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**Employment, poverty and economic development in
Madagascar: A macroeconomic framework**

Gerald Epstein, James Heintz, Léonce Ndikumana, and Grace Chang

Country
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Preface

The primary goal of the ILO is to contribute, with member States, to achieve full and productive employment and decent work for all, including women and young people, a goal embedded in the ILO Declaration 2008 on *Social Justice for a Fair Globalization, and*¹ which has now been widely adopted by the international community.

In order to support member States and the social partners to reach the goal, the ILO pursues a Decent Work Agenda which comprises four interrelated areas: Respect for fundamental worker's rights and international labour standards, employment promotion, social protection and social dialogue. Explanations of this integrated approach and related challenges are contained in a number of key documents: in those explaining and elaborating the concept of decent work², in the Employment Policy Convention, 1964 (No. 122), and in the Global Employment Agenda.

The Global Employment Agenda was developed by the ILO through tripartite consensus of its Governing Body's Employment and Social Policy Committee. Since its adoption in 2003 it has been further articulated and made more operational and today it constitutes the basic framework through which the ILO pursues the objective of placing employment at the centre of economic and social policies.³

The Employment Sector is fully engaged in the implementation of the Global Employment Agenda, and is doing so through a large range of technical support and capacity building activities, advisory services and policy research. As part of its research and publications programme, the Employment Sector promotes knowledge-generation around key policy issues and topics conforming to the core elements of the Global Employment Agenda and the Decent Work Agenda. The Sector's publications consist of books, monographs, working papers, employment reports and policy briefs.⁴

The *Employment Working Papers* series is designed to disseminate the main findings of research initiatives undertaken by the various departments and programmes of the Sector. The working papers are intended to encourage exchange of ideas and to stimulate debate. The views expressed are the responsibility of the author(s) and do not necessarily represent those of the ILO.

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¹ See http://www.ilo.org/public/english/bureau/dgo/download/dg_announce_en.pdf

² See the successive Reports of the Director-General to the International Labour Conference: *Decent work* (1999); *Reducing the decent work deficit: A global challenge* (2001); *Working out of poverty* (2003).

³ See <http://www.ilo.org/gea>. And in particular: *Implementing the Global Employment Agenda: Employment strategies in support of decent work*, "Vision" document, ILO, 2006.

⁴ See <http://www.ilo.org/employment>.

Foreword

The project “*Operationalizing Pro-Poor Growth through the Promotion of Decent Employment*” (OPPG) was launched in March 2006 to promote the integration of employment in national policies for economic growth and poverty reduction. OPPG built on lessons learnt from past and ongoing projects already implemented by the International Labour Organisation (ILO) as well as on activities led by the government of Madagascar further to the 2004 Ouagadougou Summit of African Heads of State and Government on Employment and Poverty Reduction.

The project, which came to an end in December 2008, was mainly financed by the Swedish Agency for International Development Cooperation Agency (SIDA) and implemented by the ILO. *At the national level*, the project aimed at building a common policy understanding at the country level to better integrate policies for productive employment into national poverty reduction strategies and support the implementation of the National Employment Policy (NPE).

The adoption of the Madagascar Action Plan (MAP) is the main event that modified the project environment, turning it yet more favourable to the promotion of employment as an essential piece in securing a broad-base economic growth. The MAP is a five-year development strategy that sets priorities, strategies, goals, and benchmarks for the period 2007-2012. It identifies eight major development goals called commitments. Promoting full employment is one of the priorities identified to promote a rapid economic growth.

Within the implementation framework of the ILO/SIDA project, the main objective of this study was to contribute to generating knowledge on formulating employment-targeted economic policies for poverty reduction. It aimed at assisting the Malagasy authorities to place employment at the centre of their economic policies. Indeed, even though employment is effectively integrated into the MAP – both in the objectives and the activity plan, the economic policies under commitment 6 do not take employment as an explicit target, but instead target low inflation, macroeconomic balance and stability in the foreign exchange market.

The study argues that the current contributions of the Madagascar financial system to generating investment, employment and incomes in the Madagascar economy is inadequate and suggests policy and structural transformations that can be initiated to greatly improve the macroeconomic context for labour market outcomes. It stresses, especially, the impacts on employment and incomes of improved access to credit by households, and by infrastructure investments in key sectors that can improve domestic linkages in the Madagascar economy. Finally, the study outlines policies that can be undertaken by the government and central banks, including loan guarantees, direct lending, and asset backed reserve requirements that can make financial assets more directly available to small producers and businesses in key sectors, including agriculture and that can counter some of the negative consequences of real exchange rate appreciation.

This study is the result of the increasing involvement of the ILO in the field of employment diagnostic tools that should facilitate the inclusion of employment issues into overall policy-making for economic development, including, macroeconomic and financial policy, by emphasizing the need to focus not only on macroeconomic stability, but also on creating a supportive environment for employment generation, and by showing how this can be done.

Given the current global financial and economic crisis which spreads worldwide with dramatic consequences on employment and poverty, the debate on alternative macroeconomic and financial policies for addressing the impact of the crisis on people

is essential. The task of generating substantially higher levels of decent employment has taken on more urgency, yet now faces even more obstacles than before. This study is an important contribution toward this objective.

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Aknowlegments

Many thanks to the local consultants for this project: André Andriamiharisoa, Banque Centrale de Madagascar, and Harivelo Rajemison, INSTAT. They were extremely helpful in the preparation of this report. However, please note that our local consultants are not responsible for the conclusions of this report, nor do they necessarily agree with them.

Thanks to Seeraj Mohamed for presenting part of our project to a World Bank Conference in Madagascar in June, 2008. We are grateful to the personnel of the ILO office in Antananarivo and especially Christian Ntsay, Director of the ILO Office, for their help and logistical support. We also thank Claire Harasty and Frederic Lapeyre of the ILO in Geneva for their comments, suggestions, and support. The paper was reviewed by two anonymous referees and we thank them for their helpful comments. Of course, all errors are ours alone.

Contents

	<i>Page</i>
Preface	iv
Foreword	v
Aknowlegments	vii
EXECUTIVE SUMMARY	1
Macroeconomic Framework	2
Restructuring Financial Institutions, Markets, and Regulation	3
Skills Development	3
Infrastructure	3
Agriculture	4
Mining and Extractive Industries	4
Tourism	5
PART I. INTRODUCTION AND SETTING	6
1. Introduction	6
The Madagascar Action Plan (MAP) and IMF Poverty Reduction Growth Facility Program (PRGF)	7
<i>A key question which this report addresses is this: to what extent is the macroeconomic framework embedded in PRGF and associated mandates consistent with achieving the goals of the MAP?</i>	7
2. The setting	13
2.1 The Labor market	15
2.2 How can earnings be increased in Madagascar? Analyzing household enterprise regressions	22
2.3 Conclusions	24
3. An input-output model of the Madagascar economy	24
3.1 The input-output model	25
3.2 Lessons and possible policy implications	26
3.3 Conclusion	29
PART II. A MACROECONOMIC, FINANCIAL AND LABOR MARKET FRAMEWORK FOR EMPLOYMENT CREATION	30
4. Macroeconomic policy for decent employment	30
<i>Macroeconomic Policy: Monetary Policy, Exchange Rate Policy, Financial Policy, and Fiscal Policy</i>	31
4.1 Trends in Madagascar's macroeconomy	33
<i>Earlier macroeconomic trends and management</i>	34

4.2	Monetary and exchange rate policy in the context of IMF structural adjustment policies .	38
	<i>Exchange Rate Policy</i>	39
	<i>Central Bank Independence</i>	40
	<i>Monetary Policy</i>	41
	<i>The IMF programming approach</i>	43
4.3	Criticisms of IMF financial programming	45
4.4	Alternative macroeconomic framework	46
	<i>The MAP and the current monetary policy framework</i>	47
4.5	Complications arising from recent commodity price increases	48
	<i>Evaluation</i>	49
	<i>Commodity price increases and Madagascar</i>	49
4.6	Conclusion	50
5.	Re-deploying the financial sector for employment creation and poverty reduction in Madagascar	52
5.1.	A description of the financial sector in Madagascar.....	54
5.2	Assessing the impact of credit on employment and incomes	58
5.3	The impact of relaxing the credit constraints on household earnings: an initial estimate ..	60
5.4	Reforming the financial sector for employment generation and poverty reduction	63
	<i>Formal Sector Banks</i>	64
	<i>How to determine to whom to lend</i>	65
	<i>What should be the rate of loan guarantee?</i>	66
	<i>How much would this program cost the government?</i>	67
	<i>Monitoring and anti-corruption protection</i>	68
	<i>Incentive-based monitoring</i>	68
	<i>How to pay for the loan guarantee program</i>	69
	<i>Development banking initiatives</i>	69
	<i>Central Bank Support for Development Banking and Small-Scale Financial Institutions</i> .	70
6.	Skills development and the role of technical and vocational	71
6.1	Education system: issues of adequacy of supply, quality, equity, and efficiency	71
6.2	Technical and Vocational Education and Training, a key to raising both employment and labor productivity	74
6.3	Assessment of TVET in Madagascar.....	76
	<i>Summing up: challenges to TVET – cost, relevance, and equity</i>	78
6.4	Strategies to address the cost-relevance-equity problems of TVET	78
6.5	Conclusion	81
PART III. SECTORAL ISSUES AND EMPLOYMENT CREATION IN MADAGASCAR.....		83
7.	Agriculture, growth and poverty reduction.....	83
7.1.	Agriculture in the Madagascar economy: lack of structural transformation.....	83
7.2	Agriculture’s central role in growth, employment, and poverty reduction.....	85
7.3	Can Madagascar triple agricultural production by 2012?.....	89

7.4	Conclusion	92
8.	Mining	93
8.1	World Bank involvement in Madagascar mining	95
8.2	Mining in the Madagascar Action Plan.....	97
8.3	Artisanal and small-scale mining in Madagascar	98
8.4	Rio Tinto/QMM in Madagascar.....	101
	<i>Overview</i>	101
	<i>Friends of the Earth/Panos London Study (2007)</i>	102
8.5	Conclusion	106
9.	Tourism	107
9.1	Statistical overview of the tourism sector	107
9.2	Sustainable tourism, employment, and poverty reduction.....	111
	<i>Overview</i>	111
	<i>Pro-Poor Tourism: Issues and Practices</i>	113
9.3	Madagascar Action Plan (2006) and World Bank Tourism Sector Study (2003).....	116
	<i>Commitment 2</i>	116
	<i>Commitment 4</i>	117
	<i>Commitment 6</i>	117
	<i>Commitment 7</i>	119
9.4	Two case studies	120
	<i>Andringitra National Park</i>	120
	<i>Integrated Value Chain Analysis of Fort Dauphin</i>	121
9.5	Conclusion	123
Appendix	125
	The Madagascar Input-Output Model	125
	<i>Data</i> 125	
	<i>Analysis</i>	125
References	127

EXECUTIVE SUMMARY

Madagascar, one of the poorest countries in the world, faces many challenges. But recent political stability, debt cancellation, and a strong developmental plan for the future embedded in the Madagascar Action Plan (MAP) – in addition to Madagascar's long-standing advantages of great mineral and environmental wealth – hold great promise for Madagascar's near and medium term future.

Still, Madagascar's initial conditions present strong challenges. More than 80% of its population live in poverty, with most of them working in low-productivity jobs, primarily in the agricultural sector. In Madagascar, it is not *unemployment which is the problem, per se*, but rather, *underemployment*, that is, employment that does not earn workers a living wage. Many Malagasy citizens are trapped in low-wage activities, often in the informal sector and usually in the agricultural sector.

Our statistical analysis in chapter 2 shows that there are high returns from primary and secondary education, from access to credit and capital assets, and from formal employment (including in the government sector) relative to informal employment. Poor citizens have virtually no access to credit or capital for fertilizer and other necessary inputs, and are often cut off from major infrastructure such as irrigation and roads. Most also lack crucial skills that would allow them to acquire jobs in other, higher productivity and therefore more highly paid employment, or to raise the earnings of their self-employment. The stark reality is that most citizens lack the skills and training that would allow them to get these higher-paid jobs.

Of equal importance, the economy is not growing fast enough or with the right sectoral balance to generate these jobs. The IMF has estimated that the economy must grow on average by 8.5 – 9.5% per year to reach the MAP goals of reducing poverty to 50% by 2012, but IMF programs and projected growth are well below that rate until 2010. And the 9.8% projected growth for 2010 is based on a huge rate of growth for the mining sector. But, as we show with our input-output analysis in chapters 3, 5, and 8, the extractive industries have relatively low employment multipliers and only modest linkage effects. So a strategy that is based on raising economic growth primarily by raising the growth rate of mining will not likely meet the poverty reduction goals of the government, especially if the impacts of tax revenue and royalty generation from mining developments are relatively modest, as they appear to be (chapter 8).

The current macroeconomic framework, based on IMF structural adjustment models embedded in the Poverty Reduction Growth Facility (PRGF) framework (see chapters 1, 2, and 4), stresses commodity price stability, external balance, central bank independence, and privatization. But it does not focus on economic growth, development, and poverty reduction. To be sure, macroeconomic balance and stability are crucial goals, but Madagascar needs a macroeconomic framework that can also encompass a strategy and commitment to adequate economic growth and poverty reduction.

Hence, we argue in this report that in order to achieve the expansion of decent work opportunities and achieve sustainable poverty reduction in Madagascar, there must be:

- A macroeconomic framework that supports the goal of reducing poverty to 50% by 2012, which implies an economic growth rate of 8.5 – 9.5% over the next several years.
- A more rapid structural transformation out of low productivity agricultural, informal employment to higher productivity, more formal employment.
- Acceleration of skills development, through more investment in vocational training and other mechanisms of skill development.
- Macroeconomic institutions and framework, including that of the Bank of Madagascar, committed to growth and development as well as macroeconomic “stabilization.”
- A restructuring of the financial sector which, at this point, is contributing very little to development. This may include the creation of a development bank, as currently envisaged by the government, but it must be a development bank that has a developmentalist vision and operating opportunities, not a framework that is constrained to operate like a private bank.
- Careful attention paid to the development of “leading sectors,” such as mining and tourism, to make sure they have strong positive linkages to the Madagascar economy and thereby are able to contribute sufficiently to sustainable poverty reductions and development.
- A significant increase in the tax and royalty payments that will be forthcoming from these investments, and a dedication of these investments to re-investment in human and infrastructure capital in Madagascar.

To implement these broad principles, we propose the following, more specific proposals.⁵

Macroeconomic Framework

- Macroeconomic policy should be oriented toward achieving the MAP’s growth and poverty reduction targets along with macroeconomic stability. In other words, decent employment generation should be targeted along with macroeconomic stability.
- The Central Bank and related macroeconomic policy institutions must have sufficient policy tools to achieve this set of goals. These can include capital management tools to help reduce exchange rate variability and avoid an over-valued exchange rate, asset-based reserve requirements, loan guarantees, and regulatory controls to mobilize and direct credit to productivity-enhancing and poverty-reducing activities.
- Credit policy can also help support industrial targeting of key sectors that have high value-added, employment generation, and linkage effects in the economy.
- Care should be taken not to overreact to external price shocks with tight monetary policy unless compensating policies are implemented to reduce the

⁵ In this report, we do not separately address issues related to the export processing zones and foreign trade integration. The export processing zones are highly dependent on changes in tax codes and foreign treatment of Madagascar exports; a separate set of specialized issues concern these zones that are beyond the scope of this report. We do address the real exchange rate, which does have an important impact on these zones. The issue of trade integration more generally is addressed within relevant sections of this report.

impacts that shocks and tight credit have on the poor and on supply-generating activities; otherwise, a downward cycle of stagnation can be initiated.

Restructuring Financial Institutions, Markets, and Regulation

- Currently, the commercial bank-centered financial sector does little to support economic development and structural transformation. Financial regulators and the central bank should do more to encourage greater intermediation and financial investment in key sectors by the commercial banks and the financial sector as a whole.
- The central bank should consider implementing a set of:
 - Asset-based reserve requirements to encourage lending to key decent work generating sectors.
 - A system of loan guarantees for investments that generate decent employment.
 - Direct lending to microfinance and other lending institutions that on-lend for small and medium enterprises and other institutions that generate decent jobs.
- The government and international institutions should follow through with the idea of creating a Development Bank, but it has to be one devoted to lending for economic transformation and the creation of decent employment.

Skills Development

- Addressing the challenge of meeting the demands from a fast-growing population and modernizing private sector will require a two-pronged strategy.
- On the one hand, the government must improve the quality and capacity of the general education system from the basic level to the higher levels. In particular, massive investments must be undertaken to increase the physical capacity of the system to enroll, retain, and provide high-quality education to a larger number of students.
- At the same time, the government needs to improve the complementarity of the classic education system and technical/vocational education. The following are elements of a strategy to enhance skills development through technical and vocational training:
 - Promoting a demand-driven TVET system.
 - Setting up and strengthening accreditation and quality assurance mechanisms.
 - Harmonization of TVET standards with regional standards.
 - Setting up programs for early school leavers.
 - Promoting a self-employment oriented TVET.
 - Promoting enterprise-based training and designing strategies to retain trained workers.

Infrastructure

A key component of Madagascar's development strategy is to increase key infrastructure in transport, education, agriculture and in other important sectors. Our discussion of infrastructure investment is divided among the sections of this report rather than collected in a separate chapter, but this should leave no doubt about infrastructure's importance to the long run creation of decent jobs in Madagascar.

Agriculture

To increase the contribution of agriculture to both growth and employment creation, the following must feature prominently in the government's medium- to long-term policy framework:

- Scaling up investment in rural infrastructure.
- Investment in agricultural productivity-enhancing technology.
- Increasing access to financing for rural producers.
- Increasing access to assets for rural producers.
- Improving market/price incentives for agricultural production and rural sector activities.
- Integrating capacity building for rural producers in rural development programs sponsored by the government and the development partners.

Mining and Extractive Industries

If mining development is to increase its contributions to sustainable, poverty-reducing development in Madagascar it must: 1) increase its positive linkages to the Madagascar economy 2) address the potential negative environmental impacts on Madagascar and 3) increase its financial contributions in the form of royalties and tax revenues over the long term that can be reinvested in infrastructure, skills, and institutions for positive structural transformation.

The revenue issue is central. Mining, by itself, generates few jobs, and contributes to environmental destruction. Moreover, investment in mining can contribute to an over-valued exchange rate which can harm the development of other sectors of the economy. So, if mining is going to contribute to the long-run development of the Madagascar economy, it **MUST** generate substantial amounts of government revenues which must be re-invested in key infrastructure and investments in other sectors which can sustain decent employment and poverty reduction over the long term.

In addition, we conclude:

- While preparations are underway for environmental restoration of the Rio/Tinto mine area after the mine closure, more needs to be done to make the region socially, economically, and environmentally better off after closure than it was before. For example, with respect to biodiversity conservation, structures should be set in place to ensure that young local people who might have begun their careers as assistants to international experts continue to receive an education that will enable them to become technicians and scientists themselves.
- As the most experienced actor involved in the mining project, the World Bank should take more responsibility to implement the goals outlined in the Mineral Resources Governance Project and Integrated Growth Poles Project in Madagascar, including providing more education and technical training and job creation in the local economy.
- Local communities, and especially the poorer members of these communities, should be supported to play a greater role in biodiversity protection. More funds should go to compensating communities for their role in conservation; local knowledge and experience should be adequately remunerated in the conservation effort.

- More revenues could be generated by increasing entry fees to conservation areas or levying a conservation tax on international tourists; the money could be returned to the local community on an equal, per capita basis. Furthermore, the fiscal authorities could target tax revenue strategies to the mining sector and use the revenues to support skills training, which would increase the productivity of labor and local infrastructure investment.
- Good jobs could be created by these policies and dedicated to conservation purposes in the areas of local policing and surveillance to protect environmental assets.
- Local people could be trained as assistants to conservation scientists, waste treatment and recycling specialists, or cultural and ecological guides.

Tourism

Tourism is an expected leading sector in the Madagascar economy, yet, as with mining and extractive industries, more needs to be done to: 1) improve positive linkages to the local economy; 2) minimize negative environmental effects and 3) raise revenue for reinvestment in decent job creation and infrastructure in the economy.

In particular:

- We support Madagascar's pledge, outlined in the MAP, to develop eco-tourism, but within a poverty-reduction framework.
- We suggest building local governance institutions so as to democratize control over tourism assets, including natural resources, and ensure that benefits are distributed equitably. We also recommend that a coordinated effort be made to integrate environmental protection, employment creation, and poverty reduction.
- To finance such projects we suggest increased park entrance fees, higher departure and other taxes, and international compensation for the positive externalities provided by the country's biodiversity conservation services to the world's ecosystem.
- Of use could be green certification systems for hotels and lodges, and eco-labeling schemes for parks and products could provide value-added to these services. The revenues generated by these efforts, in addition to tax revenues generated by the mining sector, could be channeled towards investments in creating decent work, including those with positive environmental effects.
- These jobs could include activities that are good for the environment, such as waste disposal and recycling services at hotels, training park guides, or educating locals in conservation practices.
- Revenues may be harnessed for the purpose of training locals in hospitality services or language skills.
- Finally, resources should be devoted to strengthening links in the supply chain, particularly in the agriculture, livestock, fisheries, and handicrafts sectors.

PART I. INTRODUCTION AND SETTING

1. Introduction

Madagascar is one of the poorest countries in the world. But it has entered a period of higher growth prospects. The current government, in consultation with Malagasy citizens and with the help of multilateral institutions and international donors, has put together an ambitious plan, the Madagascar Action Plan (MAP), which, complemented by the Millennium Development Goals (MDGs), is designed to put the economy on a solid path toward sustainable growth and poverty reduction. After years of political instability and economic stagnation, recent political and economic progress and the MAP process provide a basis for optimism about medium-term economic prospects for the Malagasy economy and people.

The road will not be easy, however. Madagascar is beset with numerous obstacles to overcome, including high levels of poverty and illiteracy, low levels of productivity in agriculture, substantial levels of informal employment and underemployment, and very poor infrastructure, including basic transportation infrastructure. Moreover, the economy is frequently buffeted by substantial external shocks, including cyclones – most recently in the fall of 2008, energy and food price shocks, and occasional political instability and insecurity. Still, there are positive economic signs as well. Various debt-reduction programs over the last decade have substantially reduced Madagascar's foreign debt over-hang. New, large mining projects are about to come on line, and inflation appears to have been stabilized relative to previous periods.

Still, for substantial and longer term sustainable progress that will significantly raise the standard of living of large numbers of the poor, the overall framework of economic policy will need to be appropriate. This report focuses on the *macroeconomic policy framework* in Madagascar. Its objective is to build on the macroeconomic framework that is currently in place and suggest some key modifications that we believe can generate higher levels of productive work and raise standards of living for the majority of Madagascar's population. These improved economic outcomes will make it more likely that the key goals of the MAP can be achieved. Our report takes as its starting point the MAP and the IMF Poverty Reduction Growth Facility Agreements (PRGFs) that form the key basis for the operative macroeconomic framework.

A key question we ask is this: is the PRGF macroeconomic framework the best one to use to achieve the MAP goals? More specifically, are the programs and targets embedded in the IMF program consistent with achieving the MAP goals with respect to economic growth and poverty reduction? More generally, what is the best macroeconomic framework to use to increase the likelihood that the MAP targets will be reached? In carrying out this analysis we discuss the macroeconomic policy framework, in general, and then focus on: 1) financial institutions, markets, and regulation; 2) skills development; 3) agriculture; 4) mining; and 5) tourism.

In the next section, we describe the MAP and the PRGF structures and in the subsection that follows we ask some questions about their relationship. In the final section we foreshadow some of our main conclusions and then we lay out the road map for the rest of our report.

The Madagascar Action Plan (MAP) and IMF Poverty Reduction Growth Facility Program (PRGF)

The Madagascar Action Plan (MAP) evolved out of preparing a *poverty reduction strategy paper* as part of the process of receiving debt relief under various multilateral debt relief facilities. The MAP, subtitled “Madagascar Naturally,” and unveiled in November of 2004, is a vision for Madagascar’s sustainable development, a road map of goals, and a five-year, medium-term development plan. It sets priorities, strategies, goals, and benchmarks for the period 2007-2012, and, in principle, provides the medium-term economic framework for national economic policy. It is also broadly consistent with the Millennium Development Goals developed by and for Madagascar.

From the perspective of the macroeconomic policy, another key set of guiding principles are the IMF structural adjustment and macroeconomic guidelines associated with the IMF's Poverty Reduction Growth Facility (PRGF), which delineates fairly tight macroeconomic goals, conditions, and benchmarks that are to be followed by monetary policy, fiscal policy, exchange rate management, and financial regulation. As we will see, these structural adjustment goals are embedded in the MAP itself, and therefore, it is this IMF PRGF framework that provides the underlying macroeconomic structure for the MAP.

A key question which this report addresses is this: to what extent is the macroeconomic framework embedded in PRGF and associated mandates consistent with achieving the goals of the MAP?⁶

To elucidate the issue, consider the following: The MAP calls for reducing the rate of poverty from over 85% (living under US\$2/day) to 50% by 2012 (Table 1.3). The IMF has estimated that in order to reduce poverty by that much, real GDP growth would have to be in the range of 8.5 – 9.5% per year. Yet, the IMF’s programmed growth over the next several years is considerably below that rate. Table 1.1, taken from the IMF July 2008 Madagascar country report, shows recent economic data alongside those projected and programmed for the next several years. It is clear that the programmed growth through 2009 is below that required to significantly reduce poverty rates. The 2010 rate of growth is significantly higher, but a closer look at the data in the table suggests that this higher rate of growth stems from a projected huge increase in exports, presumably from the mining sector. Table 1.2, which shows projected rates of growth of different sectors, seems to confirm this point: most sectors’ growth rates are not programmed or projected to grow significantly more over the next several years, except for *extractive industries*, for which a huge growth rate of 880% is projected for 2010.

⁶ As a related matter, we could ask the same thing about the Millennium Development Goals, but since the Malagasy Government is focused on the MAP, we will mostly do likewise.

Table 1.1 IMF economic projections and programs, 2006-2010

National Income	2006	2007 Estimated	2008 Programmed	2009 Programmed	2010 Projected
<i>(Percentage Change, unless otherwise indicated)</i>					
Real GDP growth	5.0	6.2	7.0	7.3	9.8
CPI (end of period)	10.8	10.3	9.7	7.5	6.5
Export of goods volume	9.0	13.7	4.5	10.2	72.9
Terms of trade (deterioration = -)	-1	-2.4	-11.7	-1.0	0.3
Reserve money	13.3	32.1	15.0	18.7	19.7
Net domestic assets	-4.0	8.9	20.0	5.9	10.7
Credit to government	-16.2	1.0	1.1	0.9	0.8
Credit to private sector	19.5	17.3	28.1	20.4	21.0

Source: IMF (2008c), Table 1.

Table 1.2 Sectoral shares and programmed/projected growth rates, 2006 - 2010

Sector/Industry	Share of GDP in 2005 (%)	2006 <i>(Percentage Change)</i>	2007 estimated	2008 programmed	2009 programmed	2010 projected
PRIMARY SECTOR	31	2.1	2.2	2.8	3.2	3.3
(of which) Agriculture	15	2.6	2.9	2.9	3.8	4.0
SECONDARY SECTOR	12	3.5	9.8	6.8	10.4	40.5
(of which) Export processing zone	4	0.0	28.6	2.9	11.2	12.1
(of which) Extractive industry	0	9.1	-7.2	12.0	130.0	880.0
TERTIARY SECTOR	46	7.1	7.7	9.3	8.8	6.2
(of which) Public works construction	3	27.6	21.8	20	18	12

Source: IMF (2008c), Table 2.

While, as we show in chapter 8, expansion of the mining sector potentially holds many benefits for the Malagasy people, their direct impacts on employment and poverty reduction are likely to be modest. As a result, other sectors and avenues for decent employment will have to be significantly developed if the standards of living are to be broadly raised. The results depend on a host of factors – internal, policy, and external – of which the macroeconomic framework is just one. But it will have a very important impact on whether the MAP goals will be achieved.

Madagascar Action Plan

The Madagascar Action Plan is the key planning document being implemented by the government of Madagascar in combination with its international partners. The MAP includes 13 Big Goals, 6 Breakthrough Reform Initiatives, and 8 Commitments, each with 10 challenges. Table 1.3 lists the “Big Goals.”

Table 1.3 Madagascar Action Plan: The “Big Goals”

Indicator	2005	2012
UN Development Index (ranking)	144 out of 177	100
Poverty rate (% of population living below \$2 a day)	85.1% in 2003	50%
Family size (fertility rate)	5.4	3 to 4
Life expectancy	55.5	58 to 61
Literacy	63%	80%
Percentage of children completing secondary school	Lower Sec: 19% Upper Sec: 7%	Lower Sec: 56% Upper Sec: 40%
Economic growth	4.6	8% to 10%
GDP (USD)	\$5 Billion	\$12 Billion
GDP per capita (USD)	\$309	\$476
Foreign direct investment	\$84 Million	\$500 Million
World Bank business climate ranking	131	80
Corruption perception index	2.8	5.2
Households having land title	10%	79%

Source: IMF (2007a).

From Table 1.3 we can see that the MAP targets an increase of economic growth to a range of 8 – 10% by 2012. At other points in the MAP document, this range is identified as 7 – 10%. These are obviously ambitious goals.

Since this report is focused on Madagascar’s macroeconomic framework, we turn next to Commitment 6: A High Growth Economy. Table 1.4 lists the goals and indicators associated with this commitment. Embedded in this set of indicators are the key points of the IMF’s Poverty Reduction Growth Facility macroeconomic framework, which itself reflects the longer standing, IMF approach to macroeconomic stabilization. It lists a set of commitments to reduce inflation, reduce budget deficits, reduce central bank financing of government, and raise international reserves, and then lists an increase in the rate of growth of the economy. In the short run, most of the strategies would tend to reduce growth. So what is missing, of course, are clear intermediate variables or indicators that show how these macroeconomic “stabilization” variables will also raise economic growth, at least in the medium-term horizon of the MAP. In chapter 4 of this report, we develop in more detail the current macroeconomic framework used in Madagascar, discuss the framework’s strengths and weaknesses, and develop some key alterations to that framework that we believe can better achieve some of the key goals of the MAP, especially those relating to economic growth and poverty reduction.

Table 1.4 Madagascar Action Plan (MAP)
Commitment 6: Create a high growth economy

Indicators	2005	2012
Annual inflation (%)	11.4	5.0
Budget deficit (% of GDP)	4.3	3.0
Central bank credit to government (%fiscal revenue of last year)	10	5.0
Foreign currency reserves (in imports month)	2.9	6
Current account balance (% of GDP)	-11.7	-8.0
Total public debt (% of GDP)	81.4	60
Economic growth rate (%)	4.6	7 – 10%
Investment rate (% of GDP)	22.5	30
GDP per capita (USD)	309	476

Source: Madagascar Action Plan

To get more specificity on the MAP growth framework, one must dig a little deeper. Within the High Growth Economy commitment, the MAP lists 10 challenges that elaborate on the strategies, targets, and indicators for achieving the “high growth economy.” These *challenges* give further insight into the links that are assumed between the stabilization aspects and the development/growth aspects of the macroeconomic framework.

Challenge 1, “Ensure a Stable Macroeconomic Environment,” embodies the general concern with low inflation and a stable exchange rate, goals that are certainly important. Challenge 2 is to “Increase Foreign Direct Investment.” Note that the MAP states: *“Foreign investment will be especially promoted in sectors where value-added, job creation integration and multiplier effects on other sectors will be maximized”* (emphasis added). In chapter 3 we develop an input-output model that broadly illustrates which sectors have these desirable characteristics.

Challenge 3 merits some more elaboration and discussion, since its goals are closely connected to the work of this report. Challenge 3 is to “Promote Full Employment.”

Table 1.5 Madagascar Action Plan
Challenge 3: Promote full employment

Goals	Strategies
Ensure labor force is well qualified	Stimulate job-generating sectors
Labor will exhibit higher productivity	Develop a National Manpower Plan to align labor to the needs of the economy
Full employment will be pursued.	Provide vocational training to support industries that contribute to the high growth economy. Shift mindset to support efficient economic activity.

Source: Madagascar Action Plan

It is important to note here that full employment is a key commitment of the MAP and that it involves a strategy to stimulate job-generating sectors and provide educational training to raise productivity. We build on these commitments and challenges in the report that follows. This commitment will be more effective if it is slightly adjusted. As we discuss further in chapter 2, the main problem in Madagascar is not unemployment, but *low productivity* and

underemployment. The challenge is to raise productivity and decent employment. In chapter 3 we develop an empirical strategy for identifying those sectors that can contribute the most value-added, employment generation, and multiplier effects for the economy. Policymakers can build on this information to help them make decisions about the type of FDI to seek.

Challenge 4 is “Reform the Banking and Financial System.” The MAP recognizes that the current financial system does an extremely poor job of providing banking services to businesses and individuals, and a poor job of mobilizing and intermediating credit. The goals are to improve the financial sector by improving regulation, increase competition by attracting more foreign banks, and strengthen the efficiency and networks of microfinance institutions. The indicators of success are: an increase in the private savings rate from 12.1 in 2005 to 25.7 in 2012, a reduction of the interest margins of the banks from 8.25% to 5%, and an increase in the amount of long-term bank credit to the private sector from 5.4% of the total to 8% of the total. As we discuss in chapter 5, it is clear that the financial sector is currently working very poorly and needs to be significantly improved and we suggest some policies that can achieve that goal. In chapter 5, we develop a set of proposals to harness the current banking system’s resources, to develop new institutions to promote more productive investment, and design ways to improve coordination between the Bank of Madagascar and other government institutions in the re-deployment of the financial system for sustainable growth and poverty reduction, as envisaged in the MAP.

Our report relates to other key challenges identified by the MAP with respect to the goal of creating a “High Growth Economy.” Challenge 7 calls for the economy to “Intensively Develop the Mining Sector”; and Challenge 8 is to “Intensively Promote and Develop the Tourism Sector.” Chapters 8 and 9 below discuss key issues in these areas and their relation to decent employment and poverty reduction in Madagascar.

Other commitments, which we discuss in this report, are obviously closely connected to the commitment of “Achieving High Economic Growth.” Commitment 4, “Rural Development and a Green Revolution” is of key importance, considering that most Malagasy citizens earn their livelihoods in agriculture and related sectors. We discuss agriculture in chapter 7. Commitment 3 calls for “Education Transformation,” which we consider in our chapter on skills development (chapter 6); and Commitment 2 calls for “Connected Infrastructure,” which is an important theme in a number of our chapters.

Road Map to Our Report

The MAP lays out a number of ambitious and important goals for Madagascar’s development. We will argue in this paper, however, that the macroeconomic framework needs to be modified if it is going to contribute sufficiently to achieving these goals. The main points and contributions that we make in the pages that follow are summarized below:

1. The goal of the macroeconomic framework should be to raise productivity, facilitate economic transformation, and increase the availability of decent jobs, while improving the ability of the Malagasy workforce to do those jobs. The macroeconomic framework must be directed to facilitating these goals while preserving macroeconomic stability, broadly defined. Thus macroeconomic policy must be focused not only on macroeconomic

stability, but also on creating a supportive environment for employment generation, resource mobilization and allocation, and economic transformation. This has important implications for Central Bank policy and institutional structure, financial policy and regulation, industrial policy, and fiscal policy. In particular, macroeconomic and financial policy should be geared more explicitly toward reaching the growth, employment, and poverty reduction targets contained in the MAP, along with “stabilization” targets.

2. This means that Central Bank policy must remain part of the overall coordinated governmental development effort, as suggested by the MAP, rather than a completely isolated entity, while having sufficient autonomy to ensure its stabilization function.
3. The Bank of Madagascar should have the financial tools and instruments necessary to achieve these multiple targets. These can include selective credit controls such as asset-based reserve requirements to support industrial targeting, as indicated in the MAP, and capital management techniques, to help manage the exchange rate. These tools, including required reserve ratios, can help manage potential over-appreciation of the real exchange rate while reducing the costs of exchange rate management to the Treasury.
4. The financial sector must become much more supportive of economic development and growth than it is presently. This means that new financial institutions should be created, including, for example, a Development Bank and related financial entities, and that the financial regulators, including the BCM, should take a more active role in stimulating financial mobilization and decent employment-oriented lending. This can include financial policies such as asset-based reserve requirements, loan guarantees, and on-lending to specialized financial institutions that are especially involved in employment creation, productivity enhancement, and poverty reduction activities.
5. Macroeconomic tools, such as asset-based reserve requirements, development banking, and loan guarantees, should be made available to support the kind of industrial targeting called for in the MAP to direct investments to and mobilize resources for high value-added, high-employment sectors.
6. This report presents an input-output (I-O) model and data analysis that help identify those sectors and suggests a broad framework that can be used to help generate and target investments to those sectors.
7. The report also has recommendations for Skills Development (chapter 6), and specific sectoral suggestions for Agriculture (chapter 7), Mining (chapter 8), and Tourism (chapter 9).

The rest of our report is organized as follows:

- Chapter 2 presents the economic setting for the report with an overview of economic developments, poverty and social indicators, and labor market statistics. This will provide the context for the economic analyses and proposals that follow.
- Chapter 3 lays out the input-output model that we developed for the Malagasy economy. This model will form the basis for our discussion of industrial targeting and financial regulation.
- Chapter 4 discusses the macroeconomic policy framework currently in place in Madagascar, analyzes its strengths and weaknesses, and proposes some improvements in the framework to better support economic growth, employment generation, poverty reduction, and other important goals contained in the MAP.

- In chapter 5, where the Malagasy financial sector is analyzed, we propose an alternative set of policies that can make the financial sector an agent of economic development, poverty reduction, and structural transformation.
- Chapter 6 discusses skills development with an emphasis on vocational training and on-the-job training to raise skill levels, a key to raising productivity.
- In chapter 7 we survey the crucial agricultural sector, where most Malagasy citizens earn their livelihoods. The focus will be on a discussion of the MAP goals of dramatically raising agricultural productivity.
- Chapter 8 discusses the dynamic mining sector, with a focus on discussing ways in which this sector can contribute to employment generation, income enhancement, and revenue creation for the government, while preserving the environment.
- In chapter 9, tourism, another dynamic sector, is analyzed from the perspective of employment generation and poverty reduction.

2. The setting

Madagascar is a very poor country that has enormous potential for development. The country currently ranks 143 out of 177 in the United Nations Human Development Index (HDI) and more than three quarters of its population live on less than \$2 a day (Table 2.1). Still, while Madagascar is poorer than the average least developed countries, the people of Madagascar have a higher level of literacy and Madagascar itself has enormous mineral wealth, natural beauty, and environmental treasures that, under the right circumstances, can be enhanced and sustained while contributing to development and significant increases in living standards.

Table 2.1 shows basic social indicators of Madagascar compared with the “least developed countries” as defined by the World Bank and with sub-Saharan Africa as a whole.

Table 2.1 Comparison of social indicators of Madagascar, sub-Saharan Africa, and LDCs

Indicators	Years	Least Developed Countries	Sub-Saharan Africa	Madagascar
Life expectancy at birth, (years)	2005	54.5	49.6	58.4
Adult literacy rate (% aged 15 and older)	1995 – 2005	53.9	60.3	70.7
GDP per capita (PPP US\$)	2005	1,499	1,998	923
Population living below \$1 a day (%)	1990 - 2005			61.0
Population living below \$2 a day (%)				85.1

Source: United Nations, Human Development Report, (2008).

Still enormous obstacles remain. Transportation infrastructure is very poor with significant parts of the country very difficult or even almost impossible to reach during certain times of the year. Economic growth has been low for

significant periods of time and highly variable at other periods. Figure 2.1 shows the evolution of per capita income since 1960.

