Patterns of Employment and Earnings in Madagascar

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ABBREVIATIONS

CEPE	Certificat d'Etudes Primaires Elémentaires (Primary Level Diploma)
CFNPP	Cornell Food and Nutrition Policy Program
DHS	Demographic and Health Survey
EPM	Enquête Permanente auprès des Ménages (Permanent Household Survey)
FMG	Francs Malagashe (Malagasy Francs)
IMF	International Monetary Fund
INSTAT	Institute National de la Statistique (National Statistics Institute)
MADIO	Madagascar-Dial-Instat-Orstom
USAID	United States Agency for International Development

1. INTRODUCTION

This report examines patterns of employment and earnings in Madagascar. In developing countries, most people survive by their labor, and this is almost always true for the poor. In Madagascar, some two-thirds of the population is estimated to be living below the poverty line (World Bank 1996). Thus an understanding of patterns and determinants of work and pay is essential for understanding poverty. It is essential as well for developing policies specifically to reduce poverty, and for understanding the impacts of other policies on poverty and inequality. To give just one example of the latter, macroeconomic reforms that affect the exchange rate will have special ramifications for the poor if the poor tend to be involved in export agriculture.

Beyond its implications for poverty and inequality, the operation of the labor market—the market in which employment and earnings are determined—has potentially profound implications for economic efficiency and growth. Ideally, labor markets function to allocate labor to its most productive uses in the economy. Changes in wages are the mechanism that draws labor to where it is most economically valuable. However, a poorly functioning labor market can inhibit this allocation process, resulting in economic inefficiencies that restrict structural economic change and growth. For example, institutional factors may cause wages to be fixed at much higher levels in some sectors of the economy than in others, with consequent rationing and excess supply for these jobs and low wages for workers in other sectors. There may also be important differences in how different groups fare in the labor market. In particular, women may face barriers to entry into certain well-paying occupations despite having the required qualifications. Such discrimination represents both inefficiency and inequity in the labor market.

This report is based on analysis of the Permanent Household Survey (*l'Enquête Permanente auprès des Ménages* or EPM), carried out in 1993-1994 by the National Statistics Institute (INSTAT). The EPM is a comprehensive, multi-purpose nation-wide survey of 4,508 households. As such it contains information on a wide range of factors, including employment, education, household consumption and assets, and fertility and health. The principle results of the survey are presented in INSTAT (1995). The data have also been analyzed in a comprehensive study of the structure and determinants of poverty by Dorosh et. al. (1998) and in an earlier poverty study by the World Bank (1996). The present study, while focussing on employment and earnings, covers some topics also analyzed by Dorosh et. al.[1]

The results discussed in this study are presented in two main sections. The first section analyzes a range of factors relating to employment and labor supply, such as participation rates, unemployment, and the age, sector, and gender composition of the

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[1]   The present study was conducted as part of USAID/Madagascar's Participation and Poverty Project.

workforce. The methodology for this section is mostly descriptive. The second section focuses on the urban labor market and uses descriptive statistics as well as econometric methods to analyze the determinants of the sector of employment and wages of men and women. A final section summarizes the main results and their policy implications.

2. PATTERNS OF WORK IN MADAGASCAR

Employment and Labor Force Participation Rates

We first look at rates of employment of men and women of prime working age (15-65 years old) in Table 1.[2]   An individual is considered to be employed if he or she engaged in any income-generating activity in the week prior to the survey, including self-employment on a family farm or business as well as work as a wage employee. The table distinguishes two categories of work. The first is directly remunerated—i.e., "paid"—work, whether in a wage job or in one's own or one's family's farm or non-farm business. The second category is "unpaid" work, that is, work in a family farm or business for which the individual does not directly receive compensation even though his or her labor generates household income. These cases arise if, for example, just one individual in the household (e.g., the male head of household) reports actual receipt of income for a farm or enterprise in which several other family members also work.   As the table indicates, the overall rate of participation in income-generating activity in rural areas is high for both men and women: 90% of men and 82% of women reported having worked in the previous week. Thus the vast majority of prime working age individuals in rural areas are economically active. Note, however, that the majority of working women in rural areas are engaged in unpaid family labor; most of this is on family farms.   In contrast, less than a third of working men in rural areas report employment as unpaid family workers. This is the case even though the vast majority of rural men, like women, work in family agriculture. However, men are more likely to directly receive the income from these activities, hence are less likely to classify themselves as unpaid family workers.[3]

In urban areas employment rates are substantially lower: 73% and 63% respectively, for men and women.   This largely reflects two differences between rural and urban areas. First, rates of unemployment are much higher in urban areas. As indicated, the table shows rates of employment, not labor force participation rates. Although the unemployed are currently not working, they are considered to be in the labor force. Thus the labor force participation rate is the fraction of the relevant subgroup of the population that is either working or unemployed.   Adding unemployed individuals (as defined below) to the

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[2]   The EPM is a random stratified survey. Urban areas were oversampled to insure adequate representation of urban socioeconomic groups. In the analysis for this paper, the sample was appropriately reweighted to generate a nationally representative sample.

[3]   We should stress that the fact that the economic activities of many women (and men) are described as "unpaid" does not imply that these individuals do not receive any benefits from their work.   The income generated by the family farm or enterprise is presumably distributed among household members even though not all individuals in the activity actually report receiving the income. It is possible, however, that those who actually receive the income have greater control over how (i.e., to whom within the household) it is distributed.

employed, we obtain urban participation rates of 79% for men and 68% for women. Nevertheless, these participation rates, like employment rates, are markedly lower than those in rural areas. The rural-urban difference that remains after accounting for unemployment is likely due to a large extent to the second factor, which is the tendency for young people to stay in school longer in urban areas. Note also for urban areas that unpaid labor is much less important than in rural areas, reflecting the association of such work with agriculture.

