN ECONOMIC PRICES 0 DER	10.01	
VALUE ADDED IN ECONOMIC PRICES 0 DER	100.03	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	146.29	
TRADABLES IN ECONOMIC PRICES 0 DER	13.30	
VALUE ADDED IN ECONOMIC PRICES 0 DER	132.98	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	37.02	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-0.94	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	17.23	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	54.10	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	79.88	

CROP: MILLET/SORGHUM, IMPROVED - ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	97.81	97.81
TRADABLES, FINANCIAL PRICES	16.81	16.81
VALUE ADDED IN FINANCIAL PRICES	81.00	81.00
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	37.02
HIRED LABOR COSTS	20.05	20.05
CAPITAL COSTS	30.74	30.74
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-10.64	-10.64
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	40.95	86.77
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	32.06	-5.76
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	90.91	
TRADABLES IN ECONOMIC PRICES 0 DER	17.27	
VALUE ADDED IN ECONOMIC PRICES 0 DER	73.64	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (c/kg)	120.06	
TRADABLES IN ECONOMIC PRICES 0 DER	22.95	
VALUE ADDED IN ECONOMIC PRICES 0 DER	97.91	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	37.02	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	24.62	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	29.04	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	91.47	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	6.43	

FILE NAME: 90BCNZIN.WK1 CROP: MAIZE, IMPROVED - MANUAL

CROP: MAIZE, IMPROVED - MANUAL
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table B6
(1995 world prices, official producer prices)

27-May-97 09:23 AM	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	20.77	20.77	20.77	20.77	20.77	20.77	31.68	31.68	31.68	20.77	20.77	20.7
...CFAF/hectare	46027.17	46027.17	46027.17	46027.17	46027.17	46027.17	57027.17	57027.17	57027.17	46027.17	46027.17	46027.1
...CFAF/total labor	321.87	321.87	321.87	321.87	321.87	321.87	398.79	398.79	398.79	321.87	321.87	321.8
...CFAF/total family labor	321.87	321.87	321.87	321.[illegible]	321.87	321.87	398.79	398.79	398.79	321.87	321.87	321.8
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-24.86	-24.86	-24.86	-24.86	-24.86	-24.86	-15.98	-15.98	-15.98	-24.86	-24.86	-24.8
...CFAF/hectare	-39772.83	-39772.83	-39772.83	-39772.83	-39772.83	-39772.83	-28772.83	-28772.83	-28772.83	-39772.83	-39772.83	-39772.8
ECONOMIC PROFITABILITY												
...CFAF/kg	93.16	72.94	0.49	112.48	92.26	19.81	102.85	82.63	10.18	139.64	115.86	31.8
...CFAF/hectare	149660.27	116705.84	785.49	179972.27	147617.84	31697.49	185125.03	148726.30	18315.90	223417.00	185370.39	50993.0
...CFAF/total labor	1565.95	1414.10	889.47	1702.12	1630.27	1105.63	1789.72	1618.89	1020.68	2985.93	1894.28	1339.9
...CFAF/total family labor	965.95	814.10	289.47	1182.12	1030.27	505.63	1189.72	1018.89	420.68	1485.93	1294.28	639.9
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.26	0.40	0.99	0.23	0.35	0.86	0.26	0.40	0.99	0.26	0.40	0.9
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.20	0.30	0.75	0.18	0.26	0.64	0.20	0.30	0.75	0.15	0.22	0.5
NOMINAL PROTECTION COEFFICIENT, INPUTS	1.16	1.16	1.18	1.16	1.16	1.10	1.16	1.16	1.18	1.16	1.16	1.1
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.07	0.07	0.09	0.07	0.07	0.09	0.07	0.07	0.09	0.65	0.66	0.6
EFFECTIVE PROTECTION COEFFICIENT	0.16	0.29	0.93	0.14	0.25	0.78	0.18	0.30	0.94	0.16	0.29	0.9
NET EFFECTIVE PROTECTION COEFFICIENT	0.12	0.21	0.70	0.11	0.19	0.58	0.13	0.22	0.71	0.09	0.16	0.5
EFFECTIVE SUBSIDY COEFFICIENT	0.20	0.33	0.97	0.10	0.29	0.01	0.21	0.33	0.97	0.20	0.33	0.9
NET EFFECTIVE SUBSIDY COEFFICIENT	0.15	0.25	0.73	0.13	0.22	0.61	0.16	0.25	0.73	0.11	0.19	0.5
DOMESTIC RESOURCE COST	0.34	0.44	0.99	0.30	0.38	0.83	0.28	0.37	0.89	0.25	0.33	0.7
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		1600.000			1600.000			1600.000			1600.000	
PROCESSING CONVERSION FACTOR		1.000			1.000			1.000			1.000	
WORLD FOB PRICE ($/ton)		95.000			135.000			95.000			95.000	
FARMGATE PRICE (CFAF/kg raw)		55.000			55.000			55.000			55.000	
RURAL MARKET PRICE (CFAF/kg proc)		64.169			64.169			64.169			64.169	
WHOLESALE PRICE (CFAF/kg)		97.813			97.813			97.813			97.813	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE PORT-TO-WHSALE POINT (km)												
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		380.000			380.000			380.000			380.000	
DISTANCE RURAL MARKET-TO-FARM (km)		50.000			50.000			50.000			50.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TEMA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: MAIZE, IMPROVED - MANUAL
FARM BUDGET
a40...p181

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		25.00												
nursery														
seeding		8.00												
transplanting														
chem. application														
manure application		2.00												
weeding		40.00												
thinning														
pest control														
earthing up														
irrigation														
harvesting		18.00												
threshing		25.00												
uprooting														
transport		25.00												
Sub-total, family labor		143.00	600.00	85800.00	0.00	0.00	85800.00	0.00	0.00	85800.00	0.00	85800.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		143.00		85800.00	0.00	0.00	85800.00	0.00	0.00	85800.00	0.00	85800.00	0.00	0.00
SEED														
improved	kg	25.00	55.00	1375.00	0.00	0.00	1375.00	55.00	55.00	1265.00	398.75	0.00	728.75	137.50
unimproved	kg							0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
NPK	kg	100.00	140.00	14000.00	-872.10	-657.90	15530.00	1397.70	465.90	13666.40	7454.40	0.00	5435.50	776.50
Urea	kg	150.00	135.00	20250.00	1607.40	1212.60	17430.00	1568.70	522.90	15338.40	8366.40	0.00	6100.50	871.50
sacks	kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams	3.00	25.00	75.00	0.00	0.00	75.00	12.00	1.50	61.50	52.50	0.00	5.25	3.75
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	1.00		0.00	-3130.60	-12522.49	15653.00	782.65	2817.54	12052.81	2347.95	0.00	9235.27	469.59

CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar		10.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seeder		10.00	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow		10.00	0.16	356.24	331.30	24.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart		10.00	0.16	241.71	0.00	241.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
plow				1244.88	1157.74	87.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer		5.00	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OPERATING COST														
O+M, irrigation	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
threshing	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WORKING CAPITAL														
3-month				2145.00	0.00	0.00	2145.00	0.00	0.00	2145.00	0.00	0.00	0.00	2145.00
6-month				1785.00	0.00	-718.15	2503.15	0.00	0.00	2503.15	0.00	0.00	0.00	2503.15
TOTAL FARM COSTS (raw)	CFAF/ha			127772.83	-906.26	-12332.84	141011.15	3891.05	3887.84	133232.26	18895.00	85800.00	21595.27	6941.99
Total Value of (By-product)	CFAF/ha	50.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			127772.83	-906.26	-12332.84	141011.15	3891.05	3887.84	133232.26	18895.00	85800.00	21595.27	6941.99
YIELD	kg/ha	1600.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			79.86	-0.57	-7.71	88.13	2.43	2.43	83.27	11.81	53.63	13.50	4.34
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			79.86	-0.57	-7.71	88.13	2.43	2.43	83.27	11.81	53.63	13.50	4.34
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	50.00	50.00	2500.00	0.00	0.00	2500.00	250.00	125.00	2125.00	1100.00	0.00	375.00	650.00
Handling, storage, margins	CFAF/ton			6087.00	0.00	0.00	6087.00	182.61	973.92	4930.47	649.57	0.00	2556.54	1704.36
Losses (7% /ton prod cost)	% prod cost			582.00	0.00	0.00	582.00	0.00	0.00	582.00	582.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2331.57	0.00	2931.54	2354.36
TOTAL COLLECTION COSTS (proc)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2331.57	0.00	2931.54	2354.36
	CFAF/kg			9.17	0.00	0.00	9.17	0.43	1.10	7.64	2.33	0.00	2.93	2.35
TOTAL PRODUCTION + COLLECTION	CFAF/kg			89.03	-0.57	-7.71	97.30	2.86	3.53	90.91	14.16	53.63	16.43	6.69
PROCESSING														
Milling	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
By-Products	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PROCESSING COSTS	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CFAF/kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			89.03	-0.57	-7.71	97.30	2.86	3.53	90.91	14.16	53.63	16.43	6.69
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			20001.00	0.00	0.00	20001.00	840.03	4480.16	27680.81	3080.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	380.00	25.00	16919.00	766.26	652.74	9500.00	950.00	475.00	8075.00	4180.00	0.00	1425.00	2470.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (raw)	CFAF/ton			38920.00	766.26	652.74	37501.00	1790.03	4955.16	35755.01	7260.11	0.00	13185.42	10310.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	0.77	0.65	37.50	1.79	4.96	35.76	7.26	0.00	13.19	10.31
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			127.95	0.20	-7.05	134.80	4.65	8.48	121.66	21.42	53.63	29.61	17.00
PRODUCTION SUBSIDY	CFAF/kg			-5.28	-1.02	-4.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			122.67	-0.82	-11.31	134.80	4.65	8.48	121.66	21.42	53.63	29.61	17.00

CROP: MAIZE, IMPROVED - MANUAL INTERNATIONAL REFERENCE PRICE a185...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	95.00	95.00			95.00			95.00	95.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	%	0.00	0.00	0.00			0.00			0.00	0.00			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			170.00			170.00			170.00	170.00			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			58820.00			58820.00			58820.00	58820.00			
CIF Price in Local Currency	CFAF/kg			58.82			58.82			58.82	58.82			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			2941.00			2941.00			2941.00	2941.00			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			86181.00	0.00	0.00	86181.00	0.00	0.00	86181.00	86181.00	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			8618.10	8618.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EMACI Tax	CFAF/ton			3680.00	3680.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial margin tax	13.63%			15339.08	15339.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-7672.69	-7672.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			10522.70	10522.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			4309.05	4309.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	380.00	25.00	9500.00	0.00	0.00	9500.00	950.00	190.00	8360.00	4845.00	0.00	3135.00	380.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			28001.00	0.00	0.00	28001.00	2800.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	50.00	25.00	1250.00	0.00	0.00	1250.00	125.00	25.00	1100.00	637.50	0.00	412.50	50.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10018.00	0.00	0.00	10018.00	1001.80	200.36	8815.84	5109.18	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				63306.24	39886.24	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				63.31	39.89	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				100807.24	39886.24	0.00	51521.00	5033.10	1006.62	45481.28	25668.81	0.00	16609.23	3203.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				100.81	39.89	0.00	51.52	5.03	1.01	45.48	25.67	0.00	16.61	3.20
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				112075.24	39886.24	0.00	62789.00	6159.90	1231.98	55397.12	31415.49	0.00	20327.67	3653.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				112.08	39.89	0.00	62.79	6.16	1.23	55.40	31.42	0.00	20.33	3.65
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				149.49	39.89	0.00	100.20	1.28	0.26	98.66	92.72	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				186.99	39.89	0.00	137.70	5.03	1.01	131.66	111.85	0.00	16.61	3.20
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				198.26	39.89	0.00	148.97	6.16	1.23	141.58	117.60	0.00	20.33	3.65

CROP: MAIZE, IMPROVED - RURAL
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a249...a314,t314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	55.00	55.00
TRADABLES, FINANCIAL PRICES	13.67	13.67
VALUE ADDED IN FINANCIAL PRICES	41.33	41.33
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	53.63
HIRED LABOR COSTS	13.50	13.50
CAPITAL COSTS	4.34	4.34
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-5.20	-5.20
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	12.56	66.18
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	28.77	-24.86
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/kg	117.60	
TRADABLES IN ECONOMIC PRICES @ OER	11.81	
VALUE ADDED IN ECONOMIC PRICES @ OER	105.79	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (CFAF/kg	156.34	
TRADABLES IN ECONOMIC PRICES @ SER	15.70	
VALUE ADDED IN ECONOMIC PRICES @ SER	140.64	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	53.63	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-6.83	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	0.68	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	47.48	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	93.16	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	64.17	64.17
TRADABLES, FINANCIAL PRICES	16.46	16.46
VALUE ADDED IN FINANCIAL PRICES	47.71	47.71
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	53.63
HIRED LABOR COSTS	16.43	16.43
CAPITAL COSTS	6.69	6.69
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-0.18	-0.18
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	18.94	72.57
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	28.77	-24.86
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/	111.05	
TRADABLES IN ECONOMIC PRICES @ OER	14.16	
VALUE ADDED IN ECONOMIC PRICES @ OER	97.69	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (CFAF/	148.78	
TRADABLES IN ECONOMIC PRICES @ SER	18.83	
VALUE ADDED IN ECONOMIC PRICES @ SER	129.88	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	53.63	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-0.18	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	3.69	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	56.93	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	72.94	