Figure 2.1

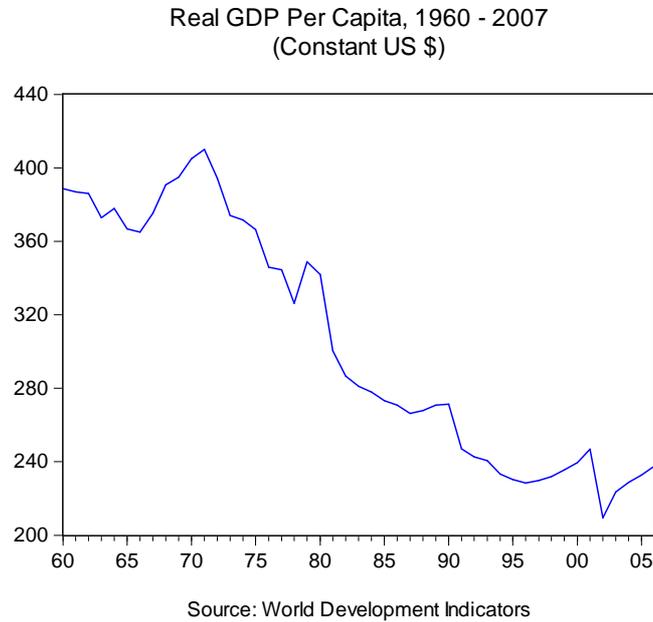
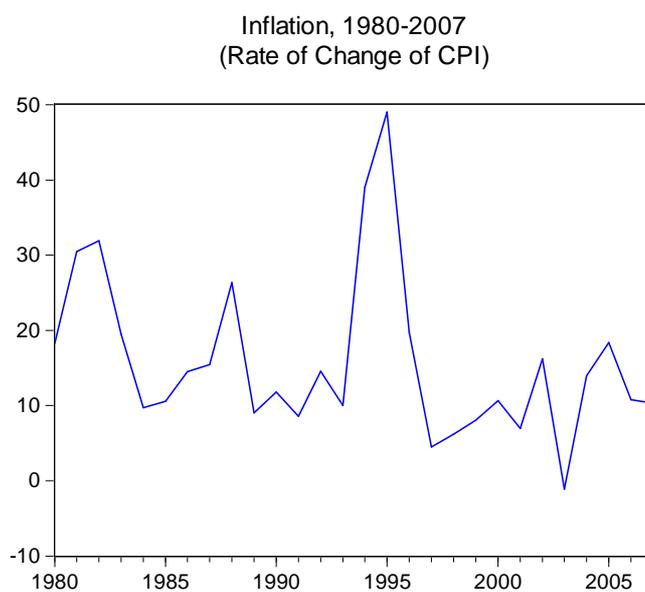


Figure 2.1 indicates a catastrophic slide in economic performance between 1970 and the late 1990s, with a partial recovery in recent years. As Figures 2.2 and 2.3 show, economic growth, inflation, and exchange rates have also been highly erratic.

Figure 2.2



Figure 2.3



Source: IMF, World Economic Outlook Data Base

The instability in growth, inflation, and exchange rates is due to numerous factors including external shocks, such as the cyclones and other bad weather that Madagascar experiences all too frequently, political instability caused by a myriad of complex factors, and economic policy mistakes.

Economic policy has evolved significantly over time. Following independence from France in 1960, the Malagasy economy underwent a decade of fairly strong economic growth until the 1970s, when policy mistakes and global shocks that afflicted much of the world ushered in a period of economic decline. Starting in the 1980s, Madagascar turned to the IMF for assistance and underwent a series of structural adjustment programs. In the mid-1990s, with the support and advice of the IMF, it ushered in a series of economic liberalization and continued structural adjustment macroeconomic policies. These culminated in significant debt relief and the development of a poverty reduction strategy paper (PRSP) in the form of the Madagascar Action Plan (MAP).

The key to carrying out this program – i.e., increasing standards of living and reducing poverty – is to raise the level and quality of employment, which, in turn, means raising productivity and increasing market demand. In order to accomplish this successfully, it is important to have a clear picture of the labor market, the structure of the economy, and an understanding of the overall macroeconomic environment. We will undertake to present these in the remainder of this and the next two chapters.

2.1 The Labor market

The Malagasy population is relatively youthful. As illustrated in Table 2.2, people of working age, defined as those aged 15 or older, constitute slightly more than half of Madagascar's population (54 percent in 2005). Therefore, the economy is characterized by a high dependency ratio – the employment income

that the economically active population earns must therefore support a large number of dependents, particularly children. Nearly 20% of the population is under the age of 6, and an additional 12 – 13% is 6 to 9 years old.

Table 2.2 Population of Madagascar by age group, 2005

Age Range	Male	Female	Total
5 years or under	1,803,726	1,811,904	3,615,630
6-9 years	1,219,967	1,220,031	2,439,998
10-14 years	1,331,385	1,274,562	2,605,947
15-19 years	943,569	981,692	1,925,261
20-29 years	1,286,000	1,476,551	2,762,551
30-39 years	1,014,303	1,123,090	2,137,392
40-59 years	1,314,680	1,290,374	2,605,054
60 years or older	398,071	356,908	754,979
Percentages			
5 years or under	19.4%	19.0%	19.2%
6-9 years	13.1%	12.8%	12.9%
10-14 years	14.3%	13.4%	13.8%
15-19 years	10.1%	10.3%	10.2%
20-29 years	13.8%	15.5%	14.7%
30-39 years	10.9%	11.8%	11.3%
40-59 years	14.1%	13.5%	13.8%
60 years or older	4.3%	3.7%	4.0%
All	100.0%	100.0%	100.0%
Working age population	53.2%	54.8%	54.0%

Source: Madagascar Household Survey (2005)

Clearly, employment income is critical for sustaining households in Madagascar.⁷ The overall labor force participation rate for the working age population is approximately 87% (Table 2.3). The participation rate for women is somewhat lower than that of men. However, women's labor force participation is very high by international standards – although not unusually so for a low-income country in sub-Saharan Africa. Although labor force participation rates are highest among the working age population, they are also significant for children and youths. Approximately 14% of children aged 6 to 9 are engaged in

⁷For the purposes of this discussion, a person is considered to be employed if he or she works to produce goods or services that would be counted in the system of national accounts. Therefore, anyone whose labor helps produce marketed goods or services would be considered employed. In addition, individuals who produce goods (but not services) for own-consumption in the household would be considered employed. In this latter case, the goods are not sold or bartered on a market, but marketed substitutes are often available – at least theoretically.

some form of employment and nearly a quarter of all children aged 10 to 14 are economically active.

Table 2.3 Labor force participation rates, Madagascar, 2005

Age Range	Male	Female	Total
5 years or under	---	---	---
6-9 years	14.1%	13.4%	13.7%
10-14 years	25.6%	24.7%	25.1%
15-19 years	63.6%	64.0%	63.8%
20-29 years	92.3%	87.9%	89.9%
30-39 years	99.3%	92.6%	95.8%
40-59 years	99.4%	94.5%	97.0%
60 years or older	82.4%	67.1%	75.2%
Total	65.8%	63.5%	64.6%
Working age population	89.4%	84.6%	86.9%

Source: Madagascar Household Survey (2005)

Table 2.4 shows how the working age population is distributed by employment status. Open unemployment is relatively uncommon, although, as we will see, underemployment in low productivity jobs is endemic. Among the employed population, the most common arrangement is some form of self-employment, either as own-account workers or as unpaid contributing family workers. Over 70% of the working age population is employed in one of these two employment status categories. Note there are gendered patterns to self-employment in Madagascar. Men are much more likely to report being employed as own-account workers while women are typically employed as unpaid contributing family workers.

Table 2.4 Labor force status, working age population, Madagascar, 2005

Labor Force Status	Male	Female	Total
Inactive	10.6%	15.4%	13.1%
Unemployed	1.6%	3.0%	2.3%
Paid manager	1.7%	0.8%	1.2%
Paid employee	13.6%	8.7%	11.1%
Own-account worker	50.4%	14.5%	32.0%
Contributing family	22.1%	57.7%	40.4%
Total	100.0%	100.0%	100.0%

Source: Madagascar Household Survey (2005)

One of the reasons that own-account and contributing family workers constitute a large fraction of employment is the importance of agricultural employment – particularly, smallholder production. Table 2.5 shows that over 80% of all employment occurs in the agricultural sector. The vast majority of this employment is some form of self-employment. Agricultural activities account for approximately the same share of men's and women's employment,

although, as we have seen, women are more likely to be employed as unpaid contributing family workers.

Table 2.5 Agricultural and nonagricultural employment, working age population, Madagascar, 2005

	Male	Female	Total
Nonagricultural	879,154	810,774	1,689,928
Agricultural	3,472,446	3,460,009	6,932,456
Total	4,351,600	4,270,783	8,622,384
Percentages			
Nonagricultural	20%	19%	20%
Agricultural	80%	81%	80%

Source: Madagascar Household Survey (2005)

Outside of the agricultural sector, wage employment accounts for a larger share of total employment. As shown in Table 2.6, approximately 57% of all non-agricultural employment is some form of wage or salaried employment (i.e., paid managers and paid employees). Note that men are more likely to work in paid employment than are women. Among employed working age women, 55% work in some form of self-employment while 45% work as employees. For men, the figures are 31% and 69 %, respectively.

Table 2.6 Nonagricultural employment, working age population, Madagascar, 2005

Employment Status Categories	Male	Female	Total
Paid manager	9.3%	4.5%	7.0%
Paid employee	59.5%	40.6%	50.4%
Own-account worker	24.0%	31.4%	27.6%
Contributing family	7.2%	23.6%	15.1%
Formal/informal employment			
	Formal	Informal	Total
Paid manager	19.0%	1.0%	7.1%
Paid employee	56.9%	47.8%	50.9%
Own-account worker	15.1%	33.3%	27.2%
Contributing family	9.0%	17.9%	14.9%

Source: Madagascar Household Survey (2005)

Important distinctions can be made in terms of formal and informal non-agricultural wage employment. Here we adopt the recommendations of the 17th International Conference of Labor Statisticians (ICLS) in defining informal employment. Specifically, we define informal self-employment as self-employment in unregistered household enterprises – in the case of Madagascar, household enterprises that do not possess a *numéro statistique*. We define informal wage employment as comprising occupations in which employees lack a basic set of labor protections, as captured in the household survey data. Specifically, a formal employee would have access to (1) a pension *or* (2) some

kind of paid leave *or* (3) social protection in the form of some type of medical coverage. An informal employee would have none of these protections.

Formal employment (both formal employees and formal self-employment) accounts for a third (34%) of total non-agricultural employment among the working age population. As Table 2.6 demonstrates, wage employment is much more common among formal workers than informal workers. Over 75% of formal non-agricultural employment is wage employment. The public sector is an important source of formal wage jobs – 47% of all formal wage employment is accounted for by the public sector. In contrast, wage employees account for slightly less than half of all informal non-agricultural employment – self-employment in informal household enterprises accounts for the remainder of informal non-agricultural employment.

It is important to note the relatively small share of formal, private wage employment in Madagascar. Only about 3% of total employment (including both agricultural and non-agricultural activities) could be characterized as formal, private wage employment – that is, wage employment that is subject to some kind of meaningful social protections. Economists often identify labor market rigidities – e.g., excessive regulation or social protection systems – as potential constraints to employment growth. Note that this argument only applies to formal wage labor markets, in which regulations are binding and in which the supply of labor (by workers) can be easily distinguished from the demand for labor (from employers). Informal employment lies partially or entirely outside of the regulatory sphere and may not be subject, *de facto* if not *de jure*, to legislative rigidities. Therefore, within the Malagasy context, this notion of labor market rigidities is simply not relevant for the vast majority of employment. The challenge of creating decent jobs in Madagascar is primarily a development challenge, not a problem of relaxing regulatory controls in the private formal labor market.

We have looked at the sectoral distribution of employment between agricultural and non-agricultural jobs. Table 2.7 presents estimates of the distribution of non-agricultural employment in Madagascar among other economic sectors. In terms of total non-agricultural employment, trade, private services, and the public sector are the most important sectors. For men, employment in construction and industrial activities are also significant. Women’s employment is primarily concentrated in trade and services. As already pointed out, public sector employment is generally formal employment. Over 70% of informal employment occurs in trade activities (e.g., street vendors) and other informal services.

Table 2.7 Non-agricultural employment by sector, working age population, Madagascar, 2005

Sector	Male	Female	Total
Primary sectors	1.2%	0.8%	1.0%
Food processing	1.7%	0.6%	1.2%
Apparel and textiles	2.9%	5.8%	4.3%
Construction	12.5%	0.9%	6.9%
Other industries	10.9%	2.6%	6.9%
Trade	19.2%	35.6%	27.1%
Transportation	8.6%	0.2%	4.5%
Health, private	0.6%	0.6%	0.6%

Education, private	2.1%	3.2%	2.6%
Government	15.1%	8.4%	11.9%
Other services (private)	25.3%	41.4%	33.0%
Formal/informal employment			
	Formal	Informal	Total*
Primary sectors	0.6%	1.2%	1.0%
Food processing	1.8%	0.8%	1.2%
Apparel and textiles	8.7%	2.1%	4.3%
Construction	2.5%	9.2%	7.0%
Other industries	7.1%	6.8%	6.9%
Trade	20.4%	30.2%	26.9%
Transportation	3.5%	5.1%	4.5%
Health, private	0.9%	0.4%	0.6%
Education, private	4.1%	1.9%	2.6%
Government	32.7%	1.4%	12.0%
Other services (private)	17.7%	40.8%	33.0%

* There may be minor variations in the estimates of the distribution of total non-agricultural employment across sectors due to missing observations that prevent classification of employment as formal or informal.

Source: Madagascar Household Survey (2005)

We can link labor force status to poverty outcomes using individual poverty rates (individuals who live in poor households expressed as a percentage of all individuals). A specific application of the individual poverty rate measure is the concept of a “working poor” poverty rate. The “working poor” population consists of individuals who are (1) employed and (2) living in households whose levels of consumption fall below an established poverty threshold.⁸

Table 2.8 presents individual poverty rates by labor force status and disaggregated by sex. Not surprisingly, poverty rates are lowest for salaried managers and highest for the self-employed (many of whom work in agriculture). Interestingly, poverty rates are lower for the unemployed relative to most employed individuals (the exception being paid managers). This suggests that many, but certainly not all, of the individuals who identify as being unemployed have access to other sources of income or support – i.e., they have the wherewithal not to work. The relatively high “working poor” poverty rates in Madagascar, combined with high rates of labor force participation, suggest that a large portion of the population is employed in low-productivity activities. The real issue in the country is not unemployment, but rather underemployment.

⁸Based on an analysis of 2005 household survey data, a household was considered to be poor if the estimated value of its consumption per capita, adjusted for regional price variations, fell below 305,300 Ariary per year.

Table 2.8 Poverty rates by labor force status, Madagascar, 2005

	Male	Female	Total
Inactive	54%	52%	53%
Unemployed	40%	45%	44%
Paid manager	23%	16%	21%
Paid employee	49%	52%	50%
Own-account worker	66%	58%	64%
Contributing family	72%	71%	72%
All	62%	64%	63%

Source: Madagascar Household Survey (2005)

Table 2.9 presents more detailed estimates of “working poor” poverty rates for employed individuals of working age. The table presents estimates for agricultural and non-agricultural employment, disaggregated by employment status. In general, poverty rates are significantly higher for agricultural employment relative to non-agricultural employment (the single exception being paid managers, where the poverty rates are identical). Among agricultural workers, poverty rates are higher for employees (who often work in seasonal and highly contingent arrangements) than for own-account workers and unpaid contributing family workers. Poverty rates among formal agricultural workers are less than half of those of informal agricultural workers. For non-agricultural workers poverty rates are lower for wage employees than for the self-employed. However, this is largely a formal/informal distinction. That is, wage employment accounts for a higher percentage of formal employment and formal workers have much lower risks of poverty than informal workers. If we focus only on informal non-agricultural employment, poverty rates are virtually identical for informal wage employees (apart from managers who account for an almost negligible share of the total), informal own-account workers, and informal unpaid contributing family workers. Somewhat more than half of all informal, non-agricultural workers live in households whose consumption levels fall below the poverty line.

Table 2.9 Poverty rates, agricultural and nonagricultural employment, Madagascar, 2005

Employment Status Categories	Formal	Informal	Total
<i>Agricultural employment</i>			
Paid manager	20%	28%	21%
Paid employee	36%	80%	77%
Own-account worker	---	67%	67%
Contributing family	---	73%	73%
Total	32%	71%	71%
<i>Nonagricultural employment</i>			
	Formal	Informal	Total
Paid manager	20%	31%	21%
Paid employee	23%	52%	41%
Own-account worker	21%	52%	46%
Contributing family	17%	52%	45%

Total	22%	52%	42%
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Source: Madagascar Household Survey (2005)

From this brief analysis, it is clear that poverty in Madagascar is not due to a lack of employment opportunities *per se*, but rather a lack of decent employment – both wage employment and self-employment. Quality of opportunity matters, not just the overall level of employment, measured by the unemployment rate or the employment population ratio. Specifically, underemployment in low-productivity jobs and activities that do not generate adequate earnings is the crucial issue. This overview suggests that poverty rates in Madagascar can be reduced by an employment strategy that aims to attain three mutually reinforcing goals: (1) a transition of employment out of agriculture and into non-agricultural activities (2) the generation (and retention) of formal employment opportunities and (3) increases in the real return to labor by improving productivity, particularly among smallholder producers and the informally self-employed.

2.2 How can earnings be increased in Madagascar? Analyzing household enterprise regressions

As we discussed in the previous section, the problem for living standards in Madagascar is not lack of employment *per se*, but the wages and benefits associated with employment. So the question is: how can earnings be increased for Madagascar workers? The general answer is that productivity has to be increased and more job opportunities must be created. This entails structural transformation, skills enhancement, and a macroeconomic environment conducive to sufficient aggregate demand and economic growth. In addition, we can glean information about the kinds of labor characteristics that are associated with earnings increases. To do that we performed a statistical analysis of earnings using data from the Madagascar 2005 Household Survey (*Enquête Auprès des Ménages*) which contains a module on non-agricultural household enterprises. (Note: Chapter 7 contains a more detailed discussion of productive activities in agriculture.)

Using these data on household enterprises, we estimate an earnings function Household enterprises are unincorporated enterprises operated by a member of the household. The enterprise may or may not be operated from the actual residence. All the household enterprises are meant to be non-agricultural (i.e. non-farm). For households with multiple enterprises, each enterprise is treated as a separate entity. For the purposes of this analysis, *informal* household enterprises are unregistered enterprises (they do not have a *numero statistique*). Formal enterprises are registered.

The dependent variable is the natural logarithm of average monthly net earnings. Earnings are self-reported. Net earnings reflect total enterprise revenues less estimates of operating costs. Since many of these enterprises will not maintain formal accounts, earnings must be seen as an approximation. Monthly earnings are calculated based on the number of months the business typically operates as recorded in the survey data. Demographic variables (age, education, sex) represent the characteristics of the household member who is primarily responsible for the operation of the enterprises. Definitions of basic demographic variables are as follows:

- **Age:** in years
- **Age-squared:** in years (negative coefficient indicates non-linear returns. Based on the coefficient estimate, earnings are maximized, controlling for other factors, at 38 years of age).
- **Sex:** 0 for men, 1 for women
- **Education:** dummy variables for the level of educational attainment.
- **Number of employees** refers to the number of paid/wage employees. Unpaid contributing family members are NOT counted as employees.
- **Capital assets** are measured in terms of their estimated value (in 1000s of Ariary). Therefore, the coefficient represents the % increase in net monthly earnings associated with an additional 1000 Ariary in capital assets. Capital assets include land holdings.
- **Manufacturing, trade, and services** are dummy variables representing the sector in which the enterprise operates. Note “services” exclude trade and commerce – i.e., the categories are mutually exclusive.
- **Credit** is a dummy variable. It takes on a value of “1” if the enterprise tried to borrow within the past 12 months and succeeded in doing so. It takes on a value of zero otherwise.
- **Microfinance** is a dummy variable. It takes on a value of “1” if the enterprise received any working capital or start-up capital from a microfinance institution. Otherwise, it takes on a value of zero. Note that the significant negative coefficient may not mean that microfinance is bad for household enterprises. It could mean that microfinance institutions target more vulnerable enterprises.

Table 2.10 The Determinants of Household Earnings
Dependent Variable: Log Household Earnings

Dependent Variable: Log household earnings	Coefficient	Std. Err.	t	P> t
age	0.0524	0.0146	3.6000	0.0000
age_sqr	-0.0006	0.0002	-3.3600	0.0010
primary	0.1582	0.0788	2.0100	0.0450
secondary	0.6257	0.0887	7.0500	0.0000
higher	0.1454	0.1933	0.7500	0.4520
informal	-0.6999	0.1244	-5.6200	0.0000
employees	0.2167	0.0394	5.5000	0.0000
capital_000	0.0325	0.0070	4.6700	0.0000
Female	-0.5900	0.0763	-7.7300	0.0000
manufact	0.1500	0.1709	0.8800	0.3800
trade	0.4383	0.1494	2.9300	0.0030
services	-0.0269	0.1405	-0.1900	0.8480
credit	-0.2723	0.5046	-0.5400	0.5890
micro_finance	-0.6687	0.2936	-2.2800	0.0230
cons	5.2929	0.3323	15.9300	0.0000
Number of observations = 2366				
F (14, 2352) = 47.09				
Prob >F = 0.0000				
R-squared = 0.2580				

According to our econometric estimates, schooling has a major impact on earnings. In addition, we find that greater access to capital could substantially enhance earnings of households. We develop this finding in our chapter on skills

development (chapter 6). We also find that for each additional 1000 Ariary in capital assets, enterprise earnings increase by more than 3% on average. Moreover, the insignificant signs on credit confirm that, because credit is so difficult to obtain for most households, access to credit as it is now structured does not enhance earnings. We will develop these last results further in chapter 5, in our discussion of the financial sector.

In addition, we find that there is a strikingly significant income penalty for informality, as is the penalty for being female. These suggest that more efforts to generate jobs in the formal sector will be important to enhancing earnings, as will efforts to improve prospects for women to create household enterprises. These have implications for labor regulation and the allocation of investible resources among sectors, which we take up in later sections of the report.

2.3 Conclusions

Madagascar's economy faces many challenges. The keys to reducing poverty and raising standards of living in Madagascar are to:

1. Create more opportunities for “decent work,” meaning jobs through which members of households can earn enough to keep their families out of poverty.
2. Mobilize and allocate financial and human resources to the right sectors to raise productivity and bring about structural transformation to underwrite the creation of more decent jobs.
3. Create a macroeconomic framework that: a) will promote the demand necessary to support the creation of enough decent jobs; b) help create the framework for a financial sector that will mobilize and allocate resources for development; and c) maintain macroeconomic stability.

The next chapter develops an input-output framework that we will use in later chapters to help identify the sectors that need to be further developed to help Madagascar achieve the MAP goals: poverty reduction and sustainable development.

3. An input-output model of the Madagascar economy

As we discussed in the previous two chapters, the key to raising standards of living and reducing poverty in Madagascar is to foster: 1) structural transformation through the mobilization and appropriate allocation of resources 2) increased productivity through skills development and appropriate investments and 3) a supportive macroeconomic environment that will provide high demand to create job opportunities, a well functioning financial system to mobilize and allocate credit, and macroeconomic stability. Along these lines, the MAP calls for expanding sectors that generate a lot of value added and employment, and have large multiplier effects and linkages to the domestic economy. We therefore need an understanding of the economic structure of Madagascar – the sectors that generate value-added, employment, multipliers, and linkages. The best way to improve our understanding of these structures is to

build a data-based model of the economy which illuminates these underlying structures and connections.

3.1 The input-output model

To better understand the dynamics of output, employment, and value-added in the country, we constructed a standard input-output (I-O) model for Madagascar, which also incorporated employment data from the 2001 household survey (*Enquête Auprès des Ménages*), the most recent data available. Specifically, we wanted to quantify the relative impact of economic stimuli to particular sectors (e.g., clothing or tourism) or to specific categories of aggregate expenditures (e.g., exports, household consumption, or investment). In addition, we wanted to examine the industrial structure of the Malagasy economy, particularly with regard to the density of upstream and downstream linkages.

We calibrated our analysis to the official 2001 Input-Output tables. We incorporated household consumption as an endogenous variable in the model, in the sense that we assumed that households would finance their consumption out of the value added produced (i.e. wage and self-employment income). Therefore, our estimates incorporate the effect of any growth in value-added on household consumption expenditures in addition to taking into account the impact of the growth of industrial demand on the output of various sectors of the economy.

As discussed in chapter 2, wage employment accounts for a relatively small fraction of total employment in Madagascar. Various forms of self-employment, particularly agricultural self-employment, account for the majority of employment. Therefore, typical employment multipliers – which are often predicated on the assumption of wage employment – will not fully assess the overall employment impact of different economic policies and stimuli. For forms of self-employment, the impact will likely take the form of increasing earnings (i.e. value-added) instead of increasing the number of “jobs.” Of course, changes in the relative earnings of different types of employment may result, over time, in differential entry into and exit from specific economic activities. This could ultimately alter the composition of self-employment. We do not focus on the long-run effects of labor migration and mobility in our analysis. Instead we focus on more short-run changes to labor market outcomes. In the case of the self-employed, for the type of analysis pursued here, we assume that the direct impact of a sectoral or aggregate economic stimulus will manifest itself in terms of increases in value-added and earnings.

For wage employment, we calculate typical employment multipliers using the I-O model. We estimate wage employment/output ratios for the various sectors. We were concerned that a total count of employment in waged positions could overstate the employment impact of a given change in output, since underemployed individuals would be weighted the same as a full-time employee. We also wanted to take into account the fact that individuals frequently are engaged in more than one type of employment. Therefore, we converted all wage employment in primary and secondary activities into “full-time equivalents.” Individuals were considered to be full-time if they worked 1,920 hours or more per year as wage employees. For those working less than 1,920 hours, their full-time equivalent would be calculated as actual annual hours worked in wage employment, divided by 1,920. The totals of full-time equivalents by industrial sector were used to construct the wage employment multipliers.

Table 3.1 summarizes key multipliers for industrial output, value-added, wage employment, and non-agricultural wage employment by sector. The output multipliers show the impact of a 1 million Ariary increase in the final demand for the output of the industry in question on total economic output in Madagascar. For example, the output multiplier for the garments sector is 3. This would indicate that a 1 million Ariary increase in the demand for domestically produced garments would result in a total increase in output, across all sectors, of 3 million Ariary (1 million directly from the garment sector and 2 million from indirect multiplier effects). Remember that these estimates take into account the impact on household consumption of the growth in value-added which would accompany such a stimulus.

The value-added multipliers can be interpreted in a parallel manner, except they indicate the impact on value-added, not industrial output. Value-added is equal to the value of industrial output less the value of intermediate inputs used in production. Therefore, the value-added multiplier must be less than the output multiplier. The difference between the output multiplier and the value-added multiplier reflects direct and indirect changes in the demand for domestically produced intermediate inputs associated with a change in final demand. The value-added multiplier is a better indicator of the impact of expanding the sector on incomes in Madagascar than is the output multiplier, so we will focus more, in the discussion that follows, on the value-added multipliers than on the output multipliers.

Also of interest are the wage employment multipliers. These indicate the total number of jobs (measured as full-time equivalents, as discussed above) across all sectors that would be generated by a 1 million Ariary increase in the final demand for the output of the specific sector in question. For example, a 1 million increase in demand for hotel and restaurant services would yield an additional 289 jobs (full-time), and 236 of these jobs would be outside of the agriculture/livestock sectors (the other 53 jobs would be wage employment in agricultural or livestock activities).

3.2 Lessons and possible policy implications

For reasons discussed in chapters 1 and 2, if we are interested in improving employment outcomes through, for example, targeted productive sector policies, we would want to focus on industries that would have high value-added multipliers or high wage employment multipliers. From Table 3.1, we can see that some of the industries with high value-added multipliers include forestry, finance, communications, trade, fishing, and agriculture. Industries with high wage employment multipliers include garments, business services, communications, education, health, and recreation services. In contrast, industries with low value-added or low employment multipliers include metal and stone working, chemicals, paper products, and, somewhat surprisingly, building and construction.

Table 3.1 Multipliers calculated from the input-output model

Sector	Output Multiplier (millions Ariary)	Value-Added Multiplier (millions Ariary)	Wage Employment Multiplier (full time equiv.)	Non-Ag Wage Employment Multiplier (full time equiv.)
Agriculture	3.4	2.0	310	150
Livestock and hunting	3.6	1.8	247	134

Forestry	3.4	2.1	252	199
Fishing	3.4	2.0	253	204
Extractive industries	3.5	1.8	384	340
Food processing	3.5	1.5	220	139
Tobacco	3.1	1.3	232	194
Garments and textiles	3.0	1.3	436	403
Wood products	3.6	1.5	397	359
Paper products	1.8	0.3	268	261
Chemicals	2.8	1.3	203	167
Rubber and plastic products	2.8	1.2	238	207
Construction materials	3.4	1.9	294	246
Metal and stone work	2.2	0.8	189	168
Machinery and equipment	3.6	1.8	320	274
Other manufacturing	3.3	1.7	283	241
Energy	2.3	0.7	311	295
Construction and building	3.0	1.4	208	174
Trade	3.5	2.0	278	227
Hotel and restaurant	3.5	1.3	289	236
Transportation	3.3	1.6	279	238
Communication	3.9	2.0	515	465
Finance	3.8	2.0	329	280
Insurance	3.8	1.9	318	271
Business services	3.9	1.9	507	458
Administrative services	3.4	1.9	427	379
Education	3.4	1.8	428	381
Health	3.4	1.7	426	382
Social services	3.3	1.9	394	347
Recreation and culture	3.7	1.9	467	417
Other services	2.5	1.1	329	301

One of the reasons for the variations in the size of the multipliers, particularly the output multipliers, is that different industrial sectors have different linkages to the domestic economy. Some sectors will have a large number of “upstream” linkages to other activities – meaning that they utilize a large amount of domestically produced inputs in their production processes. Others have “downstream” linkages – their outputs are used by other domestic firms to produce final goods and services. Industries may have weak multipliers when they import the inputs used in production. This is one of the principal leakages that occurs in a standard I-O model. In our model, which incorporates endogenous household consumption, we note that leakages can also occur when households buy imported goods instead of domestically produced ones.

We can construct general indicators of the extent of upstream and downstream linkages in the Malagasy economy. Table 3.2 presents examples of these types of estimates. The density of upstream linkages is estimated by calculating the value of domestically sourced inputs as a percent of the value of total non-labor inputs into production (calculated at market prices). The density of downstream linkages is estimated by the amount of domestic industrial demand expressed as a percent of total domestic output for each sector. In addition, we calculate an indicator of the intensity of use of imported inputs – the value of imported inputs expressed as a percent of total non-labor production costs.

Sectors with strong upstream linkages include livestock, finance, business services, and communications. Sectors with strong downstream linkages include extraction industries, livestock, construction materials, and insurance. We would expect the upstream and downstream linkages to contribute to higher output

multipliers for these sectors. The employment and value-added multipliers will also be influenced by the density of domestic linkages, although other sector-specific factors (e.g. the labor intensity of production, technology, and the level of productivity) will influence the size of these effects.

Table 3.2 also shows that a number of sectors, primarily in manufacturing, rely on imported inputs into production: paper products, energy, chemical, rubber and plastic products, and metal and stone-working. Import leakages will reduce the impact any expansion of these sectors would have on the overall domestic economy. For example, although the paper sector has relatively strong downstream linkages to other sectors of the Malagasy economy, its reliance on imported inputs into production reduces the domestic impact of this sector.

Table 3.2 Upstream, downstream, and import leakages calculated from I-O model

Sector	UPSTREAM LINKAGES Domestically sourced inputs as % of non-labor production costs	DOWNSTREAM LINKAGES Domestic industrial demand as a % of domestic production	IMPORT LEAKAGES Imported inputs as % of non-labor production costs
Agriculture	61%	50%	17%
Livestock and hunting	80%	75%	1%
Forestry	77%	38%	4%
Fishing	60%	68%	23%
Extractive industries	71%	89%	19%
Food processing	74%	18%	3%
Tobacco	55%	15%	26%
Garments and textiles	58%	27%	21%
Wood products	76%	74%	3%
Paper products	33%	72%	40%
Chemicals	40%	40%	34%
Rubber and plastic products	43%	50%	33%
Construction materials	69%	88%	18%
Metal and stone work	25%	57%	46%
Machinery and equipment	77%	18%	14%
Other manufacturing	55%	21%	23%
Energy	36%	56%	42%
Construction and building	53%	2%	23%
Trade	75%	0%	16%
Hotel and restaurant	72%	22%	7%
Transportation	70%	22%	16%
Communication	93%	67%	4%
Finance	90%	47%	8%
Insurance	83%	82%	11%
Business services	89%	72%	7%
Administrative services	72%	0%	16%
Education	71%	19%	15%
Health	67%	28%	17%
Social services	54%	0%	21%
Recreation and culture	87%	23%	6%
Other services	30%	9%	39%

In some cases, we may be interested in the impact of an increase in a particular category of expenditure on output, value-added, and employment, not the impact of an increase in sectoral demand. For example, does an increase in exports have the same employment impact as an equivalent increase in domestic

household spending? Table 3.3 summarizes the impact on value-added and wage employment by expenditure category.

Table 3.3 Multipliers by spending category

	Household Consumption (C)	Fixed Capital Investment (I)	Government Spending (G)	Exports (X)
<i>Expenditure increase of 1 million Ariary</i>				
Value-added	1.6 million	1.4 million	1.9 million	1.5 million
Employment	283 jobs	231 jobs	427 jobs	323 million
<i>One percent increase in expenditure</i>				
Value-added	+1.14%	+0.27%	+0.27%	+0.34%
Employment	+1.12%	+0.24%	+0.33%	+0.41%

If we look at the impact of a constant amount of expenditure – 1 million Ariary – across the different categories of expenditure, the impact on value-added would be largest for government spending, followed by household consumption and exports. Spending on fixed capital investment would have the lowest effect (note: this only reflects the demand-side impact of greater investment; by increasing capacity and productivity, investment will have much larger longer-run impacts). In terms of wage employment, the outcome is somewhat different. Again, government spending will have the largest impact, followed by exports, household consumption, and investment.

We can also express these relationships in terms of elasticities – what percentage increase in value-added (or employment) would we expect from a 1 percent increase in expenditures? In this case, the largest effect comes from household consumption, but this is hardly surprising. The value of total household consumption is much higher in Madagascar than the value of other expenditure categories, such as total exports. So a 1 percent increase in household expenditures represents a larger overall stimulus. Nevertheless, the elasticities in Table 3.3 give us a unit-free estimate of the responsiveness of value-added and employment to changes in expenditures, which can be applied to different economic scenarios.

3.3 Conclusion

In the chapters that follow, we will report on policy experiments linked up to this input-output model. As we will see, using this model will allow us to indicate sectoral investments that are more likely to generate demand for decent employment, either directly and/or indirectly through linkage effects. For example, in Chapter 5 on financial markets and institutions, we will use these data to show that the current allocation of credit in the economy is not well suited to expand investment in sectors having high multipliers. It suggests that there needs to be some major reforms in the financial sector to allocate funds to areas that will have larger effects on poverty reduction and sustainable increases in decent jobs.

PART II. A MACROECONOMIC, FINANCIAL AND LABOR MARKET FRAMEWORK FOR EMPLOYMENT CREATION

4. Macroeconomic policy for decent employment

Macroeconomic policy in Madagascar faces severe challenges, as Madagascar is highly vulnerable to external shocks, such as terms of trade changes, and the ending of preferential access in developed countries' markets, as well as internal obstacles, notably a lack of well-performing financial institutions and infrastructure. There have also been a variety of internal political struggles and instabilities that have made macroeconomic policymaking difficult.

Furthermore, macroeconomic policy has been under IMF tutelage off and on for over twenty-five years, and has been subject to a panoply of interventions, including structural adjustment, monetarist IMF financial programming, financial liberalization, "inflation targeting-lite," and other evolving policies over that period of time, without evident signs of sustained success. The IMF's focus on financial liberalization and privatization, together with a lengthy list of macro policy targets, indicators, and benchmarks, often grounded in policies that have questionable bases and sometimes even contradictory requirements, has provided an insufficient macro framework for achieving significant poverty reduction and decent employment generation.

The key implicit assumption of these frameworks is that the role of macroeconomic policy is to limit government's access to credit in order to stabilize inflation and the balance of payments, and to create financial and political space for private-sector investment and development. While such an approach has understandable origins in some of the serious macroeconomic abuses that took place in Madagascar in the 1980s and early 1990s, the framework nonetheless has serious flaws. The framework assumes that with stabilized *commodity prices*, then *asset prices*, such as nominal and real exchange rates, will also stabilize. Then, the argument goes, relative commodity and asset prices will reflect their true relative values, giving the correct price signals to investors. And with the created financial space and correct price signals, private financial actors will have the resources to lend to those who have the best information and skills, who will then generate sufficient investment and job opportunities. To carry out this policy and establish credibility, the central bank must greatly enhance its independence from the government. The role of government itself is to raise revenue through non-distortionary taxes; and having established "credibility," it will be able to get financial help from private investors and the international community, to finance infrastructure investment, such as roads and educational systems.

Recently, added to this vision has been the push to create "market friendly" political and regulatory institutions, such as those that will lead to a good "investment climate," and proper financial regulation. The assumption is that if

market friendly institutions are in place, investment will likely follow. This vision has pitfalls. A fundamental problem is that this market-centered view fails to take into account the profound externalities, uncertainties, and thick network of skills, including entrepreneurship, that may be missing.

More generally, while there are some important and correct aspects of this vision – such as the need for macroeconomic stability broadly defined and for significantly more infrastructure investment such as in roads and other transportation networks – the faith in the private financial markets and private investors guided by the “price system” to fill the gap left by weakened community and public institutions is misguided. If the government follows these policies, the international aid community might respond positively to these “good housekeeping seals of approval,” but this will not be sufficient to bring about sustained economic development and poverty reduction if sufficient aid is not forthcoming. Instead, as we argue here, macroeconomic institutions and policy must be part of a broader development initiative, not as simply stabilization policy that forms the hopeful backdrop of credibility for an over-optimistic vision of efficient free markets in saving, investment and financial allocation.

To make macroeconomic policy part of development policy, it must be recognized that generating “market friendly” policies will not be sufficient, especially in poor economies such as Madagascar’s, which lacks sufficient infrastructure, skills, and entrepreneurship. It will also be necessary to make sure that all key macroeconomic policy institutions, *including* the *central bank*, have the institutional incentives – or better yet, the institutional culture – to become part of the developmental project, even if there is a division of labor with respect to specific responsibilities, as of course, there must be. In particular, as we will argue in more detail presently, a central bank commitment to a narrow definition of macroeconomic stability without having an obligation to participate in a broader project of stabilization and development is likely to be counter-productive.

The key recommendation of this chapter is that macroeconomic policy, including monetary policy, exchange rate policy and financial policy, all have to be coordinated and directed toward achieving the MAP goals of reducing poverty to 50% by 2012, while, at the same time, sustaining macroeconomic stability. The only ways to accomplish this is to promote the creation of substantial numbers of decent jobs. To support the creation of substantial numbers of decent jobs while maintaining macroeconomic stability, the macroeconomic authorities may have to utilize more, rather than fewer, tools of macroeconomic policy, as is suggested by the dominant Washington Consensus approach. This may entail, for example, the use of more credit allocation policies, as discussed in chapter 5, and capital management techniques, as discussed in this chapter.

Macroeconomic Policy: Monetary Policy, Exchange Rate Policy, Financial Policy, and Fiscal Policy

Within the macroeconomic sphere, the biggest changes from the standard “Washington Consensus” approach need to be made with respect to central bank, exchange rate, and financial policy. We have a separate chapter on financial

policy (chapter 5), so our discussion here will be brief, focusing in particular on the intersection of financial and central bank policy.

Central bank policy must be oriented toward macroeconomic stability as normally defined (augmented by a concern with the stability of asset prices as well as commodity prices), but also toward helping to mobilize and channel financial resources to those activities that will generate productivity gains, decent employment, and economic transformation. To achieve this, the central bank must:

1. See itself as part of the developmental project, while having sufficient autonomy to carry out its stabilizing role in a sometimes difficult political environment. (Of course, this autonomy must be defined more broadly than simply the autonomy from the domestic political authorities; it must also have sufficient policy space from external forces such as the IMF, and internal forces such as local financial elites.)
2. Have sufficient tools to allow it to carry out its multiple tasks and achieve its multiple objectives. These may include credit allocation techniques and direct controls, as well as capital management techniques to help it stabilize and maintain competitive exchange rates.

With respect to *financial policy*, the central bank should support the development of financial institutions that will mobilize and allocate credit to productive uses. This may involve the support of microfinance institutions, using carrots and sticks to mobilize resources from private banks, as well as the support of the development and operations of a development bank. This is developed in detail in chapter 5.

Finally, *exchange rate policy* should be directed toward maintaining a stable and competitive real exchange rate (SCRER) (e.g., Frenkel and Rapetti, 2008) which, with other support, will help develop domestic industry and exports. The influx of FDI associated with the mining projects presents significant challenges to maintaining a stable and competitive real exchange rate even under the best of circumstances, but this challenge is rendered more difficult if the central bank does not have all the policy levers it needs to try to manage the exchange rate. In particular, the central bank may need to be able to use capital management techniques, such as dual exchange rates temporarily, or more aggressive use of reserve requirements, in order to deal with some of the challenges facing them with respect to exchange rate management, especially during the period of rapid influx of mining FDI.