As indicated, the rates of employment in Table 1 are based on whether an individual worked in the past week. While this is standard practice in calculating employment or participation rates, much economic activity is seasonal, as we would expect in an economy that is heavily agricultural. Because of this, the percentages of men and women who reported working any time in the last year are higher than the percentages working in the week prior to the survey. 96% of men and 92% of women in rural areas age 15 to 65 worked sometime during the previous year; thus almost all men and women in rural areas engage in some income generating work over the year. In urban areas, 80% of the men and 71% of women worked sometime in the last year.

We should emphasize that "unpaid" family labor should by no means be considered more casual than work that is directly remunerated. In rural areas, the number of weeks worked per year and weekly hours of work are very similar for paid and unpaid labor. Women whose main activity in the past year was unpaid family labor worked on average 43 weeks and 23 hours per week over the year in the activity (the latter is calculated as total hours in the year averaged over all weeks, worked or not, in the year). This compares with 40 weeks and 25 hours per week for women in paid work. Men whose main activity was unpaid labor worked on average 45 weeks in the past year and 31 hours per week, compared with 44 weeks and 32 hours per week for men in paid work. In urban areas, those in paid employment tend to work more hours than those in unpaid work, but the labor supply of the latter is still substantial. Thus men in paid work in urban areas have averages for the year of 45 weeks and 39 hours compared with 40 weeks and 26 hours for unpaid workers. Women in paid employment worked an average of 42 weeks and 32 hours compared with 44 weeks and 25 hours for women in unpaid work.

Table 2 examines employment status (paid or unpaid) by age and per capita expenditure quintile. Household expenditure per capita, or expenditure divided by household size, is a commonly used indicator of household welfare. The first quintile contains the 20% of households in the sample with the lowest per capita expenditure (the poorest households), while at the opposite extreme, the fifth or highest quintile contains the 20% with the highest per capita consumption (the richest households). Thus the table shows how employment status varies with the level of household resources. Note that this table does not distinguish urban and rural areas and thus refers to the entire, national sample.

Focussing first on the prime age (15-65) adults, for both men and women, participation is lower for the highest two or three quintiles than for the poorest quintiles. This is expected, as the poor do not enjoy the option of not working. It is likely that the lower employment rates in the higher quintiles reflects the related fact that affluent young

(say, age 15 to 30) men and women are more likely to be in school, hence not working, than their counterparts from poorer families. Among seniors (age 65 and over), we also see that men are more likely to work if they are from poor households. The overall participation of men over 65 is quite high, averaging around 70%. There is less of a clear pattern by quintile in the work behavior of women over 65. However, overall far fewer women than men in this age group are working: the employment rate for all quintiles is about 44% for women over 65.

The table also shows that the employment of children age 7-14 in Madagascar is far from trivial. Here the negative relationship of participation and household expenditure quintile is quite pronounced. This reflects the need for all able family members, including children, to work to insure the subsistence of poor households, as well as the related higher school attendance among children in better-off households. Thus 37% of boys age 7 to 14 in the poorest quintile worked in the previous week compared with only 15% in the highest quintile; for girls the figures are 30% and 17%. We will examine patterns of child labor in more detail below.

Unemployment

Table 3 presents unemployment rates by age and sex for rural areas, Antananarivo (the capital and largest urban center in the country), and other urban areas. By convention, an individual is considered to be unemployed if he or she was not working in the reference period (e.g., the last week) but was actively looking for work. However, a somewhat broader definition might be more relevant, especially in a situation where job growth has been stagnant for a long time. This definition would also count "discouraged workers" as unemployed. These are non-working individuals who want a job but have given up searching for work. We use this second, broader definition in the table. The unemployment *rate* is defined as the ratio of the number of unemployed to the total labor force. As noted earlier, the labor force includes both those working and the unemployed.

The table shows very different unemployment rates by area and age. There is almost no unemployment in rural areas for any age group for males and females. This is not surprising: where there is a family farm, one can usually find some kind of useful work to do. It should be noted, though, that this work may be unproductive (i.e., contribute little to household income) in comparison with the earnings that could be had in alternative (e.g., wage) work if such work was available. Such a phenomenon, known as "disguised unemployment", is more difficult to measure than conventionally defined "open" unemployment. Therefore we consider only the latter here.

In urban areas, and especially in Antananarivo, rates of open unemployment are high for men and women age 15-20 and 21-30. In Antananarivo, 21% of men in the labor force age 15-20 and 16% of those 21-30 are either actively searching for work or would like to work but have stopped searching. For women in these age groups the rates are 17% and 14%. The corresponding figures for other urban areas for young men and women are lower but still substantial. In all urban areas, unemployment rates tend to be substantially lower for

older age groups, though in the capital it remains at about 6% for both men and women age 31-50.

Unemployment thus appears to be primarily an urban phenomenon affecting those under 30—that is, new or relatively recent entrants to the urban labor force. In this regard Madagascar is like many other developing countries. We examine this issue further in Table 4, which shows urban unemployment rates for men and women age 15-30 by level of the highest educational degree or diploma obtained. In developing countries, urban unemployment is typically positively associated with education level. Those who are educated have the qualifications for potentially lucrative employment in the public sector or modern private sector. However, these positions are usually rationed, i.e., the current demand for such jobs exceeds the supply. Educated young people may find it worthwhile to wait for such a job to become available, and since they tend to come from better-off households, they also are more likely to be able to get financial support to enable them to remain out of work while they search.