CROP: MAIZE, IMPROVED - URBAN
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	97.81	97.81
TRADABLES, FINANCIAL PRICES	25.25	25.25
VALUE ADDED IN FINANCIAL PRICES	72.56	72.56
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	53.63
HIRED LABOR COSTS	29.61	29.61
CAPITAL COSTS	17.00	17.00
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-2.83	-2.83
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	43.79	97.42
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	28.77	-24.86
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ OER (CFAF/kg)	92.72	
TRADABLES IN ECONOMIC PRICES @ OER	21.42	
VALUE ADDED IN ECONOMIC PRICES @ OER	71.30	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC @ SER (c/kg)	123.20	
TRADABLES IN ECONOMIC PRICES @ SER	28.00	
VALUE ADDED IN ECONOMIC PRICES @ SER	96.00	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	53.63	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	25.30	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	15.30	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	90.31	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	0.09	

FILE NAME: 100CKIZA.WK1 CROP: MAIZE, IMPROVED - ANIMAL TRACTION

CROP: MAIZE, IMPROVED - ANIMAL TRACTION
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table 07
(1995 world prices, official producer prices)

27-May-87 09:42 AM	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	21.74	21.74	21.74	21.74	21.74	21.74	25.06	25.06	25.06	21.74	21.74	21.74
...CFAF/hectare	39129.77	39129.77	39129.77	39129.77	39129.77	39129.77	50129.77	50129.77	50129.77	39129.77	39129.77	39129.77
...CFAF/total labor	387.42	387.42	387.42	387.42	387.42	387.42	496.33	496.33	496.33	387.42	387.42	387.42
...CFAF/total family labor	387.42	387.42	387.42	387.42	387.42	387.42	496.33	496.33	496.33	387.42	387.42	387.42
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-11.93	-11.93	-11.93	-11.93	-11.93	-11.93	-5.24	-5.24	-5.24	-11.93	-11.93	-11.93
...CFAF/hectare	-21470.23	-21470.23	-21470.23	-21470.23	-21470.23	-21470.23	-10470.23	-10470.23	-10470.23	-21470.23	-21470.23	-21470.23
ECONOMIC PROFITABILITY												
...CFAF/kg	105.00	84.78	12.33	124.32	104.10	31.65	112.53	92.31	19.86	156.49	126.71	42.67
...CFAF/hectare	189001.36	152602.63	22192.24	223777.36	187378.63	56968.24	225066.12	184623.08	39722.64	279878.24	228075.00	76800.94
...CFAF/total labor	2333.33	2091.46	1255.81	2677.65	2435.78	1600.12	2650.15	2381.41	1452.90	3143.99	2838.72	1796.49
...CFAF/total family labor	1733.33	1491.46	655.81	2077.65	1835.78	1000.12	2050.15	1781.41	852.90	2543.99	2238.72	1196.49
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.25	0.40	0.99	0.23	0.35	0.86	0.25	0.40	0.99	0.25	0.40	0.99
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.19	0.30	0.75	0.17	0.26	0.64	0.19	0.30	0.75	0.14	0.22	0.56
NOMINAL PROTECTION COEFFICIENT, INPUTS	1.07	1.09	1.12	1.07	1.09	1.12	1.07	1.09	1.12	1.07	1.09	1.12
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.80	0.82	0.84	0.80	0.82	0.84	0.80	0.82	0.84	0.60	0.61	0.63
EFFECTIVE PROTECTION COEFFICIENT	0.14	0.20	0.95	0.12	0.24	0.78	0.15	0.29	0.95	0.14	0.20	0.95
NET EFFECTIVE PROTECTION COEFFICIENT	0.11	0.21	0.71	0.09	0.18	0.59	0.12	0.22	0.71	0.08	0.16	0.50
EFFECTIVE SUBSIDY COEFFICIENT	0.20	0.32	0.97	0.18	0.28	0.81	0.21	0.32	0.97	0.20	0.32	0.97
NET EFFECTIVE SUBSIDY COEFFICIENT	0.15	0.24	0.73	0.13	0.21	0.61	0.16	0.24	0.73	0.11	0.18	0.55
DOMESTIC RESOURCE COST	0.24	0.33	0.87	0.21	0.29	0.72	0.19	0.28	0.79	0.18	0.25	0.65
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		1800.000			1800.000			2000.000			1800.000	
PROCESSING CONVERSION FACTOR		1.000			1.000			1.000			1.000	
WORLD FOB PRICE ($/ton)		95.000			135.000			95.000			95.000	
FARMGATE PRICE (CFAF/kg raw)		55.000			55.000			55.000			55.000	
RURAL MARKET PRICE (CFAF/kg proc)		64.169			64.169			64.169			64.169	
WHOLESALE PRICE (CFAF/kg)		97.813			97.813			97.813			97.813	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE PORT-TO-WHSALE POINT (km)												
DISTANCE WHSALE POINT-TO-RURAL MARKET (km)		380.000			380.000			380.000			380.000	
DISTANCE RURAL MARKET-TO-FARM (km)		50.000			50.000			50.000			50.000	
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TEKA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: MAIZE, IMPROVED - ANIMAL TRAC
FARM BUDGET
a60...p181

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		22.00												
nursery														
seeding		2.00												
transplanting														
chem. application														
manure application		4.00												
weeding		16.00												
thinning														
pest control														
earthing up														
irrigation														
harvesting		23.00												
threshing		30.00												
uprooting														
transport		4.00												
Sub-total, family labor		101.00	600.00	60600.00	0.00	0.00	60600.00	0.00	0.00	60600.00	0.00	60600.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		101.00		60600.00	0.00	0.00	60600.00	0.00	0.00	60600.00	0.00	60600.00	0.00	0.00
SEED														
improved	kg	25.00	55.00	1375.00	0.00	0.00	1375.00	55.00	55.00	1265.00	398.75	0.00	728.75	137.50
unimproved	kg							0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
fertilizer														
NPK	kg	100.00	140.00	14000.00	-872.10	-657.90	15530.00	1397.70	465.90	13666.40	7454.60	0.00	5435.50	776.50
Urea	kg	150.00	135.00	20250.00	1607.40	1212.60	17430.00	1568.70	522.90	15338.40	8366.40	0.00	6100.50	871.50
sacks	kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams	3.00	25.00	75.00	0.00	0.00	75.00	12.00	1.50	61.50	52.50	0.00	5.25	3.75
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	1.00		0.00	-3130.60	-12522.40	15653.00	782.65	2817.54	12052.81	2347.95	0.00	9235.27	469.59
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar	9053.60	10.00	0.16	1256.79	0.00	0.00	1256.79	188.52	62.84	1005.43	691.23	0.00	226.22	87.98
seeder	3228.30	10.00	0.16	448.04	0.00	0.00	448.04	67.21	22.40	358.43	246.42	0.00	80.65	31.36
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow	6250.00	10.00	0.16	867.41	-139.27	-10.48	1017.16	0.00	20.34	996.82	945.96	0.00	50.86	0.00
cart	1696.25	10.00	0.16	235.42	0.00	-40.64	276.06	0.00	5.52	270.54	256.73	0.00	13.80	0.00
plow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer	1796.00	5.00	0.26	404.03	0.00	0.00	404.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)			0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST														
O+M, irrigation	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha			1321.57	0.00	0.00	1321.57	158.59	105.73	1057.26	528.63	0.00	475.76	52.86
threshing	cost/ha			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha			4241.00	0.00	0.00	4241.00	0.00	84.82	4156.18	3732.00	0.00	212.05	212.05
WORKING CAPITAL														
3-month				1515.00	0.00	0.00	1515.00	0.00	0.00	1515.00	0.00	0.00	0.00	1515.00
6-month				1785.00	0.00	-718.15	2503.15	0.00	0.00	2503.15	0.00	0.00	0.00	2503.15
TOTAL FARM COSTS (raw)	CFAF/ha			120074.26	-2534.57	-12736.97	136145.79	4305.36	4189.49	127246.91	25296.05	60600.00	22654.62	18696.24
Total Value of (By-product)	CFAF/ha	50.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha			120074.26	-2534.57	-12736.97	136145.79	4305.36	4189.49	127246.91	25296.05	60600.00	22654.62	18696.24
YIELD	kg/ha	1800.00												
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg			67.15	-1.41	-7.08	75.64	2.39	2.33	70.69	14.05	33.67	12.59	10.39
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg			67.15	-1.41	-7.08	75.64	2.39	2.33	70.69	14.05	33.67	12.59	10.39
COLLECTION (FARM-TO-RURAL MARKET)														
Transport	CFAF/ton-km	50.00	50.00	2500.00	0.00	0.00	2500.00	250.00	125.00	2125.00	1100.00	0.00	375.00	650.00
Handling, storage, margins	CFAF/ton			6087.00	0.00	0.00	6087.00	182.61	973.92	4930.47	669.57	0.00	2356.54	1704.36
Losses (7% /ton prod cost)	% prod cost			582.00	0.00	0.00	582.00	0.00	0.00	582.00	582.00	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2351.57	0.00	2931.54	2354.36
TOTAL COLLECTION COSTS (proc)	CFAF/ton			9169.00	0.00	0.00	9169.00	432.61	1098.92	7637.47	2331.57	0.00	2931.54	2354.36
	CFAF/kg			9.17	0.00	0.00	9.17	0.43	1.10	7.64	2.35	0.00	2.93	2.35
TOTAL PRODUCTION + COLLECTION	CFAF/kg			76.32	-1.41	-7.08	84.81	2.82	3.43	78.33	16.40	33.67	15.52	12.74
PROCESSING														
Milling	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
By-Products	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PROCESSING COSTS	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CFAF/kg			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg			76.32	-1.41	-7.08	84.81	2.82	3.43	78.33	16.40	33.67	15.52	12.74
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)														
Handling, bulking, other costs	CFAF/ton			28001.00	0.00	0.00	28001.00	840.03	4480.16	22680.81	3080.11	0.00	11760.42	7840.28
Transport	CFAF/ton-km	300.00	25.00	10919.00	766.26	652.74	9500.00	950.00	475.00	8075.00	4100.00	0.00	1425.00	2470.00
Losses	CFAF/ton			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL DISTRIBUTION COSTS (proc)	CFAF/ton			38920.00	766.26	652.74	37501.00	1790.03	4955.16	30755.81	7260.11	0.00	13185.42	10310.28
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg			38.92	0.77	0.65	37.50	1.79	4.96	30.76	7.26	0.00	13.19	10.31
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg			115.24	-0.64	-6.42	122.31	4.61	8.38	109.09	23.67	33.67	28.70	23.05
PRODUCTION SUBSIDY	CFAF/kg			-5.28	-1.22	-4.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg			109.97	-1.84	-10.48	122.31	4.61	8.38	109.09	23.67	33.67	28.70	23.05