More generally, the key macroeconomic issue for Madagascar is how to mobilize resources and allocate them to activities and sectors that will raise productivity, create decent employment and living standards, while helping Madagascar to make a transition to higher value-added economic activities and shared prosperity. To be sure, there is no simple set of solutions to Madagascar's macroeconomic dilemmas; but an overly zealous commitment to macroeconomic austerity, liberalization, and privatization is not going to be sufficient to reach these goals.

The recent increases in the prices of basic commodities, such as oil and food, need to be treated carefully by macroeconomic policy. While the government and central bank must avoid a de-stabilizing price spiral, they must not overreact and make the inevitable loss of real income greater than it would be

otherwise due to excessively restrictive macroeconomic policy designed to keep inflation low. In addition to carefully calibrated monetary policy, non-monetary policy actions – such as incomes policies in the short run and investments to expand supply capacity of key commodities in the medium term – must complement responsible monetary and fiscal policy so they do not have to shoulder all the burden of preventing a destabilizing inflationary spiral.

Madagascar's current macroeconomic policy framework is mainly determined by the government's obligations to the IMF under the current Poverty Reduction and Growth Facility (PRGF) program and exogenous shocks, such as the recent cyclone, oil and food price increases; in addition, capital flows associated with mining sector dynamics have major macroeconomic implications for the Malagasy economy (such as impacts on real exchange rates). All of these macroeconomic factors take place against the backdrop of a poverty rate of more than 60% that has only recently been falling. As should be obvious, implementing macroeconomic policy in this environment creates major challenges. In this chapter, we analyze the current macroeconomic policy approach with an emphasis on assessing its strengths and weaknesses for achieving the related goals of poverty reduction and the generation of more decent employment opportunities. We argue that, while the current framework has a number of significant strengths, unless it is modified, it will not be sufficient to allow the government to achieve many of the goals embedded in the Madagascar Action Plan (MAP), including the reduction of poverty by 50 percent by 2012.

Instead, the macroeconomic framework for the monetary and financial policy should be oriented around an employment and growth framework. This is already implicit in the MAP. The IMF has estimated that the economy has to grow by 9.4% on average to achieve that goal. Monetary, fiscal, and financial policy should be coordinated to achieve this goal, subject, of course, to the constraint of macroeconomic stability.

The rest of this chapter is organized as follows: Section 4.2 gives a survey of recent macroeconomic trends. Section 4.3 describes the nature and evolution of monetary policy, exchange rate policy, and fiscal policy in the context of the current Madagascar-IMF agreements with respect to the macroeconomic framework. Section 4.4 assesses the strengths and weaknesses of this framework. Section 4.5 proposes an alternative framework that will better generate employment creation and poverty reduction, while maintaining macroeconomic stability. Section 4.6 discusses the short-term issues that arise with respect to the recent commodity price increases and how macroeconomic policy should respond. Section 4.7 summarizes and concludes.

4.1 Trends in Madagascar's macroeconomy

Over the last half-decade, the performance of the Malagasy economy has generally been poor in terms of generating adequate rates of economic growth and providing adequate levels of decent employment and wages. Moreover, in the last twenty-five years, nominal variables such as inflation and exchange rates have exhibited a high degree of instability. More recently, the macroeconomy has improved somewhat, and there is hope that this trend toward better performance will continue and that the pace of improvement for the majority of Malagasy people will improve. Still, significant challenges remain, and unless

the current macroeconomic framework is modified, it is unlikely that these challenges will be met.

Earlier macroeconomic trends and management

Economic growth

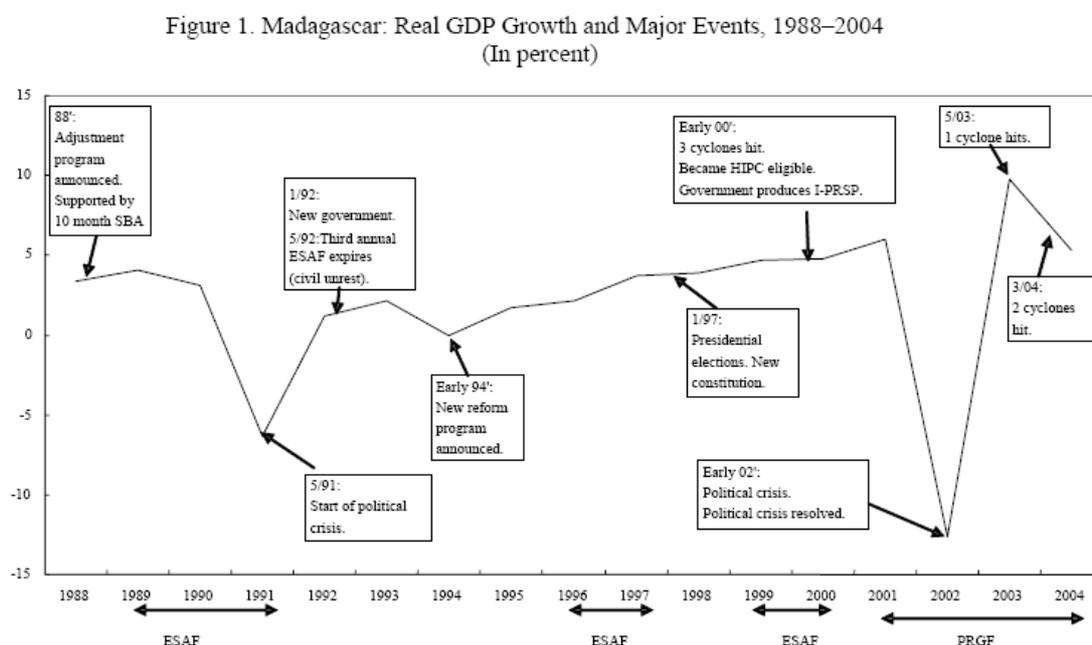
For the past several decades, the pace of economic growth has been low, making it extremely difficult for Madagascar to reduce under-employment and generate improved incomes and standards of living. As was seen in Figure 2.2 in chapter 2, the pattern of real GDP growth over the last several decades has been highly erratic. Moreover, low levels of real economic growth along with population growth has meant that the real GDP per capita has declined dramatically over the past 40 years (see Figure 2.1 in chapter 2).

Madagascar's economic growth over the period 1983-2004 has been almost one-third lower than that of sub-Saharan Africa as a whole (2.0 versus 2.9 for sub-Saharan Africa) and significantly more volatile (standard deviation of real GDP growth of 4.4 versus 1.9 for sub-Saharan Africa). Most graphically, the average rate of growth of real GDP per capita over the 1983-2004 period has been negative (-0.9 %, versus -0.3% for all of sub-Saharan Africa).

Madagascar's growth performance in absolute terms was better in the period 1993-2004 than it had been in the previous decade, but in relative terms its performance was not much better. So, while there has clearly been significant improvement in growth performance since the 1980s, much more needs to be done if the Malagasy economy is to significantly reduce poverty and achieve structural transformation along with adequate economic growth.

Part of the challenge in achieving adequate levels of economic growth has been due to adverse external factors, such as cyclones, and also internal problems, most notably political strife. Figure 4.1 shows that declines in real GDP growth have been associated with political strife and adverse weather events. At the same time, the economy has been undergoing IMF programs off and on during virtually the whole period, without obvious improvement. The figure illustrates the high volatility of real GDP growth, and most dramatically, the huge decline around the time of the 2001-2002 political crisis. It also indicates that in recent years, economic performance as measured by real GDP growth has improved somewhat.

Figure 4.1 Madagascar: Real GDP growth and major events, 1988-2004



Note: ESAP is Emergency Structural Adjustment Facility; PRGF is Poverty Reduction Growth Facility.

Source: IMF, (2005)

Poverty and standard of living

The economic decline and stagnation in Madagascar since the 1970s has had devastating impacts on the standard of living of the Malagasy population. During the 1970s -1990s, Madagascar fared very poorly, even compared to other poor-performing countries in sub-Saharan Africa. In 1997, the IMF staff estimated that significant increases in economic growth were required to make substantial inroads into poverty, and that even if this growth were slanted toward the poor, the increases would still have to be substantial and sustained.

Table 4.1 shows IMF estimates of the required rates of economic growth needed to bring down poverty rates. The table indicates that to make a substantial reduction in poverty rates, it would be necessary to raise the growth rate of the economy to 10% per year and sustain it for 5 to 10 years, which is a significant change from past history. It is also higher than is being currently projected in IMF macroeconomic programs (see below).

Table 4.1 Estimates of poverty impacts of economic growth

Impact on Poverty Incidence of:	Current Head Count Index	Over five years	Over 10 years
Effect of 1% per capita growth	70	68	66
Effect of 5% per capita growth	70	59	45
Effect of 10% per capita Growth	70	45	20

Source: IMF, 1997, Table 15.

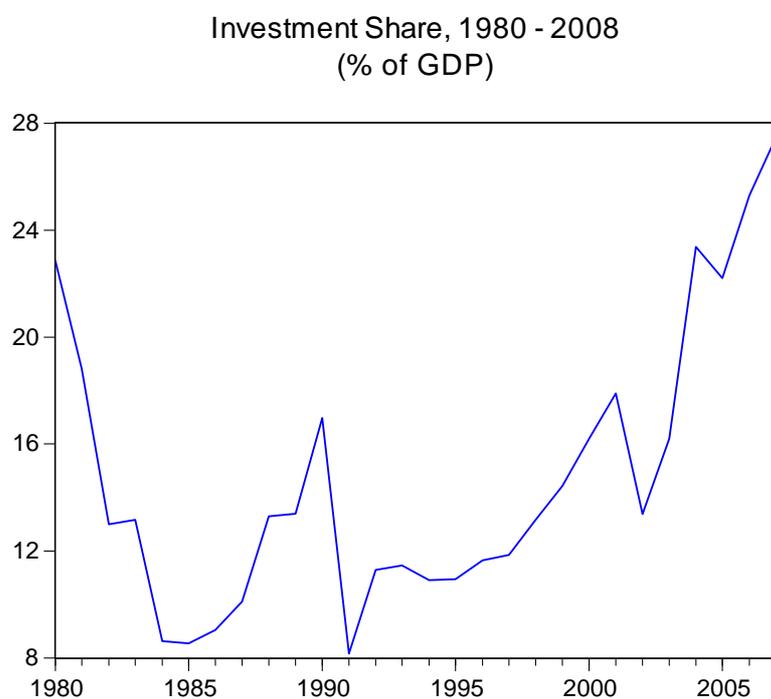
Table 4.1 refers to *per capita* growth rates. Recent IMF estimates of required growth refer to total real growth rates. As we discussed in chapter 1 and will discuss again below, the government’s goal now is to reduce the level of poverty to 50% in 10 years (by 2012). To achieve that goal, the IMF estimated that it would take an average growth rate of GDP of 9.3%. To reach the MDG goal of halving poverty by 2015 would require an average growth rate of 8%. If the growth were directed more toward reducing poverty, then the overall growth rates might not have to be as high, but a significant increase will still be necessary.

In order to achieve such large increases in economic growth and poverty reduction, the Malagasy economy will have to mobilize significant financial resources and allocate them productively in a way that will raise productivity, generate decent employment, and contribute to structural transformation. Equally importantly, macroeconomic policy itself has to be oriented toward achieving that goal, and to do so, it must do more than simply try to create a “stable macroeconomic environment” for private investment.

Private and public investment

In the medium to long run, investment is the key to productivity growth and increases in living standards. Figure 4.2 shows the evolution of capital accumulation in the Malagasy economy over recent decades. From the mid 1980s until recently, investment share has been relatively low. In the last several years, it has made a significant recovery but is still somewhat low for a country that has the development aspirations and needs of Madagascar. The key to raising the investment share is to mobilize resources and create productive investment opportunities by developing infrastructure and skills as well as generating an appropriate macroeconomic framework for widely shared economic growth.

Figure 4.2



Source: IMF Financial Statistics

Inflation⁹

Inflation in Madagascar has been extremely variable, including several periods of very high inflation (Figure 2.3). The volatility has arisen primarily from 1) supply shocks 2) political instability and 3) policy mistakes. In the last several decades, Madagascar has experienced three periods of rapid inflation: During the first two decades after independence in 1960, inflation performance was good, with Madagascar fixing its currency to the French franc and importing France's relatively benign inflation. In the 1980s and 1990s, however, inflation became much more variable, and at times, reached very high levels. These spikes resulted primarily from exogenous shocks in the weather or terms of trade, or changes in exchange rate management policies—sometimes under the tutelage of the IMF—that were apparently mishandled or ill-conceived. In early 1980, the inflation rate spiked due to terms of trade shocks and then excessive fiscal deficits overly accommodated by central bank financing. In 1982, the exchange rate peg was replaced by a crawling peg, and a very large increase in inflation followed. A large spike in inflation occurred in 1987 as a result of a massive devaluation as part of a liberalization effort under the IMF's program, supported

⁹ See IMF 1997, 2007, 2008 for useful descriptions of the recent inflation history in Madagascar.

by a IMF Structural Adjustment Facility. Inflation rose significantly again in the 1994-1996 period in response to three factors: 1) a shift to a floating exchange rate and the introduction of an interbank foreign exchange market in May 1994, once again under IMF guidance, resulting in a major depreciation of the exchange rate (60%) 2) a major cyclone in 1994 which damaged the rice crop and 3) a rapid increase in the money supply in 1993-1994, which accompanied the depreciation of the exchange rate. Inflation rose to over 70% in mid-1995 before declining to about 40% by the end of the year and to 16% at the end of 1996 as a result of much tighter monetary policy and a large reduction in government expenditure in 1996.

Since 2000 there have been two inflationary surges, due, once again to 1) political instability and 2) exogenous weather and terms of trade shocks. In 2002, inflation rose as a result of the political crisis of 2001, which triggered oil shortages, among other problems. Two cyclones which hit Madagascar in early 2004 triggered a 50% depreciation in the exchange rate and a significant rice shortage. A further energy price shock occurring at the end of 2005 and continuing through mid-2006 was largely offset by a decline in rice prices. More recently, commodity price pressure has increased pressure on the overall price levels, threatening another bout with higher inflation. Yet, despite these surges, inflation has stayed below 15%, far below the high levels that are associated with macroeconomic instability.

As this description makes clear, in the context of a highly variable exchange rate, managing inflation in Madagascar, a country whose economy is highly vulnerable to exogenous weather and terms of trade shocks, is a very difficult task. Political instability and shifting and possibly misleading external macroeconomic advice have made this problem even more difficult. Still, apart from a few periods, Madagascar has been able to avoid the extremely high levels of inflation that have beset some countries.

4.2 Monetary and exchange rate policy in the context of IMF structural adjustment policies

Monetary and exchange rate policy have operated in a difficult environment, having evolved significantly over time. In the 1960s and 1970s, Madagascar pegged its currency to the French franc, which both limited inflation and constrained domestic monetary policy. The central bank used various direct controls, such as interest rate ceilings, credit controls and foreign exchange controls, to give it some room for maneuver, which it used to respond to the needs of the government and banking sector for credit and foreign exchange. With policy errors and the significant external shocks of the 1970s, which buffeted much of the world economy, Madagascar entered the 1980s with serious macroeconomic imbalances. What has ensued since that time has been several decades of structural adjustment programs and stop-and-go attempts to implement various IMF programs and macroeconomic policy advice based on evolving Washington Consensus ideas, punctuated by (partly endogenous) political turmoil, exogenous shocks, and occasional economic policy backsliding. These policies evolved over time as fashion, knowledge, and circumstances changed in Madagascar, Washington, and the world economy, but generally they have involved various combinations of economic austerity, financial liberalization, privatization, the bolstering of central bank

independence, and the implementation of “market friendly” financial regulation along “Washington Consensus” lines, though not always with positive effects.

Exchange Rate Policy

Until 1982, the Malagasy currency was pegged to the French franc. After April, 1982, when the peg to the French franc was discontinued, the exchange rate was managed with respect to a basket of 10 currencies (IMF, 2008c), in a type of crawling peg arrangement with frequent adjustments. Since July 2004, the Malagasy currency has been determined through a continuous interbank foreign exchange market system, and on January 1, 2005, the Ariary replaced the Malagasy franc as official unit of account. The exchange rate is officially classified by the IMF as a managed float with no predetermined path. Madagascar accepted the obligations of Article VIII, Sections 2, 3, and 4 in 1996 and maintains no restrictions on the making of payments and transfers for current international transactions, and has not imposed exchange restrictions.

Madagascar pegged its exchange rate to the French franc until 1982 when it instituted a crawling peg system with frequent devaluations. It then instituted a maxi-devaluation in 1987 as part of an IMF-sponsored financial liberalization program. In 1994, the authorities instituted a shift to a floating exchange rate system and introduced an interbank foreign exchange market in May. This policy backfired, producing a major depreciation of the exchange rate (60%) and contributing to several years of very high inflation. Recently, the country has had a managed exchange rate system in which it has, in addition to the other monetary policy goals just described, attempted to limit the variability of the exchange rate. At the same time, the country has tried, in recent years, to stem the appreciation of the Ariary, which has experienced pressure due to the capital inflows associated with foreign investment in mining.

Table 4.2 Madagascar: History of exchange rate arrangements

Madagascar		
Date	Classification: Primary/Secondary/Tertiary	Comments
January 12, 1900–June 6, 1925	Exchange rate arrangement with no separate legal tender	French franc
June 6, 1925– February 8, 1944	Peg to French franc	Only notes issued by Banque de Madagascar et des Comores are sole legal tender. On September 9, 1939 exchange controls are introduced within Franc zone.
February 8, 1944– December 26, 1945	Peg to US dollar and UK pound	On March 19, 1941 incorporated in the Sterling Area
December 26, 1945–December 1946	Peg to French franc	Return to Franc Zone. CFA franc is introduced.
January 1947–December 1948	Peg to French franc/Freely falling	
January 1949–July 1, 1963	Peg to French franc	
July 1, 1963–September 4, 1971	Peg to French franc	Malagasy franc is introduced.
September 4, 1971–August 6, 1973	Dual Market	Parallel market data is not available for this period.
August 6, 1971–April 2, 1982	Peg to French franc	
April 2, 1982–June 1985	De facto crawling band around French franc	+/- 2% band.
July 1985–April 1994	Managed floating	Officially pegged to a basket of currencies, frequent adjustments
May 1994–October 1995	Freely falling/Managed floating	Despite the flexibility of the official rate, there is a parallel market with premium in double digits.
November 1995–December 2007	Managed floating	See comment above.

Notes: Formerly Malagasy Republic. Reference currencies are the French franc/Euro and US dollar.

Data availability:

Official rate, 1900:1-2007:12

Parallel rate, 1985:1-1998:12

Source: Ilzetzki, Reinhart, and Rogoff (2008)

In order to limit the exchange rate appreciation while meeting its inflation goals, the Central Bank of Madagascar has engaged in sterilized foreign exchange intervention. This policy is widely used in such situations but can have high fiscal costs, as the central bank must issue debt to buy up domestic currency created when the central bank buys foreign exchange. This can generate very high profits for the commercial banks that sell the central bank local currency, and can impose a significant financial burden on the central bank. In the case of Madagascar, the government has agreed to pay this cost, which then reduces available resources to spend on other useful investments, such as roads, education, and other infrastructure. Indeed, in the most recent memorandum of understanding with the IMF, the government of Madagascar has indicated that it will cut its government expenditure somewhat to finance this fiscal cost. Managing the inflows of capital is important. But the costs of sterilized intervention can be quite high. Are there better alternatives?

First, the question is whether the inflation target should be loosened. The sterilization is taking place to limit the inflationary impacts of the foreign exchange interventions, not to finance the interventions themselves.

Second, another widely used approach to limit the monetary impacts of foreign exchange intervention is to impose higher reserve requirements on banks (Reinhart and Reinhart, 2008). This will prevent monetary expansion based on those reserves, without imposing fiscal costs on the government. The costs would be borne by the banks and/or their customers. The banks would presumably oppose significant lifting of these required reserves. However, as we will show in more detail in chapter 5, currently the banks have high excess reserves and are not mobilizing their current resources very aggressively to help develop the Malagasy economy. Perhaps government expenditure on health, education, and infrastructure is more socially productive at this juncture; so until the performance of the private banks improves, it probably does make sense to raise reserve requirements, save the government's fiscal costs on sterilization, and maintain public expenditure in these vital areas.

Another possibility is to deal with the overvaluation problem by other capital management techniques, such as using dual exchange rates and adjusting regulation concerning limits on fund repatriation, lending and borrowing ceilings. To some extent, Madagascar uses some of these, but others, such as dual exchange rates, are prohibited by agreements with the IMF. The problem here is that the use of these arrangements is not allowed under the IMF articles which Madagascar has signed.

Central Bank Independence

As is common in other countries, the IMF is attempting to bolster the political independence of the Central Bank of Madagascar (BCM). Most recently, this involves working out an agreement for the government to "recapitalize" the central bank, and to reduce the degree to which the central bank offers direct financing of government budget deficits (IMF, 2008b, 2008c). While bolstering central bank independence in various ways has become standard operating procedure for the IMF in its dealings with developing countries, the approach is not without its problems. On the one hand, it has merits to the extent that central banks must be able to undertake policies that will help maintain macroeconomic stability. At the same time, there are several potential costs: First, in poor countries requiring significant investment,

institutional innovation, and structural change to bring about development, it is desirable for the central bank to be part of a coordinated government development effort; it is not helpful if the central bank sees its only job as “macroeconomic stabilization,” narrowly defined as maintaining a low inflation rate and moderate balance of payments (Epstein, 2006). Second, independent central banks tend to have an excessively “finance-colored” approach to monetary policy, meaning that they tend to have excessively close relationships with the financial sector (Epstein, 1982). This tends to weaken the resolve of the central bank to confront the financial sector about its activities, which in the case of Madagascar may well be a liability given the reforms the financial sector must make in order to contribute significantly to the development of the economy.

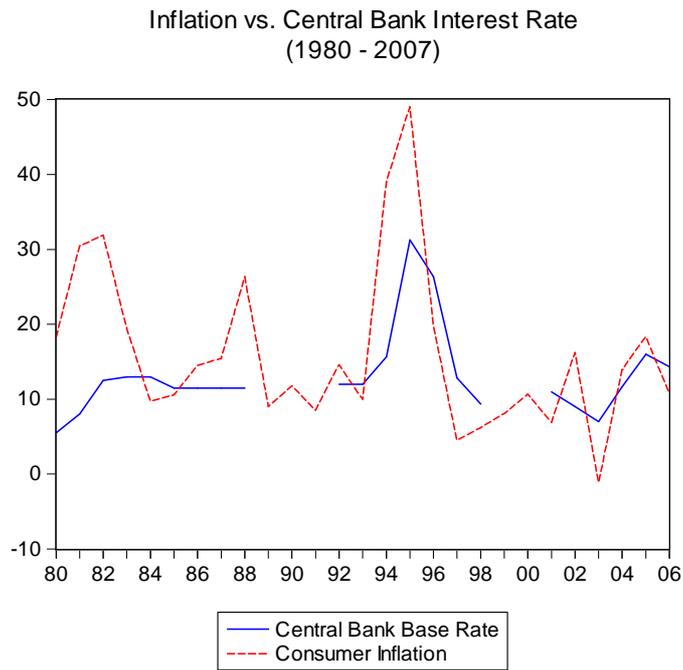
What is required then is not a generalized promotion of central bank independence, but the creation of an institutional structure that will give central banks the autonomy they need to pursue stabilization policy, while at the same time giving them the incentives to coordinate with the government to promote economic development.

Monetary Policy

Prior to 1994, tools of central bank policy consisted mostly of direct controls: reserve requirements, interest ceilings, and other direct controls. In 1994-1996, a major reform and liberalization of monetary policy and the financial sector took place. These reform measures included creating a money market, choosing the *taux directeur* as the base rate for monetary policy and on advances to the government. REPOs were also introduced at this time. Credit controls, including credit ceilings, were removed in December 1995. An interbank foreign exchange market was created along with the liberalization of the foreign exchange market.

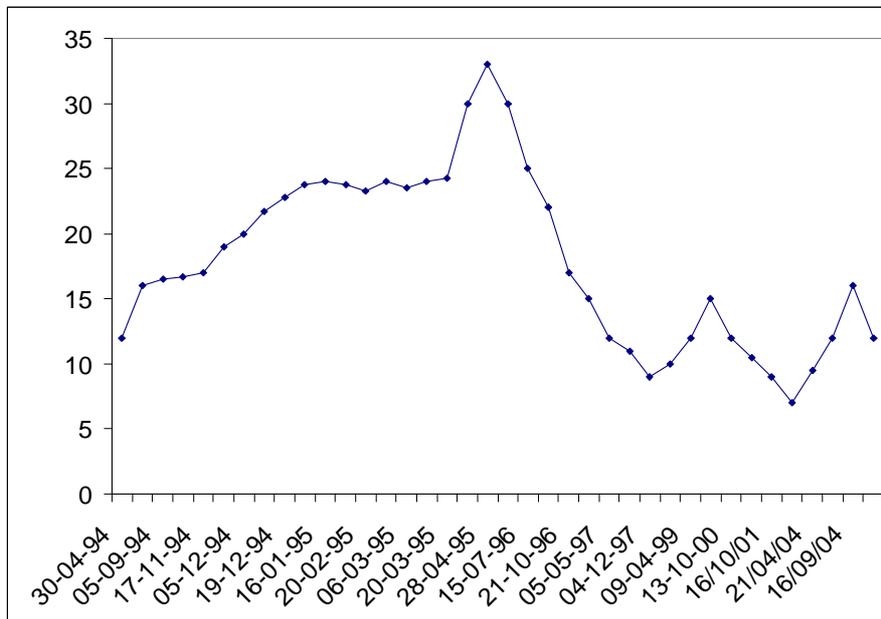
Starting in 1994, a new Central Bank Charter was passed, determining that the Central Bank of Madagascar’s primary objective was to maintain price stability. The main tools of central bank policy have been reserve requirements and an indicator interest rate to signal interest rate levels and changes to the market (see Figures 4.3 and 4.4). These instruments have been used to try to fight inflationary pressures and mop up liquidity in the banking system, particularly during inflationary episodes (see below for more discussion of excess liquidity concerns). More specifically, these are the tools that have been used to try to achieve program requirements established under the various IMF programs (see below for more detail on the IMF programs).

Figure 4.3



Source: International Monetary Fund (IFS)

Figure 4.4 Evolution of BCM's base rate, 1994-2004



Source: Bank of Madagascar website

Table 4.3 Evolution of the reserve requirement ratio, 2000-2005

Date	Base	Coefficient
15 July to 14 August 2000	Demand deposits	25%
	Savings and long-term deposits	5%
from 15 January 2003	Demand deposits	12%
	Savings and long-term deposits	0%
from 15 April 2004	Demand deposits	15%
	Savings and long-term deposits	0%
from 15 July 2004	Demand deposits	15%
	Savings and long-term deposits	15%
15 March to 14 April 2005	Demand deposits	15%
	Savings and long-term deposits	15%

Source: Bank of Madagascar website

The IMF programming approach

Within this context, since the mid-1980s, the central bank has been operating under an IMF programming framework¹⁰ (Nassar, 2005). This programming framework is based on a fairly simplistic, monetarist model of the economy (Polak, 1977 [1957], 1997). Under this framework the central bank is given a targeted rate of growth of M3 which is implicitly calculated to achieve a desired inflation rate, given an assumed growth rate of productive capacity and a stable demand for money equation. Then the central bank, assuming a stable relationship between “high powered money” and money (M3), attempts to hit a target growth rate for high powered money (bank reserves plus currency in circulation). In addition, the IMF sets ceilings (maximum amounts) that the central bank can lend to the government and the banking system (domestic credit (DC)), and sets, as well, a floor (minimum) on the amount of foreign exchange reserves that the central bank must hold (net international reserves (NIR)). More recently, the IMF has, in addition, strongly promoted an inflation ceiling keeping inflation in the single digits¹¹ and, more recently, added the goal of reducing exchange rate variability to the list of recommended goals.

Tables 4.4 and 4.5 give examples of recent IMF programs with Madagascar.

¹⁰ See Schaechter (2001) for an exceptionally clear description of this framework.

¹¹ This has been called “inflation targeting lite.”

**Table 4.4 IMF quantitative performance criteria for Madagascar,
March 2008**

Quantitative Performance Criteria	March 31, 2008 Indicative Targets			Status
	Programmed	Estimated Actual	Adjusted Actual	
EXTERNAL				
Ceiling on accumulation of new external arrears (U.S. \$)	0.0	0.0		Met
Ceiling of contracting or guaranteeing of new external debt on non-concessional terms (U.S. \$)	0.0	0.0		Met
CENTRAL BANK				
Floor on net foreign assets (NFA) of BCM (SDR millions)	1.6	-30.0	-30.0	Not met
Ceiling on net domestic assets (NDA) of the BCM (MGA billions)	-56.1	51.4	78.8	Not met
FISCAL				
Ceiling on domestic financing of the government	72.5	-144.9		Met
Floor on tax revenue	396.5	462.0		Met
Ceiling on accumulation of new domestic arrears	0.0	0.0		Met

Table 4.5 Recent IMF programming framework for Madagascar

Quantitative Performance Criteria	Indicative Targets, 2 nd half, 2008			
	September 2008 Indicative Targets		March 2008 Indicative Targets	
	Programmed	Revised Program	Program	Revised Program
EXTERNAL				
Ceiling on accumulation of new external arrears	0.0	0.0	0.0	0.0
Ceiling of contracting or guaranteeing of new external debt on non-concessional terms	0.0	0.0	0.0	0.0
CENTRAL BANK				
Floor on net foreign assets (NFA) of BCM (SDR millions)	81.7	36.5	114.4	50.5
Ceiling on net domestic assets (NDA) of the BCM (MGA billions)	-33.6	81.7	3.4	193.3
FISCAL				
Ceiling on domestic financing of the government	-33.0	-86.9	65.6	31.5
Floor on tax revenue	1338.3	1416.8	1827.1	1931.5
Ceiling on accumulation of new domestic arrears	0.0	0.0	0.0	0.0

4.3 Criticisms of IMF financial programming

The IMF financial programming approach has been subject to a number of significant criticisms (Epstein and Heintz, 2006; Easterly, 2004; Blejer et al., 2002). Easterly (2004) shows that there is significant empirical slippage in virtually every stage of the programming analysis, so that hitting ultimate targets becomes extremely problematic. As a result, the framework either routinely produces wrong results, or must be supplemented by other analyses that are not part of the programming framework. Partly as a result, the IMF has recently been imposing (or strongly recommending) additional targets, especially inflation targets (IT). Blejer et al. (2002) argue that inflation targets are redundant and sometimes inconsistent with the other IMF programming targets; Epstein and Heintz (2006) show that inflation targets enforce a contractionary bias on the regular programming targets, making it less likely that the central bank will accommodate economic growth and credit creation when desirable. Table 4.6 is reproduced from the Epstein and Heintz (2006) paper. In the traditional financial programming exercise, the main targets are net domestic assets ceilings (NDA, sometimes called “domestic credit ceilings,” which limit the amount of credit that the Bank of Madagascar can create, and the net international reserves floor (NIR), which require that monetary and fiscal policy are set to maintain a minimum level of international reserves. If either target is threatened – that is, if international reserves are too low or if net domestic assets are too high – then the program calls for tightening monetary policy, raising the target interest rate, cutting down on credit to the government and banking sector, and/or raising reserve requirements.

A key and troubling implication of this approach is that there is no clear set of conditions under which expansionary monetary or credit policies are called for, even in a situation of slow growth. Even if both targets are met, programming does not call for expansionary policy. This is largely because there is no explicit operational target for economic growth, employment creation, or poverty reduction. The bias of financial programming is therefore contractionary.

Table 4.6 IMF Financial programming based on net domestic assets ceilings and net international reserves floors

		Net Domestic Assets (NDA)	
		Higher Than Programmed (Threatened)	Lower Than Programmed (Not Threatened)
Net International Reserves (NIR)	Higher Than Programmed (Not Threatened)	Only the NIR target has been met. Policy: tighten	Both targets have been met. Policy: No need for tightening
	Lower Than Programmed (Threatened)	Neither target has been met. Policy: tighten	NIR has not been met. Policy: tighten

Source: Epstein and Heintz (2006), adapted from Blejer et al. (2002), Table 1

If explicit inflation targets are added to the traditional financial programming exercise, then this bias becomes even worse, especially in a situation of supply-side inflation shocks, as Madagascar and many other countries are experiencing now. Table 4.7 illustrates the problem. An inflation ceiling (in Madagascar’s case, it has committed to keeping inflation in the single digits) essentially adds an additional restriction on policy. Table 4.7, adapted from Blejer et al. (2002), illustrates this point. For example, in the situation where the NIR floor is met and NDA ceiling is met, but, say, because of a supply

shock, the inflation target is not met, this approach would call for restrictive policy. Again, there is no situation which explicitly calls for looser policy because, as before, growth or employment generation does not have explicit targets within the monetary programming framework. There are growth forecasts in the framework (IMF, 2008c) but these are not made operational targets of central bank policy as is now the case with inflation.

Table 4.7 Financial programming with net domestic assets, net international reserves, and inflation targets

		Inflation Target (IT)	
		Higher Than Programmed (Threatened)	Lower Than Programmed (Not Threatened)
Net Domestic Assets (NDA) Relative to Program Requirements	Higher Than Programmed (Threatened)	NDA and IT give the same signal. Policy: tighten	NDA and IT give different signals. (NDA – tighten; IT – don't tighten). Policy: tighten
	Lower Than Programmed (Not Threatened)	NDA and IT give different signals: IT – tighten; NDA – no tightening needed. Policy: tighten	NDA and IT give the same signal. Policy: No tightening needed.

Source: Epstein and Heintz (2006), adapted from Blejer et al. (2002), Table 2

None of this is meant to imply that we believe maintaining a moderate and stable inflation rate is unimportant; nor are we arguing that the macroeconomic authorities in Madagascar can ignore supply-side inflation. But it does suggest that unless economic growth targets are explicitly incorporated into the making of macroeconomic policy, there will be a bias against growth in the formulation of policy as it is currently structured.

For example, in an IMF Country Report (IMF, 2007c) the IMF notes: “BCM monetary policy through 2007 will be geared to achieving its inflation target. To do so, it will manage banking sector liquidity using indirect monetary policy instruments, such as the bank rate, reserve requirements, and operations to inject or mop up liquidity on the money market. Subject to meeting its inflation target, the BCM will also attempt to meet its foreign exchange target and allow enough growth of credit to the economy to attain the GDP growth objective and to meet government financing requirements.” Yet, there are no explicit growth targets and the central bank is still subject to explicit Net Domestic Credit ceilings so the statement “...meet government financing requirements” is somewhat misleading.

As documented in the latest IMF (2008c) documents, current monetary policy is geared toward fighting inflationary pressures emanating from increases in food and energy prices, and toward reducing the volatility of exchange rates, while trying to limit the appreciation of the real exchange rate. We will discuss in more detail below the special issues that are raised for monetary policy in dealing with the supply shocks.

4.4 Alternative macroeconomic framework

In this chapter, we analyze the current macroeconomic policy approach with an emphasis on assessing its strengths and weaknesses for achieving the related goals of poverty reduction and the generation of more decent

employment opportunities. We argue that, while the current framework has a number of significant strengths, unless it is modified, it will not be sufficient to allow the government to achieve many of the goals embedded in the Madagascar Action Plan, including the reduction of poverty by 50% by 2012.

The MAP and the current monetary policy framework

As we discussed earlier, the MAP's goals of cutting poverty to 50% by 2012 will require not just the creation of more jobs, but the creation of decent jobs. This will entail:

1. The mobilization and allocation of financial resources to sectors and industries that can raise productivity, generate high value-added, have strong direct or indirect linkage effects, and high multiplier impacts. Chapter 5 describes some modifications to the financial sector that will be required to make progress in this direction. Our input-output model discussed in chapter 3 and utilized in chapter 5 and other chapters indicates what sectors and industries are the best candidates in terms of these linkages and effects.
2. The development of infrastructure, including skills and physical infrastructure, that can contribute to these jobs and can help lay the basis for structural transformation. Chapters 6–9 discuss these kinds of investments.
3. A macroeconomic framework that can generate the demand pressure necessary to provide opportunities for decent jobs and the macroeconomic stability required to have the economy grow at a high level on a sustainable basis.

This chapter focuses most directly on this third component. To achieve high demand pressure for growth while maintaining macroeconomic stability properly defined, the macroeconomic authorities, with the support of development partners, and especially the IMF, should adopt the economic growth targets associated with the MAP's goals, along with reasonable macroeconomic stability requirements. The monetary policy authorities should develop and revive the policy tools necessary to achieve these myriad goals. Instead of committing to strict, narrow goals of privatization, excessive central bank independence, and financial liberalization, the authorities should adopt a more flexible and pragmatic approach to conducting macroeconomic policy that notes the importance of achieving economic growth and economic transformation for bringing down poverty to 50% by 2012.

To implement this approach, we propose that the macroeconomic framework be adjusted in these ways:

1. The macroeconomic framework for the monetary and financial policy should be oriented around the employment and growth framework embedded in the MAP. This is already implicit in the MAP framework, which sets a goal of cutting poverty to 50% by 2012. The IMF has estimated that the economy has to grow by 9.4% on average to achieve that goal. Thus monetary, fiscal, and financial policy should be coordinated to achieve this goal, subject, of course, to the constraint of macroeconomic stability.
2. The implication of adopting this approach is that the BCM and other macroeconomic policy institutions need to develop the institutions and tools that can allow them to achieve these goals and to maintain macroeconomic stability while achieving the poverty reduction goals of the MAP.

3. An implication of points 1) and 2) is that the IMF programming requirements may need to be altered. Among other things, the government should seriously consider implementing capital management techniques, as these can complement the important (and IMF-endorsed) policy of managing the exchange rate to reduce exchange rate volatility and over-valuation.
4. The macroeconomic authorities should take stronger action to support investments in employment-generating activities, including the support of development banking institutions and the provision of more carrots and sticks vis-à-vis the commercial banks, so that more of their resources are mobilized for lending for employment-generating activities, as we discuss in chapter 5.
5. Monetary policy targets need to be more flexible, to facilitate monetary policymaking. The current framework, which has incorporated an inflation targeting, is bound to make monetary policy more difficult, especially in an environment of commodity price shocks.
6. The fiscal authorities should enhance their tax revenue strategies, including strategies aimed at the mining sector, to help fund skills training and infrastructure investment. A dedicated tax on mining to re-invest in activities for structural transformation and the creation of decent jobs should be made part of the fiscal policy reform actions.

4.5 Complications arising from recent commodity price increases

The recent increases in oil, food, and other commodity prices have significantly complicated macroeconomic policymaking in Madagascar and other poor developing countries. There is no simple way of dealing with such increases with traditional tools of monetary policy, especially when there is great uncertainty with respect to the length of time these increases will stay in place (will they be quickly reversed or are they here to stay?) or how high they will go. Complicating matters further, there is no one set of optimal policy responses for all countries, as the most appropriate responses will depend on factors quite specific to different countries, including their dependence on food and oil imports, their access to concessional borrowing, their budgetary and inflation position ex-ante, and their degree of excess capacity with respect to food and energy products.

The IMF has been giving technical assistance and advice to countries as to how to respond and is well aware of these complications (IMF, 2008a). Their general advice with respect to energy and food prices, and monetary, fiscal, and exchange rate policy has been as follows:

- The governments should allow the increased prices of food and energy to be passed on to consumers so that prices will accurately reflect world prices.
- Monetary policy should accommodate the “first round” effects of increased food and energy prices, but should prevent the increases in food prices from spreading to the rest of the economy, thereby limiting the “second round” inflation effects.
- Fiscal policy should apply financial relief very specifically targeted to the most vulnerable, rather than across the board policies that reduce the costs of commodities more generally.

- If the energy and food price increases are expected to be long-term, net importers should allow their real exchange rates to depreciate to accurately reflect these increases and allow the economy to adjust.

Evaluation

A full evaluation of this policy advice is beyond the scope of this chapter, but a few comments are in order. Advising central banks to accommodate initial increases in prices is sound advice, as these increases signal real losses of national income, and the loss should not be compounded by further contractionary policy that will lower national income even further.