The table indicates that in Antananarivo there is a connection between the unemployment rate and the level of education, as least for young men. Unemployment is about 10% for men age 15-30 who have no degree compared with 24% for those with a primary diploma (CEPE) and 28% for those with a baccalaureate. Thus about one quarter of the men age 15-30 in the Tana labor force who have obtained either a primary or standard secondary education are out of work. For young women in the capital, and young men and women in other urban areas, there is less of a clear relationship between unemployment and education level.[4]

What can be inferred from the high unemployment rates for young men and women in urban areas? In a narrow textbook sense, they suggest that the labor market is insufficiently flexible. In theory, if there is unemployment in particular education or occupation categories, wages should fall to equate labor demand and supply so that all who desire to work at the equilibrium (lower) wage will be hired. Certainly, wages in the public sector, and possibly also in some modern private sector enterprises, are to an extent set institutionally—through minimum wage legislation or agency or firm compensation rules—rather than determined only by supply and demand. At a wage that is fixed above the equilibrium level, job seekers will outnumber positions, resulting in unemployment.

However, the problem of urban unemployment should be considered in a broader context, encompassing more than the labor market itself. First, there is the overall poor performance of Madagascar's economy since 1980, and in particular the weak growth of formal or modern sector employment (including the public sector and the formal private sector). Economic stagnation beginning in the early 1980s restricted the expansion of such

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[4]   For women in Tana with a baccalaureate, unemployment appears very high (47%) but this figure is not completely reliable since there are only 17 observations in this category. The same consideration applies to university educated women in Tana.

employment; in the public sector, employment leveled off after 1982 (Dorosh and Bernier 1994). Another relevant development was the rapid expansion of educational access throughout the 1970s, particularly for primary education, to the point where almost universal primary education was achieved (though enrollments later began to decline with the overall economic deterioration). Thus the growth of formal employment in urban areas was being curtailed at the same time as the demand for such jobs—from primary and secondary school graduates —was increasing. In view of the rapid earlier expansion of primary schooling, the very high rate of unemployment for primary graduates, at least in Antananarivo, is noteworthy.[5]

Sectoral Distribution of the Labor Force

As in other developing countries, the labor market in Madagascar is not homogeneous but instead is made up of apparently distinct portions or sectors. As an extreme example, consider the difference between working on a family farm and working in the public sector as an administrator or teacher.[6] It is important to know the distribution of the workforce among various portions of the labor market because policies will usually affect the sectors differently. For example, exchange rate devaluation will have particularly important effects on farmers, especially in export agriculture. Reductions in public expenditures usually imply a retrenchment of the public sector workforce, which obviously will have the strongest effects on public sector employees. Further, as discussed in detail in subsequent sections of this report, the sectors of the labor market may differ in important ways with regard to the factors determining entry and earnings.

The EPM distinguishes two types of self-employment activity and three main types of wage employment. The self-employment categories are work on a family farm and work in a non-agricultural family enterprise. The three types of wage employment are: employment in the public sector; employment in "enterprises", including both state and private enterprises;

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[5] Note also that an explanation of high unemployment based on the idea of formal sector wage inflexibility runs into the problem that compensation has in fact fallen sharply in real terms in Madagascar since the early 1980s, at least for the public sector (for which more information is available). This occurred because nominal wage increases failed to keep up with inflation (Dorosh and Bernier 1994; World Bank 1988). Thus real wages in the public sector can hardly be characterized as inflexible, as Colclough (1991), among others, has pointed out with regard to Africa in general for the 1980s. Nevertheless, compensation (including non-wage benefits) in the public sector and private formal employment may remain higher than in informal wage or non-wage employment. Evidence for this is presented below. This may lead to high unemployment levels if people hold out for formal public or private sector jobs rather than accept less attractive work in the informal sector.

[6] As this example suggests, we are defining the "labor market" broadly to include all income-earning activities, even those that do not involve working for a wage.

and employment by other households or individuals. The last category includes work as domestics and work in small businesses operated by other households or individuals.

While the first wage sector is unambiguously public and the third (work for other households or individuals) is clearly in the private sector, the "enterprise" sector, as just noted, includes both private and state-owned enterprises. Unfortunately, the survey questionnaire did not distinguish private from public enterprises. Hence this category is somewhat poorly defined; strictly speaking, it should probably not be considered as a distinct labor market sector, though out of necessity we will refer to it as such in the following analysis. However, it must be kept in mind that comparisons of the "enterprise sector" and the public wage sectors are not equivalent to comparisons of the private and public sectors, a point that will be brought out again below.[7]

Figure 1 shows the allocations of working men and women to these five sectors of the labor market. The charts show the sector of the primary work activity (paid or unpaid) in the previous year. Most striking is the importance of agriculture, which accounts for about 80% of the workforce of both men and women.[8] It should be kept in mind that we are considering the total (rural and urban) sample. These figures underscore the fact that the economy of Madagascar remains largely agricultural. Among the other sectors, non-agricultural self-employment appears to be more important as a primary work activity for women than for men, accounting for about 9% of female primary employment compared with 5% for men. On the other hand, men are more likely to be employed in either the public or enterprise wage sectors. About the same percentage of employed men and women (6%) are found to be working as employees of other households or individuals.

From the perspective of analyzing poverty (and understanding the effects of specific policies on the incomes of the poor), it is important to know where—that is, in which sectors of the labor market—the poor are most likely to work. In Table 5, therefore, we show the sector of primary employment of households heads by per capita expenditure quintile. For each type of employment or sector the table shows the proportion of the workers in that sector that belong to each quintile. Thus for example, for a given sector, a figure greater than 20% for the first quintile means that individuals from the poorest quintile are found disproportionately in that activity. A figure under 20% would mean that the poorest fifth of the population is underrepresented in that activity.