CROP: MAIZE, IMPROVED - ANNUAL TRAC INTERNATIONAL REFERENCE PRICE a185...p245	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FOB Price in $ US	$/ton	1.00	95.00	95.00			95.00			95.00	95.00			
Freight, Insurance	$/ton	1.00	75.00	75.00			75.00			75.00	75.00			
Quality Adjustment	%	0.00	0.00	0.00			0.00			0.00	0.00			
				0.00						0.00	0.00			
CIF Price in $ US	$/ton			170.00			170.00			170.00	170.00			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
CIF Price in Local Currency	CFAF/ton			58820.00			58820.00			58820.00	58820.00			
CIF Price in Local Currency	CFAF/kg			58.82			58.82			58.82	58.82			
Port Charges														
Port fees	CFAF/ton			5270.00			5270.00			5270.00	5270.00			
Storage and handling	CFAF/ton			4050.00			4050.00			4050.00	4050.00			
Interest and Insurance (5% CIF)	CFAF/ton			2941.00			2941.00			2941.00	2941.00			
Delivery charges, port-to-border														
Transport	CFAF/ton			15100.00	0.00	0.00	15100.00	0.00	0.00	15100.00	15100.00	0.00	0.00	0.00
CIF price, Mali frontier	CFAF/ton			86181.00	0.00	0.00	86181.00	0.00	0.00	86181.00	86181.00	0.00	0.00	0.00
Delivery charges, border-to-Bamako														
Import Duty on sacks	CFAF/ton	1.00		40.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax on rice	10% CIF Frontier			8618.10	8618.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EMACI Tax	CFAF/ton			3480.00	3480.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Handling	CFAF/ton	1.00		12830.00	0.00	0.00	12830.00	1283.00	256.60	11290.40	6543.30	0.00	4233.90	513.20
Finance Charge	CFAF/ton	1.00		1190.00	0.00	0.00	1190.00	0.00	0.00	1190.00	0.00	0.00	0.00	1190.00
Commercial marçie tax	13.63%			15339.08	15339.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rebate	6%			-7672.69	-7672.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sales tax	11.1% CIF frontier + import tax			10522.70	10522.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CPS	5% CIF			4309.05	4309.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OSRP	CFAF/ton			5050.00	5050.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transport	CFAF/ton			9400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Delivery charges, Bamako to rural market														
Transport	CFAF/ton	380.00	25.00	9500.00	0.00	0.00	9500.00	950.00	190.00	8360.00	4845.00	0.00	3135.00	380.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			28001.00	0.00	0.00	28001.00	2800.10	560.02	24640.88	14280.51	0.00	9240.33	1120.04
Delivery charges, rural market-to-farm														
Transport	CFAF/ton	50.00	25.00	1250.00	0.00	0.00	1250.00	125.00	25.00	1100.00	637.50	0.00	412.50	50.00
Losses	3% CIF			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distribution	CFAF/ton			10010.00	0.00	0.00	10010.00	1001.00	200.34	8815.84	5109.10	0.00	3305.94	400.72
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/ton)				63306.24	35286.24	0.00	14020.00	1283.00	256.60	12480.40	6543.30	0.00	4233.90	1703.20
DELIVERY CHARGES BORDER-TO-WHSALE (CFAF/kg)				63.31	35.89	0.00	14.02	1.28	0.26	12.48	6.54	0.00	4.23	1.70
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/ton)				100007.24	39886.24	0.00	51521.00	5033.10	1006.62	45481.28	25648.81	0.00	16409.23	3203.24
DELIVERY CHARGES BORDER-TO-RURAL MKT (CFAF/kg)				100.01	39.89	0.00	51.52	5.03	1.01	45.48	25.67	0.00	16.41	3.20
DELIVERY CHARGES BORDER-TO-FARM (CFAF/ton)				112075.24	39886.24	0.00	62789.00	6159.90	1231.98	55397.12	31415.09	0.00	20327.67	3453.96
DELIVERY CHARGES BORDER-TO-FARM (CFAF/kg)				112.08	39.89	0.00	62.79	6.16	1.23	55.40	31.42	0.00	20.33	3.65
CIF REFERENCE PRICE, BORDER EQUIVALENT AT WHSALE POINT (CFAF/kg)				149.09	39.89	0.00	100.20	1.28	0.26	98.66	92.72	0.00	4.23	1.70
CIF REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				186.99	39.89	0.00	137.70	5.03	1.01	131.66	111.85	0.00	16.61	3.20
CIF REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				198.26	39.89	0.00	148.97	6.16	1.23	141.58	117.60	0.00	20.33	3.65

CROP: MAIZE, IMPROVED - ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a249...a314,t314

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	55.00	55.00
TRADABLES, FINANCIAL PRICES	15.04	15.04
VALUE ADDED IN FINANCIAL PRICES	39.96	39.96
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	33.67
HIRED LABOR COSTS	12.59	12.59
CAPITAL COSTS	10.39	10.39
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-4.73	-4.73
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	18.22	51.89
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	21.74	-11.93
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	117.60	
TRADABLES IN ECONOMIC PRICES 0 DER	14.05	
VALUE ADDED IN ECONOMIC PRICES 0 DER	103.54	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	156.34	
TRADABLES IN ECONOMIC PRICES 0 DER	18.68	
VALUE ADDED IN ECONOMIC PRICES 0 DER	137.66	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	33.67	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-7.74	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	6.73	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	32.66	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	105.00	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	64.17	64.17
TRADABLES, FINANCIAL PRICES	17.82	17.82
VALUE ADDED IN FINANCIAL PRICES	46.35	46.35
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	33.67
HIRED LABOR COSTS	15.52	15.52
CAPITAL COSTS	12.74	12.74
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-3.65	-3.65
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	24.61	58.28
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	21.74	-11.93
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	111.85	
TRADABLES IN ECONOMIC PRICES 0 DER	16.90	
VALUE ADDED IN ECONOMIC PRICES 0 DER	95.44	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	148.79	
TRADABLES IN ECONOMIC PRICES 0 DER	21.81	
VALUE ADDED IN ECONOMIC PRICES 0 DER	126.99	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	33.67	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	-1.09	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	9.54	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	42.11	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	84.70	

CROP: MAIZE, IMPROVED - ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	97.81	97.81
TRADABLES, FINANCIAL PRICES	26.42	26.42
VALUE ADDED IN FINANCIAL PRICES	71.40	71.40
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	33.67
HIRED LABOR COSTS	28.70	28.70
CAPITAL COSTS	23.05	23.05
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-2.10	-2.10
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	49.66	83.32
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	21.74	-11.93
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	92.72	
TRADABLES IN ECONOMIC PRICES 0 DER	23.67	
VALUE ADDED IN ECONOMIC PRICES 0 DER	69.06	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (c/kg)	123.28	
TRADABLES IN ECONOMIC PRICES 0 DER	31.46	
VALUE ADDED IN ECONOMIC PRICES 0 DER	91.81	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	33.67	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	24.47	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	21.35	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	79.48	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	12.33	

FILE NAME: 11BOCCOT.WK1 CROP: COTTON, IMPROVED MANUAL

CROP: COTTON, IMPROVED MANUAL
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table 90
(1995 world prices, official producer prices)

	.....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 1 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 2 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL	Option 3 .....SENSITIVITY ANALYSIS..... FARM LEVEL	RUR MKT	TOTAL
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	104.77	93.69	93.69	104.77	93.69	93.69	124.30	113.69	113.69	104.77	93.69	93.69
...CFAF/hectare	40120.20	35883.74	35883.74	40120.20	35883.74	35883.74	57120.20	52253.40	52253.40	40120.20	35883.74	35883.74
...CFAF/total labor	265.75	237.64	237.64	265.75	237.64	237.64	378.33	346.05	346.05	265.75	237.64	237.64
...CFAF/total family labor	265.75	237.64	237.64	265.75	237.64	237.64	378.33	346.05	346.05	265.75	237.64	237.64
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-131.78	-131.78	-131.78	-131.78	-131.78	-131.78	-72.83	-72.83	-72.83	-131.78	-131.78	-131.78
...CFAF/hectare	-50471.80	-50471.80	-50471.80	-50471.80	-50471.80	-50471.80	-33471.81	-33471.81	-33471.81	-50471.80	-50471.80	-50471.80
ECONOMIC PROFITABILITY												
...CFAF/kg	143.04	160.77	172.08	34.55	51.48	62.78	215.95	232.93	244.24	295.18	334.68	341.06
...CFAF/hectare	55691.32	61575.65	65905.50	13230.95	19715.20	24045.13	99252.47	107056.23	112252.65	113053.66	128183.77	130206.74
...CFAF/total labor	2087.16	3189.98	3292.91	2163.34	2466.17	2569.09	3650.75	4016.74	4140.25	3809.39	4341.71	4544.47
...CFAF/total family labor	1320.58	1696.79	1799.72	596.76	972.98	1075.91	2084.17	2534.45	2657.96	2322.81	2848.52	3051.28
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.52	0.64	0.65	0.65	0.77	0.76	0.52	0.64	0.65	0.52	0.64	0.65
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.39	0.48	0.49	0.49	0.58	0.57	0.39	0.48	0.49	0.30	0.36	0.37
NOMINAL PROTECTION COEFFICIENT, INPUTS	0.87	1.01	1.01	0.87	1.01	1.01	0.87	1.02	1.02	0.87	1.01	1.01
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.66	0.76	0.76	0.66	0.76	0.76	0.66	0.77	0.77	0.49	0.57	0.57
EFFECTIVE PROTECTION COEFFICIENT	0.44	0.53	0.55	0.58	0.67	0.68	0.46	0.54	0.55	0.44	0.53	0.55
NET EFFECTIVE PROTECTION COEFFICIENT	0.33	0.40	0.41	0.44	0.51	0.51	0.34	0.41	0.42	0.25	0.30	0.31
EFFECTIVE SUBSIDY COEFFICIENT	0.53	0.59	0.62	0.70	0.75	0.77	0.53	0.59	0.62	0.53	0.59	0.62
NET EFFECTIVE SUBSIDY COEFFICIENT	0.40	0.44	0.47	0.52	0.56	0.58	0.40	0.44	0.46	0.30	0.33	0.35
DOMESTIC RESOURCE COST	0.69	0.69	0.70	0.90	0.80	0.86	0.55	0.57	0.59	0.52	0.52	0.53
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		1000.000			1000.000			1200.000			1000.000	
PROCESSING CONVERSION FACTOR		0.383			0.383			0.383			0.383	
WORLD FOB PRICE ($/ton)		1640.000			1400.000			1640.000			1640.000	
FARMGATE PRICE (CFAF/kg raw)		85.000			85.000			85.000			85.000	
RURAL MARKET PRICE (CFAF/kg proc)		331.179			331.179			329.411			331.179	
WHOLESALE PRICE (CFAF/kg proc)		360.985			360.985			359.216			360.985	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE BORDER TO PORT (km)												
DISTANCE MILL TO BORDER (km)		470.000			470.000			470.000			470.000	
DISTANCE FARM TO MILL (km)												
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
SULPH AMMONIA CIF PRICE (TERA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: COTTON, IMPROVED NAMUL FARM BUDGET a60...p181	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT TRAD.	TAXES/SUBSIDIES DIRECT NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT TRAD.	TAXES/SUBSIDIES INDIRECT NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		25.00												
nursery														
seeding		8.00												
transplanting														
chem. application		10.00												
manure application														
weeding		35.00												
thinning														
pest control														
earthing up														
irrigation														
harvesting		95.00												
threshing														
uprooting		7.00												
transport		11.00												
Sub-total, family labor		151.00	600.00	90600.00	0.00	0.00	90600.00	0.00	0.00	90600.00	0.00	90600.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		151.00		90600.00	0.00	0.00	90600.00	0.00	0.00	90600.00	0.00	90600.00	0.00	0.00
SEED														
improved	kg	44.00	16.18	711.70	0.00	0.00	711.70	28.47	28.47	654.76	296.39	0.00	377.29	71.17
unimproved	kg							0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	13.00	850.00	11050.00	-6283.16	-1022.84	18356.00	2936.96	367.12	15051.92	12849.20	0.00	1284.92	917.80
fertilizer														
NPK	kg	150.00	140.00	21000.00	-1308.15	-984.85	23295.00	2096.55	698.85	20499.60	11181.60	0.00	8153.25	1164.75
Urea	kg	50.00	135.00	6750.00	535.80	404.20	5810.00	522.90	174.30	5112.80	2788.80	0.00	2033.50	290.50
sacks	number			250.00	0.00	0.00	250.00	37.50	12.50	200.00	137.50	0.00	45.00	17.50
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams		25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lumpsum	1.00		0.00	-3130.60	-12522.40	15653.00	782.65	2817.54	12052.81	2347.95	0.00	9233.27	469.59
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.03	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seeder			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
plow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer	1796.00	5.00	0.26	249.26	-209.80	-15.72	473.78	0.00	7.48	464.30	440.62	0.00	23.69	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

