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**Final report  
Cornell University - Economic Analysis**

**Part II:  
Summary of analytical findings**

Part II of the final report summarizes the major findings that come out of the analytical work of the Ilo program. The structure of the report follows the structure of the different themes that were planned to be studied at the outset of the Ilo program, i.e. 1/ poverty: dynamics and causality; 2/ the distribution of social service delivery; 3/ urban labor markets and 4/ agriculture and poverty. The complete reports of the fifteen analytical deliverables can all be downloaded from the webpage: [www.ilo.cornell.edu](http://www.ilo.cornell.edu) or can be obtained in the INSTAT or FOFIFA office in Antananarivo (in English and French).

# 1. POVERTY: DYNAMICS AND CAUSALITY

## 1.1. Poverty dynamics

The poverty dynamics study (Razafindravonona et al., 2001) takes advantage of a rich set of three nationally representative household surveys conducted by the Malagasy national statistical office (INSTAT), to examine changes in poverty in Madagascar from 1993 to 1999. The timing of this work is opportune in light of the Madagascar government's participation in the HIPC debt-relief initiative and its efforts to develop a poverty reduction strategy. It should also contribute to a better understanding of the nature and evolution of poverty in this Indian Ocean country, and to provide insight into poverty alleviation efforts.

The incidence of poverty in Madagascar rose from 70 percent in 1993, to 73.3 percent in 1997, before falling modestly to 71.3 percent in 1999. The pattern of change is consistent with macroeconomic indicators that saw real per capita GDP increase between 1993 and 1997, and fall thereafter following the tightening of both fiscal and monetary policies. These changes, however, were not equally felt around the country, as Antananarivo, Taomasina and Toliara provinces fared well given declines in poverty, and as Antsiranana, Fianarantsoa and Mahajanga experienced swelling among the ranks of their poor. Even after controlling for determinants of poverty such as household demographics, education levels, sectors of employment, size of land holdings, and environmental shocks, we remain unable to explain much of the observed regional variation in poverty with the data at hand.

A clear finding that emerges of this study is that poverty in Madagascar is primarily a rural and agricultural phenomenon. While urban poverty rates are admittedly high, they responded to macroeconomic shocks – increasing from 50 percent to 63 percent between 1993 and 1997, before falling back to 52 percent in 1999 – and pale in comparison to the high rates observed in rural areas. What is worse, rural poverty rose persistently throughout the entire period between 1993 and 1999. With extremely high headcount ratios of over 75 percent, and with more than 8 out of every 10 poor persons living in rural areas and/or involved in agricultural activities, addressing poverty in these areas is crucial to improving the well-being of the majority of the people in Madagascar. Given the lack of response in rural areas to the fiscal reforms that have established a more open and competitive market since 1996, it is evident that liberalizing the market, while necessary, is not sufficient to address the issue of rural poverty. There exist severe structural constraints that hinder the abilities of the rural poor to escape poverty. This is captured in part by the strong correlation found in this study between “remoteness” (as measured by various proxies) and high levels of poverty. Development of rural infrastructure is one step that needs to be taken toward removing these constraints and toward alleviating the degree to which many households are “remote.”

Alternative sources of income for farming households, such as non-agricultural enterprises, were found to contribute to the alleviation of poverty among rural households between 1993 and 1999. But the degree to which the market can absorb such activities is

uncertain, as shown by decreasing returns to such activities in urban areas. As such, efforts need to be placed on improving the income earning capabilities of the more than 75 percent of the population involved in agricultural production. This is especially true given that the findings in this study suggest that the productivity of land owned by small holders fell. As demographic pressures lead to shorter fallow periods and decreasing productivity of existing lands, small-scale agricultural land owners have increased their holdings. Qualitative analyses suggest that the observed agricultural extensification is leading to the use of less fertile and more environmentally fragile land. While the available data does not permit the statistical testing of this hypothesis, the evidence presented in the report is consistent with the notion that an emphasis needs to be placed on increasing the productivity of small-scale farmers to help them escape the vicious cycle of decreasing productivity leading to exploitation of fragile lands, which leads to declining productivity, and so on. In addition, the introduction and/or strengthening of family planning services can help to alleviate the demographic pressures that contribute to this extensification and its consequences.

Finally, improving the quantity and quality of educational services, especially at the primary level, will go a long way toward alleviating the burden of poverty in both urban and rural areas. Despite the low rates of return to primary and secondary levels of education with the present quality of schools, the extremely modest improvements found in these returns between 1993 and 1999 were also shown to have a significant impact on alleviating poverty. Efforts in this direction have already been made as evidenced by increasing enrollment rates of children age 6 to 14, and with a central position for education in the country's poverty reduction strategy. Nonetheless, many gains remain to be realized in terms of both access to schooling and quality of teaching.

## **1.2. The incidence of indirect taxes**

To analyze to what extent government's fiscal policy contributes to a more equitable distribution of resources, the incidence of indirect taxes was analyzed (Rajemison and Younger, 2003). Our analysis uses a new method based on both household survey data and an input-output table to assess tax incidence in Madagascar, with special emphasis on taxes that fall primarily on intermediate inputs rather than final goods and services. We use this method to analyze the impact of Madagascar's recent tax reforms. We find that the direct effects of Madagascar's changes in tax policy in the late 1990s were not regressive. Changes in indirect taxes were roughly neutral, while the increasing share of direct taxes on wages in households' overall tax burden made the system slightly more progressive. The one major tax change that was regressive was the increase in taxes on kerosene, a product with a very low income elasticity of demand.

Despite this conclusion, we do find that the burden of taxes in Madagascar shifted toward the poor. This was not due to changes in tax policy, but rather to a shift in the pattern of consumption of the poor out of lightly taxed food and informal sector items and into more heavily taxed formal sector goods. This may be a consequence of the poor's improved standard of living, which brings with it a greater (relative) share of the tax burden.

In terms of methods, we have found that using the input-output table to map taxes on intermediate inputs to final consumers makes a significant difference in our analysis of tax incidence. In particular, petroleum duties, especially those on gasoline and diesel, are significantly less progressive than the pattern of final consumption suggests. Nevertheless, taxes on gasoline and diesel (but not kerosene) remain among the most progressive taxes in Madagascar, even after accounting for the indirect effects on the prices of goods that use these products as intermediate inputs.

### **1.3. Evaluation of potential motors to pull Madagascar out of poverty**

The impact of four different types of investments was evaluated through simulations of a CGE (Computable General Equilibrium) Model. The four motors evaluated each generate different outcomes (Dorosh et al., 2003). Two in particular – agricultural research and road investments – directly target poor rural households. In addition, any activity that stimulates productivity in the production of basic food staples will likewise benefit poor urban consumers. The two other motors – the export processing zone and tourism – favor primarily urban households, both poor and non poor. Given its more dispersed nature, tourism also generates significant benefits for the rural poor. Thus, each motor has a different role to play in the national battle for poverty reduction.