Yet the specific advice that the central bank not allow “second round” price increases is excessively vague and quite open to misinterpretation, especially, as we will see, in a monetary policy environment in which inflation fighting has taken on such a priority. The increase of inputs such as energy and some other commodities must get reflected through the whole input–output structure of the economy. This takes time. The IMF, on the one hand, wants economies to let final prices to consumers reflect world commodity prices, but on the other hand, wants these price increases to be limited. In that case, the only impact will be to reduce needlessly economic activity, since actual price declines are not a common feature of modern economies, especially when they are in an inflationary environment.

Moreover, the advice that the central bank should not allow a destructive wage–price spiral to ensue, which essentially reflects a socially destructive attempt by various social groups to pass on the real income loss to those who are least able to protect their real incomes, is sensible. However, in Madagascar, wage employment is a very small share of total employment and unions are relatively weak. So a wage–price spiral is very unlikely. The bigger issue is inertial increases in prices that might result by the spread of price increases through the input–output structure, which, as we have suggested, are necessary to reflect the readjustment of relative prices.

Where problems arise is when those with monopoly pricing powers are able to use the “cover” of inflation to inordinately raise prices. But the solution for this is careful monitoring of monopoly power – wage and price monitoring and negotiations – and not a generalized restrictive monetary policy which can do serious “collateral” damage.

So what is the best way to prevent a destructive wage–price spiral? Other institutional structures may be necessary, such as wage–price coordination among the major societal actors, facilitated by the government and the central bank. These types of coordination can usefully supplement monetary and fiscal policy and reduce the output costs of preventing destructive wage–price spirals.

Commodity price increases and Madagascar

In the case of Madagascar, the IMF and the government have apparently implemented some aspects of the policy advice and not others. The government, with the help of the IMF and other donors, is implementing targeted fiscal policies to subsidize the costs of food for the most vulnerable, and to increase cash transfers to help offset the increased costs of fuel. The government has indicated that it will undertake policies to increase food supplies, but it is not

entirely clear what those policies are and how much international support they are receiving.

Box 2. Madagascar: Measures to Mitigate the Fuel and Food Price Shocks for the Population

In order to alleviate the consequences of the sharp rise in fuel and rice prices for the population, the government intends to implement the following measures during the second half of 2008 (MEFP, ¶12 and 13):

- temporary VAT exemption on rice and VAT exemption on lighting fuel (revenue loss of about 0.3 percent of GDP);
- freeze of electricity prices until October, necessitating additional budgetary transfers (0.2 percent of GDP) to the electricity company;
- targeted transfers to the poorest, such as food for work and school children nutrition programs (0.1 percent of GDP); and
- subsidy for a second annual rice harvest and for urban transport (0.2 percent of GDP).

Source: IMF (2008c)

Yet, at the same time, the authorities are tightening the fiscal policy (IMF, 2008c), which may unnecessarily increase the costs associated with the supply shocks. With respect to monetary policy, however, there has been very little acknowledgement of the possible need to accommodate the price increases, as the inflation target remains “price increases in the single digits.” While an understandable target under normal circumstances, it might not be appropriate in the short to medium term as the economy tries to adjust to increased food and fuel prices. Indeed, as mentioned earlier, the medium term program calls for inflation to be reduced to 6.5% by 2010 and this has not been adjusted.

In fairness, the BCM and the IMF appear to be moving to a “core inflation” concept (IMF, 2007b) and this would be an improvement on setting inflation targets based on headline inflation, precisely because of the problems associated with temporary commodity price shocks. Still, even core inflation may need to increase in order to accommodate the higher food and fuel costs, and monetary policy may need to accommodate that increase if it is to avoid doing further unnecessary damage.

4.6 Conclusion

Madagascar has experienced a long period of economic stagnation, poverty, and instability. However, as we discussed in chapters 1 and 2, in the most recent period, several trends provide some optimism for an improvement in macroeconomic policy outcomes: the Madagascar Action Plan provides a set of worthy goals focused on economic development and poverty elimination; as a result of a set of debt mitigation activities from the international community, including the IMF, Madagascar’s external debt situation has improved greatly; the development of mining activities provides a new *potential* force for economic growth and revenue generation which must be handled carefully.

However, the framework which guides macroeconomic policy in Madagascar has not caught up with the goals of the MAP and, as a result, needs to be modified if the MAP’s goals of economic growth and poverty reduction are to be achieved. In recent decades, macroeconomic policy in Madagascar has

been guided primarily by Washington Consensus formulas. Madagascar's current macroeconomic policy framework is mainly determined by the government's obligations to the IMF under the current Poverty Reduction and Growth Facility (PRGF) program, which stresses macroeconomic stability, but does not focus on development.

Still, making macroeconomic policy in the Madagascar environment is not easy. Exogenous shocks, such as the recent cyclone and oil and food price increases periodically throw macroeconomic plans off course; in addition, capital flows associated with mining sector dynamics have major macroeconomic implications for the Malagasy economy (such as the impacts on real exchange rates). All of these macroeconomic factors take place against the backdrop of a poverty rate of more than 60% that has only recently been falling. As should be obvious, implementing macroeconomic policy in this environment creates major challenges.

In this chapter, we analyzed the current macroeconomic policy approach with an emphasis on assessing its strengths and weaknesses for achieving the related goals of poverty reduction and the generation of more decent employment opportunities. We argue that, while the current framework has a number of significant strengths, unless it is modified, it will not be sufficient to allow the government to achieve many of the goals embedded in the government's Madagascar Action Plan, including the reduction of poverty by 50% by 2012.

Among other proposals, we suggest that:

1. The macroeconomic framework for the monetary and financial policy should be oriented around the employment and growth framework embedded in the MAP. This is already implicit in the MAP framework, which sets a goal of cutting poverty to 50% by 2012. The IMF has estimated that the economy has to grow by 9.4% on average to achieve that goal. Monetary, fiscal, and financial policy should be coordinated to achieve this goal, subject, of course, to the constraint of macroeconomic stability.
2. The implication of adopting this approach is that the BCM and other macroeconomic institutions need to develop the institutions and tools that can allow them to achieve these goals and to maintain macroeconomic stability while achieving the poverty reduction goals of the MAP.
3. An implication of points 1) and 2), is that the IMF programming requirements may need to be altered. Among other things, the IMF should relax its insistence that the government refrain from implementing capital management techniques as these can complement the important (and IMF-endorsed) policy of managing the exchange rate to reduce exchange rate volatility and over-valuation; moreover, the targets of monetary policy may need to be changed as we describe presently.
4. The macroeconomic authorities should, with the IMF's endorsement, take stronger action to support investments in employment-generating activities, including the support of development banking institutions and the provision of more carrots and sticks vis-à-vis the commercial banks, so that more of their resources are mobilized for lending for employment-generating activities, as we discuss in chapter 5.
5. The macroeconomic authorities, with the endorsement of the IMF, should alter its monetary policy targets to include real goals of decent employment generation and growth as embodied in the MAP. The

ultimate targets, for example, include real GDP growth consistent with the MAP goals, subject to macroeconomic stability constraints. These would include a stable and competitive real exchange rate (SCRER) and a maximum inflation rate below 15%. This would avoid the current situation in which, as we discussed above, all the operating targets in the IMF programs call for contractionary monetary policy, and none clearly call for expansionary monetary policy.

6. The fiscal authorities should enhance their tax revenue strategies, including strategies aimed at the mining sector, to help fund skills training and infrastructure investment. A dedicated tax on mining to reinvest in activities for structural transformation and the creation of decent jobs should be made part of the fiscal policy reform actions.
7. Finally, the recent increases in the prices of basic commodities, such as oil and food, need to be treated carefully by macroeconomic policy. While the government and central bank must avoid a de-stabilizing price spiral, they must not over-react and make the inevitable loss of real income greater than it would be otherwise due to excessively restrictive macroeconomic policy designed to keep inflation low. In addition to carefully calibrated monetary policy, non-monetary policy actions – such as incomes policies in the short run and investments to expand supply capacity of key commodities in the medium term – must complement responsible monetary and fiscal policy so they do not have to shoulder all the burden of preventing a destabilizing inflationary spiral.

Creating significant amounts of decent work for sustainable poverty reduction will require a macroeconomic framework that is oriented to economic growth and decent work creation, in addition to macroeconomic stabilization. It will also require a flexible and pragmatic approach that builds on the requirements of Madagascar's economy and not on a one-size-fits-all approach to policy.

5. Re-deploying the financial sector for employment creation and poverty reduction in Madagascar

As we discussed in chapters 1 and 2, the Madagascar Action Plan (MAP) has outlined a strategy to counter pervasive unemployment, underemployment, and poverty in Madagascar, including a broader role for the financial sector. This chapter argues that the current contributions of the Malagasy financial system to generating investment, employment, and incomes in the economy is woefully inadequate and suggests policy and structural transformations that can be initiated to greatly improve the macroeconomic context for labor market outcomes. Based primarily on an analysis of the Madagascar Household Survey (Enquête Auprès des Ménages, 2005), the Madagascar Enterprise Survey (Enquête sur les Entreprises, 2005), and an input-output model based on the 2001 Madagascar I-O framework, the paper quantitatively assesses the impact of policies to improve the mobilization of financial resources by the financial sector, including the central bank, for investment in key sectors of the Malagasy economy. These sectors include agriculture, energy, and tourism (hotels and restaurants). Using these data sets, we estimate the impacts on employment and incomes of improved access to credit by households, and infrastructure investments in key sectors that can improve domestic linkages in the Malagasy economy.

We then outline policies that can be undertaken by the government and the central bank, including loan guarantees, direct lending, and asset-backed reserve requirements that can make financial assets more directly available to small producers and businesses in key sectors, including agriculture, and that can counter some of the negative consequences of real exchange rate appreciation. Given severe data limitations, such estimates should, of course, be treated with caution, but they do give an indication of the orders of magnitude that can be achieved with different degrees of financial effort.

The need for improved mobilization of financial resources for investment and employment is evident from a number of indicators. For example, the 2005 enterprise survey found that access to credit or capital was identified by most of the respondents as a barrier to creating an enterprise. Out of almost 140,000 formal household enterprises, only 2885 received start-up funds from a bank loan, of which fewer than 6000 received such funds from a microcredit institution. Among more than 100,000 informal enterprises, fewer than 650 reported having received a bank loan, with only 4215 having received start-up credit from microcredit institutions. Yet, the large banks in Madagascar, like their counterparts in many other African countries, have substantial excess reserves.

According to our econometric estimates, greater access to capital could substantially enhance earnings of households. Running a basic earnings equation using the household survey (EPM), we find that net enterprise earnings increase by more than 3 percent for every additional 1000 Ariary in productive capital assets a household enterprise has at its disposal. (See Chapter 2 and the discussion later in this current chapter).

Mobilizing financial resources and allocating them to productive units in key sectors could be a crucial component of the development strategy for Madagascar. Using our input-output model, we identify a number of key sectors where more investment could generate greater employment and incomes. These include agriculture, fishing, trade, and recreation services, among others. We also identify the impacts on employment and wages of improving domestic upstream linkages, for example in sectors such as tourism and the extractive industries.

Building on other work we have undertaken in Ghana, South Africa, and Kenya, we suggest financial policies and innovations that could be implemented, such as asset-backed reserve requirements, development banking, and loan guarantees, that can help generate more investment in key sectors to increase employment and incomes for the poor (Pollin, Epstein, Heintz, and Ndikumana, 2006; Epstein and Heintz, 2006; Pollin, Githinji, and Heintz, 2007; Epstein and Grabel, 2007).¹²

¹² Papers available at www.peri.umass.edu.

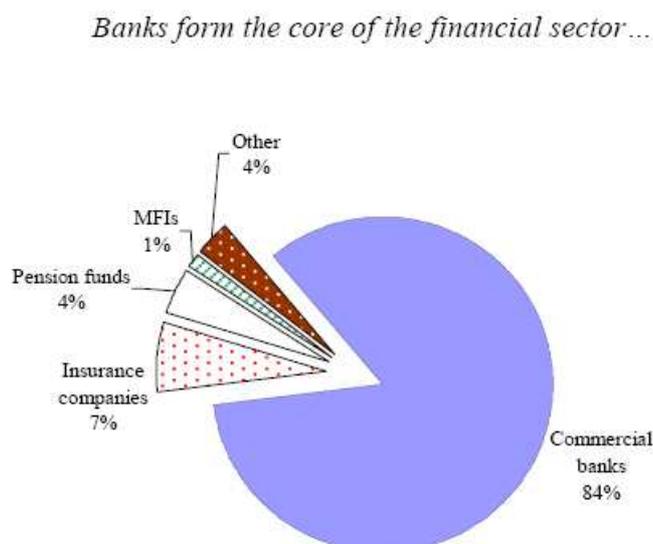
5.1. A description of the financial sector in Madagascar¹³

Like the financial sectors in many sub-Saharan African countries, the financial sector in Madagascar is dominated by banks (Heintz and Pollin, 2008; Honohan and Beck, 2007; Aryeetey, 2003). According to IMF data, in 2005, commercial banks in Madagascar controlled 84% of financial assets (Figure 5.1). Unlike most other sub-Saharan African economies, however, all the banks are foreign owned, with 64% of bank assets and deposits being controlled by only three (French) banks (Figure 5.2).

There are numerous ways to show that the performance of the Malagasy financial system is not contributing as much as it could to the development of the local economy. Perhaps most notably, only 41% of bank assets are invested directly as credit to the local economy. The rest is held as reserves, invested in treasury bills, or placed as deposits in other banks, with about half of bank assets being held as liquid assets (Figure 5.3).

Although, on a *prima facie* basis (see more evidence below), the banking system does not seem to be contributing a great deal to social development, banks nonetheless appear to be making very healthy profits. As shown in Table 5.1, Madagascar banks' return on equity of over 45% in 2003 compares quite favorably to the average return on multinational banks in Africa of 43.2 % in the period 2000-2004, and of 9.8% for multinational banks globally during the same period. These compare with a rate of return on equity of banks in Africa generally of 20%. Interest margins, the difference between lending and borrowing rates, are also quite high in Madagascar – over 11% compared with around 7% for the rest of the world, but less than the 12.7% prevalent in sub-Saharan Africa during the 2000-2004 period.

Figure 5.1



¹³ The source for Figures 5.1 – 5.3 is IMF (2006).

Figure 5.2

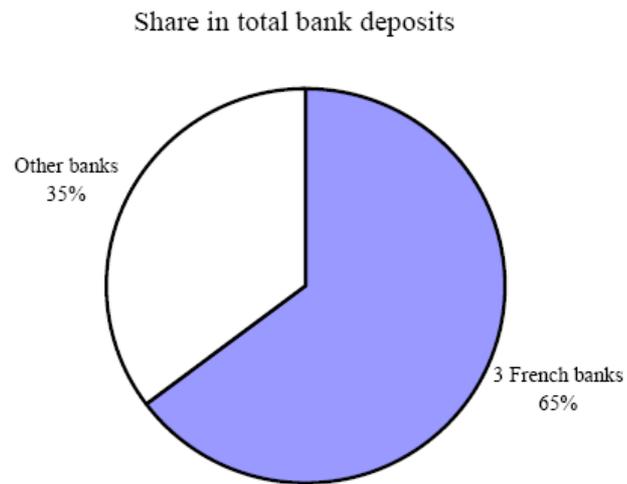


Figure 5.3

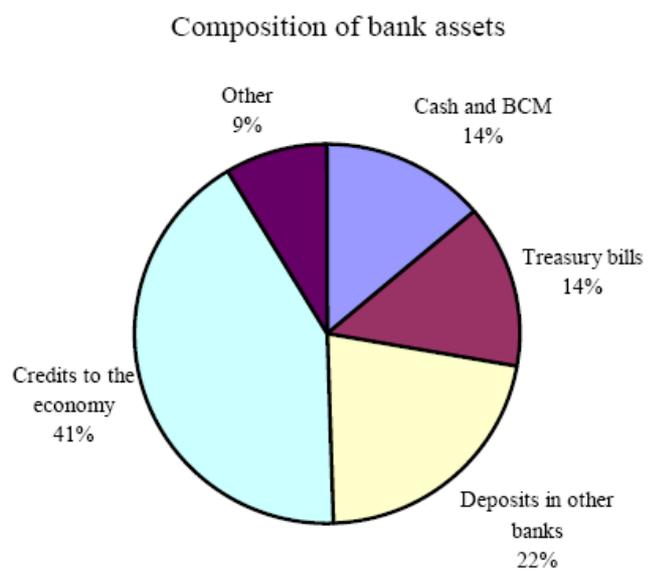


Table 5.1 Banks very profitable: Bank profit comparisons, 2000 – 2004

	Return on Assets (%)	Return on Equity (%)
Africa	2.1	20.1
Foreign Banks in Africa	2.8	26.7
Multi-national Banks in Africa	4.7	43.2
Rest of the World	0.6	8.5
Madagascar (2003)	3.2	45.6
Multi-national Banks in Rest of World	0.7	9.7

Source: Sacerdoti (2005); World Bank (2007b)

Table 5.2 Interest rate margins in selected areas, 2000 - 2004

	2000	2001	2002	2003	2004	2005	AVG
Madagascar	11.50	13.25	13.25	12.75	10.31	8.25	11.55
Sub-Saharan Africa	13.08	13.72	13.00	12.11	12.85	11.67	12.74
Low-Income	13.08	13.72	13.00	12.44	12.17	11.26	12.61
World	7.35	7.14	7.18	6.97	6.47	6.52	6.94

Source: World Development Indicators (2007b)

Survey data also reveal that local clients and potential clients of the financial system in Madagascar do not feel that their credit needs are close to being met. The Madagascar household survey of 2005 contains a good deal of evidence that the financial system does not sufficiently help to promote family enterprises. Table 5.3 reveals that the single largest barrier to creating an enterprise is access to credit or capital. And this barrier was, perhaps surprisingly, more significant for formal enterprises (54.4% of respondents) than informal enterprises (44.9%).

Table 5.3 What are the barriers to creating enterprises?

Barriers to Creating Enterprise	Formal Enterprises	Informal Enterprises	Total
Unknown/undeclared	13.4%	0.8%	2.3%
Access to credit or capital	54.4%	44.9%	46.0%
Technical know-how	2.1%	6.8%	6.2%
Acquiring equipment	3.8%	8.1%	7.5%
Administrative tasks	2.3%	0.3%	0.6%
Marketing/market access	9.0%	11.8%	11.5%
Lack of business skills	2.9%	4.0%	3.8%
Other barrier, not specified	3.9%	6.5%	6.2%
No barriers to creating enterprise	8.2%	16.9%	15.9%

Source: Madagascar Household Survey (EPM) (2005)

This difficulty of accessing credit is also reflected in the fact that, far and away the largest source of start-up capital for household enterprises is household savings (66.5%, overall) and that only 2.1% of the start-up capital of formal enterprises and 0.1% of informal enterprises get their start-up capital from bank loans (Table 5.4).

Table 5.4 Sources of start-up capital

	Formal Enterprises	Informal Enterprises	Total
Unknown/undeclared	12.9%	0.5%	2.0%
Household savings	58.1%	67.6%	66.5%
Bank loan	2.1%	0.1%	0.3%
Microfinance	3.6%	0.4%	0.8%
Loan/aid/gift from relatives	7.2%	6.8%	6.8%
Money lender	0.0%	0.2%	0.1%
Loan/aid/gift from friends	3.4%	2.7%	2.8%
Profits/financial earnings	8.8%	9.6%	9.5%
Other, not specified	3.9%	12.1%	11.1%

Source: Madagascar Household Survey (EPM) (2005)

Data also make clear that the problem is not simply one of a lack of demand for credit. Table 5 reveals that there were certainly a large number of potential borrowers who did not even try to borrow (90%), perhaps because the process is too costly and difficult, but that also a significant number did try but were unable to (90% of those who applied were denied credit).

Table 5.5 Did the household enterprise seek credit over the past 12 months?

	Formal Enterprises	Informal Enterprises	Total
Unknown	13.6%	0.8%	2.3%
Yes, succeeded	2.3%	0.7%	0.9%
Yes, failed	6.5%	6.7%	6.7%
No	77.6%	91.8%	90.1%

Source: Madagascar Household Survey (EPM) (2005)

The Madagascar enterprise survey, which covers micro, small and medium, and larger enterprises (as opposed to the household survey, which covers household enterprises), reveals broad dissatisfaction with credit access among these enterprises as well. First of all, Table 5.6 confirms that the majority of enterprises need credit in order to maintain and expand their businesses (“for investment”).

Table 5.6 Reasons for needing credit

Sector/Unit	<i>Reasons for Needing Credit (% of respondents)</i>		
	For Investment	To Re Pay Debt	Other
Secondary	55.64	10.51	6.64
Sector	54.80	7.44	7.04
Tertiary sector	54.81	7.70	6.86
Microenterprise	55.82	8.20	8.09
SMEs	40.86	21.4	12.33

Source: Madagascar Enterprise Survey (EPM) (2005)

While most enterprises need credit for investment and other purposes, very few report being satisfied with financial services or find that access to credit is easy (Table 5.7). A huge majority of firms do not believe that collateral requirements are reasonable, and fewer than 20% of large firms find the collateral requirements are reasonable. Over a third of the firms believe that foreign enterprises are favored relative to domestic firms.

Table 5.7 How easy is it to get credit?
(% of respondents)

	Access Is Easy	Foreign Favored	Collateral IS Reasonable	Are Satisfied with Financial Services
Secondary sector	17.46	49.39	8.70	13.14
Tertiary sector	18.69	37.62	8.04	9.19
Microenterprise	17.45	37.11	7.54	8.58
SMEs	27.84	53.61	12.73	18.35
Large enterprise	18.51	61.36	17.69	15.07

Source: Madagascar Enterprise Survey (EPM) (2005)

Still, as one might expect, not all firms have difficulty accessing credit. Indeed, as Table 5.8 suggests, large firms in key sectors – namely extractive industries and energy industries – report very satisfactory access to credit, whereas firms in most other sectors are much less satisfied.

5.2 Assessing the impact of credit on employment and incomes

In order to assess more directly the impact of credit allocation on employment and incomes, especially among the poor, it is useful to look at the sectors that create jobs and incomes for the poor and compare those with those that appear to have more access to credit. To do this, we have taken information from the Madagascar input-output tables (2001) and calculated employment and value-added multipliers for sectors that we believe roughly match those covered in the enterprise survey.¹⁴

Table 5.8 Large enterprises in key sectors have easiest access to credit

Branch and Type of Enterprise	Satisfied (%)
Extractive activities	100.0
Manufacturing	27.8
Production and distribution of energy	100.0
Construction	43.6
Trade	28.6
Hotels and restaurants.	34.2
Transport and communications	63.4
Real estate and other services	16.3
Microenterprises	30.3
SMEs	46.7
Large enterprises	51.0

Source: Madagascar Enterprise Survey (2005)

Table 5.9 reports on the consolidated industry multipliers which consolidate the industries from the I-O tables discussed in more detail in the next section,

¹⁴ We discuss in more detail the construction and meaning of these multipliers in the next section. Also, please see chapter 3.

using a weighted average of final demand. Table 5.9 shows several different multipliers in an analysis which makes household consumption endogenous, feeding back into final demand: an output multiplier (per million Ariary of final demand); a value-added multiplier (per million Ariary of final demand); an employment multiplier; a wage multiplier; and a non-agricultural wage multiplier. Finally, Table 5.9 shows upstream linkages, measured as domestically sourced inputs as a percentage of the non-labor production costs.

As explained in more detail in chapter 3 and the next section, the existence of large amounts of self and informal employment creates significant challenges for conducting and interpreting this input-output analysis. The main problem is that the employment and wage data primarily encompass only formal employment and wages. Moreover, informal employment is often paid at an extremely low level. Hence, simply expanding employment will not necessarily do much to reduce poverty. Considering these statistical and structural problems in the Malagasy economy, it is the “value-added multiplier,” rather than the output, employment, or wage employment¹⁵ multipliers, that are likely to be the most revealing about the impact of sectoral growth on employment and income. Hence, to look at the broader impacts of expanding sectoral demand on both formal and informal employment as well as incomes, we will focus for now on the value-added multipliers.

Table 5.9 Consolidated industry multipliers

	Multipliers		Employment (per million Ariary)		Upstream Linkages
	Output (per million Ariary)	Value-Added (per million Ariary)	Wage	Non-Ag.	Domestically Sourced Inputs as % of Non-labor Production Costs
Agriculture	3.4	2.0	292	157	65%
Extractive industries	3.5	1.8	384	340	71%
Manufacturing	3.3	1.5	264	203	65%
Energy	2.3	0.7	311	295	36%
Construction	3.0	1.4	208	174	53%
Commerce/trade	3.5	2.0	278	227	75%
Hotels and restaurants	3.5	1.3	289	236	72%
Transport and communications	3.5	1.7	342	299	76%
Real estate and business services	3.9	1.9	507	458	89%

Source: Derived from input-output tables (2001) (see Appendix below, and Chapter 3)

Next, we use these consolidated industry multipliers to look at the relationship between credit allocation and industries that have high value-added

¹⁵ By “wage employment” multipliers, we mean the multipliers only apply to wage employees (i.e. number of jobs excluding self-employment).

and employment multipliers and thick domestic linkages. We are trying to get an indication of whether credit is allocated in the Malagasy economy to those sectors that generate decent jobs and have high multipliers. Table 5.10 suggests that the answer is no. It indicates that “credit satisfaction” and sectors with “high value-added multipliers” are not highly correlated. In other words, there is not a lot of evidence from these data that in Madagascar, credit is allocated to those sectors where they will create the most value-added, and therefore, are likely to create the highest number of good paying jobs. On the contrary, those sectors (energy, extraction) tend to be sectors where value-added multipliers tend to be relatively low (energy and extractive enterprises). In terms of upstream linkages, the pattern is more mixed, with energy have low upstream linkages and extractive enterprises having medium levels of upstream linkages.

Table 5.10 Credit is not allocated to sectors with highest multipliers or upstream linkages

Sector	% of Credit Needs Satisfied	Value-Added Multiplier	Upstream Linkages
Commerce/trade	26.6	2.0	75%
Agriculture	NA	2.0	65%
Real estate/Business services	16.3	1.9	89%
Extractive industry	100	1.8	71%
Transpiration/Communications	63.4	1.7	76%
Manufacturing	27.8	1.5	65%
Construction	43.6	1.4	53%
Hotels/Restaurants	34.2	1.3	72%
Energy	100	.7	36%

Source: Authors' input-output analysis.

These data show that improvements can be made in the allocation of credit to support more income generation for under-employed and low-productivity workers.

In the next section, we present further evidence that relaxing credit constraints can improve household earnings. Following that, we suggest some policies that could be used to improve the allocation of credit for employment creation and poverty reduction.

5.3 The impact of relaxing the credit constraints on household earnings: an initial estimate

To estimate the impact of relaxing credit constraints on household incomes, we have utilized data from the Madagascar household survey, 2005. We report again on the econometric results first reported in chapter 2 that indicate the impacts of various characteristics on wages. The point of this exercise is to show that access to capital can have a big impact on household enterprise incomes and that, therefore, there is evidence that relaxing the credit constraints to households can substantially improve living standards for households.

As we discussed in chapter 2, we use data on household enterprises and estimate an earnings function that includes capital assets. We use these data to estimate the impact of increasing access to capital on earnings of households.

Household enterprises are unincorporated enterprises operated by a member of the household. The enterprise may or may not be operated from the actual residence. All the household enterprises are meant to be non-agricultural (i.e. non-farm).

As we discussed in Chapter 2, the dependent variable is the natural logarithm of average monthly net earnings. To repeat, the definitions of basic demographic variables are as follows:

- **Age:** in years
- **Age-squared:** in years (negative coefficient indicates non-linear returns. Based on the coefficient estimate, earnings are maximized, controlling for other factors, at 38 years of age).
- **Sex:** 0 for men, 1 for women (variable called “féminin”)
- **Education:** dummy variables for the level of educational attainment.
- **Number of employees** refers to the number of paid/wage employees. Unpaid contributing family members are not counted as employees.
- **Capital assets** are measured in terms of their estimated value (in 1000s of Ariary). Therefore, the coefficient represents the % increase in net monthly earnings associated with an additional 1000 Ariary in capital assets. Capital assets include land holdings.
- **Manufacturing, trade, and services** are dummy variables representing the sector in which the enterprise operates. Note “services” exclude trade and commerce – i.e. the categories are mutually exclusive.
- **Credit** is a dummy variable. It takes on a value of “1” if the enterprise tried to borrow within the past 12 months and succeeded in doing so. It takes on a value of zero otherwise.
- **Microfinance** is a dummy variable. It takes on a value of “1” if the enterprise received any working capital or start-up capital from a microfinance institution. Otherwise, it takes on a value of zero.

The results are presented in Table 5.11.

Table 5.11 The impact of capital access and other factors on household earnings
Dependent variable: Log household earnings

Dependent Variable: log_earnings	Coefficient	Std. Err.	t	P> t
age	0.0524	0.0146	3.6000	0.0000
age_sqr	-0.0006	0.0002	-3.3600	0.0010
primary	0.1582	0.0788	2.0100	0.0450
secondary	0.6257	0.0887	7.0500	0.0000
higher	0.1454	0.1933	0.7500	0.4520
informal	-0.6999	0.1244	-5.6200	0.0000
employees	0.2167	0.0394	5.5000	0.0000
capital_000	0.0325	0.0070	4.6700	0.0000
female	-0.5900	0.0763	-7.7300	0.0000
manufact	0.1500	0.1709	0.8800	0.3800
trade	0.4383	0.1494	2.9300	0.0030
services	-0.0269	0.1405	-0.1900	0.8480
credit	-0.2723	0.5046	-0.5400	0.5890
micro_finance	-0.6687	0.2936	-2.2800	0.0230

cons	5.2929	0.3323	15.9300	0.0000
Number of observations = 2366		Prob >F = 0.0000		
F (14, 2352) = 47.09		R-squared = 0.2580		

According to our econometric estimates, greater access to capital could substantially enhance household earnings. We find that every 1000 Ariary increase in capital asset holdings is associated with more than a 3% increase in earnings, on average, for households operating enterprises. Moreover, the insignificant signs on credit confirm that, because credit is so difficult to obtain for most households, access to credit as it is now structured does not enhance earnings.

Note that the significant negative coefficient may not mean that microfinance is bad for household enterprises. Indeed, for the economy as a whole, we would expect a negative correlation between a borrower's revenue or enterprise/borrower size and microfinance lending. This is because as size/revenue increases, the unit has more access to formal sources of credit. There is one critical developmental problem that derives from this negative coefficient: the majority of enterprises are medium size enterprises which require credit in amounts above the threshold compatible with microfinance institutions' capacity, but below the threshold/range that is of interest for the banks. This is the same for middle-class households (civil servants, for instance, for housing loans, equipment loans, etc). So, the majority need credit that microfinance institutions cannot afford and that banks do not find "interesting" (too small, thus too costly). This is why we say that while microfinance will be of great help, it is not enough to solve the problem of access to finance for the purpose of unlocking the potential of the private sector.

In the case of our particular sample, we must interpret these results slightly differently, but the general implication is very similar to that just described. In our sample, the vast majority are small-scale enterprises with only one own-account worker (and possibly family members helping out). The negative coefficient probably means that both microfinance and commercial banks only reach a small fraction of these enterprises. Microfinance operations, run by NGOs, might target particularly vulnerable groups (e.g. women), hence the negative coefficient. So there is a huge middle of very small enterprises which is completely cut off from all support – simply because microfinance has a limited reach.

The upshot is that while important and useful, microfinance has severe limitations in reaching medium size enterprises and even small enterprises in a broad fashion. Hence, micro-finance must be supplemented with other financial institutions and programs, as we describe below.

There are a number of other results that are of interest. The significant income penalty for informality is striking, as is the penalty for being female. What the results are really saying is that under the current conditions, women do not have what it takes to make their enterprises profitable. One of those conditions is lack of access to credit (supported by the results) and lower skills. Given that women tend to be more credit rationed than men, the result is simply illustrating the fact that women are at a disadvantage relative to men in terms of

overall support for private enterprise promotion. So, the policy focus should be on promoting women's access to credit, skills development (including formal and informal training), access to markets, and all the other factors that enhance private enterprise success. Simply increasing the number of women-owned enterprises under the current conditions would not give us the results we want, e.g., increased standards of income and living for women.

To summarize, this section has demonstrated that the Malagasy financial sector is not doing an adequate job of making credit widely available for productive purposes. It strongly suggests that relaxing the *capital asset access constraint* could have an important impact on enhancing household earnings and that an improved functioning of the financial sector could greatly contribute to relaxing that constraint. The next section discusses suggested improvements in the financial sector that could re-deploy financial assets to improve earnings and reduce poverty in Madagascar.

5.4 Reforming the financial sector for employment generation and poverty reduction

As part of the MAP, the government of Madagascar has identified a large number of investments in economic sectors and human capital, and a number of ambitious goals. One – though of course, not the only – key challenge in meeting these goals will be to mobilize and allocate financial resources to meet these goals. However, as we have argued, the Malagasy financial sector, in its present configuration, is unlikely to facilitate the achievement of the MAP. As in much of sub-Saharan Africa, more generally, the financial sector has failed to live up to its potential as an agent of economic development (Sacerdoti, 2005).

In many countries, the preferred solution to this problem has been a heavy dose of financial liberalization (Nissanke and Aryeetey, 1998; Honohan and Beck, 2007). Recently, liberalization has been combined with the attempt to create a regulatory framework which would monitor and guard against financial instability, while creating space for private financial investment and enterprise, often from abroad. The Madagascar government's approach has basically followed this approach. But as a great deal of accumulated evidence suggests, while achieving some successes, financial liberalization by itself will not be sufficient to do the job (Serieux, 2008; Honohan and Beck, 2007; Heintz and Pollin, 2008).

Another increasingly popular approach is to build up the microfinance sector. In Madagascar, in recent years, there has been a significant expansion of this sector and it has achieved some important successes in terms of making small amounts of finance available to those in both rural and urban areas who have been hitherto excluded from any financial services at all. However beneficial microfinance is for some, the main problems with microfinance are: 1) the interest rates on microfinance loans are often excessively high and 2) the scale of microfinance loans available is too low to facilitate a significant structural transformation and significant increases in productivity. Such loans often finance consumption loans, or the start of individual home enterprises at a very low scale, but do little to help small and medium enterprises (SMEs). Still, to be sure, microcredit has often found innovative solutions to the problem that poor borrowers starting new businesses lack collateral and are therefore not able to receive loans from formal sector financial institutions.

Hence, what is needed is to combine the resources available to formal sector financial enterprises and government financial institutions such as the central bank with the access, innovation, and lending experiences of microcredit institutions (Atieno, 2001; Aryeetey, 2001; Pollin, Githinji, and Heintz, 2007). There are several ways to do this that have been suggested in the literature, and also put into practice, if only on a small-scale basis. Among the most promising are those that involve programs in which formal sector institutions such as commercial banks or central banks take positions in cooperative, microcredit and other development-oriented financial institutions, either by lending to them and or by taking equity positions in them. To be successful, these programs usually involve government regulations and subsidies that generate carrots and sticks for formal sector institutions to extend credit to these smaller institutions that then on-lend to poor and/or small borrowers with good potential.

Another way to raise lending and investment to scale so that it can have a transformative impact is to create *development banking institutions* that take direct positions in final borrowers who are engaged in activities that will generate large numbers of good jobs and high value-added, and contribute to the structural transformation of the economy. The government of Madagascar is considering this approach, as we discuss in more detail below.

Here we outline several policies along these lines that can be used to help re-deploy and transform the financial sector to facilitate the MAP and help achieve more good jobs, raise productivity, and reduce poverty in Madagascar.¹⁶ In particular we will focus on three: 1) Asset backed reserve requirement (ABRR); 2) loan guarantees; and 3) development banking.

Formal Sector Banks

Carrots and sticks need to be applied to formal sector banks to get them to lend more to high-priority sectors such as those represented in the MAP, or that can be identified by the type of input-output analysis we described above. Here we present two examples of carrots and sticks that can be used to encourage formal sector banks to become so engaged. The first is asset-backed reserve requirements (ABRR); the second, more extended example, is loan guarantees.

Example I: Asset-backed reserve requirements (ABRR)

As discussed in more detail in Pollin et al. (2006, 2007), with a system of asset-backed reserve requirements (ABRR), banks are required to hold reserves against their income-earning assets. However, they are allowed to hold smaller required reserves on assets that are identified as contributing to employment generation and poverty reduction, perhaps using the type of analysis we describe above or in terms of the priority sectors identified by the MAP. This would encourage banks to lend directly to high-priority sectors. Similarly, securities issued by smaller institutions that are experienced in making loans to small/poor borrowers or small and medium sized enterprises, microfinance institutions

¹⁶ This section draws heavily on Epstein and Heintz (2006); Epstein (2007); Heintz and Pollin (2008); Pollin et al. (2006, 2007).

(MFIs), and rural banking cooperatives can have preferred reserve requirements as well.

Example II: Loan guarantees – Loan guarantee scheme¹⁷

A loan guarantee program could help to mobilize resources from Madagascar's commercial banks for on-lending to microcredit and other institutions who have the knowledge and experience to on-lend to cooperatives, small entrepreneurs, and businesses for productive activity, or to make direct loans to the final borrowers, if the commercial banks so choose. The basic idea is that the government would guarantee a certain percentage of the loan, thereby reducing the default risk faced by the bank; this can help to substitute for collateral which most borrowers in the target group will not be able to provide. This would also help keep the interest rate charged to the final borrowers lower.

The program works as follows. The government chooses to guarantee a certain portion of loans from commercial banks or other lenders to borrowers who will achieve program goals, such as generate more decent jobs, increase productivity, and improve the quality of jobs, or invest in innovations or infrastructure to reduce the cost of inputs or consumption goods consumed by the poor, and thereby have strong multiplier effects through the economy to raise the standard of living of the poor. The guarantees may also underwrite a program by commercial banks to lend to microcredit institutions who will then lend to final borrowers.

In setting up such a program, there are several issues that must be addressed:

- 1 How to determine to whom to lend
- 2 What should be the rate of loan guarantee?
- 3 How to monitor the program to avoid corruption, excessive moral hazard, and inefficiency

How to determine to whom to lend

Indirect lending to development institutions. The key here is to start with development finance institutions that have the knowledge, track record, and experience to identify final borrowers that can use the credit productively to create decent jobs, directly or indirectly, for themselves and, on a larger scale, for others in their community. The point will be to raise the scale and reach of these institutions. Careful attention will have to be paid to the organizational structure of the program, and it may vary from region to region. But the key will be to pool the resources to be able to benefit from economies of scale and knowledge, without so much centralization that the programs bypass small borrowers that can both benefit directly and have the possibility to help create value for their locales and communities.

¹⁷ This section draws extensively on Pollin et al. (2007), especially chapter 9. Also see Atieno (2001), who discusses such a program for Kenya.

Direct lending by commercial banks. If the large banks want to start lending directly to such borrowers, then, since they do not have a track record of doing so, it would work best if they were to develop a business plan and a “Decent Employment Impact Statement” that makes clear how many jobs, and at what wages and benefits, would be generated by their loans, and, if possible, some clear idea of the domestic linkages and multiplier effects. Such direct lending, especially to small and medium enterprises, would be highly desirable, but to receive the loan guarantees, they would have to demonstrate the likely employment effects.

What should be the rate of loan guarantee?

In choosing the rate of loan guarantee, there are a number of considerations that must be taken into account, including moral hazard, and the cost of the program to the government. The problem of moral hazard dictates that the government guarantee must be less than 100% of the loan, and possibly significantly less. To reduce moral hazard (and the cost to the government), other mechanisms that substitute for collateral should also be developed, as we describe below. As we see momentarily, the cost to the government will also depend on the rate of guarantee. The higher the rate of guarantee, all else constant, the higher the cost to the government and the greater the problem of moral hazard. However, the lower the rate of government guarantee, the less attractive will be the program to lenders and to borrowers.

These points can be seen more clearly with a simple model:¹⁸

Assume that the rates that banks charge for loans to small financial institutions (we will call it a “development lending” institution) who are part of the program depends on a mark-up over the “base” interest rate, depending on the perceived level of risk. Assume further that the perceived risk level depends primarily on the perceived risk of default on the loan by the borrower.

In this case, the relationship between the base interest rate (i_b) and the market interest rate (i_m) the commercial bank charges can be written as:

$$(1) \quad i_{lg} = i_m - LG$$

where:

i_{lg} = the interest rate on guaranteed loans

i_m = the market interest rate

LG = the loan guarantee factor

And LG, the loan guarantee factor, is:

$$(2) \quad LG = c \cdot (i_m - i_b)$$

where:

c = the percentage of the loan guaranteed; i_b is the treasury bill rate.

So (1) and (2) state that, for a given market interest rate, the rate of interest on the loan from a commercial bank to a development lending institution will be

¹⁸ This is adapted from Pollin et al. (2007), chapter 9.

lower, the higher is the fraction of the loan guaranteed by the government and the lower is the base interest rate.