land rent	cost/ha		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha		107.76	0.00	0.00	107.76	12.93	8.62	86.21	43.10	0.00	38.79	4.31
O+M, tractor	cost/ha		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WORKING CAPITAL													
3-month			2265.00	0.00	0.00	2265.00	0.00	0.00	2265.00	0.00	0.00	0.00	2265.00
6-month			1988.09	0.00	-1215.70	3203.79	0.00	0.00	3203.79	0.00	0.00	0.00	3203.79
TOTAL FARM COSTS (raw)	CFAF/ha		135471.81	-10394.91	-15359.31	161226.03	6492.96	4141.87	150591.19	30270.16	90600.00	21281.62	8439.41
Total Value of (By-product)	CFAF/ha	50.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha		135471.81	-10394.91	-15359.31	161226.03	6492.96	4141.87	150591.19	30270.16	90600.00	21281.62	8439.41
YIELD	kg/ha	1000.00											
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg		135.47	-10.39	-15.36	161.23	6.49	4.14	150.59	30.27	90.60	21.28	8.44
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg		353.71	-27.14	-40.10	420.96	16.95	10.81	393.19	79.03	236.55	55.57	22.04
COLLECTION (FARM-TO-RURAL MARKET)													
Transport	CFAF/ton-km		13300.00	0.00	0.00	13300.00	1330.00	665.00	11305.00	5852.00	0.00	1995.00	3458.00
Handling, storage, margins	CFAF/ton		4336.00	0.00	0.00	4336.00	130.08	693.76	3512.16	476.96	0.00	1821.12	1214.08
Losses (3% /ton prod cost)	% prod cost		4064.15	0.00	0.00	4064.15	0.00	0.00	4064.15	4364.15	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton		21700.15	0.00	0.00	21700.15	1460.08	1358.76	18881.31	10393.11	0.00	3816.12	4672.08
TOTAL COLLECTION COSTS (proc)	CFAF/ton		56658.37	0.00	0.00	56658.37	3812.22	3547.68	49298.47	27136.07	0.00	9963.76	12198.64
	CFAF/kg		56.66	0.00	0.00	56.66	3.81	3.55	49.30	27.14	0.00	9.96	12.20
TOTAL PRODUCTION + COLLECTION	CFAF/kg		410.37	-27.14	-40.10	477.61	20.77	14.36	442.49	106.17	236.55	65.53	34.23
PROCESSING													
Milling	CFAF/ton		78649.00	0.00	0.00	78649.00	8651.39	3932.45	66065.16	18875.76	0.00	34605.56	12583.84
By-Products	CFAF/ton		-26060.00	0.00	0.00	-26060.00	-1378.11	-857.66	-23824.82	-5858.21	-11082.14	-4491.15	-2193.32
TOTAL PROCESSING COSTS	CFAF/ton		52589.00	0.00	0.00	52589.00	7273.28	3075.39	42240.34	13017.55	-11082.14	29914.41	10390.52
	CFAF/kg		52.59	0.00	0.00	52.59	7.27	3.08	42.24	13.02	-11.08	29.91	10.39
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg		462.96	-27.14	-40.10	530.20	28.04	17.44	484.73	119.19	225.47	95.44	44.62
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)													
Handling, bulking, other costs	CFAF/ton		5892.00	0.00	0.00	5892.00	176.76	942.72	4772.52	648.12	0.00	2474.64	1649.76
Transport	CFAF/ton-km		8812.50	-1586.25	-1351.25	11750.00	1175.00	587.50	9987.50	5170.00	0.00	1762.50	3055.00
Losses	CFAF/ton		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finance Charge	CFAF/ton		15101.00	0.00	-10269.00	25370.00	0.00	0.00	25370.00	0.00	0.00	0.00	25370.00
TOTAL DISTRIBUTION COSTS (raw)	CFAF/ton		29805.50	-1586.25	-11620.25	43012.00	1351.76	1530.22	40130.02	5818.12	0.00	4237.14	30074.76
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg		29.81	-1.59	-11.62	43.01	1.35	1.53	40.13	5.82	0.00	4.24	30.07
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg		492.77	-28.73	-51.72	573.22	29.39	18.97	524.86	125.01	225.47	99.68	74.70
PRODUCTION SUBSIDY	CFAF/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg		492.77	-28.73	-51.72	573.22	29.39	18.97	524.86	125.01	225.47	99.68	74.70

CROP: COTTON, IMPROVED MANUAL INTERNATIONAL REFERENCE PRICE a185...p212	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	NONTRAD.	FINANCIAL COS	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
CIF Price in $ US	$/ton	1.00	1640.00	1640.00			1640.00			1640.00	1640.00			
Freight, Insurance	$/ton	1.00	110.00	110.00			110.00			110.00	110.00			
Quality Adjustment	%	-1.00	0.00	-16.40			-16.40			-16.40	-16.40			
				0.00						0.00	0.00			
				0.00						0.00	0.00			
FOB Price in $ US	$/ton			1513.60			1733.60			1733.60	1733.60			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
FOB Price in Local Currency	CFAF/ton			523705.60			599825.60			599825.60	599825.60			
FOB Price in Local Currency	CFAF/kg			523.71			599.83			599.83	599.83			
Port Charges														
Sales Commission	CFAF/ton			6463.00	0.00	0.00	6463.00	0.00	0.00	6463.00	6463.00	0.00	0.00	0.00
Port Fees	CFAF/ton			8471.00	0.00	0.00	8471.00	0.00	0.00	8471.00	8471.00	0.00	0.00	0.00
Storage and handling	CFAF/ton			7057.00	0.00	0.00	7057.00	0.00	0.00	7057.00	7057.00	0.00	0.00	0.00
Insurance	CFAF/ton			3764.00	0.00	0.00	3764.00	0.00	0.00	3764.00	3764.00	0.00	0.00	0.00
Delivery charges, border-to-port														
Transport	CFAF/ton	755.00	25.00	18156.25	0.00	0.00	18875.00	0.00	0.00	18875.00	18875.00	0.00	0.00	0.00
FOB REFERENCE PRICE, BORDER (CFAF/kg)				483.79	0.00	0.00	555.20	0.00	0.00	555.20	555.20	0.00	0.00	0.00
FOB REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				453.99	1.59	11.62	512.18	-1.35	-1.53	515.07	549.38	0.00	-9.24	-30.07
FOB REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				344.74	1.59	11.62	402.94	-12.44	-0.15	423.53	509.22	11.00	-69.12	-52.66

CROP: COTTON, IMPROVED MANUAL
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a216...a201,t201

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	221.93	221.93
TRADABLES, FINANCIAL PRICES	68.05	68.05
VALUE ADDED IN FINANCIAL PRICES	153.09	153.09
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	234.55
HIRED LABOR COSTS	55.57	55.57
CAPITAL COSTS	22.04	77.04
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-29.29	-29.29
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	48.31	287.07
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	104.77	-131.70
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	423.53	
TRADABLES IN ECONOMIC PRICES 0 DER	79.03	
VALUE ADDED IN ECONOMIC PRICES 0 DER	344.49	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/kg	563.07	
TRADABLES IN ECONOMIC PRICES 0 SER	105.07	
VALUE ADDED IN ECONOMIC PRICES 0 SER	458.00	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	234.55	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	55.57	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	22.04	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	314.15	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	143.04	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	331.10	331.10
TRADABLES, FINANCIAL PRICES	120.09	120.09
VALUE ADDED IN FINANCIAL PRICES	211.09	211.09
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	225.47
HIRED LABOR COSTS	95.44	95.44
CAPITAL COSTS	44.62	44.62
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-22.67	-22.67
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	117.40	342.87
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	93.69	-131.70
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	515.07	
TRADABLES IN ECONOMIC PRICES 0 DER	119.19	
VALUE ADDED IN ECONOMIC PRICES 0 DER	395.88	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/	684.77	
TRADABLES IN ECONOMIC PRICES 0 SER	158.46	
VALUE ADDED IN ECONOMIC PRICES 0 SER	526.31	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	225.47	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	95.44	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	44.62	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	365.54	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	160.77	

CROP: COTTON, IMPROVED MANUAL
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	360.98	360.98
TRADABLES, FINANCIAL PRICES	125.67	125.67
VALUE ADDED IN FINANCIAL PRICES	235.32	235.32
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	225.67
HIRED LABOR COSTS	99.60	99.60
CAPITAL COSTS	74.70	74.70
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-32.76	-32.76
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	141.62	367.16
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	93.69	-131.70
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	555.20	
TRADABLES IN ECONOMIC PRICES 0 DER	125.01	
VALUE ADDED IN ECONOMIC PRICES 0 DER	430.19	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (c/kg)	738.12	
TRADABLES IN ECONOMIC PRICES 0 SER	166.19	
VALUE ADDED IN ECONOMIC PRICES 0 SER	571.93	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	225.47	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	99.60	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	74.70	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	399.85	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	172.08	

FILE NAME: 1300CC07.WK1 CROP: COTTON, IMPROVED ANIMAL TRACTION

CROP: COTTON, IMPROVED ANIMAL TRACTION
SENSITIVITY ANALYSIS + KEY PARAMETERS
a3...q57

Table 99
(1995 world prices, official producer prices)

	Sensitivity analysis: Farm level	Rur mkt	Total	Option 1 Farm level	Rur mkt	Total	Option 2 Farm level	Rur mkt	Total	Option 3 Farm level	Rur mkt	Total
FINANCIAL PROFITABILITY, cash basis												
...CFAF/kg	78.27	69.39	69.39	78.27	69.39	69.39	98.79	90.26	90.26	78.27	69.39	69.39
...CFAF/hectare	35973.64	31893.08	31893.08	35973.64	31893.08	31893.08	52973.64	48398.18	48398.18	35973.64	31893.08	31893.08
...CFAF/total labor	248.46	238.01	238.01	248.46	238.01	238.01	395.33	361.18	361.18	248.46	238.01	238.01
...CFAF/total family labor	248.46	238.01	238.01	248.46	238.01	238.01	395.33	361.18	361.18	248.46	238.01	238.01
FINANCIAL PROFITABILITY, imputed value												
...CFAF/kg	-96.66	-96.66	-96.66	-96.66	-96.66	-96.66	-51.15	-51.15	-51.15	-96.66	-96.66	-96.66
...CFAF/hectare	-44426.36	-44426.36	-44426.36	-44426.36	-44426.36	-44426.36	-27426.36	-27426.36	-27426.36	-44426.36	-44426.36	-44426.36
ECONOMIC PROFITABILITY												
...CFAF/kg	182.53	199.73	211.03	73.23	90.43	101.73	238.80	256.03	267.33	331.58	371.71	390.09
...CFAF/hectare	83880.90	91793.74	96989.56	33656.46	41561.30	46757.12	120042.10	137282.67	143344.45	152394.52	170839.15	182962.71
...CFAF/total labor	3633.55	4064.98	4294.16	2654.77	3086.21	3225.39	4493.85	4997.30	5161.68	4968.36	5605.16	5879.33
...CFAF/total family labor	2066.96	2577.91	2717.09	1608.19	1599.14	1738.32	2927.28	3521.87	3684.25	3401.78	4118.09	4392.26
NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.52	0.64	0.65	0.65	0.76	0.76	0.52	0.64	0.65	0.52	0.64	0.65
NET NOMINAL PROTECTION COEFFICIENT, OUTPUTS	0.39	0.48	0.49	0.49	0.57	0.57	0.39	0.48	0.49	0.30	0.36	0.37
NOMINAL PROTECTION COEFFICIENT, INPUTS	0.88	1.00	1.00	0.88	1.00	1.00	0.88	1.02	1.01	0.88	1.00	1.00
NET NOMINAL PROTECTION COEFFICIENT, INPUTS	0.66	0.75	0.75	0.66	0.75	0.75	0.66	0.76	0.76	0.49	0.57	0.57
EFFECTIVE PROTECTION COEFFICIENT	0.43	0.53	0.54	0.57	0.67	0.67	0.45	0.54	0.55	0.43	0.53	0.54
NET EFFECTIVE PROTECTION COEFFICIENT	0.33	0.40	0.41	0.43	0.50	0.50	0.34	0.40	0.41	0.25	0.30	0.31
EFFECTIVE SUBSIDY COEFFICIENT	0.51	0.57	0.61	0.67	0.72	0.75	0.51	0.57	0.60	0.51	0.57	0.61
NET EFFECTIVE SUBSIDY COEFFICIENT	0.38	0.43	0.46	0.50	0.55	0.57	0.38	0.43	0.45	0.29	0.32	0.34
DOMESTIC RESOURCE COST	0.60	0.62	0.63	0.79	0.78	0.78	0.49	0.52	0.54	0.45	0.46	0.47
DISCOUNT RATE		0.100			0.100			0.100			0.100	
YIELD (kg/ha)		1200.000			1200.000			1400.000			1200.000	
PROCESSING CONVERSION FACTOR		0.383			0.383			0.383			0.383	
WORLD FOB PRICE ($/ton)		1640.000			1400.000			1640.000			1640.000	
FARMGATE PRICE (CFAF/kg raw)		85.000			85.000			85.000			85.000	
RURAL MARKET PRICE (CFAF/kg proc)		330.126			330.126			328.761			330.126	
WHOLESALE PRICE (CFAF/kg)		359.931			359.931			358.566			359.931	
OFFICIAL EXCHANGE RATE		346.000			346.000			346.000			346.000	
SHADOW EXCHANGE RATE		460.000			460.000			460.000			612.000	
DISTANCE TO BORDER TO PORT (km)												
DISTANCE MILL TO BORDER (km)		470.000			470.000			470.000			470.000	
DISTANCE FARM TO MILL (km)												
TRANSPORT RATE (CFAF/ton-km)		25.000			25.000			25.000			25.000	
FAMILY LABOR WAGE RATE		600.000			600.000			600.000			600.000	
HIRED LABOR WAGE RATE		600.000			600.000			600.000			600.000	
CHILD LABOR WAGE RATE												
LAND RENTAL COST		0.000			0.000			0.000			0.000	
EXTENSION COSTS (CFAF/ha)		15653.000			15653.000			15653.000			15653.000	
NPK FERTILIZER CIF PRICE ($/ton)												
AMMONIA PHOSPHATE OFFICIAL PRICE TO FARMERS (CFAF/kg)												
DALPH AMMONIA CIF PRICE (TEMA) ($/ton)												
UREA OFFICIAL PRICE TO FARMERS (CFAF/kg)												
FERTILIZER IMPORT DUTY		0.000			0.000			0.000			0.000	