The question of how to set priorities will hinge on a comparison weighing measured benefits of each motor with its costs. The question of *costs* must be considered in order to complete the process of formulation, selection and programming public policy choices. We leave it to specialists in each technical area to add estimates of cost envisaged for each specific case considered.

While awaiting these complementary data, we can say with certainty that the spark plugs that will make each motor run are investments – in infrastructure, technology and equipment. If one wishes to change the dynamics currently under way, then someone must invest. They must invest to assure the financial, human and technical means that will permit workers to become more productive in the future.

Both public and private actors have a role to play. Agricultural research and road investments remain public goods. Because they cannot capture the full benefit of these investments, private firms will never invest sufficiently in these activities. But in the export processing zone and in tourism, the principal investors will be private. The role of public authorities will be limited to assuring a stable, favorable investment climate and providing the infrastructure – air transport, efficient customs services, ports and roadways – necessary to ensure the smooth functioning of these export activities.

The consolidation of an enabling environment favoring private investment in the export processing zone and tourism sectors constitutes a key campaign in the battle against poverty in Madagascar. A parallel campaign in a broad-based attack on poverty will require targeting a series of strategic public investments. These will demand a series

of more detailed evaluations to enable selection of specific priority investments. In the agricultural realm, rice and cassava dominate as key priorities in any battle against poverty. For rural roads, however, government cannot tackle all sites at once. Therefore, it will be necessary to examine regionally which are most apt to trigger important production responses in rural zones. An evaluation of costs and comparison with anticipated benefits will enable necessary prioritization of public road investments.

A private-public partnership of this nature which succeeds in igniting these four motors would form the core of a powerful four-cylinder economic growth engine. Working in combination, these four activities could achieve an appreciable reduction in both rural and urban poverty in Madagascar.

## 2. THE DISTRIBUTION OF SOCIAL SERVICE DELIVERY

### 2.1. Overall findings

Our analysis of education and health services suggest strong differences in access along several important socioeconomic dimensions (Glick and Razakamanantsoa, 2001). Rates of utilization of almost all the services are higher for the well-off than for the poor and for those in urban areas relative to those in rural areas. In some cases the disparities are quite large. For example, only 56 percent of children age 6 to 14 from the poorest expenditure quintile were attending school (public or private) in 1999 compared with 82 percent for the top quintile. Enrollment rates are 15 percent lower for rural children than urban children in this age category. Disparities by income level and rural vs. urban location are also found for formal health consultations and prenatal care, though these tend not to be as pronounced as for schooling. On the other hand, for both education and health services, no notable gender differences exist in coverage

Looking at changes over time, a bright spot is that primary enrollments have apparently risen significantly after stagnating during the early to mid-1990s. Furthermore, this improvement has occurred in rural areas, which are poorer, thus narrowing (but far from closing) the gap in the enrollments of poor and wealthy children. Gross primary enrollment ratios appear as good or better than the average for sub-Saharan Africa, while secondary gross enrollments are near the average. However, both remain far too low, and well below the levels achieved in Madagascar two decades ago. The implication is that, despite recent improvements, the average level of skills of the country's workforce is declining and will continue to do so. This obviously does not bode well for Madagascar's development prospects.

A smaller improvement in coverage was seen for vaccinations: the share of young children receiving at least one (complete) immunization rose from 65 to 75 percent, while the share getting all 4 vaccinations rose from 20 to 26 percent. The former change appears to be the outcome in part of the AVA campaign for vaccination against polio, indicating that coverage for immunizations will respond positively to such programs. Less favorably, there was a small decline in the share of pregnant women getting formal prenatal care, though at the same time these services became somewhat better targeted to poor women.

Overall, the changes in utilization rates for services between 1993 and 1999 were modest, as one would expect given the absence of major changes in per capita income and poverty in Madagascar during the period. It is true, of course, that coverage (utilization) rates reflect not just demand, which incomes would affect, but also the supply of services, which for the predominately public services discussed here would be determined by government policies. One sector where there have been major policy initiatives since 1993—involving most importantly, decentralization and cost recovery—is health. Based on informal evidence, it is likely too early for decentralization to have had major effects on service delivery. On the other hand, our household level data on the

cost of care confirms that cost recovery is being implemented more than in the past. While trends in the EPM data in the use of health services are not conclusive, the demand for care appeared to have been no lower in 1999 than in 1993 and by some measures was actually higher. There is the possibility of a decline during the 1997-1999 period, though in the context of a modest longer-term increase in utilization. It is of course important to follow up this analysis with continued monitoring. All in all, it will probably require more time to assess the full effects of the recent changes in health sector policy.

Our analysis of the incidence of social services yields results in line with evidence from other countries in the region. Many, in fact most, social services are progressive in the sense that they are distributed more equally than income (proxied by expenditures). On the other hand, with the possible exceptions of primary schooling and prenatal care, no service meets the stronger criterion of per capita progressivity and some are actually per capita regressive. The latter means that upper income individuals receive a disproportionate share of the benefits. In discussions about targeting social services to the poor, it is usually the per capita criterion that, explicitly or implicitly, is being applied. From this perspective, social spending for the most part would not be considered pro-poor in Madagascar. We can put this another way by saying that even though many services do redistribute resources to the poor, they are far from being equivalent to targeted income transfers to the poor.

## **2.2. Options for making social spending more progressive in Madagascar**

### *General lessons from the EPM*

In principal, the best method for insuring that public spending on a service is targeted to the poor or to those who need it most is means testing: information on the household incomes or assets of potential program participants would be used to determine their eligibility for a service and/or the appropriate subsidy (or fee) level. As is well known, however, means testing of individuals or households is very difficult to carry out administratively as well as politically, and where it has been tried in Africa it has been mostly unsuccessful (see Hamner et. al. 1999). Still, the results of this study do point to a number of ways in which the incidence of public expenditures can be improved.