Example I:

For example, in 2007, the treasury bill rate (i_b) = 11.8%; the lending rate from commercial banks (i_m) was 45%. Since this might have been an outlier, we will take the 2006 rate of about 29.8% for our example.

In this case, let's say that the government guarantees 75% of the loans. The rate facing the microcredit institutions will be:

$$(3) i_{lg} = 29.8\% - .75(29.8\% - 11.8\%) = 29.8\% - 13.5\% = 16.3\%$$

A 75% rate of loan guarantee would of course reduce the cost of borrowing to the development financing institution quite significantly. As part of the program, of course the development lending institution would then have to pass these savings on to the final borrower.

How much would this program cost the government?

Setting aside administrative costs, the major cost to which the government would be exposed is the cost of defaults. How large a cost would this be to the government? This depends on the size of the program and the default rate. Let's start first with the size of the program. According to the MAP, the government wants to raise the rate of gross domestic investment from 22.5% of GDP in 2005 to 30% of GDP by 2012 (MAP, Commitment 6). To help achieve this goal, let's say the government implements a loan guarantee program equal to 5% of GDP (a little more than 20% of investment in 2005) in the hope that this would substantially raise the rate of investment according to the MAP's goal.

Now turn to the rate of default. According to the latest figures compiled by the Madagascar banking commission, the rate of non-performing loans on the commercial banks was 9% in 2007 and, at the height of the recent political instability, it was 19.6%. Let's say that the rate of default was much higher than that, say 30%. What would the cost of the program be? In this case, the cost would be $.3 \times .05 = 1.5\%$ of GDP. The budget deficit in 2007 was about 500 billion Ariary, or 3.6% of GDP.

If the default rate was 20% instead of 30%, which is probably a more realistic figure, then the cost would be 1% of GDP, thereby raising the budget deficit by significantly less than one third.

The program could be made cheaper of course by reducing the guarantee rate. If the rate was lowered to 50% from 75%, then the cost of the program at the default rate of 20% would be $.2 \times .05 = 1\%$ of GDP. Of course, lowering the rate of loan guarantee would raise the cost to the development finance institution and ultimate borrowers. According to equations (1) – (3) the rate would go up from 16.3% to 20.8% :

$$(4) i_{lg} = 29.8\% - .50(29.8\% - 11.8\%) = 29.8\% - 9.0\% = 20.8\%$$

Hence there is a tradeoff between the rate of guarantee (and, therefore, the cost to the government) and the cost to the borrower, all else equal.

What other changes could reduce the severity of this tradeoff? There are several:

1. Reduce the rate of default: If the rate of default was lower, then the cost to the government would be lower for any rate of guarantee. Having a good system of monitoring, and good programs of selecting and working with borrowers, would be crucial to reducing the default rate. We discuss this in somewhat more detail below.
2. Reduce the base rate: From equations (1) – (3), we can also see that reducing the base rate i_b would also bring down the cost to the ultimate borrower for any given default rate. There are several ways of reducing the base rate:
 - Less tight monetary policy can lower the base rate, for any given inflation rate.
 - More competition in the banking system can lower the rate, which is quite high by international standards.
 - More competitive and better organized auctions of government debt can lower the base rate.

Monitoring and anti-corruption protection

As discussed in detail in Pollin, Githinji, and Heintz (2007), a potential problem with any program is corruption. In business as well as government, monitoring and accountability issues will be crucial. In the case of the loan guarantee program, it is quite easy to see the form that corruption could take, especially in cases where the government guarantees a large percentage of the loan: the lender and borrower could arrange a false loan; the borrower could default, receive the payment from the government, and split the proceeds.

Of course, close monitoring and accounting could, in principle, prevent such corruption from occurring. But monitoring itself has costs and there are advantages to add complimentary measures to monitoring schemes to reduce the incentives for corruption. Pollin et al. (2006, 2007) have designed an anti-corruption system based on escrow accounts and “whistleblower” awards that can help cut down on the likelihood of significant corruption. We will briefly outline these arrangements here.

Incentive-based monitoring

Escrow accounts. To reduce the incentive for corruption, the government could implement a system of escrow accounts. The account would work as follows: The lender places a certain percentage of the loan in an escrow account with the government or central bank. If there is a default, the lender will receive the amount placed in escrow only after a thorough investigation of the case to establish there was no corruption involved. If there is no default, then the borrower receives the amount at the end of the period, which can then be rolled over as part of the new loan with minimal administrative interventions (forms, filings, etc.) or can be repaid to the lender. Such escrow accounts will clearly cut down on incentives for corruption, but at some cost in terms of the available funds available to the borrower.

Whistleblower incentives. This is another incentive-based monitoring measure suggested by Pollin et al. (2007), based on an idea promoted by Dean Baker (2003). His idea is to create large penalties for fraud, combined with high rewards for “whistleblowers” (combined with strong penalties for fraud on their part). For example, defrauding the loan guarantee system would involve large civil and possibly even criminal penalties. Bank employees or others with key information who provide key information that could be used to prove or to lead to investigations that would prove the fraud would receive a sizeable financial reward.

Corruption and inefficiency can plague all economic endeavors, be they private or public. Having sensible, serious policies in place to reduce the incentives for corruption and to identify and penalize it can make a key difference between a successful and an unsuccessful program.

One objection to these types of mechanisms is that they might seem to be similar to the “directed lending programs” that have failed in earlier periods. However, the programs here are designed to incorporate strong monitoring and anti-corruption mechanisms and are also part of development programs that are embedded in strong market-based initiatives.

How to pay for the loan guarantee program

Above, we proposed a loan guarantee program that would cost anywhere from 1% to 1.5% of GDP. We showed that the budget deficit is currently about 3.6% of GDP, so, without further tax revenue, this program could increase substantially the budget deficit. Could the program be at least partially paid for by other means? Eventually, of course, the program would lead to a more rapid rate of economic growth and would likely pay for itself. In the short run, it would undoubtedly have to be paid for by increased taxes, more foreign aid, increased borrowing, or cuts in expenditures on other programs.

This program could be attractive, at least on a start-up basis from foreign aid donors. But donors aside, a key source of funds could be a dedicated tax on mining income revenues to help underwrite this set of financial incentives for economic transformation. As we discuss in more detail in chapter 8, there is a concern that the benefits from the mining sector development will not spread to other parts of the economy. As we have shown earlier, the employment and linkage effects of mining are modest, so it is primarily through the generation and smart investment of mining tax revenues that the benefits of mining can eventually spread to the entire economy.

Of course there will be many worthy demands on these tax revenues. We argue here that among the demands that should be carefully considered is a loan guarantee program that can help generate investments in good jobs for the long term.

Development banking initiatives

Development banking initiatives were of crucial importance in the successful development of industrial economies of Asia and Latin America, what Alice Amsden calls “The Rise of the Rest” (Amsden, 2001), but the reputation of “development banking” experiences in Africa has been seriously tarnished (Yaron, 2004). Yet the major challenges for development and financial policies –

and the insufficiency of financial liberalization as a solution - call for a re-consideration of numerous policy options, including the revival of development banking (Ndikumana, 2007). The key to success of development banking initiations in Africa are the following: integration of development finance institutions into the national development agenda; appropriate governance; efficient operating procedures; minimizing non-interest barriers to access to credit; innovative strategies for the mobilization of stable long-term funds (Ndikumana, 2007, p. 32).

Integration of finance institutions means that the design of the national development plan should specifically take into account the role of these institutions. For example, in the case of Madagascar, the discussion of the MAP should, to a greater extent, include the discussion of the possible role of development banking in helping to promote the plan. This could include the development banking institutions receiving specific mandates for sectors on which to focus; the government developing a monitoring system to evaluate the performance of the development banks; and a system of incentives to award good performance and to penalize poor performance. (Ndikumana, 2007).

Apart from putting into place mechanisms to monitor and incentivize productive investments in key sectors, mobilizing long-term funds is perhaps the biggest challenge facing development banks. The Madagascar government can invest some basic capital in development bank coffers, but the longer-term mobilization of resources will be required. As we discuss below in somewhat more detail, among the ideas that should be considered is a dedicated tax from the mining sector to be dedicated to providing capital for development banks, and that can then be utilized for long-term investment in key sectors of the non-mining economy (including the attempt to build linkages from the mining economy to other sectors of the economy for employment and income generation, as described in chapter 8).

Central Bank Support for Development Banking and Small-Scale Financial Institutions

As discussed in Epstein (2007), central banks have historically played a much larger role in helping to support longer-term economic development goals than has become fashionable more recently. This has been true both in developing countries and in the now developed countries as well. Central banks, acting as agents of development, have bought long-term bonds for infrastructure development; kept and administered differential interest rate ceilings in support of favored sectors, such as housing in many developed countries (Epstein, 2007); used their discount window to discount loans for specialized lending institutions, such as microcredit institutions in Asia (Asian Development Bank, 2000); and provided efficient or even subsidized financial services for specialized institutions playing important social roles. These policies have not always been successful, but if planned carefully with monitoring and safeguards, they can be an important part of mobilizing and re-deploying finance for development purposes. For example, central bank support for the Grameen Bank in Bangladesh and for rural development banks in Indonesia are seen as very successful (Asian Development Bank, 2000). Another role that central banks have successfully played is the management of funds from the central government, and then on-lending them to MFIs and other institutions engaging

in rural and small business lending (Ndikumana, 2007; Asian Development Bank, 2000).

In addition, the central bank can play an important promotional role in helping to undertake studies relevant to developmental finance, provide data and technical support to institutions undertaking more active financial roles and training (Asian Development Bank, 2000). But in countries that have successfully developed rapidly, central banks have taken a more active role in helping to mobilize and channel resources for developmental purposes (Epstein, 2007). The Central Bank of Madagascar should look for steps to take to begin doing likewise, especially as part of the Madagascar Action Plan.

6. Skills development and the role of technical and vocational

The development of human resources is well-recognized as critical to a country's ability to achieve high growth rates and reduce poverty. More specifically, a national program for developing skills that targets the unemployed, the poor, the youth, women, and other socially disadvantaged groups is crucial to making progress in reducing poverty. In 1998, the ILO's *World Employment Report* noted that it is not possible to lay the basis of a just society without a solid educational foundation (ILO, 1998). This is because the educational system is critical for the development of the skills necessary to achieve high levels of productivity and efficiency. The ILO report also argues that skills development is best achieved in an overall growth-promoting environment, and when training decisions are taken in close consultation between government, the local community, employers (and business organizations), and workers (and trade unions). In this context, the Madagascar Action Plan (MAP) seeks to build an education system with international standards of quality and efficiency as a means of stimulating creativity, allowing the trainees to make their dreams come true, and launching the country on a path to become competitive in a globalized economy. Thus the government plans to increase investments in the education sector to achieve these specific goals in human resource development, as well as support the goals set in other areas of the MAP.

This chapter underscores the challenges faced by the education system in Madagascar in meeting the needs arising from an increasing demand for schooling as well as its quality and efficiency. It discusses the critical role that technical and vocational education and training (TVET) must play in complementing formal general education to meet skills demand by the labor markets and the increasingly skill-intensive private sector. It proposes some strategies for improving the quality of TVET in Madagascar as a means of supporting the government's agenda to accelerate employment creation.

6.1 Education system: issues of adequacy of supply, quality, equity, and efficiency

Over recent years, Madagascar has made substantial progress in some key areas of education. From 1990-2006, the average national literacy rate increased from 58% to 71%, while net elementary school enrollment increased from 64% to 92% (World Bank, 2007b). In the eight years from 1997/98 to 2005/06,

elementary school enrollment increased by an average of 10% per year, from 1.7 million to 3.7 million. From 2001/02 to 2005/06, enrollment rates increased by 53.5% in elementary schools, 69.1% in colleges, 50.3% in lycées, 55.7% in higher education, and 42.9% in technical and professional education (Ministry of Education). The government expects these gains in enrollment rates to continue with the implementation of the plan for “national education for all” (Plan National d’Education Pour Tous, EPT).

The aggregate gains in education, however, fall short of expectations and are still insufficient relative to the country’s massive needs in human resource development. The education system faces serious problems with regard to the quantity, quality, equity, and efficiency of the provision of educational services.

Concerns about quantity or supply of educational services arise in the face of increasing demand due to both demographics and the requirements of a fast-changing economy. The educational infrastructure is clearly not adequate to accommodate the increasing demand in a country with a high fertility rate and a very young population. As a result, many school-age children do not attend school, and among those who attend, many are forced to drop out of school early. According to the 1999 household survey, only 72% of the adult population have attended any school (INSTAT, 2000). The 2005 household survey shows an even lower figure, 69.8% (INSTAT, 2005). A large number of children leave school at a very young age. The problem is most pronounced in the rural area, where 63% of the children drop out of school before the age of 15. One out of every four enrolled children leaves only after the first year of school, a fact that the government partly attributes to the lack of pre-school preparation (MAP). But the most obvious problem is the general shortage of school infrastructure, which fails to accommodate the increasing demand.

The other serious problem experienced in the educational system in Madagascar is the low quality of training and the low quality of services in general. The low quality of education is much more pronounced in elementary education compared to secondary and higher education. This, again, is primarily due to high pressure on infrastructure and human resources. Too many students are crowded in too small classes. Teachers have to teach and supervise too many learners, which severely undermines the quality of teaching and service delivery. In 2005/06, the students/teacher ratio was 52 while the students/classroom ratio stood at 59 for the nation. The quality of education appears also to be lower in public schools than in private schools, which is not surprising given that public schools are more crowded than private schools. Public schools accommodate over 80% of the student population on average nationally, with even higher ratios in the rural area. The quality of education in the public schools is also compromised by the inadequacy of funding, with detrimental effects on equipment and school supplies. Teachers’ motivation is also often low in public schools due to low pay and inadequate supervision, which is also compromised by inadequate funding. Monitoring is inefficient, as school inspectors are not sufficiently equipped to undertake regular visits.

The quality of education exhibits a heavy urban-rural bias. The quality of education is rated by parents as “good” in urban areas more than rural areas, where it is consistently rated as “bad.” In the 1999 household survey, about 41% of the respondents in urban areas rated the quality of education as “good” compared to only 8% in the rural area. The quality bias was also apparent across income categories, with richer households being more satisfied by the quality of the education that their children receive compared to poorer households.

According to the survey, about 47% of the households in the richest category find the quality of education good compared to only 23% among the poorest households. Over 64% of parents with a university degree find the quality of education good, and only 5% of households in this income category find the quality bad. These results clearly indicate that the rich have access to better-equipped schools with better teaching curriculum and staff, while the poor are relegated to schools of sub-standard quality.

It is clear that the Malagasy education system faces a serious problem of equity and equality of access to education. The lack of equity is observed from the urban-rural bias, the gender imbalance, and inequality of access to education across income categories. The cost of education can be a deterrent to school enrollment and is one of the causes of the high dropout rate, especially in rural areas and among low-income urban families. The problem of equity in the educational system is also apparent in terms of the quality of education. As discussed above, the quality of education is perceived to be worse in rural areas than in urban areas. Moreover, it appears that those who rate the quality of education as “good” also tend to view the supply of educational services and their quality as improving. In contrast, those who find that the quality of education is “bad” also assess the supply and quality of educational services as deteriorating. This indicates that the gap in access to quality education between rural and urban areas, and between the rich and the poor, is increasing. This in turn increases income inequality because children who have access to better-quality schools also have access to higher-quality jobs and thus better living standards.

It is also clear that, in terms of service delivery and the utilization of resources, the education system is, by and large, inefficient. One indicator of inefficiency is the high repetition rates (Table 6.1). More than one out of every four children repeats the first year of elementary school. This is due to many factors, including excessive selectivity, inadequate pedagogy, and lack of support services to assist students with special needs. The high rates of repetition reduce the number of new students that schools can accommodate, which prevents enrollment rates from increasing. The high repetition rates are an indictment of the pedagogy used in the school system, which, unfortunately, is common in other African education systems. This is a major failure of the educational system on the continent and must be addressed seriously and urgently for African countries to have a chance of reaching their national goals vis-à-vis universal education. Establishing an efficient education system is also critical to the country’s ability to solving the problems of mass unemployment and underemployment as well as the issues of low labor productivity and lack of competitiveness.

Table 6.1 Grade repetition rate in elementary school

	Survey year	11th	10th	9th	8th	7th
Capital city	2005	22.4	13.3	5.7	0.0	0.0
	1999	17.9	10.0	9.1	22.6	24.0
Large urban centers	2005	17.8	11.0	11.0	9.9	18.8
	1999	20.0	29.6	17.5	13.2	15.6
Rural	2005	27.7	18.8	17.3	13.4	20.3
	1999	27.9	34.1	22.3	29.0	20.8

Country average	2005	26.4	17.9	15.8	11.9	18.3
	1999	25.4	32.1	20.9	26.5	19.5

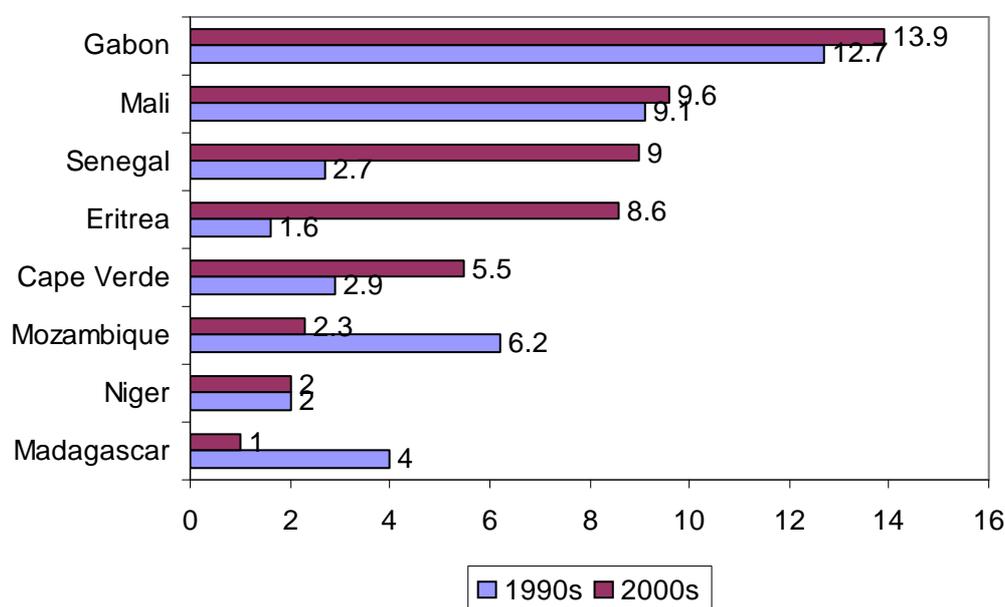
Source: EPM (1999, 2005)

6.2 Technical and Vocational Education and Training, a key to raising both employment and labor productivity

One major weakness of the education system in Madagascar, as in other African countries, is the marginalization of technical and vocational education and training (TVET) in terms of resource allocation and policy focus in general. There has been a disconcerting decline in the allocation of public resources to education, with expenditures per student in primary education dropping from 11% of per capita GDP in 2000 to 8% in 2005 (World Bank, 2007b). The share of TVET in the education budget declined drastically from 5.8% to 0.9% from 2000 to 2006 (AfDB/OECD/UNECA, 2008). Allocations to TVET in Madagascar remain significantly low compared to other African countries, and are declining, while the share is increasing in other countries (Figure 6.1).

The decline in public funding for TVET is partly due to the decline in donor funding for TVET over the past years for the continent in general. The enthusiasm showed by donors in the 1960s towards TVET as a factor of “modernization” of African societies faded in later decades, as illustrated in the decline of funding. For example, the share of World Bank loans to TVET in total education loans declined from 20% in the 1960s to 10% in the 1970s, and only 6% in the 1990s. Multilateral development assistance to Africa in TVET has declined from 12% of total aid to education in 1995-98 to 6% in 2002-06, while bilateral aid stagnated at 4% during the same period (AfDB/OECD/UNECA, 2008).

Figure 6.1 Share of TVET expenditures in total government expenditures on education (percentage)



Source: AfDB/OECD/UNECA (2000). "L'Education en chiffres," *African Economic Outlook 2007/08*, Madagascar Ministry of Education, school year 2005-06

The low and declining level of funding for TVET raises serious concerns given the critical role that TVET can play in raising productivity in formal and informal activities. In Madagascar, the informal sector employs the bulk of the active population. Yet, most of those employed in the informal sector, whether in wage employment or self-employment, often have very little training. Thus the country is unable to achieve the full potential of the informal sector in terms of production. The formal sector is also confronted with the problem of the inadequacy of the workers' skills relative to the demands of the ever-changing production technologies. This undermines both productivity and the private sector's ability to create new jobs. Firms find it difficult and often impossible to find workers with the right skills and are forced to either cut down the level of activity or import labor.

TVET is also crucial in advancing the decent work agenda, especially in the formal sector, as the quality of the working conditions is greatly influenced by workers' skills. Given the insufficiencies of the formal education system, a large proportion of workers do not have the appropriate skills to command reasonable compensation packages and must often accept to work in poor conditions to make a living. Practical training allows workers to climb the professional ladder and access better working conditions.

Access to TVET is critical for technological acquisition, which, in turn, is crucial to the private sector's ability to keep up with the changing demands of global markets. Technological acquisition through TVET is also important for promoting diversification. Indeed, investment in new production lines is often constrained by the lack of appropriate skills on the part of workers and potential national investors. As is well established, the lack of diversification is one of the main reasons for African countries' inability to achieve high growth and sustain

high growth rates (UNECA, 2007). This is the case for Madagascar, which has been unable to achieve economic transformation. Thus, TVET must be an integral component of the country's development strategy, for reasons of economic diversification.

The role of TVET is critical in view of the predominance of the informal sector in the Malagasy economy. The potential of the informal sector remains largely under-exploited, and a major reason is the lack of an efficient training system to provide the required skills. These skills cannot be adequately supplied by the formal education system due to its rigidity and slow pace of adaptation to the changing needs of labor markets. Most importantly, the formal education system is too removed from the realities of the informal sector to be able to accommodate its needs. TVET offers a viable avenue to meet the specialized needs of the informal sector.

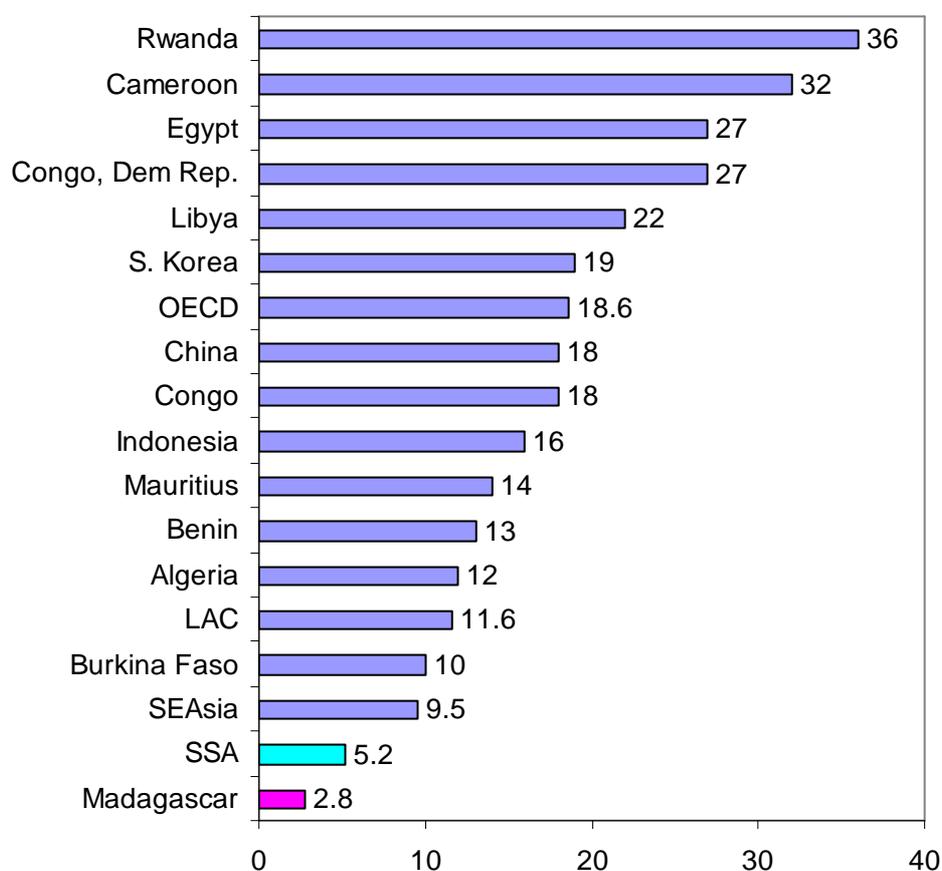
6.3 Assessment of TVET in Madagascar

Technical and vocational training has a long history in Madagascar, dating from the colonial era. Indeed it was in 1832 that the first workshops for technical training were established in the country (International Institute for Educational Planning, 2001). During the colonial period, regional schools of industrial and agricultural apprenticeship were established in large cities around the country. However, the series of efforts undertaken during the post-independence era to reform and develop the TVET sector were not successful.

The main problems faced by TVET include the mismatch between training and labor market needs, the lack of rationalization of public expenditures, and the poor quality of training in general. At the end of the 1980s, the negative assessment of the sector's performance led the government to negotiate external financial support for reform. Thus in 1992, the government signed a credit agreement with the World Bank for the implementation of the Project of Reinforcement of Technical and Vocational Education, which ran from January 1993 to June 1999. Notable results from the project include (1) the establishment of a structure for the promotion and coordination of TVE, notably the creation of the National Council for TVE; (2) the reinforcement of the public TVE sector, especially the establishment of the Resource Center for TVE; (3) the creation of a structure to improve information on labor market conditions and employment by the establishment of the National Observatory of Skills and Employment, which was renamed the National Observatory of Employment and Training in 1996.

The Malagasy government is fully aware of the critical role of TVET in meeting national development goals, especially in building the human resources necessary to fuel a high-growth economy. However, despite the series of efforts undertaken thus far, TVET still faces serious problems and challenges that limit its ability to fulfill its mission. Madagascar ranks among the countries with the lowest enrollment in TVET in the continent. Only 2.8% of secondary school enrollment is in TVET, compared to an average of 5.2% for sub-Saharan Africa (Figure 6.2). In addition to low enrollment, the quality of training is also low.

Figure 6.2 TVET enrollment as percentage of secondary school enrollment



Notes: SSA = Sub-Saharan Africa; SEAsia = South East Asia; LAC = Latin America and the Caribbean.

Source: AfDB/OECD/UNECA (2000). "L'Education en chiffres," *African Economic Outlook 2007/08*, Madagascar Ministry of Education, school year 2005-06

The first problem faced by TVET in Madagascar is the inadequate institutional setting. One of the causes of ineffectiveness of TVET is the lack of consistency in institutional commitment, poor management, and the lack of policy focus. This is due in part to the high frequency of changes in the leadership responsible for TVET, leading to frequent shifts in the orientation and operational structures. Monitoring is also sub-standard due not only to insufficient resources, but also to the lack of continuity in leadership.

The second problem of TVET is the poor design of the programs in general. The programs tend to have unrealistic targets and hence are inconsistent with available resources. They also remain too rigid and ill-equipped to meet and adapt to the changes in workers' needs and the demands of the labor market and modern industry. One reason for the design problem is the lack of effective coordination between the government organs responsible for the programs, employers, and workers. Thus the programs are often out of touch with the reality on the ground.

The third problem of TVET is financing, specifically inadequate funding and the lack of rationalization of costs. Most of programs depend heavily on government subsidies, which means that in times of budgetary crisis, the programs tend to undergo severe downsizing. Moreover, the costs of TVET programs tend to be high, especially for technical programs, due to the high costs of equipment and low enrollment rates. The high costs force institutions to set high entry fees, which makes it difficult for low-income workers and the unemployed to access training.

The fourth problem faced by TVET is popular perception, where general education is regarded as more prestigious than technical education. This is despite the fact that technical and professional training provides higher chances of access to employment than general education. Thus both students and parents want to see technical schools as a route to higher education (World Bank, 2002). Hence, the national agenda must include efforts to influence popular perception vis-à-vis technical training. This may be done through public education programs, higher publicity of success stories, and the establishment of merit awards to best-performing institutions and the most successful laureates of TVET.

Summing up: challenges to TVET – cost, relevance, and equity

To summarize, the TVET system faces three serious challenges, namely *cost*, *relevance*, and *equity*. Vocational skills development is typically costly and very difficult for any government to get right. The high costs raise issues of sustainability for government-run as well as private TVET programs. The constant changes in demands and expectations from these programs require constant adaptation of not only the curriculum but also the equipment. This further complicates the planning and management of TVET programs.

In addition to high costs, TVET faces the serious problem of *relevance* due to the mismatch between training and the skills needed by dynamic, competitive markets. This is mainly a result of the lack of close collaboration between the training programs and the labor market (employers and workers).

Finally, due to high costs, short supply, and low income, TVET faces the problem of *equity* in access to training. Unfortunately, it is those who need vocational training the most who are excluded because they cannot afford it. These are members of low-income households, who cannot afford the long, formal education programs, and the low-skilled unemployed, who need training to be integrated into the labor market. This creates inequities in access to technical and professional training across income categories. In addition to income inequities, there is also an urban-rural bias in access to technical training. Adequate supply of vocational training in rural areas is a critical condition for raising productivity in rural areas, which in turn is essential for the national agenda of increasing employment and achieving shared growth.

6.4 Strategies to address the cost-relevance-equity problems of TVET

The evaluation of TVET conducted in 2006 recognized the serious problems confronting TVET today, most of which revolve around the issues of

cost, relevance, and equity described above (AfDB/OECD/UNECA, 2008). The recommendations from the evaluation underscored the need for accelerating reforms and improving institutional support for TVET. Thus it was recommended to speed up the establishment of the Autorité Nationale de Formation (ANF). The objective of this institutional innovation is to coordinate strategies aimed at improving the quality of training and its responsiveness to labor market needs, in order to increase access to, and relevance of, professional and vocational training.

The promotion of TVET is one of the key targets of the MAP as a means of achieving full employment and increasing productivity. To this effect, the government plans to create new training centers in all 22 regions as well as regional centers for research and technical training. It also plans to strengthen partnerships with the private sector to diversify the sources of funding for TVET.

Along the lines of the government's efforts to improve the performance of the TVET sector, the following actions need to be given serious consideration within the context of a comprehensive strategy for promoting growth, increasing competitiveness, creating employment, and reducing poverty.

(1) Promoting a demand-driven TVET system

One of the key weaknesses of the TVET system in Madagascar, as in other African countries, is that training programs are not well aligned with the reality of the labor markets and the needs of enterprises. Thus, in many cases, TVE becomes a deadend: upon completion of the training programs, the trainees neither have the right skills to make them employable nor are able to pursue further studies in other areas due to their lack of general knowledge. To address this problem, it is necessary to make TVET programs more demand-driven, that is, tailored to meeting specific, identified needs in the labor market, the private sector, and the public sector (central government and parastatal sector). To achieve this goal, a number of actions need to be undertaken before setting up any TVET program. These include (1) identification of areas of high employability potential; (2) providing information to potential trainees and apprentices on the requirements of the program, the content, the costs, and the potential for employment upon graduation; (3) assisting graduates with job placement upon graduation. Making TVET programs more demand-driven will also help to alleviate one other key problem faced by the sector, which is the negative perception of vocational training as inferior to general education.

(2) Setting up and strengthening accreditation and quality assurance mechanisms

To increase efficiency and support the move towards demand-driven TVET programs, it is important to increase the credibility and quality of training programs. In this regard, the government, in collaboration with employer and workers' organizations, need to strengthen strategies aimed at the rationalization of accreditation and quality control of TVET. The objective is to optimize the match between the demand and supply of TVET, improve the quality of the training, and maximize the employability of the graduates. The rationalization of accreditation and quality assurance also serves to create a level playing field for competition between public and private centers, on the one hand, and among private centers, on the other hand. Thus the system will allow a better allocation

of resources towards the most effective centers. It will also give candidates the chance to choose the programs that best meet their needs and improve their prospects for employability upon graduation. The government can also use information from quality control reports to inform the allocation of subsidies by giving priority to the highest-performing centers.

(3) Harmonization of TVET standards with regional standards

The increasing trend towards regionalism will be accompanied by increasing labor mobility, allowing Malagasy workers to seek employment in the neighboring countries. However, to be competitive, Malagasy workers will need to meet the skills standards required by labor markets in other countries in the subregion. Thus TVET programs need to align their standards with regional and international standards to allow graduates to take advantage of the job opportunities that the regional markets can offer.

(4) Setting up programs for early School leavers

As discussed earlier, the education system in Madagascar exhibits very high dropout rates, especially at the elementary and high school levels. A large number of those who leave school are too young to start working or enter into an apprenticeship. The government, in collaboration with the private sector, the donor community, and NGOs, needs to set up programs that provide pre-vocational or pre-apprenticeship skills training that cater to children who leave school early. The main objectives of these programs include (1) to improve the academic credentials of the early school leavers to facilitate their enrollment in TVET programs later; (2) to introduce these children to trades with the highest likelihood of employability (both self-employment and wage employment), in order to guide them in their choice of future occupations (this will inform their choice of the kind of TVE programs in which they would ultimately want to enroll); (3) to curb the problem of juvenile delinquency, and all the problems that derive from it, such as petty crime, drugs, and sexual promiscuity.

It is important to emphasize that these pre-vocational skills training programs are not intended to be an alternative to elementary school. They aim to accommodate children that are unable to follow the formal education system, either because of a lack of skills or simply because of the inadequacy of the formal system itself, i.e., the lack of sufficient supply and an inadequate support system for children with special needs. The setting up of these programs must be a complement to government strategies for improving access to formal education and increasing the efficiency of the formal education system.

(5) Self-employment oriented TVET

One important way to increase the employability of TVE trainees is to emphasize training that is geared towards self-employment. This must be an integral part of a holistic support system aimed at increasing employment and livelihoods. The strategies will work best if they are targeted to specific groups, especially those that are traditionally marginalized, such as women, youth, smallholder farmers, craftsmen, and other specialized professions in the informal sector. In addition to professional skills training, the program should include mechanisms that assist the trainees in accessing credit, and which provide legal assistance and capacity building in the areas of project design, planning, and

marketing. Madagascar can learn valuable lessons in this area from programs that have been implemented in a number of countries. One example of such programs is the African Women in Business Initiative (AWIB), sponsored by the African Development Bank in Rwanda. Another is the USAID-funded coffee project, the Partnership for the Enhancement of Agribusiness in Rwanda (AfDB/OECD/UNECA, 2008). These programs aim at improving livelihoods through capacity building and skills development in the context of a holistic support system that can help the laureates become more effective in their activities and financially self-sufficient. This approach to skills development may be suitable for countries such as Madagascar, which has an underdeveloped, formal private sector and a large, unskilled labor force.

(6) Enterprise-based training: strategies to retain trained workers

Building a successful system for skills development will require the strong participation of private enterprises. However, private companies hesitate to invest in skills development, as they fear poaching of trained workers by other firms. One solution is for firms to include explicit clauses in labor contracts that require workers to stay with the company for a specific amount of time after the completion of training. They can also design schemes that provide incentives to trained workers to stay by offering compensation packages that are strongly progressive over time. The government can assist by partly subsidizing the costs of training incurred by firms. The rationale for such a subsidy is simply this: since the gains from workers' training accrue to the economy as a whole, the costs should be borne by society rather than a single firm.

Another way to alleviate firms' costs for skills development is to set up loan schemes and need-based financial assistance for trainees. The loans are to be paid upon graduation, following successful integration into the job market. One advantage of the loan system is that it gives trainees more incentives to take training seriously, and will therefore increase their commitment. The trainees will also want to maximize the gains from training, which includes their selection of the best-performing training center. This, in turn, will increase competition among centers, which will improve the quality of training.

6.5 Conclusion

It is clear that the success of the ambitious and admirable Madagascar Action Plan critically depends on the government's ability to engineer an economy that creates substantial amounts of decent jobs to meet the increasing demand arising from demographics (a young and rapidly increasing population) and high pressure for sophistication in the private sector. Indeed, to compete in the global economy, the private sector in Madagascar is forced to utilize technologies that require more sophisticated skills. At the moment, the generation of such skills is still vastly inadequate and this explains, to a large extent, the high levels of underemployment in the economy. This is a critical challenge that the government must confront in a systematic and effective manner.

Addressing this challenge will require a two-pronged strategy. On the one hand, the government must improve the quality and capacity of the general education system at all levels. In particular, massive investments must be undertaken to increase the physical capacity of the system to enroll, retain, and

provide high-quality education to a larger number of students. At the moment, too many children drop out of the school system too early, making it impossible for them to engage in meaningful professional activities. At the same time, the government needs to improve the complementarity of the classic education system and technical/vocational education. This will enhance the flexibility of the skills development system as a whole and improve its ability to meet the demands of the labor market. This chapter has identified a number of strategies that could be used to advance the government's goals in this area. The implementation of these strategies will require adequate allocation of government resources with the support of development partners. Indeed, education in general and technical/vocational training in particular must be given higher priority in budgetary allocation and donor funding than has been the practice until recently.

PART III. SECTORAL ISSUES AND EMPLOYMENT CREATION IN MADAGASCAR

7. Agriculture, growth and poverty reduction

The performance of agriculture remains a critical element of the overall economic performance and social development in Madagascar, as in all other developing countries. As the World Bank's *World Development Report* (2008b) puts it, "in the 21st century, agriculture continues to be a fundamental instrument for sustainable development and poverty reduction." (World Bank, 2008b, p. 1). Increasing the performance of the agriculture sector must be a central component of Madagascar's overall national agenda of accelerating growth and reducing poverty, as well as the other dimensions of the Madagascar Action Plan (MAP). This chapter discusses important features of the agricultural sector in Madagascar to shed light on key strategies to (re)energize the sector and increase its contribution to growth and poverty reduction.

7.1. Agriculture in the Madagascar economy: lack of structural transformation

Madagascar's economy has experienced little structural transformation over time, as is typically the case for sub-Saharan African economies (UNECA, 2006). Structural transformation is understood here as the process of shifting relative contributions of various sectors to GDP and overall employment. The process is driven by the reallocation of factors of production from less productive to more productive sectors and typically results in diversification of economic activity away from primary sectors (agriculture, minerals, and oil) towards industry (especially manufacturing) and services. Structural economic transformation is permitted by an increase in productivity in primary sectors, allowing the release of production factors (e.g., labor) towards industry and services. It is this process of economic transformation that allows economies to achieve and sustain higher levels of economic growth, resulting in rising living standards over time.

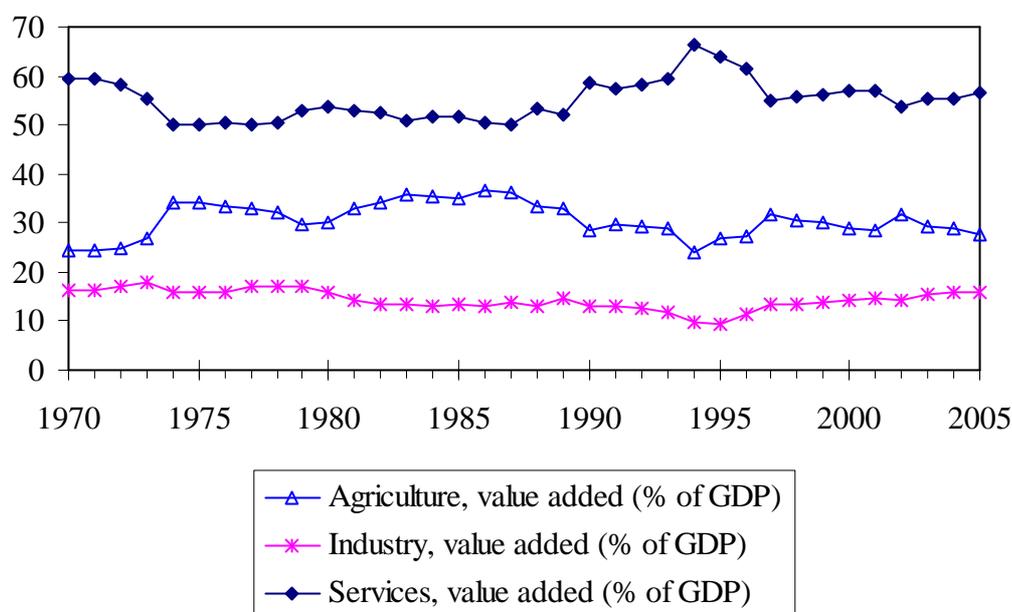
This process of structural economic transformation has failed to take off in Madagascar. The data show no definitive trend in the relative shares of the main sectors, namely agriculture, industry, and services (Figure 7.1 and Table 7.1). Agriculture currently represents a little less than 30% of GDP, down from 34% on average in the 1980s. The service sector contributes the largest share with more than half of GDP (56% in 2000-05). While the share of industry shows some signs of increase, it is still low even by African standards. It rose from 12% in the 1990s to 15% in 2000-05 compared to an increase from 25% to 28% for the sub-Saharan African average. It is expected that the industry sector will experience substantial expansion in the coming years due to the expected increase in mining production (AfDB/OECD/UNECA, 2008). However, as we discuss in chapter 8, the country's ability to take full advantage of its mineral resources is severely handicapped by the shortage of skilled labor. Thus, the expansion of the mining sector may not have a sizeable impact on employment. The lack of skilled labor leads mining companies to import labor. This is

exacerbated by the lack of a coherent national strategy for maximizing the employment gains from mining sector development. Such a strategy could, for instance, require mining companies to hire a minimum share of their labor domestically.