CROP: COTTON, IMPROVED ANIMAL TRACT
FARM BUDGET
a40...p101

	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	TAXES/SUBSIDIES DIRECT INPUTS NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	TAXES/SUBSIDIES INDIRECT INPUTS NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
FARM PRODUCTION														
LABOR	person days													
land preparation		23.00												
nursery														
seeding		2.00												
transplanting														
chem. application		18.00												
manure application														
weeding		14.00												
thinning														
pest control														
earthing up														
irrigation														
harvesting		65.00												
threshing														
uprooting		10.00												
transport		2.00												
Sub-total, family labor		134.00	600.00	80400.00	0.00	0.00	80400.00	0.00	0.00	80400.00	0.00	80400.00	0.00	0.00
Sub-total, hired labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sub-total, child labor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Labor		134.00		80400.00	0.00	0.00	80400.00	0.00	0.00	80400.00	0.00	80400.00	0.00	0.00
SEED														
improved	kg	44.00	16.18	711.70	0.00	0.00	711.70	28.47	28.47	654.76	206.39	0.00	377.20	71.17
unimproved	kg							0.00	0.00	0.00	0.00	0.00	0.00	0.00
OTHER INPUTS														
insecticides	litres	16.00	850.00	13600.00	-7733.12	-1258.80	22592.00	3614.72	451.84	18525.44	15814.40	0.00	1581.44	1129.60
fertilizer														
NPK	kg	150.00	140.00	21000.00	-1308.15	-986.85	23295.00	2096.55	698.85	20499.60	11181.60	0.00	8153.25	1164.75
Urea	kg	50.00	135.00	6750.00	535.80	404.20	5810.00	522.90	174.30	5112.80	2788.80	0.00	2033.50	290.50
sacks	number			250.00	0.00	0.00	250.00	37.50	12.50	200.00	137.50	0.00	45.00	17.50
sheets	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
storage chemical	grams			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
seed dressing	grams		25.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
batteries	number			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
extension	lump sum	1.00		0.00	-3130.60	-12522.40	15653.00	782.65	2817.54	12052.81	2347.95	0.00	9235.27	469.59
CAPITAL RECOVERY	INVESTMENT COST	EXPECTED LIFE	ANNUITY COEFF	CAP RECOV COST										
land clearing labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
hoes			0.00	500.00	0.00	0.00	500.00	75.00	25.00	400.00	275.00	0.00	90.00	35.00
tool bar	9055.60	10.00	0.16	1256.79	-201.78	-15.19	1473.76	0.00	29.48	1444.28	1370.59	0.00	73.69	0.00
seeder	3228.30	10.00	0.16	448.04	-71.94	-5.41	525.39	0.00	10.51	514.88	488.61	0.00	26.27	0.00
sacks			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
harrow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
cart	1696.25	10.00	0.16	235.42	-37.79	-2.84	276.06	0.00	5.52	270.54	256.73	0.00	13.80	0.00
plow			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sprayer	1796.00	5.00	0.26	249.26	-208.80	-15.72	473.78	0.00	9.48	464.30	440.62	0.00	23.69	0.00
irrigation, labor			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
animals (a pair)			0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	12000.00	0.00	0.00	0.00	12000.00

OPERATING COST													
land rent	cost/ha		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, implements	cost/ha		946.57	0.00	0.00	946.57	113.59	75.73	757.26	378.63	0.00	340.76	-37.86
O+M, tractor	cost/ha		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O+M, animal	cost/ha		3953.00	0.00	0.00	3953.00	0.00	79.06	3873.94	3478.66	0.00	197.65	197.65
WORKING CAPITAL													
3-month			2010.00	0.00	0.00	2010.00	0.00	0.00	2010.00	0.00	0.00	0.00	2010.00
6-month			2115.59	0.00	-1300.00	3415.59	0.00	0.00	3415.59	0.00	0.00	0.00	3415.59
TOTAL FARM COSTS (raw)	CFAF/ha		144426.36	-12156.38	-15703.09	174285.84	7271.38	4418.26	162596.20	39165.47	80400.00	22191.53	20839.21
Total Value of (By-product)	CFAF/ha	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL FARM COSTS (raw)	CFAF/ha		144426.36	-12156.38	-15703.09	174285.84	7271.38	4418.26	162596.20	39165.47	80400.00	22191.53	20839.21
YIELD	kg/ha	1200.00											
NET UNIT TOTAL FARM COSTS (raw)	CFAF/kg		122.02	-10.13	-13.09	145.24	6.06	3.68	135.50	32.64	67.00	18.49	17.37
NET UNIT TOTAL FARM COSTS (proc)	CFAF/kg		318.69	-26.45	-34.17	379.21	15.82	9.61	353.78	85.22	174.93	48.28	45.34
COLLECTION (FARM-TO-RURAL MARKET)													
Transport	CFAF/ton-km		13300.00	0.00	0.00	13300.00	1330.00	665.00	11305.00	5852.00	0.00	1995.00	3458.00
Handling, storage, margins	CFAF/ton		4336.00	0.00	0.00	4336.00	130.08	693.76	3512.16	476.96	0.00	1821.12	1214.08
Losses (3% /ton prod cost)	% prod cost		3660.66	0.00	0.00	3660.66	0.00	0.00	3660.66	3660.66	0.00	0.00	0.00
TOTAL COLLECTION COSTS (raw)	CFAF/ton		21296.66	0.00	0.00	21296.66	1460.08	1358.76	18477.82	9989.62	0.00	3816.12	4672.08
TOTAL COLLECTION COSTS (proc)	CFAF/ton		55604.85	0.00	0.00	55604.85	3812.22	3547.68	48244.96	26082.56	0.00	9963.76	12198.64
	CFAF/kg		55.60	0.00	0.00	55.60	3.81	3.55	48.24	26.08	0.00	9.96	12.20
TOTAL PRODUCTION + COLLECTION	CFAF/kg		374.20	-26.45	-34.17	434.82	19.63	13.16	402.02	111.30	174.93	58.25	57.54
PROCESSING													
Milling	CFAF/ton		78649.00	0.00	0.00	78649.00	8651.39	3932.45	66065.16	18875.76	0.00	34605.56	12583.84
By-Products	CFAF/ton		-26060.00	0.00	0.00	-26060.00	-1435.54	-867.54	-23756.92	-6606.78	-8878.48	-4712.62	-3559.04
TOTAL PROCESSING COSTS	CFAF/ton		52589.00	0.00	0.00	52589.00	7215.85	3064.91	42308.24	12268.98	-8878.48	29892.94	9024.80
	CFAF/kg		52.59	0.00	0.00	52.59	7.22	3.06	42.31	12.27	-0.88	29.89	9.02
TOTAL PRODUCTION + COLLECTION + PROCESSING	CFAF/kg		426.79	-26.45	-34.17	487.41	26.85	16.23	444.33	123.57	166.06	88.14	66.57
DISTRIBUTION (RURAL MARKET-TO-WHOLESALE)													
Handling, bulking, other costs	CFAF/ton		5892.00	0.00	0.00	5892.00	176.76	942.72	4772.52	648.12	0.00	2474.64	1649.76
Transport	CFAF/ton-km		8812.50	-1586.25	-1351.25	11750.00	1175.00	587.50	9987.50	5170.00	0.00	1762.50	3055.00
Losses	CFAF/ton		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Finance Charge	CFAF/ton		15101.00	0.00	-10269.00	25370.00	0.00	0.00	25370.00	0.00	0.00	0.00	25370.00
TOTAL DISTRIBUTION COSTS (raw)	CFAF/ton		29805.50	-1586.25	-11620.25	43012.00	1351.76	1530.22	40130.02	5818.12	0.00	4237.14	30074.76
TOTAL DISTRIBUTION COSTS (proc)	CFAF/kg		29.81	-1.59	-11.62	43.01	1.35	1.53	40.13	5.82	0.00	4.24	30.07
TOTAL COSTS INCL. PRODUCTION, COLLECTION, PROCESSING, DISTRIBUTION	CFAF/kg		456.59	-28.04	-45.79	530.42	28.20	17.76	484.46	129.39	166.06	92.38	96.64
PRODUCTION SUBSIDY	CFAF/kg		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NET TOTAL COSTS INCLUSIVE OF PRODUCTION TAX/SUBSIDY	CFAF/kg		456.59	-28.04	-45.79	530.42	28.20	17.76	484.46	129.39	166.06	92.38	96.64

CROP: COTTON, IMPROVED ANIMAL TRACT INTERNATIONAL REFERENCE PRICE a185...p212	UNITS	QUANTITY	UNIT PRICE	FINANCIAL EXPENDITURE	TAXES/SUBSIDIES DIRECT INPUTS TRAD.	NONTRAD.	FINANCIAL COST	TAXES/SUBSIDIES INDIRECT INPUTS TRAD.	NONTRAD.	ECONOMIC COST	TRADABLE INPUTS	.....NON-TRADABLE INPUTS. FAMILY LABOR	HIRED LABOR	CAPITAL
CIF Price in $ US	$/ton	1.00	1640.00	1640.00			1640.00			1640.00	1640.00			
Freight, Insurance	$/ton	1.00	110.00	110.00			110.00			110.00	110.00			
Quality Adjustment	%	-1.00	0.00	-16.40			-16.40			-16.40	-16.40			
				0.00						0.00	0.00			
FOB Price in $ US	$/ton			1513.60			1733.60			1733.60	1733.60			
Official Exchange Rate	CFAF/$			346.00			346.00			346.00	346.00			
FOB Price in Local Currency	CFAF/ton			523705.60			599825.60			599825.60	599825.60			
FOB Price in Local Currency	CFAF/kg			523.71			599.83			599.83	599.83			
Port Charges														
Sales Commission	CFAF/ton			6463.00	0.00	0.00	6463.00	0.00	0.00	6463.00	6463.00	0.00	0.00	0.00
Port Fees	CFAF/ton			8471.00	0.00	0.00	8471.00	0.00	0.00	8471.00	8471.00	0.00	0.00	0.00
Storage and handling	CFAF/ton			7057.00	0.00	0.00	7057.00	0.00	0.00	7057.00	7057.00	0.00	0.00	0.00
Insurance	CFAF/ton			3764.00	0.00	0.00	3764.00	0.00	0.00	3764.00	3764.00	0.00	0.00	0.00
Delivery charges, border-to-port														
Transport	CFAF/ton	755.00	25.00	14156.[illegible]	0.00	0.00	18875.00	0.00	0.00	18875.00	18875.00	0.00	0.00	0.00
FOB REFERENCE PRICE, BORDER (CFAF/kg)				483.79	0.00	0.00	555.20	0.00	0.00	555.20	555.20	0.00	0.00	0.00
FOB REFERENCE PRICE, BORDER EQUIVALENT AT RURAL MARKET (CFAF/kg)				553.99	1.59	11.62	512.18	-1.35	-1.53	515.07	549.38	0.00	-4.24	-30.07
FOB REFERENCE PRICE, BORDER EQUIVALENT AT FARM (CFAF/kg)				345.79	1.59	11.62	403.99	-12.38	-8.16	424.51	511.03	0.[illegible]	-44.09	-51.30

CROP: COTTON, IMPROVED ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL
a216...a201,t201

ANALYSIS OF FARM PRODUCTION ONLY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
FARMGATE PRICE (CFAF/kg)	221.93	221.93
TRADABLES, FINANCIAL PRICES	74.59	74.59
VALUE ADDED IN FINANCIAL PRICES	147.34	147.34
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	174.93
HIRED LABOR COSTS	48.28	48.28
CAPITAL COSTS	45.34	45.34
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-24.55	-24.55
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	69.07	244.01
FINANCIAL PROFITABILITY TO FARMER (CFAF/kg)	78.27	-96.66
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg	424.51	
TRADABLES IN ECONOMIC PRICES 0 DER	85.22	
VALUE ADDED IN ECONOMIC PRICES 0 DER	339.30	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/kg	564.38	
TRADABLES IN ECONOMIC PRICES 0 SER	113.29	
VALUE ADDED IN ECONOMIC PRICES 0 SER	451.09	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	174.93	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	48.28	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	45.34	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	268.56	
ECONOMIC PROFITABILITY AT FARM LEVEL (CFAF/kg)	182.53	

ANALYSIS OF FARM PRODUCTION, COLLECTION	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
RURAL MARKET PRICE (CFAF/kg)	330.13	330.13
TRADABLES, FINANCIAL PRICES	123.97	123.97
VALUE ADDED IN FINANCIAL PRICES	206.16	206.16
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	166.06
HIRED LABOR COSTS	88.14	88.14
CAPITAL COSTS	66.57	66.57
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-17.94	-17.94
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	136.77	302.82
FINANCIAL PROFITABILITY TO RURAL INTERMEDIARY (CFAF/kg	69.39	-96.66
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/	315.07	
TRADABLES IN ECONOMIC PRICES 0 DER	123.57	
VALUE ADDED IN ECONOMIC PRICES 0 DER	391.50	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (CFAF/	600.77	
TRADABLES IN ECONOMIC PRICES 0 SER	164.28	
VALUE ADDED IN ECONOMIC PRICES 0 SER	520.49	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	166.06	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	88.14	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	66.57	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	320.76	
ECONOMIC PROFITABILITY AT RURAL MARKET LEVEL (CFAF/kg)	199.73	