First, standard fiscal incidence analysis suggests that overall public spending can be made more progressive by lowering the cost (i.e., increasing the subsidy) of services used by the poor while raising the cost (reducing the subsidy) of services used by the rich. If there are no major changes in demand, the changes in the subsidies will be distributed approximately in proportion to current demands for each service, so the poor benefit relative to the rich.<sup>1</sup> In health care, this suggests that a progressive strategy for cost-recovery would be to impose higher charges at hospitals, which are used more by the

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<sup>1</sup> Note that targeting by type of service can be considered a crude form of means testing: we are identifying the poor based on the types of services they consume rather than their incomes.

well-off, than at basic health care centers, which are the primary source of care for the poor.<sup>2</sup>

In education, university enrollment is dominated by individuals from the top expenditure quintile, and secondary enrollments are also highly skewed toward the rich. Unit (per student) subsidies at these levels are very high relative to primary schooling, even in comparison with other countries in the region, with the result that the distribution of overall education spending in Madagascar is highly inequitable. A more pro-poor pattern of education spending could be achieved by reducing the unit subsidy at the secondary and university levels while increasing it for primary, where participation of the poor is highest. From this perspective the shift in the education budget in the last decade away from university toward lower levels has been a favorable development. However, the ultimate effect on the progressivity of public education expenditures will be a function of whether primary or secondary education has benefited the most from the reallocation in resources. At least since 1994, the relative shares of primary and secondary in MinESEB expenditures on salaries as well as investment appear to have been stable; had primary instead increased its share, greater positive effects on equity would have been realized.<sup>3</sup>

By similar reasoning, investments in improving the quality of services will increase the progressivity of social spending if they are directed at the services the poor use the most. In health, this would mean directing quality improvements (increased drug availability, more or better-skilled personnel) toward rural basic care centers instead of, or relative to, urban-based hospitals. This is an intended outcome of the reallocation of resources and administrative control to health districts under the National Health Policy, though as noted, practical barriers to implementation have so far limited the effectiveness of the policy. In education, improvements in school quality at the primary level will be more pro-poor than improvements at secondary and post-secondary levels.

#### *Expanding access: removing constraints on the poor's participation*

The key insight informing the discussion in the previous section is that, for a fixed level of public resources and taking the existing patterns of demand of the rich and poor as given, budget reallocations among different types of services can make social spending more progressive. This is a simple and powerful guide to policy, but it does not go far enough in addressing Madagascar's needs. Both current budgets and—certainly—existing patterns of demand are far from ideal: no one would disagree with the assertion that Madagascar's poor currently make inadequate use of education and health services. In fact, when policymakers (and analysts) talk of making social spending more pro-poor, they typically mean an *expansion* of services to the poor.

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<sup>2</sup> This policy prescription comes with the caveat that, while it is globally true (i.e., at the national level) that health spending would become more equitable, such a policy may penalize some urban poor who rely on hospitals for their care.

<sup>3</sup> In fact, based on analysis of personnel data, World Bank (2000) argues that secondary has probably benefited more than primary.

Policies to achieve this goal have to be designed carefully. It is not enough to simply set a target for an expansion of primary enrollments or basic health care consultations, despite the fact that these are the services the poor currently use the most intensively. The essential problem is that the rich also consume most types of public services; hence it is possible that they rather than the poor will “capture” (in the terminology of Lanjouw and Ravallion 1999) the increases in the benefits.<sup>4</sup> This illustrates again the importance of distinguishing the current or ‘average’ incidence of a service, which may be somewhat tilted toward the poor, and the marginal incidence, which need not be. In cases where the objective is to increase the poor’s use of a service that currently is used primarily by the non-poor—for example, secondary education—the problem of preventing capture by the latter looms even larger.

To increase utilization by the poor—to direct the marginal benefits to them—policy must explicitly address the constraints that inhibit the poor’s participation (Castro-Leal et. al. 1999). In Madagascar, one such factor clearly is the inaccessibility of health facilities and (secondary) schools. In rural areas health facilities are usually far from an individual’s place of residence, and demand analysis has shown that greater distance reduces the likelihood of seeking treatment when ill (Glick et. al 2000). Similarly, distances to lower and upper secondary schools in rural areas are typically quite large and this has been shown to have a strongly negative effect on enrollment. Since rural areas are also poor, a clear implication for policy is that increasing the presence of facilities in rural areas will disproportionately increase the poor’s use of these services.

Distance is not the only major constraint, however. Primary school enrollments remain significantly lower for the poor than the non-poor, for rural areas compared with urban areas, and in some provinces relative to others—despite the fact that almost every community throughout the country has access to a local public primary school. However, the quality of such schools is generally very low, and parents’ enrollment decisions for their children are sensitive to primary school quality (Glick et. al. 2000). Therefore directing school quality improvements (more or better trained teachers, supplies, etc.) to rural areas, or rural areas in the poorest Faritany, will also disproportionately raise the participation of the poor. The same is true for investments in the quality of rural basic health services.

A third important barrier is cost. For the poorest households, the direct and indirect costs of schooling or seeking health care can make up a non-trivial portion of household consumption expenditures. Evidence from a number of countries, including Madagascar (Glick et. al. 2000) indicates that the poor are more sensitive than the well-off to the cost of services. All things equal, therefore, policies that raise the costs to households of using education or health services will reduce demand for the poor more than the non-poor, something that policymakers should always be aware of when contemplating changes in user charges. In practice, all things are not usually equal,

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<sup>4</sup> Some services are not likely to be of interest to the well-off, for example, adult literacy campaigns or nutrition programs that require a large commitment of time on the part of the recipient household. Expansion of these services can be assured of primarily benefiting the poor. However, such examples are the exception in developing countries.

because revenue from fees may be used to finance much needed improvements in services, such as greater drug availability. Therefore the net effect on participation by the poor, in absolute terms and relative to the non-poor, is uncertain. In the case of Madagascar's health sector cost-recovery, as noted, it may be too early to tell what the results will be. The most we can conclude at this point, again, is that careful monitoring both of changes in service quality and the poor's use of health facilities must continue as implementation of the new policies proceeds.

### *Poverty mapping and targeting*

Although geographical targeting in the forms recommended above—directing service expansion or quality improvements to rural areas—will disproportionately benefit the poor, it remains a crude and relatively inefficient form of targeting. Some rural areas, even within the same province, are poorer than others, and within a rural area there are poor and non-poor who would gain equally. However, new developments in poverty mapping techniques, currently being applied in Madagascar as in a number of other countries, promise to improve policymakers' ability to target the poor. The approach will combine national census information with the EPM household survey data.<sup>5</sup> The latter contain the detailed information needed to construct welfare indicators such as household consumption and hence poverty lines, but use too small a sample to estimate poverty rates at a level of disaggregation beyond simple rural and urban breakdowns within each Faritany. Census data do not have this problem as they cover the entire population, but they do not contain the information needed to calculate the welfare indicators. The method imputes welfare (consumption) to all households in the census using regression results for consumption from the EPM based on a set of household characteristics common to both surveys; from these estimates poverty rates can be calculated at highly disaggregated levels. This in turn will make it easier, subject to administrative and political constraints, to direct public expenditures on services to the poorest communities.<sup>6</sup>

### *Private sector growth and public spending progressivity*

A quite different route to greater progressivity in social spending than targeting the poor directly is to get the well-off to use private providers. As noted, a major problem with targeting expansions or improvements in public services to the poor is that the non-poor also currently use these services. If the rich can be induced to switch from public to private services, the share of the poor in total public spending will automatically rise, and as long as the overall budget is maintained, coverage and/or quality for poor users can be increased as well. In environments where the private sectors in health and education have been held back by government overregulation or outright prohibition,

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<sup>5</sup> See Mistiaen et al. (2003) for a general description and application of the method to Madagascar.