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[7]   The enterprise sector also includes individuals who work for "foreign organizations" but the number of these workers is very small.

[8]   The agriculture category includes only those who are self-employed, i.e. working on their own or their family's farm. It does not include wage workers in agriculture. However, agricultural wage labor, at least as a primary activity, is relatively rare. Note also that the agricultural self-employed include both those who own the land on which they work and those who rent land.

The table indicates that household heads from the lowest three quintiles are disproportionately involved in agricultural self-employment, but not extremely so: for example, 24% of the agricultural workforce come from the poorest 20% of sample households. It would be more accurate to say that the wealthy are under-represented in agriculture, since the richest quintile accounts for just 12% of the agricultural self-employed. Interestingly, the opposite is the case for non-agricultural self-employment. The poor are under-represented here while household heads in higher quintiles are over-represented. This could reflect the need for capital to start an enterprise. Access to capital is likely to be a function of household resources, through greater household savings or greater collateral for loans. In addition, the category also includes some self-employed professionals (e.g., lawyers) who tend to be relatively affluent.

This pattern is even more strongly in evidence for wage work in the public and "enterprise" sectors. Only 2 % of the households heads working in these sectors come from the poorest 20% of the sample, while 58% and 48% of the public and enterprise wage employed, respectively, are drawn from the highest quintile. This corresponds to the largely urban nature of these activities (urban households are more affluent on average than rural households) and, more importantly, the predominance of highly paid skilled occupations in these two sectors. In contrast, employees of other households or individuals are fairly evenly distributed across the per capita expenditure quintiles.

Some basic implications for policy emerge from this table and the preceding one. First, agriculture remains the most important source of employment in Madagascar. Therefore, policies affecting agricultural incomes will, all else equal, have the strongest overall impact on household welfare. With respect to poverty and inequality, since the poor are only slightly over-represented in agriculture, policies that raise agricultural incomes in general will not have strongly disproportionate benefits for the poor, though of course they will benefit together with households in the higher income quintiles. In other words, policies that lead to general improvements in agricultural incomes could not be considered to be interventions targeted *specifically* to the poorest groups in Madagascar. We should stress that the foregoing statement is concerned with relative poverty, which is what the division of the sample into expenditure quintiles is designed to highlight. In an absolute sense, most agricultural households—and most households in Madagascar overall—would indeed be defined as poor, that is, falling below some minimum income needed to secure basic needs.[9] Thus improvements in agricultural incomes remains a major path to reducing absolute, but not necessarily relative, poverty in Madagascar.[10]

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[9] Using a commonly accepted definition of an absolute poverty line, defined as the income required to satisfy basic food and non-food needs, some 70% of Madagascar households can be considered to be in poverty (World Bank 1996). This would include all households in the bottom three quintiles and half of those in the fourth quintile.

[10] It may be possible for policies to target the poorest households *within* the agricultural sector, thereby addressing relative as well as absolute poverty. For example, infrastructure investments (in particular, road construction) could emphasize the poorest rural regions.

The implications for poverty-reduction strategies of the distribution of public and enterprise workers among expenditure quintiles are unambiguous. Such workers are largely drawn from better-off households. Therefore, policies that raise earnings in these sectors are not pro-poor and instead will tend, all else equal, to worsen the income distribution. The same would not be said for wage employment with other households or individuals, since as noted, workers in this category are more evenly distributed over the expenditure distribution.

Although wage employment, which is primarily an urban phenomenon, appears to be far less significant on the national scale than agriculture, it is nonetheless important. There are several reasons why the urban labor market, which encompasses most wage employment as well as a large portion of the non-agricultural self-employment in Madagascar, merits closer examination. First, conditions in urban labor markets—the availability of work and levels of pay—determine the pace of rural-urban migration (and can even cause reverse migration back to rural areas). In so doing, they are likely also to affect productivity in agriculture. For example, weak job growth in cities and towns or high urban unemployment may reduce migration to urban areas, leading to underemployment or unproductive employment in agriculture. Second, unemployment is an important social and political phenomenon and is largely an aspect of the urban labor market, as we have seen. In a later section of this report we will examine employment and pay in different sectors of the urban labor market.

Multiple Job-Holding

Focusing on the main work activity of individuals, as we have done so far, has limitations. Individuals may derive income from more than one job or type of work. For example, the head of the household may work as a civil servant while also operating a family business. In urban African settings, multiple job holding, especially by public sector workers, is often thought to be a response to declining real wages in formal employment. Real wages for formal sector workers in Madagascar declined sharply throughout the 1980s and early 1990s (Dorosh and Bernier 1994; IMF 1997). In addition to adding to household resources, a second activity may also serve an insurance function: it can act as a buffer against severe revenue declines if the household head loses his job or suffers a decline in his real wage. Multiple job holding may also be an indication of low levels of efficiency in an individual's main job, as his or her energies are diverted to a supplementary income-earning activity.

Table 6 shows the extent of multiple jobholding by area of residence. In rural areas, 32% of working individuals reported that they worked in two activities in the past week and

Alternatively, credit or extension programs can focus on crops grown predominantly by the poor, though in Madagascar, the poor are involved in both food and export agriculture (World Bank 1996). For detailed discussions of policy options for poverty reduction, see Dorosh et. al (1998) and World Bank (1996).