CROP: COTTON, IMPROVED ANIMAL TRACTION
CALCULATION OF ECON INDICATORS: FARM LEVEL AND RURAL MARKET LEVEL

ANALYSIS OF FARM PRODUCTION, COLLECTION, PROCESSING, DELIVERY	CASH BASIS	IMPUTED VALUE
FINANCIAL PROFITABILITY ANALYSIS		
WHOLESALE PRICE (CFAF/kg)	359.93	359.93
TRADABLES, FINANCIAL PRICES	129.55	129.55
VALUE ADDED IN FINANCIAL PRICES	230.38	230.38
VALUE OF NON-TRADABLES IN FINANCIAL PRICES		
FAMILY LABOR COSTS	0.00	166.06
HIRED LABOR COSTS	92.38	92.38
CAPITAL COSTS	96.64	96.64
LAND COSTS	0.00	0.00
TAXES/SUBSIDIES ON NONTRADABLES	-28.03	-28.03
TOTAL VALUE OF NON-TRADABLES IN FINANCIAL PRICES	160.99	327.04
FINANCIAL PROFITABILITY TO WHOLESALER (CFAF/kg)	69.39	-96.66
ECONOMIC PROFITABILITY ANALYSIS		
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 DER (CFAF/kg)	555.20	
TRADABLES IN ECONOMIC PRICES 0 DER	129.39	
VALUE ADDED IN ECONOMIC PRICES 0 DER	425.81	
TRADABLE WHOLESALE PARITY PRICE, ECONOMIC 0 SER (c/kg)	730.12	
TRADABLES IN ECONOMIC PRICES 0 SER	172.02	
VALUE ADDED IN ECONOMIC PRICES 0 SER	566.11	
VALUE OF NON-TRADABLES IN SHADOW PRICES		
SHADOW FAMILY LABOR WAGE RATE COEFFICIENT	1.00	
FAMILY LABOR COSTS IN SHADOW PRICES	166.06	
SHADOW HIRED LABOR WAGE RATE COEFFICIENT	1.00	
HIRED LABOR COSTS IN SHADOW PRICES	92.38	
SHADOW CAPITAL COST COEFFICIENT	1.00	
CAPITAL COSTS IN SHADOW PRICES	96.64	
SHADOW LAND COST COEFFICIENT	1.00	
LAND COSTS IN SHADOW PRICES	0.00	
TOTAL VALUE OF NON-TRADABLES IN SHADOW PRICES	355.07	
ECONOMIC PROFITABILITY AT WHOLESALE LEVEL (CFAF/kg)	211.33	

ANNEX C.

EFFECTIVE PROTECTION AND DOMESTIC RESOURCE COSTS FOR SELECTED INDUSTRIAL PRODUCTS IN MALI.

This annex presents estimates of incentive indicators for selected goods produced by Mali's industrial sector. The primary data for the calculation of these estimates were obtained directly from firms surveyed in June-July 1986. The names of the firms are listed in table C-4. Table A-24 in Annex A gives information on sector of activity, first year of operation, location, and ownership of those firms. More than 20 outputs produced by the firms were selected for on the basis of sector of activity, ownership (public, private, mixed) and data availability for the computation of indicators of protection and comparative advantage. These indicators are the nominal protection coefficient, the effective protection coefficient, the effective subsidy coefficient, and the domestic resource cost.

NOMINAL PROTECTION COEFFICIENT.

Nominal protection coefficients (NPC) measure the ratio of the domestic price to the border price of the product. NPCs for several industrial products are discussed in chapter 2. The main sources of the data are the tariff code and information provided by the Direction National des Douanes. Prices are adjusted for the IAS tax on domestic production. The NPC expresses the effects of various incentives on the sales price of the product, and is a relevant measure of protection from the point of view of the consumer.

EFFECTIVE PROTECTION COEFFICIENT.

The domestic producer is concerned with the combined effect of incentives on his output and inputs. This is measured by the effective protection coefficient (EPC), which is defined as the ratio of domestic value added to value added at world market prices. Domestic value added is the difference between the price of the product and the cost of purchased inputs, all valued at domestic prices. Its components include post-tax profits, profit tax, IAS, financial charges, interest and wages (African and expatriate). In turn, value added is obtained by valuing the product and its purchased inputs at world market (border) prices.[1]

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[1] For a more complete discussion of the methodology used in this annex, see Bela Balassa, Methodology of the Western Africa Study, mimeo, World Bank, 1976.

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An effective protection coefficient exceeding one means that, at the existing exchange rate, protective measures provide positive incentives to the firm. Conversely, an EPC less than one indicates that the protective measures discriminate against the firm. A negative effective protection signifies a loss of foreign exchange to the national economy because value added in world prices is negative.

The main source of information used in the calculations was production cost data submitted by the firms to the DNAE for approval of their sales price.[2] These costs are divided into tradable and nontradable inputs. Nontradable inputs such as water and electricity are further decomposed into their tradable components and primary factors (value added).[3] In the absence of reliable data from firms, the following decomposition was used: transport (80% traded), containers (70%), electricity and water (80%), TFSE (50%), and overhead (44%). Nontradable inputs may further be embodied in depreciation (80% traded), which is considered an input cost in the calculations.[4] The adjustment for tradable and nontradable inputs is made both for domestic and world market value added. The domestic value of the product is the factory gate price (prix carreau usine). The border price of the product was obtained either directly from firm accounts, or indirectly by dividing the domestic value by the applicable tariff rate.

Table C-1 shows the effective protection coefficients for selected industrial products. In addition to the structure of tariff rates, these effective protection coefficients also reflect the tariff exemptions on the imports of equipment, raw materials, and other inputs as enjoyed during the year for which the EPC is calculated (1985 or 1986).[5] The effective

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[2] The decree defining the procedure for the approval of producer prices stipulates that "le coût de production unitaire sortie producteur des denrées et produits au Mali est la fraction des charges d'exploitation supportée par unité produite. Le producteur est tenu de mettre à la disposition de l'Administration compétente (Direction Nationale des Affaires Economiques (DNAE), Ministère des Finances et du Commerce) les documents comptables permettant de déterminer ce coût pour la période d'exploitation la plus récente" (Article 2, Décret No.../PG-RM fixant les modalités d'application de la Loi No.../AN-Rm portant régime général des prix, 1986).

[3] The decomposition of nontradable inputs is based on the assumption that these inputs are produced at constant costs.

[4] See G. Shepherd, Incentives and Comparative Advantage in Industry in Mali, mimeo, World Bank, revised 1977.

[5] Exemptions on equipment, even though they might have been obtained long ago, continue into the year for which the calculation is made in the form of lower depreciation.

protection coefficients are, therefore, higher than those provided through the tariff structure alone. The highest protection coefficient in the sample is 4.35 (sirop de tamarin en bouteille). The factors contributing to this high value of effective protection include high nominal protection on the output [6] and a low tariff rate on the major input (sugar). The lowest effective protection coefficient is minus 3.71 (nails). The negative protection coefficient derives from a negative value added at border prices. This implies that there is a loss of foreign exchange in producing the product in the country.[7]

The wide variation in the effective protection coefficient leads to a misdirection of resources and involves substantial costs to the national economy. The weighted average of the effective protection coefficient for 10 firms (17 products) is 1.45.[8] This probably underestimates the overall average effective protection coefficient, because it does not take into account the impact of quantitative restrictions on domestic prices.

While the overall impact of a reform in tariff rates on tariff revenue would depend upon the elasticities, it is believed that lower tariff levels would reduce widespread smuggling. This would expand the tariff base and most likely increase tariff revenues. To the extent that products with low tariff rates would have their tariff rates raised while products with high tariff rates would have their tariff rates reduced, this too would tend to increase tariff revenues. This is because products with low tariff rates generally tend to be inelastic in demand, while those with high tariff rates tend to be elastic in demand.

Table C-1 gives some indications of relative protection in the domestic (import substitution) and export (CEAO) markets, for products such as cottonseed oil, shearnut oil, and tamarin syrup. The effective protection rates for export markets are lower than those for the domestic market, indicating a bias of the incentive structure in favor of import substitution. Many of the export products receive a net disincentive (effective protection coefficient less than unity). Factors contributing to this discrimination against exports include the fact that higher duty rates on outputs are useless so far as protection in the export markets is concerned. Instruments such as export subsidies could bring about a more uniform protection across exports and imports substitution activities.

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[6] The nominal tariff rate on sirop de tamarin imported from the CEAO is 81 percent. It is 93 percent if imported from outside the CAEO.

[7] The largest input, steel (fil acier clair) represents 88 percent of the output price of nails (both steel and nails valued in border prices). This leaves little room for other costs.

[8] Weighting was achieved using total value added in 1985.

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TABLE C.1. Effective Protection Coefficients

Product	Year	Effective Protection Coefficient	
		Domestic Market	Export
Agricultural Equipment (SMECMA)			
1. Multiculteur	1985	1.47	
2. Semoir	1985	1.63	
3. Train de Roues a Pneus	1985	0.53	
Cigarettes (SONATAM)			
4. Liberte Ordinaire	1986	1.836	
5. Liberte Filtre	1986	1.75	
6. Mansa	1986	1.975	
7. Allumettes (SONATAM)	1986	1.74	
8. Toles (TOLMALI)	1986	0.69	
9. Batteries (FAMAC)	1986	1.592	
10. Clous (SOMAFAM)	1985	-3.71	
11. Sac Polypopline (SADA DIALLO)	1985	1.29	
Textiles (COMATEX)			
12. Tissu	1985	1.27	1.02(CEAO)
13. Fil a tisser	1985	1.28	1.07(CEAO)
14. Huile de Coton	1986	1.08	0.59(CEAO)
Sirop de Tamarin (SOCAM)			
15. en bouteille	1985	4.35	3.10(CEAO)
16. en bidon	1985	1.30	1.05(CEAO)
17. Beurre de Karite (SIKAMALI)	1986	N/A	0.91 (CEE)
Range		-3.71 to 4.35	
Weighted Average		1.45	

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EFFECTIVE SUBSIDY COEFFICIENT.

The effective subsidy coefficient (ESC) expresses the combined effects of protective measures and of preferential treatment with respect to credit, taxes, and prices. The ESC is derived by adjusting the effective protection coefficient for the differences between profit taxes, interest, and prices of nontradable goods actually paid by the firm and what is considered to be "normal" charges. The norm should ideally be taken as averages for all productive activities taken together, so as to insure that the overall averages of EPCs and ESCs are identical. This would involve calculating averages of interest rates, weighted by the amount borrowed; averages of profit taxes, weighted by pretax profits; and averages of input-output coefficients for nontradable goods, weighted by production value expressed in domestic prices. However, in this annex, the "normal" profit tax was taken to be zero. When data were available showing that the firm paid a profit tax, the latter was taken to be 50 percent of the margin. A zero norm means that business taxes actually paid are considered as providing negative incentives.*

As regards interest rates, the assumption is made that higher rates paid on informal credit markets reflect the higher costs of obtaining information and of risk taking. At the same time, in the absence of reliable information on the size of the informal credit market, average interest rates on all (preferential and nonpreferential) lending have not been calculated. Accordingly, the rate of interest payable on normal bank credits, which is 14.5 percent, has been retained as the norm, and a subsidy element on preferential credit has been calculated as the difference between the actual interest paid and that payable at nonpreferential rates.

Table C-2 presents the effective subsidy coefficients for some of the production activities examined. The ESCs broadly confirm the patterns suggested by the estimates of effective protection. The figures again show that the system of incentives in Mali discriminates against exports. Where the effective subsidy coefficient is higher than the effective protection coefficient interest subsidies outweigh profit tax disincentives. In the reverse situation, the profit tax disincentive is greater than any interest rate subsidies.

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* Mali relies to a great extent on indirect tax revenues. Direct [illegible] including individual income taxes and business taxes, amount to only [illegible] percent of GNP.

MALI

TABLE C.2. Effective Subsidy Coefficients

Product	Year	Effective Subsidy Coefficient	
		Domestic Market	Export
Agricultural Equipment (SMECMA)			
1. Multiculteur	1985	1.49	
2. Semoir	1985	1.65	
3. Train de Roues a Pneus	1985	0.54	
Cigarettes (SONATAM)			
4. Liberte Ordinaire	1986	1.72	
5. Liberte Filtre	1986	1.60	
6. Mansa	1986	1.50	
7. Allumettes (SONATAM)	1986	1.60	
8. Toles (TOLMALI)	1986	0.77	
9. Batteries (FAMAC)	1986	1.55	
10. Clous (SOMAFAM)	1985	-3.08	
11. Sac Polypopline (SADA DIALLO)	1985	1.19	
Textiles (COMATEX)			
12. Tissu	1985	1.075	0.92(CEAO)
13. Fil a tisser	1985	1.07	0.95(CEAO)
14. Huile de Coton	1986	1.08	0.58(CEAO)
Weighted Average		1.57	

DOMESTIC RESOURCE COST.