<sup>6</sup> The initial attempt at poverty mapping for Madagascar, conducted by INSTAT, will combine the 1993 census with the 1999 EPM. It is planned to update the poverty map using the 2003 census and the upcoming 2001 EPM. The latter has been designed to be more compatible with the census questionnaires to facilitate the combining of the datasets.

simple legislative or administrative changes could free the private sector to grow to meet the demands of affluent consumers.

Certainly, the well-off in Madagascar, as elsewhere, are more likely than the poor to use private providers. However, the potential for encouraging private sector growth as a means of making public spending more progressive may be limited. Private primary and secondary schools already play a more prominent role in Madagascar than in most African countries. For health care, the share of private providers in total consultations is about 33 percent, on par with the average for the region noted in Castro-Leal et al. (1999). However, Madagascar stands out because these private providers are (to the best of our ability to tell from the data) overwhelmingly for-profit providers rather than NGOs or charitable organizations. This suggests that rather than being repressed, the country's private health and education sectors are relatively well developed and probably already reflect true market demand. Therefore, short of heavily subsidizing private providers—which contradicts the objective of increasing the progressivity of public spending—the avenues for policy in this area are unclear.<sup>7</sup>

Since we have devoted so much attention to policies to improve equity in public spending on services, it is appropriate to add the reminder that equity should not be *only* criterion for investments in education and health. In many cases necessary investments will favor the non-poor, at least in terms of their first-round effects. For example, economic growth will require high as well as low-skilled workers. Thus there is a rationale for spending to improve the quality of post-primary schooling even if most of the direct beneficiaries will be children from affluent families. Since economic growth will also benefit the poor, however, second round effects may be significantly pro-poor. In the same vein, subsidizing urban hospitals may benefit the well-off more than the poor but hospitals are also important as training sites for medical personnel. Many of these will work go on to work in primary care facilities that serve the poor, so again there are potentially large second round effects that help the poor.

Finally, expansions of services (as opposed simply to budget reallocations) obviously will require additional public resources. When compared with regional averages, spending on social services in relation to GDP is low in Madagascar. However, there is some cause for optimism here because of the debt relief provided to Madagascar under the Heavily Indebted Poor Country Initiative. A basic premise of HPIC is that resources made available from debt relief will be channeled into spending to reduce poverty. This together with Madagascar's explicitly stated commitment to poverty reduction should result in greater as well as better directed social spending on education and health.

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<sup>7</sup>Currently in Madagascar the government does provide some grants to private schools, but the share of these subsidies in the education budget is less than 1 percent (World Bank 2000 p. 73). In health, it has been proposed that the government subsidize living expenses of private doctors who agree to practice in remote rural areas, but the objective here would be to subsidize the access of the poor, not the wealthy, to doctors' services.

### 3. URBAN LABOR MARKETS

In this section we draw together the findings of the labor market study (Glick et al., 2003). The discussion is organized around the following key themes: trends in labor force participation and structure of employment; trends and determinants of earnings; gender in the labor market; and impacts of Zone Franche expansion.

#### 3.1. Trends in labor force participation, unemployment, and the structure of the urban labor market

The share of the population that is economically active is higher in rural areas than urban areas, and men's participation is higher than women's. Reported unemployment is virtually non-existent in rural areas, but there is likely a substantial degree of underemployment or disguised unemployment in the form of low hours or low productivity. Unemployment in urban areas, in contrast, was high in 1993, especially in the capital Antananarivo, but fell to low levels by 2001, reflecting the much improved economy.

The Madio labor force surveys for Tana indicate that the size of the labor force (in relation to population) was relatively stable during 1995-2001. In part reflecting low levels of rural to urban migration, there were essentially no changes in the characteristics of the urban Tana labor force with respect to sex, age, and schooling during this period.

Impacts of the country's political and economic crisis of the first half of 2002 can be seen in the last Madio urban labor force surveys for Antananarivo, collected during the last half of 2002. Among men in the labor force, unemployment increased from 5% in 2001 to 7.5% in 2002. Overall, however, the rise in unemployment and decline in the number of individuals working are less than expected given the proximity of the survey to the crisis period. The data record some other—again not very dramatic—reactions to the crisis. There was an increased tendency on the part of women to work secondary jobs, perhaps in response to reductions in the earnings or hours of work in their primary jobs (for women, average monthly hours in primary employment was 12 hours lower in 2002 than 2001), or to a reduction in their spouse's earnings.

With respect to the structure of the urban labor market, Madagascar is notable for the relatively small size of the public sector. Even in the capital, public administration and public enterprises together account for only 16% of all employment and 24% of all wage employment. Further, the share of public sector employment has fallen rather sharply since the early 1990s, especially for men.

The most dramatic development in the urban labor market, however—at least for the capital city—has been the growth of employment in the recently created export processing zone (Zone Franche). Data for Tana over 1995-2001 reveal a fairly remarkable transformation of female employment patterns – and to a lesser degree, male employment patterns—during a relatively short period. Women shifted out of private informal wage employment and into formal employment in Zone Franche enterprises,

which rose from 5% to 15% of all female employment. In contrast, employment growth in the rest of the formal private sector has been weak, doing no more than keeping up with the increase in the size of the economically active population.

Although the dynamism of the export processing zone in Madagascar is impressive, its growth has occurred from a very small base. Such employment is essentially limited to two urban areas (Tana and Antsirabe) of the country. It clearly has yet to significantly alter the structure of employment in the county overall or even in urban areas generally: Zone Franche employment still accounts for only about 1% of employment in the country, which remains overwhelmingly agricultural.

Further, in urban areas, the Zone Franche was the sector most negatively affected by the 2002 crisis. Unable to meet orders, most export processing firms temporarily ceased operations and laid off their workforces. This impact is reflected in the Madio survey from the second half of 2002, which shows a sharp decline in the number of women and men employed in the sector. At the same time, the share of self-employment activity increased, presumably because individuals turned to the informal sector to replace family income from other sources that was reduced or eliminated. This reallocation—perhaps only temporary--away from export processing employment is the most dramatic effect of the crisis seen in our data—more so than changes in unemployment rates or earnings among the employed.