4% more worked in three activities. In urban areas other than the capital, about 25% of workers report more than one job in the past week. In Tana, about 21% report multiple jobs. These calculations use a strict definition of multiple-job holding: that two (or more) activities are conducted during the reference week (the week prior to the interview). We might also be interested to know how many individuals worked at more than one job during the course of the past year, even if the activities were not both performed in the previous week, or even in any other week in the past year. The last possibility involves working at different jobs at different times of the year, which should be relevant to a largely agricultural economy in which many activities are seasonal. Using the broader definition of having had more than one work activity (concurrently or not) over the course of the past year, the percentages of workers engaged in multiple activities become even more significant, as the second row of Table 6 shows. In rural areas, 52% of individuals who worked in the past year worked in more than one activity. In other urban areas and Tana, respectively, 38% and 40% of workers did more than one type of work.[11]

In rural areas, the figures for multiple activities in the last week and last year probably overstate the extent of multiple job holding as this term would usually be defined. This is because for most individuals reporting two activities (68% using the past week criterion), both activities were in family agricultural enterprises. These activities would presumably be less distinct than say, work on the family farm and work in a wage job off the farm. Still, for agricultural households, off-farm (wage) employment is not insignificant as a source of secondary income. Among working adults whose main activity in the past year is family agriculture (about 90% of the rural employed), 17% also held a wage job at some time during the year.

In urban areas the figures for multiple job holding by last week or last year are lower than for rural areas but in urban areas there is probably truer diversification in employment for individuals involved in multiple activities. Indeed, for fully 71% of urban residents reporting two activities in the last week the two activities were of different types (that is, one of the following combinations: wage and non-agricultural self-employment, wage and agricultural self-employment, or non-agricultural and agricultural self-employment). About 42% had a wage job combined with a non-wage activity (agricultural or non-agricultural self-employment).

In sum, although there may be some ambiguity of definition for rural areas, multiple job-holding appears to be a significant phenomenon in Madagascar. It is common for individuals to work in more than one activity in a given week, and even more common to work in more than one activity over the course of a year.

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[11] About 80% of individuals reporting multiple employment over the past year reported doing their secondary activities at the same time as the main job at least some time during the year.

To what extent does poverty induce individuals to seek secondary (or even tertiary) sources of income? Table 7 shows the percentage of employed individuals with more than one activity in the last week by per capita expenditure quintile. Since households in urban areas tend to have higher incomes than in rural areas, we have constructed separate expenditure quintiles for rural and urban areas. In rural areas there is no strong pattern between household resources and the extent of multiple activities. If anything, individuals in higher rural expenditure quintiles are more likely to have more than one work activity at the same time. This may be because households with more resources (including land) are better able to support multiple agricultural activities, or else to start non-agricultural enterprises.[12] In urban areas there is a somewhat clearer pattern. Here the extent of multiple job holding does decline as household income or expenditure increases, at least after the third urban expenditure quintile.

It is also of interest to see if the propensity to seek additional work depends on the nature of an individual's primary activity. Table 8 divides up the Tana and other urban wage workforces by the sector of the main activity and shows the percentage of workers in each sector with additional employment in the past week. In both the capital and other urban areas, public wage employees are the most likely to have a second activity. This is especially noticeable for other urban areas, where 39% of public sector workers report multiple jobs, compared with 21% and 29%, respectively, for the enterprise and household/individual sectors.

There are several possible reasons for the tendency of public sector workers (relative to other wage employees) to hold additional jobs. Pay may be lower or may have declined more rapidly in the public sector than elsewhere in the economy. Or, government employees may desire to hold onto their civil service jobs while working at another job because the benefits (e.g., pensions) in government jobs are especially generous. Lastly, supervision in the public sector may be lax, making it easy to combine one's regular government job with a side activity. We are not able to address this question adequately with the EPM data. However, as pointed out below, public sector employees do enjoy more generous benefits than other wage workers. There is also clear evidence of very large declines in real terms in public sector pay levels. For example, among higher skill echelons, real monthly salaries in 1990 were barely one third their levels at the beginning of the 1970s (World Bank 1998). Such a decline may have precipitated efforts by public sector employees to find additional sources of income.[13, 14]

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[12]   It should also be kept in mind that causality may run in the opposite direction: individuals who work in multiple jobs have more income to contribute to their households, other things equal, so are more likely to be in higher expenditure quintiles.

[13]   On the other hand, we also show below (with several important caveats noted) that pay levels in the public sector tend to be higher, not lower, than in other wage employment, other things equal.

Children and Work

We saw above that the participation of children in income-generating activity in Madagascar is substantial. Child employment presents a dilemma for policymakers. On the one hand, the work of children (say, on the family farm) may be crucial to the survival of poor households. On the other hand, such work is likely to prevent children from attending school or from giving adequate attention to their schoolwork if they do attend. This will reduce the future productivity and income of children from poor households, thus leading to an intergenerational transmission of poverty and inequality. Table 9 shows the rate of participation in (paid or unpaid) income-generating work in the previous week among children age 7 to 14, as well as, for comparison, that of prime age adults and seniors by area and sex. The table also shows the average weekly hours of work for those who worked. We rely on average annual weekly hours because the survey only collected information on labor supply over the past year. The weekly averages in the table are calculated as the total hours worked in the past year in all activities divided by total weeks in the year.[15]

Participation[16] of children is much higher in rural areas than in urban areas, reflecting the involvement of children in family agricultural activities. Among rural children age 7-14, 39% of boys and 30% of girls worked in the week prior to the survey. (These figures would be slightly higher if work in the past year was considered, reflecting the seasonal nature of much of this work). This compares with urban employment rates for this age group of 16% for boys and 17% for girls. The hours of labor supplied by children who work are not trivial.

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[14]   It is also of interest to see how the propensity to work a second job is related to one's skill or pay level in the main job. For urban public sector workers, the percentages with additional work in the previous week by educational attainment are as follows: less than completed primary: 36%; primary: 30%; secondary 15%; lower university or higher: 33%. The overall average for the highest two education levels is substantially below that for the lower two (less skilled) levels. Thus this is not primarily a case of white-collar civil servants using their official positions or connections to secure lucrative side activities. For the other two wage sectors, there is a clearer pattern of multiple job-holding declining with education level. Since the better educated earn more in their main jobs, this pattern accords with the lower multiple job holding of those in higher income quintiles seen above.