Table 7.1 Agriculture vs. other sectors: Value added (%GDP), average per decade

Sector	Madagascar			Sub-Saharan Africa		
	1980s	1990s	2000-2005	1980s	1990s	2000-2005
Agriculture	34.3	28.6	29.1	30.8	30.9	28.3
Industry	13.8	12.1	15.1	24.4	25.4	27.9
(Manufacturing)	(11.3)	(10.3)	(13.2)	(10.7)	(10.8)	(9.9)
Services	51.9	59.3	55.8	44.6	43.6	43.7

Figure 7.1 Sectoral contribution to GDP, 1970-2005



The lack of structural economic transformation of the Madagascar economy is an important factor explaining the poor growth performance over the past decades and the inability of the economy to meet the increasing demand for employment. Indeed, although the official figures show low unemployment rates, they grossly underestimate the true extent of unemployment, especially in the informal sector, where the problem of underemployment is pervasive.

The reasons for the slow structural transformation of the economy include the lack of a coherent and sustained national strategy to achieve its productivity potential and to harness intersectoral linkages. This is partly due to the lack of adequate quantitative information about these linkages and productivity potential

to guide policy. The analysis of the Madagascar economy indicates that a number of activities have powerful positive externalities on other sectors through upstream and downstream linkages.¹⁹ Sectors with strong upstream and downstream linkages have large output and employment multipliers. For example, the data show that the leading activities in upstream linkages in the Madagascar economy are hotels and restaurants, wood products, and food processing. These sectors utilize a large amount of domestically sourced inputs as a percentage of their output: 83%, 80%, and 78%, respectively.²⁰ This evidence suggests that strategies aimed at promoting these sectors would have a magnified impact on the domestic economy through the demand for inputs. These sectors are particularly important for the national agenda to develop agriculture. Strong performance of these sectors will create larger demand for agricultural products, which will boost production. This, of course, requires appropriate supply-side support strategies to allow agriculture to meet the increased demand from these sectors. This clearly shows that the strategies for developing agriculture cannot focus on agriculture in isolation; they must be an integral part of a comprehensive and multisectoral plan for national economic development. This is exactly what the MAP seeks to accomplish.

7.2 Agriculture's central role in growth, employment, and poverty reduction

The agricultural sector will play a critical role in advancing the national development agenda, especially the goals of accelerating growth, creating employment, and reducing poverty. For this reason, investment in agriculture must be a central component of the national development strategy, i.e., the MAP, and other sectoral strategies.

Agriculture plays a central role in employment creation, being the largest employer in the economy. In Madagascar, agriculture employs 78% of the labor force, and is the main source of livelihood for a large majority of the population. Thus, national plans to increase employment must seek to exploit and increase the employment-generating potential of agriculture. Unfortunately, over the past decades, the capacity of agriculture to create *new* employment has declined. This feature seems to prevail in other African countries as well as developing countries in other regions (ESCAP, 2008) and may explain the limited impact of growth on poverty reduction. In the case of Madagascar, several factors explain this inability of agriculture to generate adequate new employment. The most prominent factor is the lack of innovation in agriculture, both in terms of the technology used as well as the range of agricultural crops cultivated on the farms. This implies that the pace of expansion of cultivated land and the creation of new agricultural activities cannot keep up with the increase in the rural labor force.

¹⁹ A sector with strong upstream linkages is one which utilizes a sizeable amount of domestically produced inputs in its production process. A sector with strong downstream linkages is one that supplies a sizeable amount of its outputs to other sectors as inputs.

²⁰ These estimates of the strength of upstream linkages are obtained using an input-output model for the Madagascar economy constructed by the authors using 2001 data, the most recent data available.

Agriculture is central to the national growth-employment-poverty reduction strategy for two main reasons. The first reason is that the rural area hosts the majority of the poor in the country and the poverty rate is also higher in the rural area. In 1999, 76.7% of the rural population was below the poverty line, compared to 52% for the urban population and 71% for the national average (World Bank, 2008b). Thus, reducing poverty will require investing significantly in programs aimed at increasing incomes in the rural area.

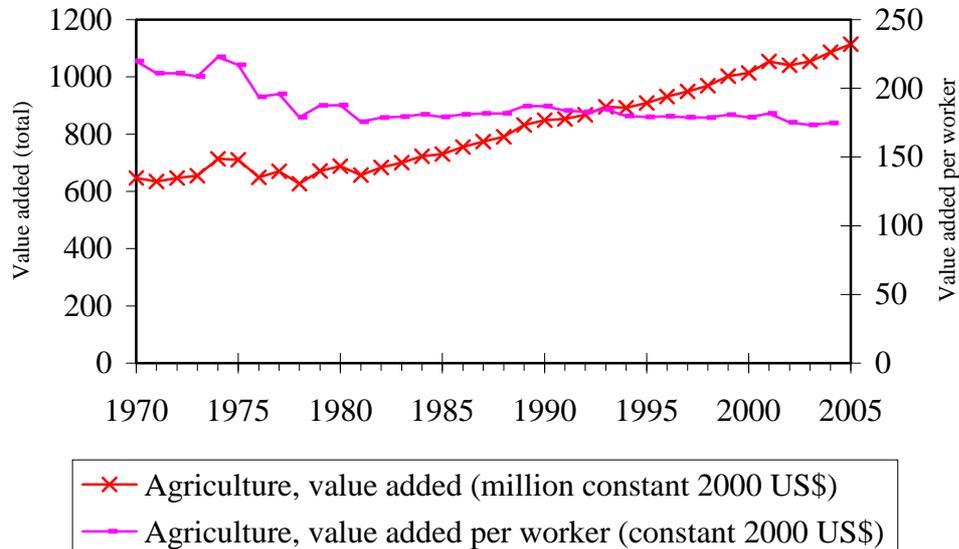
The second reason for the central role of agriculture in poverty reduction is the demonstrated large impact that an increase in agricultural performance has on poverty reduction. It is estimated that more than 80% of the observed worldwide decline in rural poverty (from 37% in 1993 to 29% in 2002, based on the \$1/day poverty rate) is attributable to better conditions in rural areas rather than the migration of the poor out of the rural areas (World Bank, 2008b). In countries recording substantial declines in rural poverty, this is credited to better performance of the agricultural sector. Indeed, empirical studies show that an increase in agricultural value added has a much larger impact on poverty reduction than that of other sectors. For example, in Asia, a 1% increase in agricultural value added in the 1970s was accompanied by a 0.6% decline in poverty, compared to only 0.1% for the manufacturing sector (ESCAP, 2008, p.122). The response of poverty to agriculture-led growth has been shown to be much higher than in the case of growth led by other sectors. Some estimates show agricultural GDP growth to have an impact as high as 3.8 times that of other sectors (ESCAP, 2008; World Bank, 2008b). This evidence suggests that a country will reap more gains in terms of poverty reduction from investment in agriculture compared to other sectors (Christiaensen, Demry, and Kuhl, 2006). This strongly suggests that agriculture should play an important role in national policy as Madagascar seeks to increase growth and accelerate progress towards reaching the Millennium Development Goals (MDGs).

In addition to the large impact of agricultural GDP growth on poverty, agriculture-led growth also results in a reduction of income inequality. This is because the majority of the poor live in the rural area and that they derive their livelihood from agricultural production. This also implies that increasing overall GDP growth while leaving agriculture behind would result in an increase in income inequality. Thus a national growth strategy that puts agriculture in the forefront will ultimately serve as a tool for achieving *shared growth*. It has been agreed that redistributive policies alone without growth cannot achieve sustainable reduction in poverty and inequality. Agriculture-led growth constitutes a means of achieving sustainable increases in living standards along with reductions in income inequality.

The agriculture sector in Madagascar is confronted by many constraints that limit its ability to generate sizeable new employment and realize its potential contribution to poverty reduction. The main constraint is low productivity. Table 7.2 clearly shows that productivity in Madagascar is very low, much lower than the average for sub-Saharan Africa. An agricultural worker in sub-Saharan Africa is on average 3 times more productive than his Malagasy counterpart, with value added of \$584/worker in sub-Saharan Africa compared to \$177/worker in Madagascar in 2000-05 (Table 7.2). Agricultural value added per capita has declined from \$71 in the 1980s to \$66 in 1990s, and to \$62 in 2000-05. Thus agricultural productivity in Madagascar is not only low but also

declining (Figure 7.2), which is a major cause for concern with regard to the country's ability to raise the trend growth rate and create sufficient employment.

Figure 7.2 Declining agricultural productivity in Madagascar



The decline in productivity in agriculture is due to a series of factors, both structural and policy-driven. Low productivity is partly attributable to slow technological progress, especially the low use of productivity-enhancing inputs, and the lack of innovation in agriculture, as clearly diagnosed in the MAP. This is due, among other things, to low investment in research and development, ineffective transmission of new knowledge to farmers, and high illiteracy rates among farmers. The low investment in technology enhancement can be illustrated by the low rates of fertilizer use and low mechanization (Table 7.2). Average sub-Saharan African fertilizer consumption is 6 times higher than fertilizer consumption in Madagascar. Mechanization is about 3 times higher in sub-Saharan Africa than in Madagascar. Investment in agriculture-related R&D is also much lower in Madagascar compared to other African countries, at about one third of the average in Africa (Table 7.3). This is compounded by low literacy rates. As it has been pointed out, inadequate investments in agricultural R&D and technological advancement in developing countries are key factors of the “growing global divide” between rich and poor countries (Pardey et al., 2006).

The lack of innovation is manifested in the slow introduction of new crops on farms, which prevents producers from taking advantage of expanding demand, potential new markets, and new consumer tastes and preferences. Low productivity is also due to inadequate infrastructure, both agricultural infrastructure (e.g., irrigation systems) and physical public infrastructure (e.g., road, water supply, electricity, and communication). Inadequate provision of social services and infrastructure also undermine productivity, notably by adversely affecting the health status of workers. Madagascar, like other sub-Saharan African countries, exhibits a severe bias against the rural area in terms of the provision of social infrastructure. As can be seen in Table 7.4, access to improved sanitation and drinking water is lower in Madagascar compared to the average in sub-Saharan Africa, and it is lower in the rural areas than in cities.

Table 7.2 Some indicators of agricultural productivity, 1980s, 1990s, and 2000-05

	Madagascar			Sub-Saharan Africa		
	1980s	1990s	2000-05	1980s	1990s	2000-05
Value added per capita (constant 2000 \$)	71.0	66.2	62.0	112.1	102.3	105.9
Value added per worker (constant 2000 \$)	181.1	181.5	176.7	489.7	511.9	584.2
Value added per hectare of arable land (constant 2000 \$)	2698	3328	3778	7093	8568	10277
Fertilizer use (100 grams per hectare of arable land)	36.5	37.7	31.1	186.3	180.4	185.4
Mechanization (tractors per 100 hectares of arable land)	10.5	11.8	12.0	50.9	38.4	32.9

Table 7.3 Research and development and human capital indicators, Madagascar vs. other African LDCs

Indicator	Madagascar	African LDCs	All LDCs
R&D expenditures (% of GDP)	0.1	0.3	0.3
Researchers in R&D (per million people)	15	95	94
School enrollment, tertiary (% of age group)	2.5	2.7	3.5
Tertiary students in science and engineering (% of tertiary enrollment)	20	20	24
Adult literacy	71	53	56
Average years of schooling	3.7	2.8	3.0

Source: UNCTAD, 2007

Table 7.4 Infrastructure, rural vs. urban, 1990 and 2004

	Madagascar						Sub-Saharan Africa					
	National		Urban		Rural		National		Urban		Rural	
	1990	2004	1990	2004	1990	2004	1990	2004	1990	2004	1990	2004
Improved sanitation (% of population)	32	48	27	48	12	26	30	35	50	52	24	27
Drinking water (% of population)	46	77	80	77	27	35	54	65	80	84	40	55
Telephone lines (per 1000 people)	3.2						11	32				
Mobile phones (per 1000 people)	9.5						0.06	8.89				

7.3 Can Madagascar triple agricultural production by 2012?

The Madagascar Action Plan recognizes the central role played by agriculture in reaching the ambitious goal of creating a high-growth economy and substantially reducing poverty. The MAP therefore envisages doubling agricultural production by 2009 and tripling it by 2012 relative to 2005 as the base year. Table 7.5 summarizes the key targets for agricultural production and rural development as well as some of the instruments to be used to achieve this goal. As can be seen in the table, all targets involve a massive improvement from the current level of performance. The production of rice, a crop with high potential for export and a basic consumption item for the households, is targeted to double over the 2005-2012 period, while rural household income is expected to triple over the same period. To accomplish this objective, the government intends to embark on a comprehensive program including increasing land titling more than sevenfold, tripling the commercialization rate, doubling coverage by financial institutions, and raising productivity by 1.7-1.9 times.

Table 7.5 MAP targets for agricultural and rural development, 2005-2012

Indicator	2005	2012	Magnitude of Change
Targets/goals			
Rice production (million tons)	3.42	7	Double
Average household income (\$ per annum)	123	370	Triple
Means to achieve the goals			
Productivity (per hectare)	1.8-2.57	3-5	1.7-1.9 times
Land title (% of farmers)	10	75	7.5 times
Commercialization index	100	300	Triple
Coverage by financial institutions	6%	13%	Double

Is the target realistic? In and of itself, the objective is not too unrealistic. The key is productivity. To start with, we have seen that Madagascar exhibits very low levels of agricultural productivity, even by sub-Saharan African standards. Raising productivity to the sub-Saharan Africa average would imply a tripling of productivity. This by itself would accomplish the goal of tripling production. Achieving a threefold increase in productivity, though challenging, would certainly not amount to a miracle in terms of where the country would be situated on the African map with regard to agricultural performance. However, doubts may be raised about the feasibility of the target in the short time frame. Raising productivity by such a substantial rate requires sizeable investments in technology and other supporting systems, which takes time to yield fruit. In this respect, the government may indeed have set itself a goal that may prove very difficult to achieve within the set time frame. On the other hand, setting a high target has the advantage of galvanizing efforts and mobilizing resources at high intensity, which will help to achieve much better results than in the business-as-usual scenario. Thus even if these results proved to be lower than the ultimate targets, the outcome would still be a significant improvement over past trends.

What strategies must be implemented to achieve this ambitious objective? Having established that the objective of tripling agricultural production is not unrealistic, the next task is to identify a set of strategies that will help the country to move towards achieving this challenging goal. We emphasize six areas of policy intervention as discussed below.

(1) Scaling up investment in rural infrastructure

The lack of infrastructure and the poor quality of the existing infrastructure constitute a major impediment to increasing agricultural production. This was clearly articulated by farmers' representatives in our discussions during our field visit in January 2008. Massive investments aimed at increasing the quantity and quality of agricultural and rural infrastructure are indispensable to stimulate production, facilitate exchange of agricultural products, and ultimately raise rural households' incomes.

The rural infrastructure investment program will include both the rehabilitation of existing infrastructure and the construction of new infrastructure, including roads, irrigation systems, electricity, and communication infrastructure. Currently, communication infrastructure in Madagascar is extremely low even by African standards. The country counts 3 telephone lines for every 1000 people compared to 32 on average for sub-Saharan Africa. Electricity coverage is very low, which severely constrains the modernization of agriculture and the development of agribusiness and associated activities. One major constraint to increasing rural infrastructure is the shortage of financing and the limited degree of maneuver for the government within tight fiscal targets. The program for increasing investment in public infrastructure must be implemented in the context of a more flexible macroeconomic framework. In particular, such a framework must recognize that while higher public spending on infrastructure may result in larger budget deficits and even higher inflation in the short run, the positive supply-side effects of better infrastructure on output in the medium term will offset these possible short-run negative effects with net positive gains in terms of higher growth and higher income levels.

(2) Investment in agricultural productivity-enhancing technology

Another major component of a national strategy to raise agricultural production and rural income levels involves massive investment in agricultural technology. As discussed earlier, a key constraint to agricultural productivity in Madagascar is the rudimentary nature of agricultural technology. In our discussions with farmers' representatives, the former indicated that the high cost of fertilizers and farm equipment were a hindrance to agricultural productivity. To address these constraints, the government needs to:

- invest more resources into research and development to investigate and implement high-yield farming techniques and crops/seeds;
- investigate affordable and sustainable means of increasing the mechanization of agriculture. It is clear that given their low incomes, it is difficult for rural farmers to afford the costs of modern agricultural equipment. Thus it is necessary for the government to investigate possibilities of subsidizing the acquisition of agricultural machinery. The other strategy is for farmers to organize in groups and acquire the machinery collectively. This possibility deserves further attention by the government in collaboration with the National Farmers Association.

(3) Increasing access to financing for rural producers

One of the constraints to expanding production in the rural area is the lack of access to finance for farmers and other rural producers. The formal banking sector in Madagascar appears to be quite stable, having been able to withstand the various economic and political shocks that have hit the economy over the past decades. This is credited to the sound quality of management and modern approach to banking applied by the local banks, the majority of which are affiliates of foreign banks. The formal banking sector has, however, remained virtually an island of success in an economy that is vastly cash starved. The sector has especially remained reluctant to engage meaningfully in financing rural sector activities, including agricultural and non-agricultural investments. Part of the problem is the

fact that the banking sector, while excessively liquid, lacks adequate long-term investment. Thus it is ill-equipped to meet the demand for financing long-term investment in agriculture. The shortage of long-term financing exacerbates the already high level of risk aversion expressed by banks vis-à-vis rural sector activities. From a profit-maximization perspective, there are currently no incentives for banks to deviate from this “winning” strategy in their lending practices. It is therefore clear that the formal banking sector cannot be relied upon to energize the rural sector in promoting the national goal of tripling agricultural production within the next 4 years. Other, more appropriate financing mechanisms need to be developed to meet the increasing financing needs of the rural area.

One avenue that offers great potential for success is the development of microfinance institutions. Microfinance constitutes a viable way of bridging the financing gap faced by rural producers who cannot access formal bank credit. The advantage of microfinance is its flexibility with regard to borrowing conditions, size of the loans, and payment arrangements. Microfinance institutions also have the advantage of being closer to the borrowers and thus more accessible, but also able to better assess the credit worthiness of the borrowers. They are also more equipped to manage small loans, which are more consistent with rural borrowers’ debt servicing capacity.

One problem typically faced by microfinance institutions is the shortage of funds as well as the high cost of funds, as they must rely heavily on funds raised in the market. This explains the high interest rates. One strategy is the establishment of a National Microfinance Fund to mobilize financing from the government, commercial banks, large private firms, and donors at concessional terms. This will allow commercial banks to put to good use their current excess liquidity through indirectly financing productive activities in the rural area and in the informal sector in general.

(4) Access to assets for rural producers

Increasing access to assets for rural households is critical to increasing productivity in agriculture and to raising living standards in the rural area. The key assets that are particularly important for agricultural productivity are: land, water (irrigation water as well as drinking water), and human capital (education and health). Access to land, with adequately defined property rights (including titling) not only has a direct effect on agricultural production but also has substantial indirect effects, especially through facilitating access to finance (using titled land as a collateral). Access to irrigation water is a major input into production while access to clean water is an indispensable condition for good health, which in turn is indispensable for increasing agricultural productivity. Improving access to water and human capital in the rural areas will require sizeable increases in public expenditure in those areas. For human capital, in addition to formal education, further investments must be undertaken in the provision of vocational and practical training to increase the skills level among rural producers. This will not only increase agricultural productivity directly, but it will also increase it indirectly by making it easier for labor to move out of agriculture into non-farm activities. This is essential for the country’s ability to meet the increasing demand for employment in the rural area.

(5) Improving market/price incentives for agricultural production and rural sector activities

Another area of focus of policies aimed at increasing agricultural production and reducing rural poverty is the removal of the historical policy bias against the rural sector in general and agriculture in particular. This will require improving the relative terms of trade of agricultural products, reducing transaction costs in agricultural production and exchange, reducing taxation on agricultural products, and improving services in the rural area in general. Insuring fair prices for agricultural products will provide incentives for higher production while also directly increasing income for rural producers. Another area of attention is the level of taxes on agricultural products. Taxation on agricultural products is

often very high and distortionary, which discourages production (by reducing returns to agricultural production) while also increasing the burden on households' budgets (by increasing the cost of food products). To increase the returns to agricultural activities, it is essential to increase the quantity and quality of infrastructure and services in the rural area. This will reduce transaction costs, improve market access, and ultimately increase revenues for rural producers.

(6) Capacity building for rural producers

Another constraint to increasing production and productivity in agriculture and in the rural area in general is the limited capacity of rural producers both in terms of technological awareness and the ability to access financial services. This is due mainly to low literacy rates but also to the specialized nature of knowledge required to acquire and apply modern technology and access formal financial services. Even if the strategies outlined above were implemented, rural producers may not be able to take full advantage of the opportunities offered by the new environment due to this lack of capacity. To bridge this gap, it is necessary to increase access to education, both formal and informal, but also to establish capacity building programs tailored specifically to meeting the needs of rural producers with regard to technological progress and access to finance. While the government should take the lead in the conception and implementation of these programs, their sustainability requires strong participation of the private sector, especially financial institutions. In fact, financial institutions will benefit from programs that raise the technical capacity and knowledge of rural producers, as this will result in an expansion of the pool of "bankable" clientele while reducing default risk. Thus investment in capacity building for rural producers is a win-win venture for farmers and financial institutions.

7.4 Conclusion

In light of Madagascar's ambitious goal of reaching high growth rates and quickly reducing poverty, this chapter has highlighted the critical role that agriculture must play for the plan to be successful. In particular, the chapter has pointed out the severe weaknesses of the agricultural sector, most importantly the low and declining levels of productivity, which explain both the sector's inability to create enough jobs and its inadequate contribution to growth. To a large extent, the low productivity of agriculture is due to inadequate rural infrastructure, especially irrigation and road infrastructure. For the agricultural sector to reach its full potential, it will be necessary to do more than make improvements at the margins in the existing system; it will be necessary to undertake massive investments in agricultural infrastructure and restructure the production system while facilitating exchange of agricultural products both domestically and internationally. Thus, the MAP is a welcome initiative. The critical challenge will be how to mobilize sufficient funding for the implementation of the plan; this is a challenge that the government and its development partners must overcome if the country is to have any chance of meeting its long-term development goals.

8. Mining

A geologically endowed country, Madagascar has good mining potential for gold, titanium (ilmenite), iron, nickel, chromite, bauxite, and coal. Rich gemstone deposits of emeralds, rubies, and sapphires are also important parts of its mineral wealth. Historically, the sector was dominated by small-scale mining activities, but following the reforms of the 1990s, changes in the country's regulatory and legal frameworks established an environment that began to attract investment in large-scale mining operations.

The first large-scale mining company to invest in Madagascar was Rio Tinto/QMM, discussed in greater detail below. After 15 years of preparation in Fort Dauphin, on the southeastern coast of Madagascar, the Rio Tinto/QMM ilmenite project was launched in 2005, with expected total revenues of US\$3.2 billion over the 40-year life of the mine (Harbinson, 2007b). Following Rio Tinto's lead, other foreign investors arrived: Dynatec, in association with Sunimoto Corporation, a consortium of Korean companies, and SNC Lavalin, are constructing a cobalt/nickel mine on the east coast in Ambotavy. The investment is estimated at US\$2.5 billion and is expected to go into the production phase in 2008. A refinery in Tamatave, on the east coast, and the improvement of associated port facilities, are part of the plan. Kumba Resources is developing a mineral sands project in Tolear, on the west coast, through its Ticor subsidiary. Finally, the Canadian company Alcan, partnering with Malagasy Access Madagascar, is considering a bauxite mine and aluminum smelter in the southwest (World Bank, 2007a). These projects would appear to carry great potential benefits for the people and economy of Madagascar.

As discussed in chapter 1, the IMF's recent Madagascar Country Report (2008c) projects an enormous growth rate of 880% in the extractive industries for the year 2010. It is not clear, however, that foreign direct investment in large-scale mining would directly benefit Madagascar's poor and rural population, either in the form of local economic development or the creation of jobs. As we show in this chapter, direct impacts on employment and poverty reduction are likely to be modest. In addition, over 500,000 artisanal and small-scale miners (ASM) are currently working in remote areas of Madagascar, but according to a report of the Mining, Minerals, and Sustainable Development Project (MMSD), "virtually all the country's \$400 million worth of gemstones are still exported illegally" (MMSD, 2002, p. 324). While Madagascar has taken positive steps to formalize artisanal and small-scale mining, more can still be done to improve the livelihoods of those working in this important segment of the mining sector. Some suggestions are made below.

Many economists believe that labor-abundant, capital-poor countries can prosper by extracting and exporting their mineral resources. However, development experience has shown that the potential gains from minerals-led development are far from automatic. Beginning in the early 1990s, the World Bank has done much work to facilitate mineral investment in developing countries, primarily through regulatory reforms. However, the Bank's programs have been criticized for inadequately addressing the needs of the poor, despite generating increases in exports and government revenues in many countries. With respect to the negative impacts of mining operations on local communities, the list is long. Issues of governance (particularly corruption), struggles over how revenue is shared, human rights, and conflict are key concerns. The problem of revenue sharing causes tensions not only among different levels of government, local communities, and mining companies, but also *within* the communities themselves. More often than not, the poor emerge as the losers in struggles over land tenure and access to natural resources, on which their livelihoods depend. Thus, investment in mineral wealth is clearly not a sufficient condition for successful economic development. The report of the MMSD states that "the ability to manage mineral wealth effectively has lagged behind the ability to attract mineral investment. A key challenge now for many countries is to develop policy frameworks to

ensure that mineral wealth is captured and creates lasting benefits for local communities and the broader population” (MMSD, 2002, p. 172).

A study commissioned by Oxfam found that 12 of the world’s 25 most mineral-dependent states, measured as the ratio of non-fuel mineral exports to GDP, are classified by the World Bank as “highly-indebted poor countries” (Ross, 2001). Ross identified seven factors, borrowed from the World Bank’s World Development Report 2000/2001, that influence poverty rates in developing countries and examined how these indicators are affected by mineral wealth. In each of the seven areas, he found that the development of the minerals sector tends to have a harmful effect on poverty rates. Most relevant for the purposes of this report, he notes that mineral dependence is associated with slower rates of growth, even after controlling for other factors that affect economic performance, such as investment rates, per capita income, trade policy, and government efficiency. Ross offers several reasons for this, including the long-term decline in the terms of trade for minerals; the boom-and-bust nature of extractive industries, which leads to economic instability and impedes long-term planning; the high levels of corruption found in many resource-rich states; and the “Dutch disease.” Under the latter affliction, high revenues from a resource boom, such as newly discovered mineral reserves, tend to lead to currency appreciation. At the same time, the resource sector draws labor and capital away from the country’s non-booming tradable sectors, notably agriculture and manufacturing, which can lead to their decreased competitiveness. As a result, the lack of diversified exports can lead to declining growth (Ross, 2001, p. 9). Assuming that growth is good for the poor, Ross concludes that, if minerals exports are bad for growth, then minerals exports are bad for the poor.

A key point with respect to poverty reduction, however, is that the kind of economic growth is as important, if not more important, than the quantity. Mineral-led economic development will be successful only if the challenge of generating “pro-poor” growth can be met. Pro-poor growth is defined by a focus on the provision of jobs for the poor, who are generally “unskilled” or “semi-skilled.” If concentrated in the agricultural sector, where the majority of the world’s poor derive their income, growth can also lead to decreasing income inequality. Moreover, extractive industries can benefit the poor if strong backward and forward linkages can be formed with the local economy.

In practice, however, mining employment is declining in most of the world, even as output goes up (MMSD, 2002, p. 182). As the industry becomes increasingly capital-intensive, it tends to employ a smaller number of highly skilled workers; in many cases, these workers are expatriates from more developed countries, who often live in enclaves, separated from the local economy. As we shall see in the discussion of the Rio Tinto/QMM ilmenite project, this problem is relevant in Madagascar. Equally applicable to Madagascar is the observation that, globally, backward and forward linkages tend to be weak in the mining sector. Food and other inputs are increasingly supplied by foreign or non-local vendors (MMSD, 2002, p. 82). One impediment to creating forward linkages is the higher tariffs that advanced industrialized countries place on processed goods, compared to raw materials. The import tariffs placed by the OECD on unprocessed minerals such as copper, tin, zinc, aluminum, lead, and nickel are zero, while the tariffs imposed on value-added products such as copper wire or aluminum kitchenware, to take just two examples, are 4.06 and 5.83, respectively (Ross, 2001, p. 10). This poses a great challenge to the development of “downstream” industries in resource-rich countries. Finally, the effects of Dutch disease can reduce the international competitiveness of a country’s agricultural and manufacturing exports, which creates a further obstacle to pro-poor forms of growth. These are only some of the challenges that resource-rich countries face, and Madagascar is no exception. Minerals-led development must be handled with extreme care. In the case of the mining sector in Madagascar, which has been supervised by the World Bank for at least a decade, it remains to be seen whether current large-scale mining projects will bring net benefits to the Malagasy people in the coming years.

This chapter investigates in more detail the impact of artisanal and small-scale mining activities and large-scale projects on employment and poverty reduction in Madagascar. Section 8.2 provides a brief overview of the World Bank's involvement in Madagascar's mining sector over the last decade. Section 8.3 assesses the Government of Madagascar's goals for the mining sector as outlined in the Madagascar Action Plan. Section 8.4 discusses recent developments in artisanal and small-scale mining, and Section 8.5 examines the case study of the Rio Tinto/QMM mine in southeastern Madagascar. Section 8.6 concludes.

8.1 World Bank involvement in Madagascar mining

The World Bank has played a key role in catalyzing private sector growth in Madagascar's mining sector since at least 1997, when operations began for the Mining Sector Reform Project. Initial funds from the International Development Association (IDA) of the World Bank Group amounted to US\$5.15 million for the purposes of increasing investment and growth in the mining sector through the "implementation of reforms and actions that will lay the ground for future private investment and exploitation, over the long term and in an environmentally sound manner, of the significant potential of its natural resources" (World Bank, 2003b).

Since 1996, the Government of Madagascar has been implementing a wide range of reforms under its structural adjustment program. An important government document, the Document Cadre de Politique Economique (1996-1999), called for liberalization of the mining sector, and one of its chief aims was to establish an "enabling environment" to both promote FDI in mining and integrate small-scale and artisanal activities into the formal economy. This required that the government modernize the legal and regulatory framework. Toward this end, the project produced several results. A series of laws and corresponding regulations were generated, including a modern Mining Law in December 1999, and its regulations in April 2000. The Mining Law was further updated in 2005. In addition, a supportive framework for the development of large industrial mining projects was established under the Law on Large-scale Investments, which was approved in October 2002 and amended in 2004. The reformed legal framework removed the state from mining operations and encouraged private-sector involvement in the industry. During the period of project implementation, average annual investments in the mining sector were US\$30 million. Exports of mineral products doubled, from US\$18 million in 1999 to US\$36 million in 2002. The specific contribution of mining to fiscal revenues remains modest, with annual average contributions of US\$2 million from mining royalties and US\$0.5 from Mining Cadastre fees, as of July 2003.

According to the World Bank, Madagascar made great progress in institutional reforms. Most significant of these was the establishment of an "independent and economically sustainable" Mining Cadastre in May 2000. The Mining Cadastre was responsible for the successful elimination of a backlog of pending applications and the cancellation of all permits held by the state (permits held by the private sector that were no longer valid were also cancelled). Regional cadastre offices were established that facilitated the granting of permits to small-scale miners in remote areas. Fees from the Mining Cadastre are being used to fund other Mining Directorate units (such as the environmental unit) and arrangements were made for the transfer of 30% of the fees to the local communities where the permits are granted. The revenue-sharing is intended to "strengthen ownership by the communities and help build capacity for the sustainable management of mineral resources." The Bank considers the Mining Cadastre the "best in Africa" for the management of mining rights (World Bank, 2007a).

The Bank (2007a) also states that improved management of small-scale mining activities and gemstone rushes have been accomplished through three pilot projects that aimed at improving the legalization and productivity of small-scale artisanal mining as well

as commercialization of the products. Local mining offices in small-scale mining areas were also established. A major outcome was the creation of special reserved areas (ZAES), which was designed to prevent and manage small-scale mining rushes. For example, a survey of 100 small-scale mining operations, conducted as part of the project evaluation, revealed that 80% had formalized their activities between 2000 and 2001; formalization was achieved with direct assistance from project activities in 33% of these. A pilot project in the Ankazobe region led to an increase in mining permits from 16 to 206 and the formalization of 37 mining operators.

In December 2002, the Government of Madagascar designed the Mineral Resources Governance Project (PGRM) with assistance from the World Bank. A credit of US\$32 million was approved in May 2003 and was scheduled to close in December 2008. The main objectives of this project are to (1) strengthen transparency and governance in mining, (2) promote key institutional reforms for the decentralized management of mineral resources, and (3) promote private investments and value-added in the sector. In May 2007, the Bank approved an additional IDA credit of US\$8 million to support the PGRM, and also extended the closing date by two years, until December 2010. The additional financing will focus on five areas: (i) policy, legal, and regulatory framework changes to strengthen investment stability; (ii) institutional restructuring and strengthening of the Ministry of Mines for improved governance and capacity building; (iii) improved government and management capacity of small-scale mining activities; (iv) support to integration of large-scale mining projects (ilmenite in Anosy, nickel in Ambatovy and ilmenite in Tulear) and to regional development, in cooperation with the IDA-financed Integrated Growth Poles project (see below); and (v) management of potential conflict between environmental protection and small- and large-scale mining.

While the original PGRM did not overlook issues related to large-scale operations in mining, it clearly focused on artisanal and small-scale mining (ASM), which was the government's main concern. However, the sector strategy was redefined in June 2005 in response to the recent surge of large-scale mining projects. As a result of the "favorable investment environment" and higher commodity prices (including oil), large-scale mining activities and oil exploration increased. In July 2005, the Bank approved an IDA credit of US\$129.8 million for an Integrated Growth Poles project to foster broad-based economic growth in three export processing zones in Madagascar. The three geographic poles are Antananarivo-Antsirabe, Nosy Be, and the Taolagnaro region, where Fort Dauphin is located.

The goal of the Integrated Growth Poles project (IG2P) is to assist the government to "construct and rehabilitate critical infrastructure essential for sustained economic activity in tourism, manufacturing, agribusiness, and mining sectors. It aims to establish appropriate incentive measures to achieve rapid growth, develop the instruments to ensure equitable, sustainable growth, and strengthen the capacity of local authorities to formulate, prepare, implement, and manage medium- and long-term integration of future regional development projects." Most relevant to this report is the fourth component of the IG2P, devoted to supporting mining-led growth in Taolagnaro/Fort Dauphin. In Section 8.5, we examine the large-scale mining project of Rio Tinto/QMM in Fort Dauphin as a case study.

An important question that emerges from this overview of the Bank's involvement in Madagascar's mining sector over the last decade is the extent to which the various objectives of the World Bank and the Government of Madagascar have been achieved. Our approach in this chapter will be to compare results on the ground to the objectives of key documents produced by both entities, beginning with the Madagascar Action Plan.

8.2 Mining in the Madagascar Action Plan

Along with tourism, agribusiness, and manufacturing, the mining industry has been identified in the Madagascar Action Plan (MAP) as an immediate priority, the target of a breakthrough reform initiative (BRI). As a key sector, mining is the object of multiple commitments in the MAP, its goals interwoven with the country's plans for infrastructure development (Commitment 2), rural development (Commitment 4), environmental protection (Commitment 7), and a high growth economy (Commitment 6). Within Commitment 6, Challenge 7 aims to "intensively develop the mining sector." Noting that the mining potential of Madagascar was "neglected by previous governments" for almost two decades, and that mining failed to generate tangible benefits in terms of job creation, tax revenues, infrastructure or social services, the MAP sets forth the following goal: "Madagascar will help current mining projects enter the production phase quickly while respecting its communities and the environment. It will unleash its extractive potential by attracting more explorers and promoting its natural assets." For the purposes of this report, a key strategy is "integrating small-scale miners in the formal economy," and a priority project is to "educate, inform, and train small-scale gemstone miners."

In 2007, mining activities contributed less than 4% of GDP, but this is set to change. One of the goals of the MAP states that the industry should account for at least 30% of GDP by 2011. Mining administration fees should increase from US\$1.58 million in 2007 to US\$15 million in 2012; mineral royalties should rise from US\$0.168 million to US\$45 million, also in the next five years; and revenues from mineral exports should go up from S\$50 million to \$US300 million over the same period. As of 2005, the U.N. Office for the Coordination of Humanitarian Affairs reported that the mining sector provides direct and stable employment for at least 100,000 people in the rural areas, in addition to 500,000 seasonal jobs.

A key question asked in this report is to what extent has Madagascar made progress towards achieving its goals for the mining sector, as outlined in the MAP. An important document that places these goals in context, the Extractive Industries Review (EIR), helps shed light on the matter. Mounting criticism of the World Bank's involvement in mining projects around the world over the last two decades prompted the Bank to undertake a two-year, independent study in July 2001, the EIR. This effort was intended to examine whether extractive industries projects are fundamentally incompatible with the Bank's goals of sustainable development and poverty reduction. The EIR serves as a backdrop for the World Bank's involvement in Madagascar's mining sector over the last decade, especially in the last five years. Elements of the EIR find themselves in key project documents of the World Bank and form the basis for the MAP. The study concluded that extractive industries *can* contribute to poverty alleviation through sustainable development, but only if handled carefully. Specifically, three enabling conditions must be satisfied: 1) pro-poor public and corporate governance, including proactive planning and management to maximize poverty alleviation through sustainable development; 2) much more effective social and environmental policies; and 3) respect for human rights (World Bank, 2003a).

For the purposes of this report, one of the important recommendations the EIR makes relates to the artisanal and small-scale mining sector (ASM). Given the potential of ASM to alleviate poverty, the Bank should help governments develop policies that recognize the ASM sector. As noted above, "integrate small-scale miners in the formal economy," and "educate, inform, and train small-scale gemstone miners" are two important goals of the Madagascar Action Plan. Specific points from the EIR include:

- National policies relating to ASM should aim to integrate the sector into the national economy, giving artisanal and small-scale miners access to markets.
- Equal attention should be given to social and environmental regulations in the process of legalizing the sector, and gender imbalances, child labor, and environmental management should be addressed.

- Problems related to ASM could be effectively addressed through rural development plans. To increase government capacity in its dealings with ASM, officials might participate in exchange programs, visiting other countries where a formalized ASM sector has successfully contributed to poverty alleviation.
- A micro-lending approach to ASM, in cooperation with other aid agencies and donors, might be pursued.
- Pilot projects could be developed in partnership with the Communities and Small-Scale Mining initiative (CASM).

In Madagascar, some of these recommendations have been achieved, as discussed in the next section, where we examine the ASM sector in more detail. In subsequent sections, we turn to the strengths and weaknesses of large-scale mining in Madagascar, again within the context of employment and poverty reduction.

8.3 Artisanal and small-scale mining in Madagascar

As in most developing countries in Africa, artisanal and small-scale mining (ASM) provides economic resources to the poor and rural population, representing an important social and economic component of poverty reduction. Artisanal mining commonly involves individuals or families, and is purely manual; small-scale mining, on the other hand, is usually more mechanized. The two groups differ also in the nature of the miners' rights to the land. Small-scale miners may have legal title to the land that they work, as recognized by the state and others. What is equally possible, however, is that the state may not recognize rights to land they have traditionally worked for centuries. Another possibility is that miners may be working the land informally and are regarded as illegal squatters by local and state authorities. Artisanal miners are the most likely to be working without legal title.