### **3.2. Earnings in the urban labor market**

Annual labor force surveys from Tana indicate that real earnings of wage employees rose over the growth period (1997-2001) period, in some sectors quite rapidly. Wages increased most in informal wage work, and least in Zone Franche employment. Earnings were lower in the aftermath of the crisis in several portions of the labor market relative to 2001, though in view of the severity of the crisis, the reductions were not very large.

Estimation of earnings functions indicates that schooling has positive returns in the labor market, but the returns differ markedly by level: for both men and women, the benefits to an additional year of primary schooling are much smaller than the benefits to a year of post primary schooling. Low returns to primary education may reflect a decline in the quality of primary education, or an increasing supply through the 1980s of primary schooled labor force entrants combined with a weak growth in demand for this labor from the formal sector.

The impacts of education on earnings are not the same in all sectors of the urban labor market. Returns to schooling are generally lower in the civil service than in other sectors. For both genders, returns appear to be high in informal wage employment--for women, returns to schooling are statistically higher in informal wage employment than in all types of formal wage employment. These patterns may reflect the lack of institutional wage-setting mechanisms in the informal sector, so that higher productivity (presumably, a function of schooling) is rewarded more readily there.

Mean levels of earnings differ across sectors of the labor market, even controlling for differences in the characteristics of workers in different sectors. Despite the fact that real wages rose fastest in the informal sector—and despite the high incremental returns to schooling there—expected earnings in informal wage work in 2001 were far lower than in formal employment (public or private), for both men and women. Notably, for both men and women, Zone Franche employment yields a substantial wage premium over informal sector wage jobs, and Zone Franche earnings are on par with earnings elsewhere in the private formal economy. However, private formal sector pay is generally lower than pay in the public sector, again controlling for worker characteristics.

These gaps in offered wages across sectors for similarly qualified workers are often large and point to inefficiencies in the operation of Madagascar's urban labor market. A plausible explanation for the observed pattern is that high wage (especially public) formal sector jobs, where pay is to some extent set by institutional means, remain in short supply, so excess labor is forced into informal employment, driving down earnings there.

### **3.3. Gender and the urban labor market**

Women in the urban labor force tend to be underrepresented in most kinds of formal employment in the labor market (civil service, public enterprises, and private formal wage employment other than in the EPZ) and over represented in informal employment (informal wage work and self employment). The important exception to this is Zone Franche employment, where, despite an increasing share of men since 1995, women continue to predominate.

The reasons for the low representation of women in the non-EPZ formal sector are hard to discern from the survey data we have. It is difficult to distinguish between explanations based on differing preferences of women and men for specific kinds of employment and those based on discrimination in access to particular sectors or occupations. In a multinomial logit model of sector allocation, the presence of young children reduces employment probabilities for women in each of the formal wage portions of the urban labor market while increasing the probability of self-employment. This suggests that women in part choose informal over formal wage employment because the former is more compatible with child rearing than the latter—a 'preference-based' explanation, but not necessarily the only one.

With regard to earnings, there are few significant differences in the returns to schooling and experience for men and women. That is, conditional on being in a given sector of the wage labor market, additional schooling and experience are rewarded similarly for men and women. This is not the same as saying that men and women with the same qualifications will be paid the same; base levels of pay can differ for men and women. For Tana we find that expected levels of male and female public sector wages are statistically equivalent. However, in the private formal (non-EPZ) sector, primary

educated women earn slightly less than men with the same background. And in private informal wage employment, the gender gap is very large—some 50% for primary educated workers.

The fact that women in this sector earn less than men with similar schooling and experience, combined with the fact that they are disproportionately represented in informal employment, explains in part why on average women in the urban wage labor force earn less than men (lower levels of schooling and experience for working women is another factor). Lower pay in informal wage employment and the larger share of women in that sector in turn may reflect gender discrimination (in pay and access), but also may be explained by differences in sector or occupation preferences of men and women.

As for the Zone Franche, an initial strong pro-male bias in pay seems to have disappeared by 2001. For this last year prior to the crisis, no statistically significant gender differences in pay are found once differences in backgrounds of female and male workers are controlled for.

Women's employment in the Zone Franche has been (at least until 2002) growing while their employment in far less well-paid private informal work has been shrinking. This reallocation is part of the explanation for the larger increase in female earnings than male earnings in Tana seen for the period 1997-2001. So is the fact that informal sector wages, though low, rose fastest during the period. This trend benefited women more than men even though the share of informal wage work in women's total employment was falling during these years, because women were still disproportionately employed in this sector. If women's export processing employment resumes its rapid growth as the country moves further away from the crisis, their average earnings should continue to rise relative to men's into the future.

To the extent that women's access to well paid formal work is inhibited by their childcare responsibilities, public support of childcare services is an intervention worth considering. In Madagascar the need may be particularly pressing because households tend to be small, meaning there are few alternative caregivers (e.g., grandparents) to whom working mothers can turn for support.

#### **3.4. Export processing zone employment: trends and future prospects**

This report has shown that the growth of export processing zone activity has had significant effects on labor markets and workers in the urban Tana economy. In terms of pay, it represents a large step up from informal sector employment, for both genders but especially for women. For women with modest levels of education, this is particularly important, because such women currently may have few alternative work options other than in the informal sector. In terms of a number of non-pecuniary aspects of work (availability of health care and paid leave, union membership, availability of continuous employment), Zone Franche work tends to be on par with public sector employment and superior to other private wage employment, even elsewhere in the formal sector.

Employment in the Zone Franche exhibits some basic patterns seen in the early stages of export processing industries elsewhere in the developing world: the workforce is predominantly female, semi-skilled (in terms of education background), and young. However, in contrast to (at least some) other contexts, the labor force is not drawn from recent rural-urban migrants; being married is not a barrier to women's employment in this sector; having young children is negatively associated with entry, but the impact is similar to that for other types of formal wage employment, including in the public sector. Rates of employer-provided training and promotion among relatively recent hires are comparable or better than elsewhere in the urban formal economy, for both men and women.

Analysis of Madio data for 1997-2001 reveals several significant trends with regard to Zone Franche earnings. Real hourly compensation for both genders in the Zone Franche rose more slowly than in informal sector employment and generally more slowly than elsewhere in the formal economy, even though this was the sector which was growing the most rapidly. This may simply indicate that employers in the Zone France benefited from a very elastic supply of labor to the sector--because other sectors were less remunerative (informal employment), or because good jobs were effectively rationed elsewhere (e.g., public administration). Although slow wage real growth is not in itself a favorable phenomenon, the trend does suggest that future expansion of export processing will not soon encounter tight labor markets and rising labor costs, such as affected neighboring Mauritius by the early 1990s. It should be recalled as well that though the wage premium of Zone Franche over informal employment has been declining, it remains very large.