[15]   That is, average hours per week are calculated as follows:

 (total weeks worked x average days worked per work week x average hours per work week) / 52 weeks

Note that we take the average over all weeks, not just the weeks in which the individual actually worked.

[16]   For children in this age group, who work (if at all) mostly in family enterprises, reported unemployment is extremely low. Thus employment and labor force participation rates are essentially the same.

In rural areas, participating boys and girls worked an average of 26 hours and 19 hours per week, respectively. It should be kept in mind that these annual averages for weekly labor supply include weeks that were not worked at all. To put the hours of work of children in perspective, note that the equivalent weekly hours for working adults in rural areas age 15-65 are 40 hours for men and 30 hours for women. As one would expect, this is greater than the weekly labor supplied by children, but the hours of rural children who work are nonetheless a substantial fraction of the hours of adults.

Overall, therefore, the EPM data indicate that children are fairly extensively involved in activities contributing to family income. For poor children and children in rural areas especially, this may act as a constraint on their ability to acquire an education. Indeed, school enrollment rates are much lower for children who work than for children who do not work. Among rural children age 7 to 15 who engaged in income-earning activities during the past year, only 25% also attended school during the year, compared with 60% for children who did not work in the past year. Care should be taken in interpreting these figures, however, because the cross-tabulations only indicate an association of work and non-enrollment, not causality from the former to the latter. Causality may sometimes actually run in the other direction: it is possible that many parents decide not to enroll their children because they do not see many benefits to primary school (in particular where school quality is poor and the economy is not generating may jobs, as in Madagascar), and put their children to work instead. Nevertheless, the figures at the very least are consistent with the notion that the work obligations of children negatively impact their opportunities to get an education.

Determinants of Female Labor Force Participation

The participation of women in the labor force is usually a major focus of any analysis of labor markets and labor supply. One reason for this is that male participation is usually universal or nearly so; hence there is not much to study with regard to the participation decisions of men. Women, on the other hand, are more likely than men not to be working, reflecting the burden of household responsibilities such as caring for children as well as cultural attitudes regarding women and work. In addition, the situation of women in the labor market—their participation and earnings—may have profound implications for many policy objectives that are not directly related to the labor market. For example, the high population growth rate in Madagascar has been cited as a serious threat to the country's natural resources. It will also lead to rapid increases in the labor force that will be difficult for the economy to absorb (World Bank 1996). However, fertility decisions, hence population growth, are likely to be strongly influenced by the range of labor market opportunities for women. More (and better-paying) work for women in high-skill employment will encourage girls' enrollments and the duration of their schooling, delaying marriage and childbearing and reducing total parity. In general, better income-earning opportunities for women should increase their participation and labor supply, reducing the time they have for domestic work. Given the time-intensiveness of child-raising, this will tend to reduce the number of children

they desire to have. Therefore, fertility is thought to be negatively linked to improvements in conditions in the labor market for women.[17]

Table 10 shows estimates from probit models of the determinants of women's paid employment in rural and urban areas. The dependent variable in these estimations takes the value of 1 if the woman participates in directly remunerated work (either in self- or wage employment); it is zero if she does not work or works as an unpaid family laborer. The focus on participation in paid work, rather than in any work, reflects several considerations. First, in rural areas, participation of adult women in any work, paid or not, is quite high so there is little to be gained by trying to understand the determinants of working in general. In addition, paid work is more likely to be relevant to changes in fertility and other important development outcomes. The range of types of paid employment in rural areas, not surprisingly, is broader than for unpaid work, virtually all of which takes place on the family farm. While most (75%) paid employment of women also takes place on family farms, about 10% of women in paid work are found in non-agricultural self-employment and another 10% work as wage employees for other families.

The estimates for rural women, shown in the first column, indicate that a woman's education, household resources, and the demographic composition of the household all influence the participation decision. Education (years of primary and years of post-primary schooling) has positive and statistically significant impacts on the probability that a woman works in paid employment in rural areas.[18] This is not surprising since women with an education presumably are able to earn more than those without schooling; that is, the education coefficients are likely capturing the positive effect of wage or earnings incentives on participation in paid work. Non-labor income (income of the household that comes from

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[17] Other examples of the importance of the situation of women in the labor market may be cited. Women who earn an income may have a greater say over the allocation of resources within the household than women who do not. If, as evidence from a number of developing countries suggests, women are more likely than men to spend their income in ways that benefit children (e.g., by spending more on food or clothing), participation of women in work, particularly paid work, may have especially strong benefits for children's welfare. Policymakers may also desire to raise education investments in girls (though we note that enrollments rates in Madagascar are currently similar for girls and boys). The decision of parents to educate daughters is likely to depend in large part on the perceived benefits in the labor market of schooling of girls compared with boys, which in turn will depend on the effect of schooling on women's employment (or employment in particular sectors or occupations) and earnings.