In calculating the effective protection and effective subsidy coefficients, domestic value added was expressed in market prices. Value added in market prices, however, over(under)states the cost to the national economy if the renumeration of the factors of production in the particular activity exceeds (falls short of) their opportunity costs. In order to estimate the cost to the national economy, the renumeration of productive factors is expressed in terms of shadow prices which reflect their opportunity costs. The domestic resource cost of foreign exchange (DRC) represents the value of domestic resources expended in saving or earning a unit of foreign exchange, valued in domestic currency at the shadow exchange rate. Accordingly, a DRC higher than one shows that the "implicit exchange rate" in the processing activity representing the amount of domestic resources expended to earn or save a unit of foreign exchange is higher than the shadow exchange rate. Ranking activities by the domestic resource cost of foreign exchange therefore expresses long-term comparative advantage in these productive activities.

The domestic resource cost coefficients have been estimated for the activities for which complete data were available, at the actual level of capacity utilization, and under full capacity utilization distinguishing, in the latter case, between variable and fixed costs. Table C-4 shows the actual level of capacity utilization for selected firms in Mali. The capital of the firms for which DRCs were calculated is entirely Malian-owned. No distinction was made between domestic and foreign labor. The assumption, therefore, is that any existing expatriate labour will in the long run be replaced by domestic labour. Nor was any adjustment made for excess profits. The return to capital was assumed to be 12 percent of net assets. The shadow price of Malian labor was assumed to be 80 percent of the actual wage rate.

Table C-3 presents the domestic resource costs for seven products under two assumptions concerning the shadow exchange rate. In the first case, it is assumed that the actual exchange rate is overvalued by 10 percent. In the second case, it is overvalued by 33 percent. Rough calculations indicate that an exchange rate adjustment of 70 percent would bring the average domestic resource cost for these industrial activities to unity at actual utilization of capacity. With no scope for adjusting the exchange rate (Mali belongs to the West African Monetary Union), and a tariff level that is already high, the most effective ways to deal with currency overvaluation would be to use export subsidies and to expand capacity utilization, e.g., through provision of working capital to firms facing financial constraint.

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TABLE C-3. Domestic Resource Costs.

A. Ratio of Shadow to Actual Exchange Rate = 1.10

Product	Year	Domestic Resource Cost at actual Capacity	Domestic Resource Cost at full Utilization
Agricultural Equipment (SMECMA)			
1. Multiculteur	1985	0.89	0.42
2. Semoir	1985	3.73	1.60
3. Train de Roues a Pneus	1985	0.49	0.22
Other Products			
4. Batterie (FAMAC)	1986	4.10	2.08
5. Clous (SOMAFAM)	1985	-0.81	-0.20
6. Polypopyline Sac (SADA DIALLO)	1985	0.83	0.63
7. Huile de Coton (HUICOMA)	1986	0.71	0.71
Weighted Average		1.9	0.95

B. Ratio of Shadow to Actual Exchange Rate = 1.33

Product	Year	Domestic Resource Cost at actual Capacity	Domestic Resource Cost at full Utilization
Agricultural Equipment (SMECMA)			
1. Multiculteur	1985	0.72	0.34
2. Semoir	1985	3.00	1.31
3. Train de Roues a Pneus	1985	0.39	0.18
Other Products			
4. Batterie (FAMAC)	1986	3.83	1.95
5. Clous (SOMAFAM)	1985	-0.66	-0.16
6. Polypopyline Sac (SADA DIALLO)	1985	0.68	0.52
7. Huile de Coton (HUICOMA)	1986	0.58	0.58
Weighted Average		1.5	0.75

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The results show that a number of production activities are economically viable. The weighted average DRC under actual capacity utilization is 1.5, while that under full capacity utilization is 0.75 for a value of the exchange rate that is 1.3 times higher than the actual exchange rate. The results thus show that expanding capacity utilization would significantly improve the DRCs and bring them within acceptable levels. This is an additional reason for removing the working capital constraint which is preventing several potentially viable firms from increasing production.

TABLE C-4. Capacity Utilization of Selected Firms.

Name of Firm	Capacity Utilization in 1985. (in percent)
TIDON KANTE	10
SEPAMA	12 (a)
SOMAPAC	13.3
SOMASAC	14 (b)
SOMAFAM (iron sheets)	20
SOMABIPAL (noodles)	24
FAMAC	25
SOMAFAM (nails)	25.5
SIKAMALI	35
SOCIMA	38 (c)
SMECMA	42
SOMABIPAL (biscuits)	54
COMATEX	62.5 (d)
ITEMA	70
SADA DIALLO (vinegar)	73.3 (f)
TOLMALI	92.2 (g)
HUICOMA	100
SONATAM	100

SOURCE: Firm data, June 1986, and Industrial Census, 1982-83.

NOTES:

(a) 12% in 1986, 40-45% in 1976-82.
(b) 60% in 1982.
(c) 38% in 1980, and 100% in 1975.
(d) In 1980.
(e) 62% in 1980.
(f) Based on 3 shifts.
(g) Based on 1 shift (46.2% based on 2 shifts).

ANNEX D

Previous Studies of Taxation In Mali

The tax system of Mali has been subject to intensive study over the past 12 years. Four especially important reports have been prepared by the IMF:

The Report on The Tax System of Mali, prepared by A.M. Abdel-Rahman and L. DeWulf, International Monetary Fund (Fiscal Affairs Department), 26 March 1974. This detailed and comprehensive report proposes a number of structural reforms some of which have been implemented while those that have not been put in effect for the most part continue to be relevant today.

Mali: The Present Tax Situation - Problems and Proposed Solutions, prepared by J.F. Garnier, Bun Hoan, and R. Soubias, International Monetary Fund (Fiscal Affairs Department), 19 May 1981. This report emphasizes the necessity of reorganization and improved administration of the revenue side of the fiscal system - the National Tax Department and the National Customs Directorate. The report also addresses problems of data collection, the special status of public enterprises, and the role of tax exemptions in encouraging investment.

Mali: A Study of Personal Income Taxation, prepared by George A. MacKenzie, International Monetary Fund (Fiscal Affairs Department), 13 December 1982. This report analyzes the role of income taxes in the Malian revenue system and the properties of the system of personal taxation. In particular, it explores the influence of the income-splitting system on average tax rates, differences in the taxation of labour and non-labour income, and the distribution of the income tax burden by income class.

Mali: Reform of The Tax System, prepared by A.M. Abdel-Rahman, A. Benbrik, and R. Soubias, International Monetary Fund (Fiscal Affairs Department), 31 October 1985. This brief aide-memoire is intended primarily to analyze the proposals of the Committees on Customs and Taxtion created under the Economic Reform Program sponsored by the U.S. Agency for International Development, in order to assess their applicability, their revenue effects, and their compatibility with the proper development of the tax system within a framework of structural reform.

Finally, as noted in last reference, there is a substantial tax dimension to the USAID sponsored Mali Economic Policy Reform Program. The proposals for tax reform in that program are

specifically intended to establish a more equitable tax system providing incentives for private sector growth and the creation of employment opportunities, accompanied by measures to improve tax administration. The Action Memorandum for the Assistant Administrator for Africa, dated 15 August 1985, outlines the USAID recommendations and the reasons for each.

In this section we briefly summarize the main conclusions and recommendations of these various studies, interjecting comments where appropriate regarding the progress of reform.

Abdel-Rahman and DeWulf (1974)

This study was undertaken primarily to improve the revenue performance of the Malian tax system. The need to generate more public revenue was pressing in 1974 due to mounting fiscal deficits in the immediately preceding years. The deficits then were attributed principally to the growing expenditure of the Government and to financial difficulties of the public enterprise sector. Although tax revenue had been growing, it was unable to keep pace with expenditures.

In contrast, the deficit in recent years is much more under control. Between 1981 and 1984 the consolidated government accounts, excluding foreign-financed investment expenditure, recorded a marked improvement, with the overall deficit on a commitment basis declining from CFAF 14.7 billion in 1981 (3.9 percent of GDP) to CFAF 8.9 billion in 1984 (1.9 percent of GDP). However, due to a substantial reduction of Treasury arrears in 1982 and 1983, the consolidated cash deficit increased from CFAF 11.0 billion in 1981 (2.9 percent of GDP) to CFAF 18.3 billion both in 1982 and 1983 (4.4 and 4.3 percent of GDP, respectively) before dropping to CFAF 8.9 billion in 1984 (1.9 percent of GDP). Consequently the current impetus for tax reform is not so much for revenue generation/deficit reduction as it is to correct economic distortions and to remove disincentives to the private sector.

The 1974 IMF Report concluded that Malian tax system was at that time structurally sound despite some major shortcomings. The tariff revision of 1968 simplified the tariff structure which had accumulated many ad hoc changes in duties and taxes. In the 1970 reform of direct taxes the civic tax on wage earners was replaced by a general income tax although that reform was unable to unify the income tax system as a whole. Indeed, taxes on income and profits have evolved as a hybrid mixture designed to optimize the advantages of the schedular and unitary systems until a transition can be made to a global personal income tax with a corporate company tax. The current hybrid system has, for example, reduced certain compliance problems, especially for wage earners who are not required to file declarations. These

administrative advantages, however, are obtained at a cost in terms of revenue and they are linked to high marginal rates for those who do have a tax liability.

The 1974 IMF Report porposed a number of specific recommendations dealing with various aspects of taxation. Some of the proposals could have been (and some were) implemented immediately whereas others were proposals for structural changes that have more far-reaching economic implications and thus were suggested to receive further study. The following are selected items.

Immediate Measures Affecting Direct Taxes on Individuals

(a) The development tax should be consolidated with the minimum fiscal. Since the two taxes are levied on the same person, this action would reduce the administrative task of assessment and collection. The Development Fund could be financed by transferring from the General Fund the equivalent of the development tax revenue.

(b) The minimum tax should be levied and collected independently and in addition to the general income tax from wage earners. This would improve the distribution of the tax burden and would raise more revenue.

(c) Individual businessmen with small scale operations who are subject to Class 6 and Class 7 of the fixed rate of the business license tax should be exempted from the schedular tax on commercial and industrial profits. This would avoid the burden of enforcing tax on many small income taxpayers from whom the tax actually collected does not justify the administrative cost.

(d) The ceiling of the forfait system should be raised to CFAF 20 million and CFAF 40 million, according to the nature of the activity. Commercial and industrial profits are assessed for the large majority of taxpayers in accordance with the forfait system, which could remain unchanged for an extended period of time. This reduces the elasticity of the industrial and commercial profits tax (the BIC) which, for all practical purposes has become a specific tax and no longer reflects taxpayers' ability to pay.

(e) Benefits in kind should be fully taxed either on their actual value or on a forfait basis determined by the Direction des Impots. The present practice of taxing only 20 percent of such benefits cannot be justified.

(f) The income-splitting system should be replaced by a system of personal exemptions. Income splitting is not well adapted to a developing country like Mali because it unduly

favours high income taxpayers with large families and so results in substantial revenue loss. Relief should be based on a deduction of fixed amounts that only vary with the size of the family. IMF (1974) recommended fixed deductions of CFAF 80,000 for the taxpayer, CFAF 40,000 for the wife (or wives), and CFAF 20,000 for each dependent child, with a maximum of five deductions for children. (Although at present the incentive to overstate the number of one's children is substantial, the Direction des Impots does not cross-check the number of children declared by a taxpayer against those shown by the records of the Social Security Fund, Institut National de Prevoyance Sociale (INPS). IMF (1982), Mali: A Study of Personal Income Taxation reports wide variation in the standards of accuracy and completeness observed in basic information on family size as declared on tax forms.)

Structural Reform of Direct Taxation of Individuals

In terms of structural reform and longer-term measures regarding taxation of incomes and profits of individuals, IMF (1974) suggests that reform could take one of the following directions: either restore the standard schedular tax system by introducing a schedular tax on wages and salaries, or introduce a full unitary income tax. Based on the experience of neighbouring countries, notably Mauritania and Senegal, it would appear that a complete schedular system would provide more revenue and would be administratively easier. On the other hand, unitary income taxes have been introduced into Chad and the People's Republic of the Congo and these cases provided evidence of the pitfalls. The present report recommends an emphasis on simplicity, administrative convenience, and emphasis of tangible proxies to income in all tax matters.

Corporate Taxation

With respect to corporate taxation, IMF (1974) recommends:

(a) The minimum profits tax should be reduced from 2 percent of the current year's turnover to 1 percent. The rationale is that this moderates the influence of the tax on corporations with low profits or losses, especially public enterprises. This particular recommendation was in fact adopted. Furthermore the rate of the IAS on chiffre d'affairs of state-owned enterprise was recently reduced to 0.5 percent.