Another notable trend since the mid-1990s has been the increasing share of male workers in the Zone Franche, from 16% in 1995 to 31% in 2001. Such a trend in export processing sectors has often been associated with technological and skills upgrading, a switch to heavy industry, or tightening labor markets. This does not appear to be the case with Madagascar's still young export processing zone.

In some countries export processing employment has proved to consist, for women, largely of short term jobs with high turnover and no prospects for advancement. Do the generally quite positive findings with respect to earnings, benefits and, in particular, promotion and training in the Zone Franche prove that this pattern is not applicable to Madagascar? Not quite. The sector is still too new to make such a judgment: even by 2001, few workers would have had the opportunity to be with their firms for more than a few years. Related concerns with regard to investment in human capital in this sector are whether firms will upgrade to more sophisticated technology while providing the appropriate training for employees, and whether Malagashe will be trained in significant numbers to move into management positions. These changes in turn may have differential impacts by gender. Longer term observation will be required to assess these outcomes.

Still, the analysis suggests that export zone manufacturing employment has been, and promises to continue to be, beneficial to Malagashe workers, especially women. It is

necessary to note the limits of our analysis, in addition to the lack of a longer term perspective just noted. Zone Franche expansion has broader potential impacts that, while important, are beyond the scope of this paper to investigate. These include the spillover effects on other sectors of the economy, whether positive--e.g., through backward industrial linkages--or negative—e.g., through competition for labor and other resources, or by increasing the tax pressure on domestic enterprises that do not enjoy the exemptions of enterprises in the EPZ. Experiences throughout the developing world suggest that while there are potentially large employment and foreign exchange benefits to EPZs, the record on issues such as technology transfer, backward linkages, and overall contribution to growth is decidedly mixed (see Kusago and Tzannatos 1998; Cling and Letilly 2001).

It is important to recall, too, that EPZ employment still constitutes just a tiny percentage of employment in Madagascar overall, so its impact on poverty to date has certainly been very small; we really can only talk in terms of what the impacts will be if growth continues.<sup>8</sup> There may eventually be constraints to further expansion in the form of inadequate infrastructure or the lack of skilled labor (Cadot and Nasir 2001). With regard to the latter, note that Zone Franche workers, while not highly educated, still tend to be significantly better schooled (about 8 years) than the average for the country (about 4.5 years for individuals age 20 to 30). Declines in primary enrollment in Madagascar were seen through the mid-90s. Although enrollments have more recently rebounded (see Glick and Razakamanantsoa 2001), the mean levels of human capital in the workforce are bound to fall before they can rise. Given the minimum skill requirements of the export processing industry, the large number of Malagashe with little or no schooling will not be poised to benefit from its expansion, ultimately limiting the impacts on poverty.<sup>9</sup> Finally, and perhaps most important at the moment, the continued expansion of the export processing sector is far from certain because of the lingering effects of the 2002 crisis. It is too early to say whether the foreign investment that left will return in full and new investment will be attracted to the country.

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<sup>8</sup> This is what Nicita and Razzaz (2003) attempt to do in a rigorous fashion. Their simulations indicate that a sustained 5 year growth of 20% per year of the textile sector would raise the consumption expenditures of more than 1 million Malagashe by an average of 24%.

<sup>9</sup> Furthermore, because of the poor quality of schooling in Madagascar (see World Bank 1995), the skills of workers who are nominally educated are said to be low relative to industry requirements and compare poorly with EPZ labor forces in Asia and India. This is suggested by interviews with firm managers reported in Cadot and Nasir (2001).

## 4. AGRICULTURE AND POVERTY

### 4.1. The link between agriculture and poverty

Perhaps the first lesson we have learned in the past quarter century is that the connections between poverty and agriculture extend well beyond Schultz's still-accurate observation that most of the poor earn at least part of their living from agriculture. Four characteristics of agriculture, in particular, have made it ever more central to the study of poverty.

First, the biological lags between input application and consumption or sale of output are relatively great in crop and livestock agriculture. This creates cash flow timing problems for farmers that magnify the investment and productivity dampening effects of financial markets failures that plague all sectors, but none more so than agriculture.

Second, those biological lags and extraordinary dependence on exogenous phenomena such as rainfall, plant disease and pest infestation create usually great uncertainty and temporal risk for farmers. In so far as risk averse agents commonly trade reduced expected income for reduced risk exposure, relatively great uncertainty induces slower growth in expected incomes (Rosenzweig and Binswanger, 1993).

Third, agriculture depends heavily on natural resources that are subject to coordination problems that can impede productivity and investment. Producers in other sectors rarely face common problems to the same degree and thus do not have to expend as much scarce time and resources on trying to resolve these obstacles.

Finally, because consumers face physiological limits on food consumption, the income elasticity of demand for most agricultural commodities is less than one, leading to a steady decline in agriculture's terms of trade. As a consequence, relative returns to agricultural assets have tended to decline over time, leading to a steady transition out of agriculture as populations become wealthier. These four features make agriculture an especially important sector for the study of poverty.

### 4.2. What do we know about poverty?

*a. Poverty is mostly a rural phenomenon.*

INSTAT (2003) estimates that in 2001, around 85% of the poor in Madagascar lived in rural areas (while the rural population makes up 77% of the total population). Moreover, the poor in rural areas are mostly found in the agricultural sector, implying that agricultural development would be particularly beneficial for the poor.

*b. Poverty is strongly related with the assets of the household (human, natural, and physical capital) and of the technologies that are used.*

Multiple studies document the deficiencies and the worsening state of education in Madagascar (World Bank, 2002). This has clear impacts on poverty levels. For example, Razafindravonona et al. (2001) show how the education level of the poorest part of the population is significantly lower than for the richest quintile. Randrianarisoa and Minten (2002) illustrate in the case of Madagascar how access to especially primary education is associated with higher subsequent agricultural productivity.

The poor in Madagascar also have access to less natural and physical capital. The analysis in the previous chapters show that the poor in the agricultural sector possess less land (Minten and Razafindraibe, 2003) and livestock (Ralison, 2003), use very little modern inputs (fertilizer and improved seeds) (Minten and Ralison, 2003) or improved technologies (such as SRI) (Barrett and Moser, 2003), and invest little in soil improvements (Minten and Ralison, 2003).