[18] The table shows the marginal effects of the explanatory variables, calculated from the estimated parameters and the data. The marginal effect equals the change in the probability of working due to an incremental change in the explanatory variable, evaluated at the sample means of all of the explanatory variables. For dichotomous (0,1) variables such as the age categories, the marginal effects must be regarded as approximations.

sources other than work, e.g., transfers from relatives) is not significantly associated with participation, but the value of agricultural assets has a significant negative impact. The latter presumably reflects the operation of an income effect: other things equal, women from better off households are less likely to work and more likely to choose leisure (or to stay at home with children). This result is consistent with the higher employment rates for women from poorer expenditure quintiles seen earlier.[19]

The model also includes a number of variables representing the structure of the household. Most notably, the number of children in the household under age 5 exerts a significant negative impact on the probability of paid employment, as we would expect if child care and supervision are incompatible with work. We should stress again that we are considering only paid employment; there is likely to be more compatibility of childcare and work in the case of unpaid labor on a family farm.[20]

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[19]   A positive rather than negative effect of agricultural assets might have been expected since these assets may raise the marginal productivity of labor on the farm. It appears that the income effect associated with assets outweighs this incentive effect, at least for paid work.

[20]   Indeed, in a probit model using participation in any work (paid or unpaid) as the dependent variable, the negative effect of the number of young children disappears. We can infer from this that paid work is less compatible with childcare. However, this is not because (or not only because) women who receive income for their labor work far from home; as noted, most of these women, like the unpaid family workers, work in family agriculture. However, being the individual actually receiving the income may signal a greater involvement in the running of the enterprise than would be the case for an unpaid family worker. This greater intensity of involvement in turn implies a reduced capacity for tending children while at work. This, in addition to the inclusion of some non-agricultural workers in

In contrast to the results for rural areas, few estimates are statistically significant for women in urban areas. Non-labor income has a negative and strongly significant effect on participation in paid work, again indicating an income effect. Education has no significant impacts, however, nor is there any effect of young children. These two results may at first appear surprising. Many jobs in cities and towns (for example, in the civil service) are associated with relatively high levels of education, implying a positive schooling impact on participation, and are also likely to be incompatible with child supervision, implying a negative effect of young children. The problem is that the simple probit model of participation aggregates types of work in urban settings that may differ greatly in terms of education requirements and childcare/work compatibility. Below, we explore in more depth the employment of women (as well as men) in urban areas, using a multinomial logit model of sector determination that allows us to distinguish the determinants of employment in different portions of the labor market.

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the paid work group, may explain why a negative effect of young children on participation is found for paid work but not for work overall.

3. URBAN LABOR MARKETS

Sector of Employment

We have noted the wide range of types of employment in the Malagasy economy. This heterogeneity of the labor market (which we define to include employment in family agricultural and non-agricultural enterprises as well as wage employment) is largely an aspect of the urban economy. In rural areas, the labor market is fairly homogenous: more than 90% of those who work report agricultural work on family farms as their primary activity. In urban areas, on the other hand, the working population is distributed among family enterprises (both agricultural and non-agricultural) and various types of wage employment. This is evident from Figure 2. In the figure and in the following discussion, the term "self-employment" denotes all forms of non-wage employment, that is, work in one's own or one's family's non-agricultural or agricultural enterprise. [21] Such activity predominates in urban areas just as in rural areas, but to a lesser degree than in the rural sector. In addition, the relative importance of self-employment differs for men and women. 50% of working men are in their own or their household's enterprises compared with 67% of working women. This means, conversely, that women who are in the labor force are less likely than men to be wage employees. In particular, women are far less likely to be employed by the public sector or by state or private enterprises. Thus while 12% and 22% of urban male workers are found in public employment and enterprise wage employment, respectively, only 7% and 11% of working women are found in these sectors. In contrast, about the same proportions of working men and women are employees of other individuals or households. We will examine these gender differences more closely below.

Sectoral differences in the urban labor market are explored in Table 11, which shows the prevalence of various job characteristics in the three wage sectors defined above: public sector, enterprise sector (including public and private enterprises), and household/individual employers. One such characteristic is permanent employee status, based on the individual's description of his or job as permanent or temporary. The other characteristics, or more accurately, terms and conditions of employment, are: the existence of a written employment contract; the presence of a union in the workplace; entitlement to paid sick leave; and entitlement to a pension after retiring. Thus the first row of the table shows the percentage of workers in each sector who are permanent employees, the second row shows the percentage who have an employment contract, and so on.

The presence of these characteristics are often used as indicators of "formal" or "modern" sector jobs as opposed to "informal" employment. Based on this criterion, the table indicates that the public sector and (somewhat less clearly) the enterprise sector could

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[21]　This includes both paid and unpaid labor as defined in Section 2. Note also that agricultural enterprises are included. In smaller urban areas in particular, a sizable portion of self-employment is agricultural.

be classified as "formal" wage sectors while wage employment with households or individuals is "informal". Virtually all public sector workers describe themselves as having permanent positions and the majority also report having an employment contract, which similarly indicates stable employment. Most public employees also enjoy sick leave benefits, and will receive a pension after they retire. The corresponding percentages are somewhat lower for the enterprise sector. This is understandable, since employers in this sector, particularly private enterprises, are less likely than the state to be in compliance with labor regulations or to respond to political demands for job security and benefits.[22] Still, as shown, the percentages of employees in this sector enjoying permanent worker status and various job benefits are quite high. Half of them, for example, have a written employment contract, and 62% get paid sick leave. In contrast, the majority of employees of other households or individuals are temporary workers (that is, they do not have permanent work with their employers) who generally do not receive benefits. Well under 10% of such workers report a contract, the presence of a union, or entitlement to a pension, and only 19% are entitled to paid sick leave. Households or individuals who hire labor presumably are either relatively small family-run establishments or simply households employing domestic help. Thus the lack of long term employment, employment contracts and various job benefits—all of which as noted are typically used to define formal employment—is not surprising.