(b) State-owned enterprises implementing social policy objectives of government should be exempt from the profits tax. This particular reform has not been adopted although, somewhat ironically, it may not be necessary inasmuch as state-owned enterprises are notorious for not generating

profits, for not paying taxes at such time as they do earn profits, and even for failing to transfer to the Treasury various withholding taxes from employees and customers that they are required to collect. Later in this report, in the section on taxation of state-owned enterprise, we propose a new and substantially different approach to the taxation of state-owned enterprise in Mali.

(c) The reduction of 50 percent in the tax on income from movable capital or dividends distributed by corporations within the first three years should be abolished. (The rationale for this proposal is straightforward: a tax on dividends in itself creates a "lock-in" effect on financial capital which thus inhibits mobility while the lower rate of tax for newer firms encourages decapitalization at the time new firms generally have weak financial structures. This IMF (1974) recommendation was not adopted although a slight extension of the time period for preferred rates - from 36 months to 42 months was introduced. The IMF seem not to place a high priority on this particular reform inasmuch as it does not appear again in IMF (1985).)

Taxation of International Trade

All studies of taxation in Mali make fundamental proposals regarding tariffs, duties and taxes on imports and exports. Trade is an important and appropriate base for taxation and the structure of taxation of trade relative to domestic taxation determines the effective protection for domestic industry. IMF (1974) recommends"

(a) With the exception of the tax earmarked for Road Fund - a levy applying only to petroleum products - all duties and taxes imposed for the benefit for other special funds, such as the statistical tax and the tax for price stabilization, should be consolidated into the import tax. This recommendation would facilitate administration and would permit better utilization of the tariff for protective policy purposes.

(b) Administrative values assigned to traded goods, valeurs mercuriales, should be used only in exceptional circumstances or for special administrative reasons such as simplifying valuation procedures for special products or for mitigating the effects of fluctuations in world prices. The tariff, and not the valeur mercuriale, should be the instrument for establishing the level - and changes in the level - of effective protection. The issue of valeurs mercuriales is an important one in the context of tax reform. It receives full attention in a section later in this report. The IMF (1974) Report clearly identified the

problems that exist; unfortunately in 1986 the problem remains unresolved and the seriousness of the issue is probably greater than in 1974.

(c) Tariff rates should be realigned to eliminate certain anomalies that have been introduced through previous ad hoc changes. Nevertheless, the recommended reform of tariff rates should maintain the current satisfactory structure consisting of (1) the customs duty required by Mali's membership in the WAEC and its association with the EEC, (2) the import duty through which changes for revenue or protection purposes should be made, and (c) the turnover tax as applied to imports.

Full discussion of Malian taxation of trade is found later in this report, including several recommendations similar to the above but presented in the context of current economic circumstances.

Other Recommendations of IMF (1974)

Several additional specific recommendations emerged from the IMF (1974) report on taxation. Some of these are structural adjustments dictated by fundamental principals of taxation designed to minimize allocative distortions although several basic recommendations were never implemented and thus remain relevant today. For example, it is advised that the turnover tax rates on locally produced goods be more closely coordinated with rates on similar imports so as to reduce unnecessary tariff protection and to eliminate undesirable discrimination against local products. Furthermore, the question of whether the turnover tax on imports is an import tax or an internal turnover tax (conveniently collected at the border) needs to be settled. If it is considered not to be a tax on imports, sufficient degrees of freedom remain to deal with effective protection. Moreover, since investment law is already liberal in terms of the benefits provided through taxation, this tax should be classified as a tax on domestic transactions, for which exemptions would not then be granted.

IMF (1974) also recommends that the single tax on consumption be eliminated because of its limited revenue and its effective duplication of the turnover tax.

MacKenzie (1982)

Mali: A Study of Personal Income Taxation is obviously a concerned with a relatively narrower set of topics than those just considered. Indeed, this report may be considered an extension and elaboration of a particular set of tax direct tax

problems raised but dealt with less completely in IMF (1974) and IMF (1981). With respect to personal income taxation, IMF (1974) had recommended several reforms, including:

1. the replacement of the income-splitting system by a system of family allowances for taxpayer dependents, thereby reducing the anomalous tax benefits enjoyed by high income individuals - benefits which increase substantially as family size increases,

2. an adjustment of the brackets of the IGR (Impot General sur le Revenu) so as to reduce average and marginal rates of that tax, and

3. changes in the taxation of ex-patriate salary earners, intended primarily to substantially reduce the favourable treatment accorded them.

The MacKenzie report endorses the recommendation to income-splitting be replaced by a system of fixed allowances for the taxpayer's dependents. It also recommends a reduction in the standard allowance for employment expenses granted wage and salary earners, the replacement of the basic allowance for family income by a basic personal allowance of a lower amount, and a reduction in the special allowance for expatriate wage and salary earners. The report proposes that the schedular taxes on nonlabour income be abolished and that all personal income be subject only to the general income tax. An interesting and useful dimension of the MacKenzie report is the attempt to explore the empirical properties of the Malian personal income tax system, including the effects of income-splitting on average tax rate, the distribution of the tax burden, and an analysis of incidence of the certain changes proposed to the tax system.

The most striking aspects of the personal income tax system revealed by the report are:

1. the low average rate of taxation of wage and salary earners;

2. the unequal treatment of entrepreneurial and rental income and wage and salary income;

3. the disproportionate reductions in the tax burdens of relatively well-off taxpayers as their family size increases;

4. the continued reliance on poll taxes; and

5. the relatively heavy reliance on taxes on employer's wage and salary bill.

Concerning the low average rate of tax on wages and salaries, the average rate of tax on a sample wage and salary earners whose average income was about 11 times per capita gross domestic product (approximately CFAF 80,000) was only 6.5 percent. This low rate reflects a high basic allowance level for family income, an employment expenses allowance of 20 percent of gross income, and the effects of the income splitting system (quotient familial) on the tax liability of higher income earners. Since the splitting system results in the after-tax income of high income families increasing by proportionately more than the after-tax income of low income families as family size increases, the split system substantially reduces the progressivity of the tax system for individuals with dependents.

Business and rental income of individuals is taxed at a significantly higher rate than labour income. Such income is assessed to either the tax on commercial and industrial profits (BIC) at 30 percent or the tax on rental income at 30 percent as well as the IGR with a deduction of 30 percent from the base for the schedular taxes. Individuals assessed the IGR on non-labour income pay approximately 36 percent of their net income before tax in schedular taxes and IGR combined . The schedular taxes account for the bulk of taxes paid by individuals with non-labour income. The average rate of the IGR on such income is about 6 percent. Many small individual businesses pay over 30 percent of their net income before tax, while wage and salary earners who are much better off pay a much smaller average rate of tax. This discriminatory taxation of entrepreneurial and rental income is highly inequitable and it provides a generally unsatisfactory solution to the problem of tax evasion by businesses in the unorganized sector. However, this large difference in the nominal incidence of taxation of labour and non-labour income exaggerates the difference in the economic or real incidence of taxation in Mali. The burden of the payroll taxes and social security contributions is at least partly borne by labour and not by the employer.

In view of the anomalies, horizontal inequities, and potential allocative distortions created by the Malian system of taxing personal income, the MacKenzie report outlined a set of recommendations to rectify these particular problems and thus were not so much concerned with total revenue consequences. The broad objectives of the proposals are first to restructure the IGR and then to make it a global tax on personal income. Some of the more pertinent specific recommendations include:

1. Replace the system of income splitting used in the calculation of the IGR by a system of fixed allowances deductible from taxable income for a dependent spouse,

children, and other dependents,and replace the basic allowance of CFAF 200,000 for family income by a basic personal allowance of CFAF 100.00.

2. Require that individuals either include the wage income of their spouses in family income subject to the IGR, or not claim an allowance for their spouse.

3. Reduce the standard allowance for employment expenses of wage and salary earners subject to the IGR by withholding from 10 to 20 percent of salary.

4. Reduce the rate of the payroll tax from 15 percent 10 percent, and consider reducing it to its old rate of 5 percent in the medium term.

5. Abolish the BIC as a tax on personal income and convert the BIC at the rate of 50 percent to a tax on net corporate income from all sources, including rental income. Abolish the tax on rental income (impot sur les revenus fonciers, IRF) and the mortmain tax (taxe sur les biens de main-morte). Retain the tax on interest and dividend income (impot sur le revenu des valeurs mobilieres, IRVM) as a withholding tax, but for individuals allow it to be creditable against IGR. The adoption of these proposals will imply the IGR will be the only tax payable on individual income.

6. Revise upward the basic personal allowance, dependency allowances, and brackets of the IGR to adjust for the effects of inflation every other year at a minimum.

For improved administration and some protection against evasion, it is also recommended that employers be required to withhold an amount of tax not less than the minimum poll tax from their employees. Furthermore, there is a need to redesign the annual return used by employers remitting IGR withheld from employees to facilitate its completion by employers and verification by the DNI. This particular change is necessary even if no further changes are made to personal income taxes.

Garnier, Buu Hoan, and Soubias, IMF (1981)

This report was prepared in the context of a recovery program supported by the IMF and the World Bank. The report itself reiterates several points developed in IMF (1974), reevaluating the issues in the circumstances of 1982. The contribution of this report to Malian tax reform arises from its emphasis on statistics and government accounting, the necessity to stimulate and reorganize the tax collection function, the importance of consolidating and rationalizing tax exemptions, and

the need to revamp the policy regarding taxation of state-owned enterprise. It is useful to comment on each of these briefly in turn.

1. Concerning tax statistics and government accounting, IMF (1981) called for a general improvement in data collection methods and record-keeping. They proposed an explicit reorganization of statistics office. In addition, the report calls for a systematic exchange of information between Direction des Impots and Direction des Douanes, especially with regard to the principal importers, who generally ought to have large tax liabilities as well. The point of information exchange is that the tax department ought to know the volume of international transactions carried out by the nation's largest (or potentially largest) taxpayers, while the customs department ought to know domestic sales volumes of importers. Such cross-checking would lead to improved assessments and aid identifying tax irregularities.

2. With respect to the tax collection function, IMF (1981) estimated real collection effort for all taxes, the BIC, the IAS, and customs. The results indicate poor collection performance for which the report provides a number of explanations and subsequent recommendations for improvement. For example, following a wise reform taken in March 1981 to establish revenue offices for the collection of indirect taxes (IAS) by the Tax Department agents, the approach could be extended to all taxes under Tax Department jurisdiction. In other words, the Tax Department should be given sole jurisdiction for the entire process of taxation - from assessment to collection to resolution of disputes over collection. The report provides some necessary administrative detail to implement such change.

IMF (1981) also addresses important problems associated with the taxation of international trade, such as the issue of valeurs mercuriales and the procedure know as "direct removal" of goods prior to settling the import tax bill. Both these issues are dealt with in detail later in the present report.

3. IMF (1981) is sceptical of the propriety and economic usefulness of the unweildy array of partial and total exemptions allowed in the common tax system. The exemptions exacerbate an already unneven application of tax law owing to problems of inept collection and outright evasion.

With respect to the Investment Code, in the absence of a cost-benefit study, the consistency of its objectives and consequences is unknown. It is certain, however, that its cost in terms of diminished revenue is high. There are

indications that without prudent reform, the foregone revenue could rise further. It is important to critically reconsider the various provisions of the investment code, to scale it down, and to monitor the exemption practice to determine the effects in terms of sectoral investment and growth. It is perhaps pertinent to note that in general, as confirmed by several empirical studies in both industrialized and developing nations, tax exemptions and special provisions tend to re-allocate investment but not to increase total investment.

(A Footnote on the Investment Code: The Malian Investment Code is fundamentally biased toward large and capital intensive projects. The Code itself requires extensive bureaucratic involvement in decisions and extraordinary delays.

There are many structural economic problems in Mali, but most of these are currently being addressed in one program or another. The need for an Investment Code and the proper structure of such a code ought to be considered only after the other structural corrections have been made. For example, once the distortions associated with the complex and variable/uneven tariff structure are corrected, and once the distortions caused by fixed prices, state-enterprises, regulations, and disincentives of the tax system are resolved, then an investment code can be considered as a policy device to encourage certain sectoral investments if such is considered a national economic priority. However, and this is the key point, an investment code has no useful role as a corrective or countervailing device against more fundamental distortions or disincentives.)

4. Regarding taxation of state-owned enterprises, IMF (1981) suggests that such entities do not bear a share of the national tax burden commensurate with their substantial economic position. The report points to significant exemptions, persistent accounting losses, and abuse of Treasury revenue withheld at source by state-owned enterprises. The recommendations include eliminating the special exemptions extended to these firms and more vigorous collection of taxes owed.

in this report, a section deals exclusively with economic and administrative problems in taxation of state-owned enterprise. The approach is substantially different from most previous positions.

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