*c. Geography and the biophysical environment matter for poverty.*

Chronic poverty is strongly linked with geography, both at the macro scale of nation states and subcontinental regions (Bloom and Sachs, 1998; Gallup and Sachs, 1998) and at the intra-national scale (Hentschel et al., 2000; Mistiaen et al., 2002). Natural resources such as soils, forests, water and wildlife are a fundamental input to rural economies, climate-dependent infectious disease health shocks are a primary threat to livelihoods, local governance influences patterns of public goods provision, and the perishability and low value-to-bulk ratio of raw commodities makes market access crucial to profitability. Geography plainly matters to patterns of poverty.

This is evident in the case of Madagascar. Stifel et al. (2003) show the strong linkage between remoteness and poverty. They show that remote households have little access to markets (for output and input markets as well as financial markets) and they use few productive technologies. They suffer also from low output prices and high transaction costs. Farmers that live in harsher biophysical environment are also poorer. Minten and Ralison (2003) show that the probability of being poor is higher in more marginal areas (hillsides, dry and semi-dry areas, etc.) and in areas with less availability of infrastructure such as irrigation or roads.

*d. Starting conditions for individuals or households matter for poverty. However, they are not the only explanation for being in poverty.*

Some people are born into poverty and have difficulty escaping because they do not have the education, health or nutrition required to accumulate physical stature and cognitive capacity early in life (Loury 1981; Strauss and Thomas 1998; Basu 1999), because they do not inherit land or capital sufficient to add value to their human capital or because they cannot effectively employ the assets they own to generate income (Carter and May, 1999).

Where some face poverty because of weak inheritance and a bad start to life, others start off luckier but fall into poverty because of an adverse shock or series of shocks. Natural

disasters and civil strife are tragic not just because of the temporary displacement and deprivation they bring but, most of all, because they can wipe out in a moment what households have labored years to accumulate through disciplined savings and investment. Brief disturbances can have persistent effects (Hoddinott and Kinsey 2000). These two effects are often mutually reinforcing as those who start off with a bad lot are far more likely to suffer serious adverse shocks that knock them back down as they struggle to climb out of poverty (Dercon 1998; Barrett and Carter 2001).

In Madagascar, there are few studies that document how certain parts of the population start worse off. Some authors show the linkages of disadvantaged groups to the caste system that persists in some parts of the country (Galy, 1999; Evers, 1997). However, shocks are a major reason as well to explain poverty. Cherel-Robson and Minten (2003) show the high number of covariate and idiosyncratic risks in agricultural activities in Madagascar. Freudemberger (1999) illustrates in the case of a village in the province of Fianarantsoa how successive deaths in the family can lead to wiping out the asset base of livestock for a family, given the custom of slaughtering animals at funerals.

*e. There is an important relationship between the agricultural economy and the non-farm rural economy.*

The role of the rural non-farm economy in facilitating escape from poverty has been widely undervalued in agricultural and development economics. A range of recent studies (in the case of Madagascar, see the study of Randrianarison, 2003) have uncovered a positive relationship between non-farm income and household welfare indicators, in particular, that greater non-farm income diversification causes more rapid growth in earnings and consumption. In places where the ranks of landless or near-landless poor are swelling rapidly, the rural non-farm economy will become essential to poverty reduction strategies.

*f. Access to financial markets is crucial for reduction of poverty.*

Most of the problems of the rural poor originate in large part from lack of capital and necessary credit to invest in the growth of agricultural productivity or in sustaining the natural resource base. Informal and formal credit systems function badly in Madagascar. Productivity suffers because when people do not have access to credit or insurance so as to enable them to move consumption across periods, they inevitably find alternative markets through which they can get costly quasi-credit. For example, farmers will sell crops at low prices immediately after harvest, fully expecting to buy back the same crops months later at a considerably higher price. Given an immediate need for cash for any of a host of reasons, but lacking access to credit or cash savings, farmers commonly borrow through product markets.

Other farmers will use labor markets for similar purposes, working for cash wages during planting season when a bit more time spent on their own farm would enable them to employ a cultivation method yielding significantly higher yields, and thus greater future labor productivity. The premium on cash today from low wages can be more than

sufficient to compensate for forgone productivity even a few months later (Moser and Barrett, 2003).

### **4.3. The importance of targeting in development assistance**

*a. As development budgets are limited, targeting is necessary.*

Perhaps the most important lesson from the past quarter century's research on rural poverty is the need to distinguish transitory from chronic poverty. Because the transitorily poor need no direct assistance in order to recover from and exit poverty, the necessary activism of donors and government in combating poverty depends inversely on the extent to which poverty is transitory. The fundamental distinction between transitory and chronic poverty implies a central role for targeting to direct assistance towards the chronic poor who cannot exit poverty without it, for safety nets to keep the transitorily poor from becoming chronically poor and for cargo nets to help lift the chronically poor from long-term deprivation or to facilitate them climbing out on their own by creating a path over key obstacles.

*b. Geographical targeting might be considered for high areas of chronic poverty, such as Fianarantsoa.*

There are many different methods for targeting interventions. Three in particular merit comment: geographic, indicator and self-targeting. Geographic targeting is perhaps the least expensive means of targeting and can be highly appropriate in areas of nearly universal chronic poverty, as in much of the province of Fianarantsoa (Razafindravonona et al., 2000; Minten and Randrianarison, 2003). Geographic targeting can likewise be appropriate for short-term, safety net interventions such as food aid distribution in the wake of natural disasters in order that short-term disruptions to incomes and food availability do not cause long-term injury for affected populations.

*c. Indicator targeting is necessary as a complement to geographical targeting.*

But because variation in incomes tends to be at least as much within regions (and even within villages) as between them in Madagascar (Mistiaen et al., 2002), geographical targeting alone will miss most of the poor. Beyond areas of intense, widespread poverty, donors, NGOs and governments need to identify thresholds measurable in readily observable units (e.g. landholdings, herd size, educational attainment) and to target the chronic poor who fall below those thresholds. Hence the importance of indicator targeting. It must be borne in mind, however, that indicator targeting only works well at combating chronic poverty if the indicators used are strongly and causally associated with lower measures of well-being.

*d. Self-targeting is useful in the case of emergencies.*

Self-targeting mechanisms can be especially useful for safety nets. These instruments take advantage of the character of the transfer – e.g., a low-wage work requirement

associated with public employment schemes, inferior subsidized foods (such as cassava in Madagascar (see Ravelosao et al., 1998)) or significant queuing for food, clothing or cash – to try to induce the non-poor to self-select out of the beneficiary pool. When set up as standing policies that kick in automatically in response to income and other shocks that imperil vulnerable populations – which may include seasonal cycles of shortage that preclude investments by smallholders (Barrett et al, 2001) – then self-targeting programs such as public employment schemes can be valuable tools for providing safety nets in response to quickly developing emergencies, as significant experience in South Asia, Southern Africa and Argentina in particular have shown (Ravallion, 1991; von Braun, 1995). Self-targeting mechanisms are often ineffective, however, in addressing chronic poverty, especially where land and credit markets both fail, causing considerable interhousehold variation in marginal returns to labor, or when agencies try to accomplish multiple goals with self-targeting transfers (Barrett et al., forthcoming).