There is no clear definition of ASM and many of the miners work casually or informally. It is therefore impossible to say precisely how many there are globally, but recent research puts the number at 13 million people directly; mining is estimated to affect a further 80-100 million (MMSD, 2002, p. 316). Many of these either come from a tradition of small-scale mining, work seasonally, or take up mining as a last resort during periods of economic recession. In the case of Madagascar, thousands of people were drawn to Ilakaka following the discovery of new sapphire reserves in the late 1990s, creating the problem of "mineral rushes." And while women play a relatively minor role in large-scale mining, they account for 50% of the ASM workforce in Mali, Zimbabwe, and Madagascar (MMSD, 2002, p. 316). Although estimates are difficult to come by, ASM also involves a significant number of children. An estimated 500,000 people work in Madagascar's small-scale mining sector, according to Chemonics International (Chemonics, 2008).

Most ASM production consists of gold and gemstones, with the latter accounting for 90 – 100% of ASM in most countries (MMSD, 2002, p. 318). Gold mining is especially hazardous; in undertaking amalgamation processes, artisanal and small-scale miners often mishandle mercury, unaware that it is extremely toxic and harmful to both human and environmental health. These problems are exacerbated by the fact that ASM is also largely unregulated. Many governments choose not to recognize the sector's activities, especially if land rights are not recognized. Informality and illegality can also extend to the marketing of products – the lack of formal protection means that miners will be exploited by intermediaries or traders. It also encourages criminality in the commodities chain (MMSD, 2002, p. 323).

In Madagascar, these issues have received much attention since the late 1990s, with the new discovery of high-quality sapphires in Ilakaka. The town's population increased dramatically from 30 to 100,000 between 1998-2000 after the discovery (Duffy, 2005). Based on fieldwork in the region, Duffy reveals that the income generated from the gem

sector is “locked in an informal and illegal economy which is populated by gem dealers, criminal organizations, protection racketeers, miners and individuals in the Malagasy elite” (p. 840). Although accurate numbers are hard to come by, given the nature of the business, a World Bank study in 1999 found that US\$100 million in sapphire gems was smuggled out of Madagascar in that year alone, with roughly US\$4 million changing hands each day in 2001 when trading in Ilakaka was at its peak (cited in Duffy, 2005, p. 840). More generally, the MAP states that annual exports of emeralds, rubies, sapphires, and other gemstones total approximately \$50 million. But it is not clear that the government has a reliable method for collecting revenue from these exports. The majority of the raw stones are smuggled overseas, where they are cut and sold at a profit of 300 to 400%, according to Chemonics International (Chemonics, 2008).

With help from the World Bank’s Mineral Resources Governance Project in the late 1990s, the Government of Madagascar has been working towards formalizing ASM, as enshrined in Commitment 6, Challenge 7 of the MAP. Progress was made in this direction with the rehabilitation of the Mining Cadastre. The establishment of regional cadastre offices facilitated the granting of permits to small-scale miners in remote areas, though it seems that more could be done. Moreover, the complexity of the land tenure laws would need to be navigated in such a way as to ensure that land titles are distributed equitably.

Nevertheless, a step in the right direction would be participation in an initiative launched by a group of donors in 2001, the Communities and Small-Scale Mining (CASM) initiative, which is housed by the World Bank and chaired by the UK’s Department for International Development (DfID). CASM’s mission is to “enhance the developmental impact of ground- and policy-level work in the artisanal and small-scale mining sector, both at the grass-roots and policy level, in ways that will directly contribute to reducing poverty and realizing sustainable development in communities affected by or involved in ASM.” Its strategy is to “provide a forum to facilitate communication and coordination between miners, communities, donors, governments, industry, and other stakeholders and by actively promoting the sharing of knowledge, lessons learned, good practices, and policies” (MMSD, 2002, p. 326).

Another program that seems to be producing promising results is described in a report that was released on March 31, 2008. A \$400,000 initiative of the Business and Market Expansion (BAMEX), funded by the U.S. Agency for International Development and managed by Chemonics International, is helping to formalize the gemstone industry in some sections of Madagascar. Thus far, BAMEX has helped formalize and provide support to 400 associations of miners and traders. These associations have provided training in gemology, healthcare, and environmental protection. They are also receiving training in improved cutting and processing techniques, enabling the country to capture more value-added. In addition to training, access to credit, and technical assistance, BAMEX is also working with a ministerial committee to fight corruption, focusing their efforts in the Ilakaka region. They are also seeking ways to generate revenue from fees and taxes in the mining sector. As emphasized elsewhere in this report, the crucial employment issue for Madagascar is quality of opportunity, not just the overall level of employment. Underemployment in low-productivity activities that do not generate adequate earnings is a central problem. While the BAMEX initiative is a step in the right direction, the fiscal authorities could do more to channel funds generated by tax revenue strategies from large-scale mining projects towards skills training in the ASM sector.

The Government of Madagascar, with assistance from the World Bank and BAMEX, has also created a program for foreign buyers to register with the Ministry of Mining to legally purchase and export gemstones, the first legal alternative to smuggling. BAMEX has also launched a biweekly gemstone market in Antananarivo, where licensed on-site gemologists offer services to help independently verify the quality of the gems and provide assurance and certification papers to buyers. Under this scheme, miners and merchants are able to earn about five times as much as they would in the black market. To ensure the

success of the market in integrating small-scale miners and traders into the formal economy, local stakeholders formed the Gemstone Market Association and assumed responsibility for managing the market in a “sustainable and profitable manner.”

In addition to these activities, Madagascar could do more to generate employment and reduce poverty in the ASM sector. The general idea is to integrate artisanal and small-scale mining in poverty reduction policies as part of an overall focus on regional development. For example, in 1997, a large open-cast mine began production in Sadiola, Mali, a traditional artisanal gold mining area. When operations began, environmental concerns led to the resettlement of inhabitants in two nearby villages to sites a couple of kilometers away. In compensation, the mining companies, AngloGold and IAMGold, established the Sadiola Gold Mining Project, whose goals were to help artisanal miners, promote community development, and diversify the local economy. As a result, the Sadiola Mining Cooperative was established, which provided technical assistance to gold miners. A community development fund provided support for a school, health center, and learning center for adults. Fruit trees were planted around the mine sites, and support to SMEs, in particular women entrepreneurs, was provided (see MMSD, 2002). In Madagascar, compensation for resettlement from mining corporations need not be the sole means by which mining cooperatives establish themselves and fund their projects. Tax revenue strategies deployed by the fiscal authorities (e.g., corporate taxes on large mining companies) and resources from the financial system could be utilized to support similar initiatives in Madagascar.

Although fifty percent of ASM in Madagascar consists of women, few assistance programs exist for them. Successful women’s mining associations, such as the Southern African Development Community’s Women in Mining Trust, or the Tanzanian Women Miner’s Association, provide good examples of programs that respond to the needs of women miners. The Women in Mining Trust lobbies for support of women in mining, trains women in environmentally sound mining methods, establishes revolving loan funds, and facilitates the marketing of women’s products. In addition to providing similar services, the Tanzanian Women Miner’s Association rents mining equipment and tools as well as a lapidary and jewelry production unit (MMSD, 2002, p. 328). These models might be replicated in Madagascar.

Although the report on Madagascar’s BAMEX initiative does not specify which gem certification services are provided in the Antananarivo gemstone market, one possibility would be for miners and merchants to link up with the fair trade movement to achieve better prices for ASM output. Increasingly, consumers in rich countries are concerned that the goods they buy, such as gemstones and jewelry, may have been produced under exploitative conditions, possibly with child labor. Production processes may have had adverse environmental impacts. Another concern is that sale of the goods may have fuelled conflict, as in the case of “blood diamonds.” In response, a number of NGO trading companies are paying a premium for “ethically and environmentally sound” production and have linked up with small-scale producers, who are responsible for 90 – 100% of gemstone mining in developing countries. According to MMSD, a German NGO, Fair Trade e.V., is working with a women’s diamond cooperative in Lesotho, as well as gemstone producers in Madagascar and Tanzania (MMSD, 2002, p. 330). To qualify for these marketing channels, producers often must work in democratic arrangements such as cooperatives, and be committed to higher environmental and labor standards. The additional revenues they capture from participation in these cooperatives could be invested towards creating decent jobs and skills training, in addition to improved local social and environmental programs.

8.4 Rio Tinto/QMM in Madagascar

Overview

Since 1986, Rio Tinto and its subsidiary, QIT Madagascar Minerals S.A. (QMM), have been assessing the potential for a 50 – 60-year ilmenite (titanium dioxide) mine near Fort Dauphin in southeastern Madagascar. The company concluded a legal and fiscal framework agreement with the Government of Madagascar in 1998 that was ratified by the Malagasy National Assembly and promulgated into law by the President. Construction of the mine and associated infrastructure of roads and a deep-sea port proceeded quickly, and the first ilmenite shipments are scheduled for December 2008, with an initial capacity of 750,000 tons per year. The mineral ore will be shipped to Québec, where it will be processed into titanium dioxide by QIT-Fer et Titane, a subsidiary of Rio Tinto.

At a cost of US\$585 million, the project is the first and largest foreign investment in Madagascar's history, enabled only as a result of over a decade of fundamental changes in the country's laws, as described in the above discussion of the World Bank's Mining Sector Reform Project, Mineral Resources Governance Project, and the Integrated Growth Poles development project. A distinguishing feature of the mining project is that it incorporates a high-profile example of a public-private partnership (PPP), a concept that was refined in the World Summit on Sustainable Development in Johannesburg in 2002 and implemented since then in many countries around the world. The port construction project in Ehoala is one such PPP between the state and the private sector.

According to the Fact Sheets (October 2007) on the Rio Tinto-QMM website, QMM and its contractors directly employ 3,300 people, of whom 1,800 (55%) are Malagasy from the local Anosy area and 1,000 (33%) are migrant Malagasy workers from outside Anosy. In addition, 400 expatriates comprise 12% of the total number. Rio Tinto estimates that more than 1,500 indirect jobs have also been created in the Fort Dauphin area, representing diverse sectors such as accommodation and food services; banking; vehicle hire; equipment supply; construction services; land and home leases; NGO administration; business support services; and materials and equipment supply. Funds disbursed directly into the Fort Dauphin economy in 2006 and the first two quarters of 2007 amounted to US\$38 million, according to Rio Tinto's estimates.

From the information disclosed on the company's website, Rio Tinto appears committed to sustainable development that involves the participation of local communities and responsible environmental management. They claim to have provided reliable electrical power, solid waste disposal, road construction and refurbishment, and a potable water supply to the town of Fort Dauphin. Other community projects include a technical and professional training center, new bus depot, basic health care centers in rural areas, primary schools in rural areas, and Fort Dauphin's first accredited secondary school. An HIV/AIDS/STD program and malaria prevention program, in collaboration with PMI/USAID, also figure prominently on their website. These community programs are supported by the Integrated Growth Poles Project. In addition, the World Bank is an active partner in developing the nearby port of Ehoala (with a loan of US\$30 million).

The company's data on involuntary resettlement reveals that the number of permanently affected persons (PAPs) amount to 492, representing 80 displaced households. QMM is using the World Bank involuntary resettlement policies and procedures in their Resettlement Action Plan. In total, US\$4 million in compensation was paid out by QMM to PAPs in 2007. "Accompanying measures" to involuntary resettlement are also listed on the website: agricultural support, handicraft training, literacy programs, sustainable fisheries training, health support, microcredit schemes.

According to their website, QMM has set up a Social and Communities Management Team whose primary areas of focus are regional development (including migration management, inflation management, public and community health, HIV prevention, and culture and sports); community relations (including surveillance, community assistance programs, consultation, resettlement, and livelihoods); and sustainable development initiatives (including recruitment, skills transfer, supply chain development, entrepreneurial and business development, and local expenditure maximization). Their “local business development plan” centers on SME development and financing, in collaboration with a local bank (BNI) and the Anosy business center. It also provides support to a regional microfinance institution (IFRA), providing microfinance services to resettled populations since December 2005. Finally, “inflation mitigation measures” include “significant support” to commercial produce suppliers to “augment production, reduce the middleman factor, and bring down market prices” for Tsara Traka and Ranamanfana farmers through CARE. They claim to be working with local communal gardens to supply fruits and vegetables for a QMM catering contractor, as well as the local market. They’ve provided a truck to transport goods from outlying areas, “thus diversifying and augmenting supplies to the local market.” Finally, they provide investment in “market rehabilitation” and supply chain management, and have a rice purchase plan to support local businesses and help alleviate shortages in price escalation during the dry season.

QMM’s mining project will exploit heavy mineral sands over an area of 6,000 hectares along the coast of southeastern Madagascar. Major deposits in this area are located underneath some of the last remnants of coastal littoral forest found only in Madagascar. Given Madagascar’s status as one of the world’s 25 “biodiversity hotspots,” and in light of the pressures on the littoral forests from the local population, which depends on them for subsistence, QMM established an environmental program that includes conservation and monitoring measures that will help preserve biodiversity in the area. Large conservation zones were created and will be co-managed with communities and in partnership with the World Conservation Society, BirdLife International, QMM, and Conservation International. In addition, QMM has a reforestation program that has been responsible for the planting of 600 hectares to date in collaboration with rural communities around Mandena and St. Luce. Finally, in the Fort Dauphin region, community projects related to natural resource management, financed by QMM, include bee keeping (100 villagers trained and producing; honey sold broadly in the area) and agriculture (720 villagers trained in 19 villages, producing vegetables as well as learning how to compost, with products commercialized in Fort Dauphin).

According to their website, Rio Tinto/QMM’s mine is supposed to be a model for responsible mining, “a model for further projects which are likely to follow in Africa and the developing world.” Indeed, the range of activities described on their website suggests that they are doing everything they can to create employment opportunities, invest in local infrastructure and skills training, and protect the environment. However, the experimental nature of their project and the lack of independent analyses of their activities make it difficult to assess the degree to which the company is successful as a role model for corporate and social responsibility in mining. The challenges the company has taken on are indeed formidable, especially in light of the fact that they are also voluntary. In many ways, the commitments summarized above are more extensive than what might be expected from a private company, and “the creation of whole departments to manage key economic, social, and environmental issues has led many stakeholders to question the extent to which Rio Tinto should take on development roles outside its core competence of mining” (Harbinson, 2007b).

Friends of the Earth/Panos London Study (2007)

These concerns and others compelled Friends of the Earth to commission an independent study in 2007 from Panos, an international development agency, with the aim

of assessing Rio Tinto's compliance with its commitments by comparing them to realities on the ground. The study, conducted by Rod Harbinson, Head of Environment at Panos London, was based on interviews with 123 stakeholders, including landless poor people, marginalized local villagers, foreign construction workers, corporate, academic, civil society, and government experts, and local business people. The conclusions from this report (Harbinson, 2007b) that are most relevant to our paper are highlighted below.

A primary concern of the Panos report is whether the mining project is a "good deal" for Madagascar in purely financial terms. Rio Tinto anticipates shipments of 750,000 tons of ilmenite (and 25,000 of zirconium) annually over the 40-year life of the mine, bringing in a potential income of US\$3.2 billion. Panos estimates that the Government of Madagascar could realize from 3 – 18% of the total revenues, depending on the scenario. The study cautions that "these estimates are based on fairly sketchy information and so might be off the mark. In the absence of more detailed information and analysis, they serve as a rough guide to interested stakeholders." In the interests of providing a rough guide, their calculations are discussed below.

The Rio Tinto/QMM website indicates that currently 80% of the mine is owned by Rio Tinto/QMM, with the remaining 20% owned by the Government of Madagascar. However, the framework agreement clarifies that this division only applies during the mine development phase, which expires at the end of 2008. After the first shipment goes out in December 2008, the Government will need to decide whether it is worthwhile to pay for up to 20 percent of the capital investment expended by this date.

Under the framework agreement, QMM enjoys concessionary breaks on taxes, duties, and royalties. Once these are deducted, the Government is expected to earn US\$7 – 9 million in the first five years, rising to a maximum of US\$15 – 26 million per year from local expenditures, royalties, taxes, and optional dividends. In QMM's Social and Environmental Impact Assessment (SEIA), it is assumed that Madagascar's annual income includes dividends from the 20% share. The SEIA also included local expenditures in its calculation of income. Since the fluctuating value of such expenditures is difficult to assess, Panos uses only direct taxes and royalties (US\$7 – 15 million) in calculations of direct government revenue. Thus, direct revenue accruing to the government will grow to US\$7 – 15 million per year without the share option and US\$11 – 21 million with the share option. Once the cost of servicing the loan to purchase the share capital is subtracted, however, the revenue is reduced significantly. (The loan is approximately US\$117 million, assumed to be repaid over 40 years at 5% interest).

To summarize, QMM projects an annual turnover of US\$69 million, according to the Panos report (Harbinson, 2007b). The SEIA estimates that the mine will contribute US\$7 – 9 million annually to the Madagascar economy during the first five years of operation (though no breakdown is offered about revenue disbursement). This will grow from US\$15 – 26 million per year from all sources over the life of the mine.

For year six and beyond, the breakdown is:

Local expenditures	US\$4 – 5 million/year
Government fiscal profits (taxes)	US\$7 – 15 million/year
Dividends deposited at the institute of mines	US\$4 – 6 million/year
Total	US\$15 – 26 million/year

Panos (Harbinson, 2007b) makes calculations for two scenarios, one in which the government exercises its capital share option, and one in which it does not. Each of these reflect the potential income range between the "best" and "worst" case. In addition, two assumptions are made. The first presumes a large step jump in revenue between years 5 and 6, but starting in year 6, the revenue income remains at a constant maximum until the end

of the mine's life. The second, more realistic, scenario shows revenues gradually rising and is calculated using a straight line increase:

Table 8.1 Best and worse case revenue scenarios for the Government of Madagascar

Total Government Mine Revenue Earnings Over 40-Year Mine Life, Minus Loan Servicing (excludes government port loan of US\$35 million)	With Stepped Revenue Increase After Five Years (optimistic), US\$million	With Gradual Increase After Five Years (realistic), US\$million
Capital share option exercised, best case	507.2	297.2
Capital share option exercised, worst case	157.2	77.2
Capital share option not exercised, best case	570	420
Capital share option not exercised, worse case	280	280

Note: Figures not adjusted for ilmenite/zircon commodity price fluctuations or inflation. Interest and repayments on loans estimated at 5 percent.

Source: Harbinson (2007b)

Table 8.2 Estimates of revenue from the mineral asset to Rio Tinto

Total Mine Revenue Earnings Over 40-Year Mine Life Minus Capital Costs	US\$million
Ilmenite at US\$80 per ton x 750,000 tons	2,400
Zirconium at US\$800 per ton x 25,000 tons	800
Total mineral value	3,200
Minus capital costs	585
Total revenue income	2,615

Source: Harbinson (2007b)

Thus, the Government of Madagascar can expect to gain from 3% (worst case) to 18% (best case) of the total mine revenues, with the rest captured by Rio Tinto.

The tax holiday and lifting of sale taxes further cuts into the potential revenue stream accruing to the government. Panos (Harbinson, 2007b) notes that the only value the mineral is afforded is that accruing from the process of extraction; the framework agreement between the government and Rio Tinto/QMM does not mention the unmined value of the mineral deposits. There is a provision for minimal land royalties, however, which amount to US\$120,000 per year.

Another area of concern raised by the Panos study is the impact of the mining operations on the local economy, specifically rising local prices, employment, and tourism. To begin, everyone interviewed recognized the problem of local inflation. The cost of bread and cooking oil in Fort Dauphin at the time of research was twice the prices in Antananarivo, and land, property prices, and rents have "increased dramatically" – one NGO was approached at the time of research by its office's landlord who had been offered four times the current rental price for the office by QMM. However, QMM said they are monitoring the situation and intended to start a radio station through which town prices can be communicated to rural regions, in the hope of motivating farmers to supply goods to the town. And one NGO is working with farmers and with Sodexho, a French company contracted by QMM to procure groceries for the mine workers' villager compound, to coordinate the local supply of groceries to the town (Harbinson, 2007b).

Villagers' expectations that QMM would bring more local employment have not been fulfilled, particularly among the young men who were interviewed. A complaint was made that although QMM hired Malagasy workers, many of them are from outside the region. It is difficult to assess the accuracy of these claims, however, given the poor data. An official at the regional administration held that 814 workers were directly employed at the mine and associated projects in 2007, including 48 foreigners. This figure differs considerably from the numbers posted on the Fact Sheet of the QMM website, which is dated October 2007, the same month and year of the Panos report. The Fact Sheet indicates that the company

directly employs 3,300 people, of whom 1,800 (55%) are Malagasy from the local (Anosy) area, 1,000 (33%) are migrant Malagasy workers from outside Anosy, and 400 (12%) are expatriates. Despite these discrepancies, however, interviewees from QMM did confirm that many positions require skills such as computer literacy and English proficiency; this combination of skills is rare among local people, whose chances for employment are consequently small. Young male permanently affected persons (PAPs) felt particularly disadvantaged; because QMM had deprived them of their livelihoods by requisitioning their farmland, the company bore a duty, they believed, to provide them with jobs (Harbinson, 2007b).

While insufficient job creation for local people is a major concern, the reverse problem of skills shortages is equally important – QMM had recruited a large share of the local skilled workforce, leaving few skilled workers available for employment in other sectors; in addition, the relatively high salaries offered by QMM made it more difficult for other sectors to match their rates, leaving these sectors with the problem of attracting staff. Finally, many worried that as the construction phase was coming to an end, many workers would be laid off and the workforce reduced to a core operating crew (Harbinson, 2007b).

Before we conclude this discussion of the Rio Tinto/QMM mining project, the relationship between mining and biodiversity conservation should be addressed. For obvious reasons, mining is often viewed as antithetical to environmental protection, as it is perhaps more damaging to the environment than other developments. This is partly due to the past legacy of industrial mining operations around the world, but it is also because of the nature of mining. Since its inception, the Rio Tinto/QMM mine has been opposed by conservationists because the site contains some of the last remaining littoral forest in Madagascar, and its conservation is seen as vital to global biodiversity. By definition, the strip mining technique requires that most of this forest and its biodiversity must be removed – at least for a period of time – to allow the extraction of the minerals.

More relevant to this paper, however, is the impact of the relationship between mining and conservation on local peoples and their livelihood or employment prospects. The conservation zones deprive communities of wood, food, and medicines on which they have relied for generations. To compensate, the World Bank has committed to developing eco-tourism in order to raise income from entry fees to the conservation zone, as discussed in the next chapter. However, tensions could arise *between* communities and *within* communities over the distribution of funds generated from entry fees into parks and other conservation areas. According to the Panos study, management of the funds from entry fees is run by a co-management committee called FIMPIA on behalf of three participating communities. However, the village representative interviewed said his village had not received any funds and there were “concerns about the non-transparent way in which they were administered” (Harbinson, 2007b). Another source of conflict arises from the confusion over the rules governing the area within the zone (managed by one community committee) and those applying to the areas just outside of it (managed by another community committee). As the report states, “investing managerial and policing powers in members of a community immediately alters existing power dynamics. Members of the community have become criminalized for practices which they and their ancestors have carried out for generations and which have long been the socially accepted norm” (Harbinson, 2007b).

In addition to the above problems, enforcement of the area has placed a burden on local villagers that is under-compensated. For example, at the time of research, six “forest police were local villagers undertaking this full-time task on a voluntary, unpaid basis” (Harbinson, 2007b). On one occasion, villagers pulled together to extinguish a forest fire; meanwhile, neighboring villages declined to help out, even though they received a share of the funds accruing from the zone. The point is that the current system does not provide enough incentives for local people to take part in conservation management, and those

villagers who helped put out the fire this time may not be motivated to do so again in future.

8.5 Conclusion

The issues discussed in the previous section underscore the challenges involved in carrying out a large-scale mining operation in an isolated locale, where local institutional capacity is relatively weak. The resolution of social and environmental problems has lagged behind mine, port, and road construction, and mining corporations are generally ill-equipped to provide all the solutions. To its credit, Rio Tinto/QMM has undertaken a variety of voluntary commitments as part of its corporate social responsibility policy, and is considered a pioneer in this regard; thus, there are few other examples of good practice available. In many ways, the company has assumed the “mantle of development actor, extending its mandate far from its core competence in mining into new and untested areas” (Harbinson, 2007a). Instead of hiring environmental and social consultants, as is usual practice, the company has created whole departments, staffed with people with NGO backgrounds. Nevertheless, their strategy is fundamentally problematic in that a basic tension exists between their role as “development actor” and their responsibility to deliver to shareholders. The company can only do so much.

Several recommendations aimed at achieving poverty reduction, employment creation, skills development, and environmental protection might now be made for the large-scale mining sector in Madagascar.

First, assuming that Rio Tinto/QMM and the agendas of international conservationists are here to stay, local communities, and especially the poorer members of these communities, have a greater role to play in biodiversity protection. In general, more funds should go to compensating communities for their role in conservation; local knowledge and experience should be adequately remunerated in the conservation effort. Villagers need to be paid for conservation work that they already do, and have been doing for generations, on the community commons. Toward this end, revenue-sharing schemes should be adjusted so that more revenues, and a greater share of them, accrue to local residents.

Second, there are various ways to generate such funds. More revenues could be generated by increasing entry fees to conservation areas or levying a conservation tax on international tourists; the money could be returned to the local community on an equal, per capita basis. Furthermore, the fiscal authorities could target tax revenue strategies to the mining sector and use the revenues to support skills training, which would increase the productivity of labor, and local infrastructure investment. Finally, the tax holiday and lifting of sales taxes further cuts into the potential revenue stream accruing to the government, which could end these practices.

Third, the additional jobs created by the above-described policies could be dedicated to conservation purposes as well, but preferably not in the areas of local policing and surveillance. In addition to general forest management, local people could be trained as assistants to conservation scientists, waste treatment and recycling specialists, or cultural and ecological guides. Rio Tinto/QMM has helped establish the first accredited secondary school in the area, but government tax revenues could be invested in education at all levels, including vocational training, and such initiatives should begin now. Mining operations are by nature finite, and Rio Tinto/QMM estimates a 40-year life for its mine. Preparations are underway for environmental restoration of the area after mine closure, but more needs to be done to make the region socially, economically, and environmentally better off after closure than it was before the mine began operations. For example, with respect to biodiversity conservation, structures should be set in place to ensure that young local people who might have begun their careers as assistants to international experts continue to receive an education that will enable them to become scientists themselves.

As the most experienced actor involved in the mining project, the World Bank should take more responsibility and work harder to implement the goals outlined in the Mineral Resources Governance Project and Integrated Growth Poles Project in Madagascar. Internationally, employment in large-scale mining is declining rapidly as new technologies have whittled the workforce down to a core of highly skilled workers; generally, local communities do not have the requisite skills (MMSD, 2002). The Government of Madagascar, Rio Tinto/QMM, the World Bank, international donors, and NGOs must do much more for the Malagasy people by providing more education and technical training, support to SMEs, and direct employment in the local economy.

9. Tourism

Madagascar is one of the world's few "mega-biodiversity" countries. Ninety-five percent of its plant and animal species are endemic, including 32 species of lemurs alone. The fourth largest island on the planet, its marine and coastal biological diversity is equally spectacular. The country is famous for the Tsingy Bemaraha Strict Nature Reserve, a World Heritage Site, and 16 National Parks distributed around the island. In addition to these, four marine parks and other private nature reserves offer unique eco-tourism experiences to travelers around the world.

Many argue that tourism cannot contribute much to poverty elimination. It is often driven by foreign, private sector interests for whom such concerns do not figure into the profit-making calculus. In fact, tourism can and has harmed the poor in a variety of ways, including local inflation, loss of access to natural resources, and social and cultural disruption, often due to physical displacement from ancestral lands.

Nevertheless, tourism has the potential to be an effective development tool. If managed properly, it can generate economic growth by creating backward and forward linkages to other productive and service sectors. In Madagascar, where poverty is concentrated in rural areas, natural assets are the most important source of livelihood for the poor. These ecological amenities generate positive externalities that are currently under-compensated. However, by harvesting scarcity rents and channeling them into decent employment for local communities, especially its poorer residents, it is possible to reduce poverty and pursue environmental protection at the same time. Local people can be trained and employed in recycling services, waste removal, or international environmental education in national parks, or provide assistance to conservation scientists. Thus, increased revenues generated by eco-tourism could be used to tilt the structure of employment towards activities that benefit people as well as the environment.

This chapter assesses the potential for the tourism sector to contribute to poverty reduction, employment, and sustainable growth in Madagascar. Section 9.2 describes the size of the sector and discusses the Tourism Satellite Account provided by the World Travel and Tourism Council. Section 9.3 introduces the general framework of sustainable tourism, poverty, and employment, summarizing key issues and good practices associated with the pro-poor tourism approach to development. Section 9.4 examines the Madagascar Action Plan in the context of the recommendations made by a World Bank tourism sector study in 2003. Section 9.5 is a critical analysis of eco-tourism case studies as currently practiced in Madagascar. Section 9.6 summarizes and concludes.

9.1 Statistical overview of the tourism sector

In recent history, tourism is an increasing phenomenon in developing countries. The World Travel Organization (WTO, 2002) reported that developing countries received 292.2 million tourists in 2000, representing an increase of 95% over the preceding decade. In particular, 5.1 million traveled to the 49 Least Developed Countries (LDCs), representing

an increase of nearly 75% between 1990-2000. Overall, an increasing share of international tourist arrivals is attributed to developing country destinations, from 20.8% in 1973 to 42% in 2000.

Madagascar is ranked 20th among those developing countries registering the fastest growth in international arrivals from 1990-2000, with a growth rate of 202% (WTO, 2002). Growth slowed following the political crisis of 2002, but the sector has recovered quickly. As shown in Table 9.1, the number of arrivals in 2007 was 344,348, compared to 61,674 in 2002, indicating a growth rate of 458% in 2002-2007.

Table 9.1 Non-resident arrivals, 2000-2007

Month	2000	2001	2002	2003	2004	2005	2006	2007
January	10,632	11,209	7,174	11,861	12,011	16,590	19,908	20,138
February	7,638	9,011	2,942	9,919	10,019	13,751	16,089	16,639
March	10,973	11,027	2,743	12,763	12,981	18,734	22,294	23,834
April	11,841	13,107	2,792	9,364	17,062	22,005	24,667	25,752
May	12,459	13,218	1,761	13,179	21,172	22,548	25,765	26,354
June	12,855	15,762	3,061	12,139	19,473	25,418	23,733	28,857
July	16,942	18,034	5,123	15,053	26,970	28,943	31,956	34,104
August	17,321	17,166	6,636	13,953	25,109	27,215	30,628	36,714
September	15,417	16,008	6,392	11,707	22,361	27,280	32,165	32,213
October	15,514	16,121	7,505	10,124	21,568	26,097	32,364	34,231
November	14,319	14,307	7,173	10,036	20,489	24,792	28,511	32,612
December	14,160	15,238	8,372	9,132	19,569	23,678	23,650	32,900
Total	160,071	170,208	61,674	139,230	228,784	277,051	311,730	344,348

Source: Ministère de la Culture et du Tourisme/Sécritariat d'Etat chargé de la Sécurité Publique/ADEMA DCE/STAT

Tables 9.2 and 9.3 show that tourism receipts grew by nearly 42% over 2000-2006, and direct employment increased from nearly 17,000 in 2000 to 22,410 in 2006:

Table 9.2 Tourism receipts, 2000-2006

	2000	2001	2002	2003	2004	2005	2006
Millions of DTS	91.9	90.2	27.8	54	104.3	124.5	157.7
Average ratio DTS/FMG	8,934	8,376	8,773	8,675	13,828	2,899	3,151
Billions FMG	821	755.5	243.88	468.45	1442.2	343	496.7

Note: DTS = SPECIAL DRAWING RIGHTS; FMG = MALAGASY FRANCS

Source: Banque Centrale de la République de Madagascar - Direction des Etudes

Table 9.3 Cumulative direct employment generated by the tourism sector

	2000	2001	2002	2003	2004	2005	2006
Hotel and/or restaurant	13,628	14,010	14,031	14,809	15,906	16,877	17,806
Tour operators	3,231	3,554	3,563	3,781	3,939	4,310	4,527
Tourist guides							77
Total	16,859.0	17,564.0	17,594.0	18,590.0	19,845.0	21,187.0	22,410.0

Source: Ministère de la Culture et du Tourisme

The Ministry of Culture and Tourism reports that the most popular activities, in descending order of popularity, are eco-tourism (55%), sun and beach (19%), cultural (15%), sport and adventure (8%), and other (3%). As indicated in Table 9.4, in the next four years, high growth is expected along the dimensions of arrivals, tourist receipts, hotel room supply, and direct employment, with receipts, hotel room supply, and direct employment nearly doubling by 2012.

Table 9.4 Forecast of tourist arrivals, hotel room supply, direct employment, and tourist receipts, 2007-2012

	2007	2008	2009	2010	2011	2012
Arrivals	34900	390336	436786	488764	546926	612011
Receipts, millions of DTS	211	236	264	296	330	370
Hotel room supply	14435	16145	18066	20216	22622	25314
Direct employment	23100	25800	28900	32300	36200	40500

Note: DTS = SPECIAL DRAWING RIGHTS; FMG = MALAGASY FRANCS

These statistics provide a rough overview of the sector. However, a recurring observation in recent studies of Madagascar's tourism sector, notably a World Bank paper released in November 2003, is the relatively poor quality of tourism data (Christie and Crompton, 2003). While tourism can be a powerful driver of economic growth, creating backward and forward linkages to other production and service sectors, a good measure of its true contribution to the national economy requires more reliable statistics. Foreign exchange receipts alone do not accurately reflect the economic contribution of tourism. Ideally, estimates of employment should not be limited to direct employment in hotels and restaurants or as travel or tour operators, but would take into account employment generated by tourism in agriculture, livestock, fisheries, manufacturing, transportation, handicrafts and souvenirs, and other tourism support services such as guiding.

The input-output analysis, developed for this report and discussed in chapter 3, provides a more detailed picture of the direct and indirect impacts of travel and tourism on the Malagasy economy. We showed that a 1 million Ariary increase in the final demand for the output of the hotel and restaurant industry (a subset of the larger travel and tourism industry), would result in a total increase in output (across all sectors) of 3.5 million Ariary. The same increase of 1 million Ariary would also result in 1.3 million Ariary of value-added, where value-added is equal to the value of industrial output less the value of intermediate inputs used in production. Finally, a 1 million Ariary increase in the final demand for hotel and restaurant services would generate 289 waged jobs (measured in full-time equivalents), out of which 53 would be in agricultural or livestock activities. The potential impact of investment in an important segment of the travel and tourism industry – hotel and restaurant services – is therefore considerable.

In order to capture more accurately the economic contribution of this dynamic sector, in 1993, the United Nations urged all countries to develop a Tourism Satellite Account (TSA), a tool for measuring the size of economic activities that are not included in the national accounts. In 2003, when the World Bank study was undertaken, Madagascar had not yet established a TSA, but had plans to do so. However, the TSA is currently available for Madagascar, a major achievement.

The TSA statistics for 2000-2008 are summarized in Tables 9.5, 9.6, and 9.7. The estimates reflect the value of the "travel and tourism" (T&T) industry to the national economy, where the term "travel and tourism" includes transport, accommodation, catering, recreation, and services for visitors. A TSA provides two different aggregates. The first is the *travel and tourism industry*, which captures the direct impact of visitor activity, e.g., transportation, accommodation, food and beverage, recreation, entertainment, and travel services. The second, *travel and tourism economy*, captures broader, economy-wide

impacts, e.g., direct and indirect impact of visitor activities, capital investment, exports, and government services.

Table 9.5 Travel & Tourism activity (Ariary billions), between 2000 – 2008

Travel & Tourism Activity in Madagascar (Ariary billions)	2000	2001	2002	2003	2004	2005	2006	2007E	2008F	2018F
Personal Travel & Tourism	252.7	304.9	342.9	175.6	304.1	307.5	336.3	369.2	413.2	1235.6
Business Travel & Tourism	45.7	41.8	38.5	41.1	51.6	71.8	92.2	114.3	131.2	347.7
Gov't expenditures - individual	6.6	8.7	8.2	12.0	12.3	13.4	14.4	18.2	20.0	48.9
Visitor exports	205.7	196.3	148.9	147.4	446.7	580.9	579.0	477.8	464.5	961.4
Travel & Tourism consumption	510.8	551.7	538.6	376.1	814.7	973.6	1021.9	979.6	1028.9	2593.6
Gov't expenditures - collective	15.3	19.9	18.8	27.2	28.0	30.6	32.8	41.8	45.9	111.6
Capital investment	94.9	136.2	99.3	126.7	235.3	294.4	330.4	391.2	415.1	745.7
Exports (non-visitor)	58.1	47.6	39.7	31.5	48.1	52.3	63.7	65.9	75.9	313.7
Travel & Tourism demand	679.1	755.3	696.4	561.4	1126.2	1350.9	1449.0	1478.5	1565.8	3764.6
Travel & Tourism Industry Aggregates (Direct Impact Only)										
Employment (000s)	77.2	75.4	68.4	66.7	121.1	135.1	124.0	106.7	99.3	108.3
Gross Domestic Product	156.1	168.8	147.8	158.7	335.3	455.9	475.4	456.5	473.7	1049.4
Travel & Tourism Economy Aggregates (Direct and Indirect Impact)										
Employment (000s)	191.5	202.8	175.3	177.8	297.6	321.8	302.1	280.7	264.4	279.6
Gross Domestic Product	379.7	443.9	371.2	414.0	808.4	1066.4	1136.3	1175.8	1233.5	2651.9

Source: WTTC/OE

E=estimate; F=forecast

Table 9.6 T&T activity as % of equivalent economy-wide spending (%), between 2000 – 2008

T&T Activity as % of Equivalent Economy-Wide Spending (%) in Madagascar	2000	2001	2002	2003	2004	2005	2006	2007E	2008F	2018F
Personal Travel & Tourism	5.6	6.4	6.5	3.0	4.5	3.6	3.3	3.1	3.0	3.4
Gov't expenditures	5.3	5.4	5.4	5.5	5.4	5.4	5.5	5.5	5.6	5.9
Capital investment	11.2	12.7	12.3	11.5	11.5	11.5	11.5	11.6	11.6	11.6
Exports	16.4	14.5	11.0	12.3	18.7	23.7	20.7	17.7	15.3	7.9
T&T imports	14.6	16.1	13.4	6.9	8.2	7.0	6.3	6.7	6.5	6.0
Travel & Tourism Industry Aggregates (Direct Impact Only)										
Employment	2.3	2.2	1.9	1.8	3.2	3.5	3.1	2.6	2.4	2.0
Gross Domestic Product	3.0	2.8	2.5	2.3	4.1	4.4	4.0	3.3	3.0	2.5
Travel & Tourism Economy Aggregates (Direct and Indirect Impact)										
Employment	5.8	6.0	4.9	4.9	7.9	8.3	7.6	6.8	6.3	5.1
Gross Domestic Product	7.2	7.4	6.2	6.1	9.9	10.4	9.6	8.5	7.8	6.3

Source: WTTC/OE

E=estimate; F=forecast

Table 9.7 Travel & Tourism real growth (% per annum, except 2018=10-year annualized)

Travel & Tourism Real Growth (% per annum, except 2018=10-year annualized) in Madagascar	2000	2001	2002	2003	2004	2005	2006	2007E	2008F	2018F
Personal Travel & Tourism	4.6	12.4	-2.4	-50.2	51.6	-15.8	-1.2	0.6	4.6	5.3
Business Travel & Tourism	5.1	-14.9	-20.0	4.0	9.9	15.9	15.9	13.7	7.2	4.0
Gov't expenditures	10.5	21.7	-17.8	40.8	-9.7	-9.0	-3.4	16.6	2.6	3.1
Capital investment	-26.5	33.7	-36.8	24.2	62.6	4.2	1.3	8.5	-0.8	0.0
Visitor exports	11.5	-11.1	-34.2	-3.7	165.3	8.3	-10.0	-24.4	-9.1	1.5
Other exports	386.4	-23.7	-27.6	-22.9	33.8	-9.6	10.1	-5.3	7.7	8.7
Travel & Tourism consumption	7.4	0.7	-15.3	-32.0	89.6	-0.4	-5.2	-12.1	-1.8	3.5
Travel & Tourism demand	7.7	3.7	-20.0	-21.5	75.6	-0.1	-3.2	-6.5	-1.0	3.0
Travel & Tourism Industry Aggregates (Direct Impact Only)										
Gross Domestic Product	8.3	0.8	-24.1	4.5	85.0	13.3	-5.9	-12.0	-3.0	0.9
Employment	6.4	-2.3	-9.4	-2.5	81.7	11.6	-8.2	-14.0	-6.9	2.2
Travel & Tourism Economy Aggregates (Direct and Indirect Impact)										
Gross Domestic Product	8.2	9.0	-27.5	8.5	70.9	9.9	-3.8	-5.2	-2.0	0.6
Employment	6.3	5.9	-13.6	1.4	67.4	8.1	-6.1	-7.1	-5.8	1.8

Source: WTTC/OE

E=estimate; F=forecast

As indicated in Tables 9.5-9.7, the T&T industry directly contributed 3.3% to Madagascar's GDP in 2007 (MGA 456.5 bn) while the T&T economy contribution was 8.5% of Madagascar's GDP (MGA 1175.8 bn). Turning to employment, T&T economy employment was estimated at 280,700 Malagasy jobs in 2007, or 6.8% of total employment. Finally, note that exports make up an important share of T&T's contribution to GDP. In 2007, T&T activity generated 17.7% (MGA 543.4 bn) of Madagascar's total exports. The government indicates that tourism is one of the top three sources of foreign exchange earnings, along with the EPZs and fisheries (Christie and Crompton, 2003, p. 3).