*e. How and what are important considerations in targeting as well.*

Targeting concerns revolve not just around who to assist, where, or when but equally how and with what. The “how” and “what” questions of targeting receive too little attention but are of particular importance in addressing chronic poverty. The reason is straightforward: in order to enable the chronically poor to begin accumulating productive assets, one must know what factors currently most limit their choices. Is the problem chiefly due to an insufficiently productive asset stock, implying a need for improved technologies to boost yields or better market access to improve the terms of trade for the goods and services sold by the chronically poor? Or is the problem more an insufficient stock of productive assets, and, if so, of which type? Land, implying a possible rationale for progressive land reform? Human capital, implying a rationale for greater public investment in education, health and nutrition, perhaps especially for young children? Or is the need chiefly for deeper and broader access to financial services so as to free more households to undertake additional investments appropriate to their particular circumstances and talents?

These are the particular pillars of decades of development strategies. There is little new to offer other than the simple observation that each case is different. Effective policies to combat chronic poverty depend on careful empirical policy research customized to local conditions. Researchers have an obligation to develop tools and information that can provide policy makers with accurate and timely information on the who, what, where, when, and how targeting questions that are the essence of poverty reduction strategies.

#### **4.4. Rural development in Madagascar: which way forward?**

*a. There are multiple pathways out of poverty. There are no simple, blanket prescriptions for poverty alleviation in rural areas.*

There are multiple pathways out of rural poverty, so one needs to beware of presenting too simplistic or mechanical a description. For some, the optimal pathway is through agricultural intensification and commercialization. For others, it lies in migration to an

urban area. For others, the right strategy involves gradual transition out of agriculture and into rural non-farm activities. Some will use a combination of these strategies. The key is not the particular path to be followed, which will vary markedly across space, time and even among individuals in the same location and moment. Rather, the key is the existence of *some* pathway out of poverty, a strategy in which current optimal choices predictably lead to the accumulation of sufficient productive assets so that the household can reasonably expect to earn an investible surplus above and beyond immediate consumption needs, enabling continued accumulation and steady growth in all or most welfare measures. The poverty problem is even more pernicious than mere accumulation failures. It is also about preventing decline. Hence the importance of transfers and interventions to resolve financial markets failures so as to empower the rural poor to conserve their scarce capital in the face of adverse shocks.

*b. Much of the poverty is transitory in nature. Safety nets are needed for the non-poor or the transitorily poor. The chronically poor need cargo nets.*

Recent research has underscored that much poverty is transitory in nature. Policy can make a great difference for the chronically poor, i.e., those who cannot exit poverty on their own without external assistance. Such assistance can come directly, in the form of transfers, or indirectly, in the form of policy reforms that induce behavioral change that leads endogenously to the poor climbing out of poverty. Anti-poverty interventions can take one of the two forms.

The first are commonly thought of as safety nets, which either prevent people from falling into poverty or, more commonly, keep those who fall into poverty from becoming so poor that they cannot recover on their own. Emergency feeding programs, crop or unemployment insurance and disaster assistance are common examples of safety net interventions.

The second form is meant to lift people or help them climb out of poverty. We like to refer to these as cargo nets. Where safety nets merely catch people, keeping them from falling too far, cargo nets are used to help climbers surmount obstacles and to lift objects, overcoming the structural forces that would otherwise keep them down. Familiar examples of cargo net policies include land reform, targeted feeding programs, subsidized micro-finance programs, etc. Safety nets are needed for the non-poor or transitorily poor so that they do not become chronically poor. The chronically poor need cargo nets.

*c. Correct macro-policies are necessary but not sufficient conditions for poverty reduction. More interventions are needed at the meso- and the microlevel in Madagascar.*

The impact of the macro- and sectoral reforms that happened over the last twenty years in Madagascar have shown little effect on the livelihoods of the rural populations due to significant structural problems at the micro- and meso-level (see also IFPRI/FOFIFA, 1999):

- *The meso level.* In the remote areas of Madagascar, the benefits of trade are currently not captured. Marketed surplus and the adoption of improved technologies are low. Storage costs, seasonal finance and transport costs are high, leading to high seasonal variation with negative effects for the poor, most of whom are net buyers of rice. Agricultural productivity is low and stagnant, with disappointing rates of adoption of new methods such as SRI and demand for nonfarm goods and services is weak, so agriculture remains the main source of income for rural Malagasy.

- *The micro level.* The challenge for the reduction of rural chronic poverty depends on increasing the asset stock of households (e.g., education); improving access to markets (especially the financial markets) and to more productive and stable technologies; and reducing exposure to exogenous shocks. To the extent that this is possible, actions should be targeted as much as possible (geographically or by indicator).

To improve agricultural productivity and alleviate poverty in rural areas, the required interventions at the meso and micro level in Madagascar include most importantly the following:

- 1) Development of more productive agricultural technologies, resistant to natural shocks and accessible for the poor;
- 2) Improvement of road infrastructure, access to credit and improved security to reduce transaction costs in markets;
- 3) Promotion of local institutions to reduce coordination costs between farmers (which is beneficial for the marketing of agricultural products, purchase of inputs, security, and the use of water and land);
- 4) Stimulate non-farm income in secondary cities that have close linkages with rural areas;
- 5) Provide social services to improve labor productivity of the poor.

Finally, to make interventions for poverty alleviation successful, it is important to continue to listen to the poor themselves, to get them involved in an authentically participatory process. An example of such an exercise - and a pre-condition before any intervention - is shown by the analysis on the “voices of the clients” regarding the priorities of development (Cherel-Robson and Minten, 2003).

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## **Annex: Analytical deliverables produced under the Ilo program**

### **1. Poverty: Dynamics and causality**

S1 : Avril 2001 : Razafindravonona, J., Stifel, D., Paternostro, S., Evolution de la pauvreté à Madagascar : 1993-1999

S2 : Juillet 2001 : Randrianarison, J., Randrianjanaka, N., Razafindravonona, J., Stifel, D., Evolution de la pauvreté à Fianarantsoa : 1993-1999

S3 : Janvier 2002 : Stifel, D., Razafimantena, T., Mobilité économique à Madagascar : 1993-1999

S4 : Septembre 2001 : Glick, P., Razakamanantsoa, M., La distribution des services sociaux à Madagascar : 1993-1999

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