9.2 Sustainable tourism, employment, and poverty reduction

Overview

As one of the fastest-growing industries in developing countries, tourism affects the livelihoods of many of the world's "poor." However, its potential for poverty reduction is insufficiently recognized; tourism has more generally been identified as an engine of economic growth rather than a tool for poverty reduction per se. As recently as 2003, a report by the United Nations Economic Commission of Africa (UNECA) noted that Madagascar's Poverty Reduction Strategy Paper, or I-PRSP (2000), identifies tourism as a high-growth sector and the "first source of foreign currency" (Gerosa, 2003, p. 22), but its connection to pro-poor growth and poverty reduction is conspicuously absent. Likewise, in the Madagascar Action Plan (MAP), the sector figures prominently as the second of the government's six immediate priorities, or "breakthrough reform initiatives" (BRI), namely, a "significant increase in investment to promote high growth." Focusing on growth, the government pledges to create "strong sector plans" to ensure that the export-oriented

industries of manufacturing, agri-business, mining, and tourism can “develop rapidly.” While the overall goals are broad, some of the particulars are enumerated under Commitment 6, Challenge 8 of the document, summarized in Table 9.8:

Table 9.8 Goals and Strategies of Commitment 6, Challenge 8 (MAP)

Commitment 6: High Growth Economy		
Challenge 8: Intensively Promote and Develop the Tourism Sector		
Goals	Strategies	Priority Projects/Activities
1. Madagascar will be a privileged destination for all kinds of tourism, esp. eco-tourism. 2. International hotel chains will be encouraged to invest (solving the problem of poor infrastructure and suitable accommodation). 3. Madagascar will be amongst the leading countries in sub-Saharan Africa and the Indian Ocean in the promotion of a high-quality tourism experience.	1. Attract high-quality investors by provision of incentives, access to land, and general support. 2. Promote “destination Madagascar” as a superior and unique eco-tourism destination. 3. Support management development and professionalism of the tourist sector. 4. Improve range of tourism products and services.	1. Identify and launch new tourist sites and products. 2. Set up a tourist database. 3. Broaden the network of tourism agencies. 4. Develop e-tourism. 5. Identify priority tourist sites which are favorable to investments, speed up and facilitate the procedures for the setting up and exploitation of investment projects. 6. Rationalize the management of hotel assets with public participation. 7. Support the training activities in the tourism sector.

Source: MAP (2006)

As the government’s official statement regarding its plans for tourism development, these sections of the MAP make clear that the emphasis is on the growth of the industry and its contribution to macro indicators; how tourism could contribute to outcomes that directly benefit the poor is less clear. The choice to focus on eco-tourism is particularly significant in that the term generally refers to the kind of tourism whose activities minimize negative impacts on the environment, builds environmental awareness, and provides direct financial benefits for conservation. As described in the tourism and development literature, eco-tourism strategies may also aim to provide financial benefits and empowerment for local people as well as support local culture. While this suggests that eco-tourism can be directed towards increasing benefits for the poor, proponents of “pro-poor tourism” consider eco-tourism to be a distinct, “niche” product that focuses more on environmental sustainability than poverty reduction as its chief goal (PPT, 2004). The concern is that eco-tourism is often led by international agencies whose main objective is environmental conservation – a worthy goal in and of itself, but one that also risks bypassing local communities, whose livelihoods depend, in vital ways, on access to the very natural resources that are being protected.

The kind of eco-tourism that is driven solely by environmental protection can thus be a double-edged sword, representing both a problem and an opportunity for the poor. It is a problem in situations where local people’s access to the resources is restricted, severely curtailing activities necessary for their subsistence. In the extreme, but not uncommon, case, entire communities may be displaced as more powerful interests step in to take advantage of informal (and therefore insecure) property rights regimes, resulting in the appropriation of community lands. Considering a more conservative scenario, where local peoples are dispossessed of – without being displaced from – their land, the negative impacts may extend, in many cases, from the loss of people’s livelihoods to environmental degradation itself. The irony is self-evident: as conservation efforts from above exclude the poor from access to natural resources, the valuable ecological services they used to provide, as part of their customary care of the land, are lost, potentially leading to the opposite of conservation.

The Madagascar Action Plan partially addresses some of these issues in Commitment 4, which indicates the government's pledge to secure land tenure as part of its "rural development and green revolution" initiative (MAP, p. 64). The document states that 330,000 titles have been issued over the last century; the "delivering rhythm" is currently 1,000 per year. As of 2006, 10% of the national territory was legally occupied, thanks to the government's National Land Tenure Program, launched in 2005, which set up 21 land tenure offices to facilitate land tenure transactions; by 2012, the aim is to increase the percentage of farmers having land titles or certificates to 75%. Noting that the current legal system "does not meet the requirements of either peasants or large scale agricultural investment," the goal is to "actively encourage private initiative in production, for small as well as large scale actors" such that "all landowners will feel secure, in rural as well as urban areas." Along these lines, the MAP proposes the creation of a land bank ("réserve foncier touristique" or RFT) as a core strategy for facilitating investments in tourism.

While the MAP re-emphasizes here that "dynamic rural development and real poverty alleviation is at the core" of its endeavors, it is not obvious how this outcome will be achieved, given the document's level of generality. To be sure, the government's recognition that tourism should be treated as part of a rural economic development plan is critical, as is its sharper focus on land policy. Communities with secure property rights in land are generally in a better position to manage tourism in such a way as to gain the greater share of the benefits. Case studies have shown that the "extent to which economic empowerment of local communities takes place is intricately linked to the nature and extent of the land rights of those rural communities" (PPT, 2004, Sheet 8). In light of these findings, "decentraliz[ing] land property management at the commune (region) level," (MAP, p. 64) is a sensible strategy, not least because, unlike the methods of many international conservation organizations, it emphasizes a bottom-up approach to tourism development.

However, the challenge for Madagascar's tourism development plan in general, and community-managed eco-tourism in particular, remains: to integrate, in more concrete or explicit ways, the needs of the poor, taking into account distributional impacts on the most disadvantaged members of poor communities. An integrated approach to ecologically sustainable, "pro-poor" tourism and development would devise strategies to create stronger linkages between environmental protection and employment creation, thereby shifting the relationship between poverty reduction and biodiversity conservation from an adversarial to a complementary one. In this sense, eco-tourism has the potential to provide opportunities, rather than problems, for the poor. Finally, job quality – meaningful engagement with one's work – should not be considered a subsidiary concern. While this concept is undoubtedly subjective, an example might help illustrate the general meaning. A national park in South America employs local residents to guard the edges of the protected reserve, creating a "live border" to serve as enforcement of park rules against trespassing; the revenues generated from park entrance fees are shared among community members. This system would seem to suggest that successful conservation be measured negatively, by what people did not do (trespass), rather than what they did do (contribute to conservation as trustees of natural resources). We would encourage a more positive employment of local labor that also contributes to human development. The pro-poor tourism (PPT) literature offers some suggestions.

Pro-Poor Tourism: Issues and Practices

The concept of "pro-poor" tourism was developed by the Pro-Poor Tourism Partnership, a collaborative research project between the Overseas Development Institute (ODI), the International Institute for Environment and Development (IIED), and the International Center for Responsible Tourism (ICRT). On their website, the group defines pro-poor tourism (PPT) as "tourism that results in increased net benefits for poor people." As such, PPT is "not a specific product or niche sector but an approach to tourism

development and management. It enhances the linkages between tourism businesses and poor people, so that tourism's contribution to poverty reduction is increased and poor people are able to participate more effectively in product development" (PPT, 2004, Sheet 1). Pro-poor tourism differs from other concepts, such as sustainable tourism, whose main concerns are environmental sustainability and community involvement in natural resource management. While acknowledging that there is overlap, Roe and Urquhart claim that sustainable tourism, unlike pro-poor tourism, "fails to take into account the links between poverty, environment, and development" (Roe and Urquhart, 2001). In a word, pro-poor tourism is an approach that recognizes the necessary interdependence of environmental protection and poverty reduction.

Practitioners of PPT have stressed that tourism is not a panacea for the challenges of economic development. Its potential to contribute to poverty elimination is limited. The industry is volatile, susceptible as it is to political unrest, exchange rate fluctuations, and natural disasters (Roe and Urquhart, 2001). Madagascar's political crisis in 2002 drastically curtailed the number of international arrivals that year. Moreover, tourism can disproportionately affect the poor themselves. Increased local costs, loss of access to resources, social and cultural disruption, and displacement are some of the negative impacts.

Nevertheless, tourism has several advantages as a sector for pro-poor economic growth. First, the consumer comes to the product, e.g., the destination, thereby providing opportunities for creating linkages through the sale of additional goods and services such as handicrafts and guiding. Second, the industry is multi-sectoral, which can encourage wider participation, particularly the participation of the informal sector. Third, it has enormous potential to develop in poor, remote areas where opportunities to diversify are few. These areas are particularly attractive to tourists for their wildlife, scenery, and cultural value, which are among the few assets belonging to the poor. Communities who have few financial resources, but are endowed with natural assets, can reap benefits from their comparative advantage in eco- or cultural tourism (Roe and Urquhart, 2001). Fourth, tourism employs a high proportion of women, compared to other modern sectors. The service nature of the industry and high proportion of low-skilled domestic jobs increase accessibility to women (Ashley et al., 2000). Informal sector activity is often disproportionately female, particularly in jobs such as street vending (Shah, 2000). Finally, the tourism sector offers labor-intensive and small-scale opportunities compared with other non-agricultural activities (Deloitte and Touche, 1999).

Based on research in India, Indonesia, Namibia, Nepal, the Philippines, Zambia, and Zimbabwe, Ashley et al. (2000) identified various factors that influence the economic participation of the poor in tourism. In general, these factors highlight the economic, social, cultural, and geographic distance that separates local peoples from tourists. Creating linkages between local communities and the tourism sector will therefore depend on strategies that successfully bridge these gaps on multiple levels. A key point raised is that the informal sector, though often neglected by tourism planners, has the greatest potential for generating employment; greater attention should be paid to the needs of this sector. In addition, the following are some of the obstacles to local participation in tourism, taken from Ashley et al. (2000), that are most relevant to the present report:

- Lack of training in important skills such as language and guiding.²¹ To be effective, training programs should be attuned to these problems and design their curricula accordingly.
- Complementarities between tourism and non-tourism activities. In general, tourism diversifies livelihood options rather than provides a substitute for core activities; it is therefore important to consider the relative degree of conflict and complementarity between tourism and, for example, the seasonality of agriculture or livestock management. On the one hand, tourism often competes for time and can also cause crop damage from wildlife, while on the other hand, tourism complements these activities by providing cash for investing in herds and crops. Particularly important for countries interested in making the transition out of agriculture, employment in tourism activities develops transferable skills, while market expansion encourages the establishment of small enterprises. Understanding the relationship between the services that tourists demand and the livelihood needs and aspirations of local peoples is crucial to developing linkages between tourism and local employment.
- Tourism regulations covering tourist activities, qualifications of workers, or service standards. These often target the formal sector, but in Namibia and other places, guide training systems that exclude people without formal education, proficiency in English, or access to the city capital are being revised, and “local guide” registration systems considered.

An important point that should be raised is that the economic impacts of tourism reach beyond waged jobs or wage income. In Madagascar, where the great majority of Malagasy do not earn waged income, this point is particularly relevant. According to Ashley et al. (2000), tourism can generate four different types of local cash income. In addition to wages from formal employment, local cash income can take the form of earnings from selling goods, services, or casual labor (food, handicrafts, building materials, guide services); dividends and profits from locally owned enterprises; and collective income, including profits from community-run enterprises, dividends from private sector partnerships, and land rental paid by investors: “Each of these areas presents opportunities to different segments of the local population, but by themselves, none are sufficient to bring economic benefits to all” (Ashley et al., 2000, p. 4). All four types are therefore important for reaching different poor families. Waged employment can be a significant lift, but these jobs are generally not available to the majority of the poor, who often lack the requisite education or training. Casual earnings per person may be small, but are more widely distributed (Shah, 2000) and may be enough to make ends meet. Guide work is relatively well compensated. Collective income can, in principle, benefit all residents and is often comparable in magnitude to wage income; however, the presence of power inequities, a reality in most communities, is a significant challenge to equitable management of resources. Thus, strategies to create economic benefits for the poor would need to tackle the obstacles to economic participation discussed above. Stakeholders would do well to “maximize a wide range of employment, self-employment, and informal sector opportunities” (Ashley et al., 2000, p. 5).

In summary, the extent to which benefits from tourism in developing countries actually reach the poor is a point of contention. However, pro-poor analyses have also shown that tourism has the potential to help the poor. Tourism is labor-intensive (compared

²¹ This stems, more broadly, from socioeconomic and cultural differences – at a basic level, tourism is often such an unfamiliar concept that tourist training courses begin with a discussion of what a tourist *is*.

to other non-agricultural sectors), employs a high proportion of women, and involves the informal sector. If developed in rural or remote areas, tourism benefits can potentially reach the poor, because natural and cultural assets are their comparative advantage. There are low barriers to entry in the tourism industry, and a range of enterprises (from microenterprises to multi-national corporations) exist in the sector, potentially providing opportunities for downstream linkages in the local economy. The poor do lose in conflicts over water, land, and coast, but they also gain from unskilled and semi-skilled employment and infrastructure development. How much they gain will depend on the level of involvement of governments, NGOs, donors, and the private sector. Among the recommendations of PPT advocates to these stakeholders are the following:

- Companies can increase their local impact by doing business differently, by developing stronger economic linkages through adapting their supply chain.
- Communities can form partnerships with the private sector, using their land or resource rights as bargaining power.
- Governments can facilitate these relationships by investing tax revenues, from sources including the mining sector, in hospitality skills training; supporting local rights over resource and small business development; and investing in physical infrastructure that responds to the needs of communities in areas surrounding the tourist facilities.
- Governments can create incentives for companies to operate in pro-poor ways, through licensing and certification procedures.

9.3 Madagascar Action Plan (2006) and World Bank Tourism Sector Study (2003)

The Madagascar Action Plan reflects the recommendations of the Tourism Sector Study conducted by the World Bank in November 2003, with a follow-up in May 2005. In addition, the Bank consultants recommended a more detailed study of the linkages between tourism and agriculture as well as handicrafts. In April 2007, the final report of such a study, conducted by Global Development Solutions for the *Projet Pôles Intégrés de Croissance* and the World Bank, was published. This report conducted a value chain analysis of four strategic industries in Madagascar, including the tourism industry in Fort Dauphin, and will be discussed in the next section.

In this section, we take a closer look at the links between tourism and infrastructure, rural development, economic growth, and the environment that are explicitly made in Commitments 2, 4, 6, and 7 of the MAP.

Commitment 2

Commitment 2, “Connected Infrastructure,” prioritizes infrastructure development for key growth areas such as tourism. One specific strategy refers to the need to “prioritize development of transport and infrastructure networks and corridors linked to economic growth engines including tourism, mining and agriculture.”

- One sign of progress is the recent purchase of five locomotives by the company Madarail, announced in April 2008 (World Bank, 2008a). As many have observed, one of the main constraints to internal land travel in Madagascar is the poor condition of the country’s roads; only 20% of roads are weatherproof. Madarail’s railway system will decrease

transport costs along the rail route, decrease the number of trucks on the country's roads, and therefore decrease the number of accidents and the amount of damage to roadways.²²

Commitment 4

Commitment 4, "Rural Development and a Green Revolution," was discussed earlier in this chapter. We add here that Challenge 5 seeks to "diversify rural activities," with the specific strategy of "promot[ing] secondary activities such as handicrafts and eco-tourism."

Commitment 6

Commitment 6, "High Growth Economy," takes up the following with respect to the tourism sector:

Challenge 3: Promote full employment.

Strategy 1: Stimulate job-generating sectors.

Strategy 4: Provide vocational training to support the priority industries that contribute to the high-growth economy.

Challenge 5: Strengthen domestic enterprises, SMEs, and the handicrafts industry.

Strategies: Establish productivity support centers; transition from informal to formal sector.

Challenge 8: Intensively promote and develop the tourism sector.

Among the priority projects and activities listed under **Challenge 3** are support for job training and vocational training programs in the Chamber of Commerce, Industries and Public Institutions; developing strategies for promoting and creating productive jobs relating to SME creation, vocational training, and the improvement of informal employment; creating strategies for building and adapting local skills to the opportunities in the regions; and setting up centers for employment and training guidance in the 22 regions. Vocational training was discussed in chapter 6 of this report.

Challenge 5 promises to have a direct impact on the poor. Handicrafts are an important linkage with tourism, with an estimated 30 – 90% of revenues of some craftspeople coming from tourists (Christie and Crompton, 2003, p. 102). However, the industry is either nonexistent in some remoter parts of the island, or very undeveloped, as our analysis of Fort Dauphin will show below. The MAP states that the government has promoted SMEs since 2002 through the Chamber of Commerce, Industry, Agriculture, and Craft Industry as well as the Chamber of Profession. The centers for Promoting Craft Industry have also been strengthened. However, the productivity of SMEs and craftspeople remains low, and access to foreign markets is limited. The government also plans to increase the incentives for the integration of the informal sector into the formal sector by providing training, access to credit and technologies, and information about the market. By 2012, the goal is to decrease the informal sector's share of GDP to 12%,

²²With respect to infrastructure constraints such as air transportation, electricity, and communications, Challenges 2, 4, and 5 of Commitment 2 show that the government intends to "facilitate an Open Skies policy that increases the number of destinations, encourages competition and reduces the cost of air transport" (Challenge 2, Strategy 6); "prioritize electricity supply to key industrial estates and high economic growth engines including tourism, mining, and agriculture" (Challenge 4, Strategy 5); and "ensure efficient and affordable communication system" (Challenge 5). Work towards these goals appears to be in progress.

compared to its 2005 level of 20%, and to increase the number of created enterprises from 882 to 2,000.

In addition to these measures, we recommend that the industry establish more organized markets. Associations could be created to coordinate activities that facilitate the siting of crafts markets closer to tourists, such as areas near hotels, resorts, and lodges, in order to create linkages, previously nonexistent, between the tourism and handicraft industries. In 2003, the five largest national parks attracted 88% of the visitors, indicating that siting within national parks in particular could provide a boost to the livelihoods of local people. Finally, in line with the best practices of pro-poor tourism, it should be emphasized that handicrafts and related activities provide a complement, not substitute, to farming. The handicraft associations could work towards mitigating the conflicts that can potentially arise between tourism-related activities and agriculture, livestock, and fishing.

Challenge 8, “Intensively promote and develop the tourism sector,” was discussed briefly earlier in this chapter. Here we make connections to pro-poor tourism practices and comment on recent progress.

1. As part of the strategy to promote the “destination Madagascar” brand as a unique and superior eco-tourism destination, the website of the Office National de l’Environnement (ONE) states its commitment to “greening” the industry through hotel certification systems and eco-labelling awards and schemes. Increasingly demanded by European and Australian tourists, “green” accreditation signals that the hotel or eco-lodge meets clearly defined environmental standards. It is therefore an effective marketing tool for promoting the island. But the presence of green hotels not only enhances the island’s image; it helps preserve the natural resource base and in many cases, such as the accreditation program supported by USAID in Jamaica, can improve profitability, enhance guest relations, and build bridges to local communities. Green accreditation improves waste disposal and establishes recycling and utility monitoring programs that have resulted in long-run savings in energy and water consumption. A positive externality of accreditation is improved health and sanitation in employees’ homes and communities.
 - Madagascar’s ONE website indicates that a program has been put in place to encourage hoteliers to integrate environmental concerns in their planning. Most large hotels use the nonprofit International Standards Organization (ISO), which provides accreditation services, as does Green Globe. This represents a good step in the right direction.
2. The World Bank study (Christie and Crompton, 2003) notes that contingent valuation (CV) studies based on willingness to pay (WTP) reveal that international tourists are willing to pay more in the form of increased park entrance fees, departure taxes, or voluntary contributions to support nature and wildlife conservation. In effect, countries rich in biodiversity, such as Madagascar, provide a positive externality to the world ecosystem through their conservation efforts in national parks and wildlife preserves, and should be adequately compensated for this ecological service. Moreover, by increasing fees, the state also ensures that it receives adequate rents for the use of the country’s natural resources for *tourism* purposes. Increasing and differentiating prices where possible, countries are able to retain higher value-added of tourism receipts, while at the same time achieving their conservation goals.
 - At the time of the Bank’s study in 2003, park entrance fees were \$6 – 10, well below the \$25– 30 charged at parks of similar caliber in other countries. According to the website of ANGAP (Association Nationale pour la Gestion des Aires Protégées), the organization that manages national parks and reserves, since 2004, the fees charged at Andringitra national park, a model of eco-tourism in Madagascar, are 25,000MGA, or

15\$US, per day per international visitor, less for national visitors (1,000MGA), and more for filmmakers (200,000MGA per 15 days) and researchers (100,000MGA per month for international, 5,000 per month for national). We believe these fees can be raised further still in light of the results from the willingness-to-pay studies.

3. It is often assumed that a high growth rate of tourism receipts will itself relieve poverty. This may be true in Madagascar where rural eco-tourism is prevalent, but most international experience shows very little trickle down effects. Targeted interventions are required to ensure tourism benefits the poor.
 - Currently, ANGAP is required by law to share 50% of the revenues from entrance fees to parks with the surrounding communities for development purposes. According to the Bank, the total distributed between 1992 and 1999 was 5,060 million MF, growing annually from 53 million MF in 1992 to 1780 million MF in 1999, for a total of 458 projects. In 1994, an estimated 76,794 families benefited from these “mini-projects,” compared to 5,880 in 1994 (Christie and Crompton, 2003, p. 41). However, it is not clear how successful this revenue-sharing program is.²³ Measures for ensuring that the revenues collected are managed fairly could include arrangements with NGOs and others.

We suggest an alternative use of the revenues that would help eliminate poverty by creating jobs geared towards the poor and, at the same time, protect the environment. The idea is that the revenues from increased entrance fees to national parks, a departure tax, or voluntary contributions to biodiversity conservation efforts of wildlife preserves, like the increased room rates that can be justified at accredited, “green” hotels, should be harnessed in such a way as to create local employment for the poor. In other words, strategies should be devised to harvest and channel scarcity rent into employment-generating environmental protection. By shifting the structure of employment towards activities that benefit both the poor and the environment, we can show that the commonly accepted jobs-environment tradeoff is a false dichotomy. Examples could include jobs and training in utility monitoring, waste removal or recycling services in green hotels, or nature guides and assistants to conservation scientists in national parks and wildlife preserves. Of course, the revenues could also go towards training and employing local people in jobs that are not directly related to environmental protection and conservation, such as the provision of hospitality services. Higher-end hotels report higher maids per room ratios, reflecting the expectation of higher-quality service, as would be the case in accredited, green hotels.

Commitment 7

Commitment 7, “Cherish the Environment,” intersects with the issues we have discussed. The MAP states that “Madagascar will be world leader in environmental best practice. Local communities will be active participants in environmental conservation. We will develop industries around the environment such as eco-tourism, agribusiness, sustainable farming practices, and industries based on organic and natural products.” The government has announced plans to triple the size of its network of areas under protection

²³ The Bank reports that complaints have been made that ANGAP has not always paid the communities their fair share.

from 1.7 million hectares to over 6 million hectares over a five-year period to ensure watershed protection and safeguard endangered species, but also to benefit tourism.

- Strengthening ANGAP will be a key factor in the employment creation scheme discussed above. It is encouraging that, with the help of the Global Environment Fund (GEF), they are in the process of establishing a trust fund.

9.4 Two case studies

Andringitra National Park

Touted as an eco-tourism success, the Andringitra National Park and eco-lodge, inaugurated in 1999 with help from the government, a German development agency (KfW), and the World Wildlife Fund (WWF), is, on the contrary, a cautionary tale. The park became accessible to the public upon completion of a 47-km road whose rehabilitation was undertaken to specifically promote eco-tourism. With the participation of local residents, WWF drew up a four-point plan at the initial stages of the planning process.

- First, a “benevolent guardian association” was established. This consisted of people living on the periphery of the park at key points to “register and control” everyone entering the park. An important function of the guardians is also to “register the entry of local residents, in order to control illegal activities and conserve natural resources.” Half of the entrance fees are returned to the local residents for community development projects; guardians are paid not in cash but in “watches, notebooks and pens” (Christie and Crompton, 2003, p. 72).
- Second, a committee was created to set guidelines to preserve the environment and enhance the tourists’ experience of the local culture. Over 80% of its members are locals, with the remaining 20% consisting of private tour operators, hotel operators, government officials, and NGOs. Guidelines defining acceptable (culturally sensitive) tourist behavior were prepared for distribution to each visitor, and the Committee collaborates with WWF on an Eco-tourism Management Plan for infrastructure development surrounding the park. The Committee controls the type and extent of future hotel development and “ensures that local residents are considered for employment opportunities” (Christie and Crompton, 2003, p. 72).
- Third, a guide and porter association was established. A guide training program was created that included professional training, language training, sessions on the natural history of the area, and first aid. Statistics compiled at the park show that each international tourist employs 1.5 porters on average, and the maximum number of tourists per guide has been set at five, for “safety and communication reasons” (Christie and Crompton, 2003, p. 108). It was made clear that working as a guide or porter was a supplement, not a substitute, for farming.
- Fourth, park infrastructure in the form of 50 km of hiking trails and three wilderness campgrounds was developed by WWF in collaboration with the local residents, who acquired skills in trail design, construction, and maintenance.

To mitigate the negative cultural and environmental impacts of tourism, the Andringitra Park Management team developed three objectives: protect cultural values and natural resources; stimulate economic benefits for local residents; provide a safe and quality visit for all guests (Christie and Crompton, 2003, p. 103).

Despite the apparent synergy among local economic development, conservation, and cultural values, we have two main concerns. The first is the palpable asymmetry in attitudes towards nature and people. While efforts were made to empower local residents by including them at every stage of the decision-making process, providing training and skills, and sharing revenues, the ultimate goal seems to be conservation, not human development. The role of the “benevolent guardian association” is described as registering “the entry of local residents, in order to control illegal activities and conserve natural resources.” Implicit in the structure of the benevolent guardian association, a live (human) enforcement and surveillance system, is thus a deep mistrust of local residents who would dare trespass on pristine grounds in search of food or firewood. Nature is privileged over people, who are treated like a potential blight on the land. Moreover, benevolent guardian jobs are not meaningful in the sense that the employment of local guards to enforce park borders might cause social conflict or resentment within the community. In light of this consideration, the term “benevolent guardian” will likely offend, as those for whom conservation represents loss of access to important natural resources will recognize that the “benevolence” of their guardian-neighbors applies to the forest, not to them. As discussed in the previous section, we think a productive use of the revenues would be to provide more decent jobs and higher wages. Such jobs could also contribute to conservation in more positive ways than border surveillance. Our second concern is related to the first: inequality within the community could result in the exclusion of the poorer residents from their fair share of the benefits while placing a disproportionate share of the cost burden on them. Some case studies show that the creation of effective formalized groups, by and in the interest of the poor, can help strengthen community ties when mechanisms for accountability are in place. NACOBTA and UCOTA in Namibia and Uganda are two examples (Gerosa, 2003, p. 21).

Integrated Value Chain Analysis of Fort Dauphin

If handled carefully, eco-tourism can be an effective development tool in Madagascar. A supply chain analysis of the tourism industry in Fort Dauphin, undertaken in April 2007 by Global Development Solutions (GDS) for the Projet Pôles Intégrés de Croissance and the World Bank, sheds light on some of the important issues. Briefly, the report recommends interventions to improve domestic productivity and strengthen forward and backward linkages between MSMEs and export-oriented activities, such as tourism, as well as possibilities for integration of the domestic private sector with the regional and global supply chains where applicable (pp. 8-9).

In light of the growing demand for eco-tourism among European tourists, who make up the largest share of international visitors to Madagascar, Fort Dauphin is in an excellent position to gain if the MAP is implemented according to design. The popularity of Berenty, a private nature reserve located 85 km to the west, could be exploited to direct more people and business to Fort Dauphin. In a review of package tours offered by tour operators, GDS found that almost all trips to southeastern Madagascar included a trip to Berenty; it is estimated that at least 60% of all airport arrivals visit the park. Yet many of these groups also never set foot in Fort Dauphin (GDS, 2007, p. 134). One major impediment lies in the poor roads leading to the region. Figure 33 of the MAP indicates that the country plans to convert the roads in question from “bad” to “good” by 2015. This will be critical to the development of the southeastern region as an eco-tourism supplement to Berenty.

The major tourism support industries in Fort Dauphin, as elsewhere, are handicrafts, food supply, nonfood hotel supply, and transportation. GDS reports that the handicrafts industry is “negligible” and, as an input to hotel supply, “nonexistent.” Only two hotels sold handicrafts, and within these, few were on display and most were not locally produced. There is no tradition of handicraft artisanship in Fort Dauphin. A positive development is the efforts of Cielo Terro, an NGO established in 1999 to help develop the industry, but Cielo Terro’s business potential is severely limited by its location and personnel shortages (GDS, 2007).

Most food supplies to hotels and restaurants in Fort Dauphin come from elsewhere (Tanambao). Only in some cases are food items purchased directly from the source. The only perishable food item that consistently comes from local sources is fish, though sometimes fish is purchased through intermediaries from surrounding areas. Turning to nonfood hotel supply, some products (carved wooden furniture, wooden doors, windows) are sourced locally, whereas others (glass for windows, upholstered furniture, kitchen pots) come from Antananarivo. Kitchen items are generally imported.

Most tourists landing in Antananarivo will choose air travel, rather than taxi brousse or a rented 4x4 vehicle, to reach Fort Dauphin. Overland travel can take a very long time – more than a week during the rainy season. However, air travel is expensive, as Air Madagascar exercises a monopoly over internal flights. Once in Fort Dauphin, the options include small tour bus (for groups), taxi, taxi brousse, or rented 4x4 vehicles.

The value chain analysis for Fort Dauphin is based on a typical, centrally located hotel with a restaurant and a tourist profile characterized by independent travelers traveling in pairs, either from Madagascar or Europe. These tourists typically stay four days on average and engage in eco-tourism activities such as a visit to Berenty and other parks in the area and Libanona beach. The form of transport assumed in the analysis is a rented 4x4 vehicle and locally embroidered tablecloth was selected as a handicraft for the purpose of the analysis, though this is not realistic. Most tourists, particularly Malagasy, do not purchase handicrafts in Fort Dauphin; most hotels do not even sell handicrafts.

Results from the complete value chain analysis show that air transportation, inland transportation, and accommodation (including food and beverages) are the key drivers in the chain. The largest cost is the flight from Antananarivo to Fort Dauphin, comprising 47% of the total. The second leading cost driver is local overland transport, at 33.5%. The value chain analysis for internal transport focuses on a rented 4x4, and shows that the largest cost item (69.7%) is overhead, comprising mainly of owner's income (42.1%) and depreciation (19.3%). The latter is explained by the fact that drivers estimate their vehicle will be completely depreciated in 7 years due to poor road conditions (GDS, 2007, p. 148).

Accommodation is the third most important driver of costs in the value chain, representing 11.4% of the total. Since the great majority (82%) of the hotels have on-site restaurants, the cost of meals/beverage is a significant part (56.1%) of a hotel's operations. It is not apparent in the figure, but food and beverages account for 91.3% of the inputs (p. 149). As noted above, most food and beverages are shipped from other parts of the country; prices, especially vegetable prices, are high due to the cost of inland transport. Approximately 90% of the vegetables come from Antsirabe and Finarantsoa (GDS, 2007).

GDS calculated the transport cost of goods delivered from Antananarivo at \$0.11/km/ton, a figure which compares unfavorably to those in other countries such as India (\$0.019), Tanzania (\$0.057), and Kenya (\$0.059). One trucking company estimates that transport costs may be reduced by as much as 30% if roads are rehabilitated. In addition, initiatives by IFAD and CARE are currently working with local suppliers to provide vegetables to hotels. These activities should help decrease the food and beverage bill for hotels as well as create more employment for local farmers.

Finally, regarding overhead costs for this hotel, which comprise 26.9% of its total costs, loan repayment (57.1%) and utilities (31.0%) are significant. Utilities include water and electricity, and the latter is particularly expensive while its supply is not continuous. Electricity costs in Fort Dauphin are among the highest in Madagascar and extremely high compared to other places in the world; for example, the cost of electricity per kilowatt-hour is \$0.04 in South Africa and \$0.20 in Fort Dauphin.

The recommendations of the GDS report fall into the categories of improved data collection, affordable financing, improved tourist information, food supply, handicrafts

development, road improvements, and hotel staff training. Focusing on food supply, handicrafts, and hotel staff training, it is clear that strengthening these linkages with eco-tourism could potentially create opportunities, including jobs, for the local economy. We emphasize, again, that studies show tourists are willing to pay more for eco-tourism; thus, a green certification or eco-labeling scheme for hotels and tourist products could be put in place to attract more visitors to Fort Dauphin, especially those visiting Berenty park, and provide a justification to charge more for ecological, and ecologically supportive, amenities. Increased tax revenues and fees (from the tourism sector and other high-exporting sectors, such as mining) could be channeled into employment and vocational training in areas such as hospitality services, recycling and waste removal efforts, handicrafts, or the new experimental vegetable plots established by CARE International (GDS, 2007).

9.5 Conclusion

This chapter concentrated on the potential role of eco-tourism in poverty reduction, employment, and sustainable growth in Madagascar. Case studies and good practices stemming from the PPT literature indicate that it may be possible to harness revenues generated by eco-tourism to create decent work for the poor that may also contribute to, rather than conflict with, environmental protection and biodiversity conservation. However, in order to realize this goal, the effects of certain constraints should be mitigated, and economic linkages to tourism support activities strengthened. At the top of the list of constraints are transportation and infrastructure, particularly the monopoly of airline companies and the poor condition of roads, but also including telecommunications and electricity. This is followed by issues pertaining to land tenure rights. The government is in the process of establishing special land reserves (*réserve foncière touristique*) for tourism purposes, and the World Bank is advocating that these RFTs carry the same benefits as EPZs to attract more investors, presumably for high-end tourism such as luxury resorts on the Madagascar coast. The Bank also emphasizes the need for an international flagship hotel or eco-tourism lodge to promote the island and raise standards through technology transfer.

However, while RFTs may help attract investors and developers, that they will benefit either local communities or the environment is not at all automatic. While these kinds of establishments bring in more jobs than do smaller outfits, they also lead to very high economic leakages, as higher standards often translate into imported goods and services, such as expatriate labor. We also caution that the historical record shows that land acquired from local peoples with the promise that tourism development will bring benefits to them and their community is often put to contrary uses. More often than not, powerful outside interests profit at the expense of the community, and even in cases where the community receives revenues, the money goes into the pockets of local elites.

For these reasons, we support Madagascar's pledge, outlined in the MAP, to develop eco-tourism, but within a poverty-reduction framework. In addition to building local governance institutions so as to democratize control over tourism assets, including natural resources, and ensure that benefits are distributed equitably, we recommend that a coordinated effort be made to integrate environmental protection, employment creation, and poverty reduction. In this chapter, we mentioned increased park entrance fees, higher departure and other taxes, and international compensation for the positive externalities provided by the country's biodiversity conservation services to the world's ecosystem. In addition, green certification systems for hotels and lodges and eco-labeling schemes for parks and products could provide value-added to these services. The revenues generated by these efforts, in addition to tax revenues generated by the mining sector, could be channeled towards creating decent work for the poor. Concern for the so-called environment versus jobs tradeoff may be dispelled by shifting the structure of employment towards activities that are good for the environment, such as waste disposal and recycling services at hotels,

training park guides, or educating locals in conservation practices. In addition, revenues may be harnessed for the purpose of training locals in hospitality services or language skills. Finally, resources should be devoted to strengthening links in the supply chain, particularly in the agriculture, livestock, fisheries, and handicrafts sectors.

Appendix

The Madagascar Input-Output Model

Data

The primary source of data for the analysis was the 2001 Madagascar Input-Output Tables. The input-output tables show the supply and uses of goods and services produced for 31 industries. These inter-industry flows are expressed in monetary terms (Ariary). The industries included: agriculture, hunting and livestock, forestry and forest products, fishing, mining and extractive industries, agro-processing, tobacco, garments and textiles, wood products, paper products, chemicals, rubber and plastics, construction materials, metalworking, machinery and equipment, other manufacturing, energy, construction, trade, hotels and restaurants, transport, communications, financial services, insurance, business services, administrative services, education, health, social services, recreation and entertainment, and other services. In addition, the tables include final demand for the products of each industrial category: consumption demand, fixed capital investment, exports, government purchases, and changes in inventories.

One focus of the input-output analysis featured in the report is the impact on employment. The Input-Output tables do not include information on the level of employment by industry. We therefore used the 2001 Madagascar household survey (*Enquête Auprès des Ménages*) to estimate levels of wage employment (i.e. employment relationships characterized by an employer and employee) by industry. To correct for the problem of partial employment, in terms of hours of work, we adjusted the levels to reflect 'full-time equivalents'. Any individual working at least an estimated 1,920 hours per year would be considered to be full-time. For individuals working less than 1,920 hours, their full time equivalent would be their actual hours divided by 1,920. Annual hours were calculated by scaling up reported work time from the survey data.

The total full-time equivalents in wage employment were then used to calculate employment-output ratios for the industrial categories in the Input-Output tables. In some cases, the industrial categories in the household surveys did not exactly match those in the Input-Output tables. When this occurred, we aggregated across industrial categories to make the two sets of industries compatible. A common employment-output ratio was then assigned to all sub-categories.

Analysis

From the 2001 Input-Output tables, we derived a standard matrix of input-output coefficients. Input-output coefficients indicate the distribution of one unit (i.e. one Ariary) of total industrial inputs used by each industry across all domestic industries which supply inputs into domestic production (e.g. the input-output coefficient would describe what *fraction* of the inputs used in agro-processing come from the agricultural sector). We incorporated an endogenous household sector into the matrix of coefficients, in which household consumption is assumed to be financed out of the value-added (i.e. income) produced in the economy.

Standard manipulations of the input-output model were used to calculate output multipliers. Specifically, we began with the following identity:

$$(1) X = AX + f$$

In which X is a vector (in our case, 31×1) of industry output, A is the matrix of input-output coefficients (31×31), and f is a vector of final demand (31×1). The identity simply states that total industry output must equal industrial demand for that output plus final demand. Note that, because we included an endogenous household sector, the matrix A and vector X also incorporate information on household consumption and value-added by industry. Equation (1) can be solved for the vector X to yield the following expression:

$$(2) X = (I - A)^{-1} f$$

Equation 2 allows us to determine the impact on output produced in Madagascar (by industry) due to a change in final demand. Since the expressions also incorporate information on value-added, we can also determine how value-added would change when final demand changes. These calculations provide us with the output and value-added multipliers featured in the report.

To derive wage employment multipliers, we simply use the employment-output ratios described above and Equation 2.

Note that this input-output methodology contains some important assumptions. First, production relationships are assumed to be fixed. Second, production faces no supply-side constraints (it depends on changes in final demand only). Lastly, the model, as formulated here, assumes that prices do not change. Because of these limitations, we do not use the model to produce long-run economic forecasts. Instead, we restrict our usage to exploring the industrial structure of Madagascar, the relative contribution of different sectors to the domestic economy (taking into account the linkages between industries and import leakages) and the potential for employment-intensive growth.

The informal sector and informal employment (as discussed in Chapter 2) are reflected in these estimates to the extent that the system of national accounts and Input-Output tables accurately capture these relationships. However, we have some residual uncertainty about the degree to which the national accounts and Input-Output tables do capture these relations which we could not resolve with the information we had or were able to acquire.

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