The comparisons of terms and conditions of employment thus provide evidence of heterogeneity in the urban labor market in Madagascar. In what follows we maintain the three-way sectoral division of wage employment, and refer to first two sectors as formal wage sectors and the third sector as informal wage employment. However, a caveat is necessary. The public sector appears to be unambiguously formal and the household/individual sector unambiguously informal, but is likely that our "enterprise" sector contains something of a mix of large and small firms (in addition to state enterprises). The smaller businesses in this sector may under some definitions be considered to belong to the informal sector; after all, a large number of the employees in this sector do not have the job benefits discussed above. Beyond the taxonomic issue of defining formal and informal employment, the distinction is important because small and large enterprises may differ in terms of the labor intensiveness of production techniques (hence their potential to contribute to labor absorption), and in the regulatory and other constraints to expansion that they face (World Bank 1996).[23]

The descriptive evidence presented in Table 11 raises additional questions: first, do the determinants of entry (e.g., education and gender) differ between sectors; and second, do rates of pay and the determinant of earnings differ between sectors? The answers to these questions are important for evaluating labor market efficiency as well as equity, as we discuss below. To address the first question, we estimated a multinomial logit model of sector of

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[22]   The Labor Code regulates the ability of employers to hire or reduce their work forces, so the degree of job stability is likely to be in part a function of adherence to the code.

[23]   Unfortunately, the EPM did not record the number of employees or other measures of employer size.

employment determination on our urban samples. Separate estimations were carried out for men and women; by doing this, we can determine if and how the factors determining participation in the various sectors differ for men and women. Five alternatives are distinguished: not working (the base category), self-employment in non-agricultural or agricultural enterprises, wage employment in the public sector, wage employment in the enterprise sector, and wage work for other households/individuals.

Selected estimates for women in urban areas age 15 and older are presented in Table 12. We will confine ourselves to a discussion of the main highlights of the results for these models. In contrast to the simple probit model of participation discussed above, the multinomial logit model yields a separate vector of parameter estimates for each employment alternative. Disaggregating by sector of employment in this way makes it apparent that education indeed has important effects on employment outcomes of women in urban areas. However, these effects vary by sector, reflecting differences in skill requirements. For the public and enterprise sectors (the second and third columns), where jobs for women would generally demand at a minimum the possession of basic clerical skills, schooling has positive and generally significant effects on entry. In contrast, educational attainment is negatively associated with participation both in self-employment (column 1) and wage work for other households/individuals (column 4). These negative education effects reflect the generally low skilled (at least in terms of formal education) nature of the work in these sectors. Many self-employment activities are very small-scale operations that clearly do not require much if any formal education; consider, for example, the running of a small food stand. "Informal" wage employment with other households also includes many occupations for which education should not be a requirement of entry. For example, about 60% of women who work for households or individuals are employed as domestics.

The effects of young children also vary by sector. A greater number of children under age 5 in the household actually increase the probability that a woman will be self-employed. The marginal effect of young children for the household/individual wage sector is also positive but not significant. A positive impact of young children on the likelihood of working, or working in a given sector, can be explained by the increased requirements for household income that come with having children. Of course, additional children also imply a greater demand for the mother's time in childcare, which all things equal would tend to reduce participation. In informal work activities—especially self-employment—women may find it possible to combine work with childcare, so for these types of employment the positive impact of children predominates. In contrast, children do not increase the probability of entering formal wage employment (public and enterprise sectors), where such compatibility is likely to be rare. In fact, there is a strong negative effect of young children on the probability of being employed in the enterprise sector (column 3). We can infer from these results that the domestic responsibilities associated with the presence of young children inhibit women from entering some types of formal employment.

Among other variables in the model, residence in Antananarivo is negatively associated with entry into self-employment. This is largely due to the fact that our self-employment category includes agriculture, which is less prevalent in the capital than in

smaller towns or cities. In contrast, residence in the capital raises the likelihood that a woman will be employed in the enterprise sector or by other households or individuals.

Table 13 presents the multinomial logit results for men. The effects of education on the sector of urban employment are generally similar to those for women. The estimates for children under 5, however, make an interesting contrast with the results just seen for women. For men, having more children under 5 raises the probability of entry into all sectors but one (self-employment). Since men do not bear the primary responsibility for childcare, the impact of children on participation comes only though the increased need for income, hence is generally positive.

Having migrated to the current location of residence within the last five years is negatively associated with men's employment in the formal wage sectors, though the marginal effect is only significant for the enterprise sector. These negative effects are not found in informal employment (self-employment or wage work for household/individuals); in fact, recent migrant status is positively and significantly associated with being an employee of another household or individual. This pattern suggests the possibility of rationing of potentially more desirable formal sector jobs. When there is rationing, connections in the labor market, such as having a relative in a government ministry or modern sector firm, may be important as a means of obtaining a position. Men who have recently arrived in the city lack the connections of those who are long-term residents, and thus would be less able to gain access to formal sector wage employment. [24]

It was seen above (Figure 2) that among the working population, men and women are not equally represented in the various sectors of the urban labor market; in particular, women were less likely than men to be found in what we have labeled as formal wage employment in the public and enterprise sectors. Can our logit results help to explain this disparity? In view of the positive effect of schooling on entry into formal wage work in the logit models, a logical factor to consider is differences in educational attainment of men and women. The average years of schooling of men in urban areas is 7.8 years compared with 6.7 years for women. Thus there is some inequality in schooling, but the gap is not large. Therefore, while differences in educational attainment may account for part of the difference in sectoral allocations of men and women in the urban labor market, it is probably not a major part. Note, however, that this refers only to the length of schooling. The quality of education

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[24] However, the negative impact of being a migrant on entry into the public and enterprise wage sectors may instead be capturing part of the effect of schooling. Since schooling enters the model directly, the estimated effects control for the fact that non-migrants tend to have more schooling than migrants. However, for any level of schooling the quality of education may be lower for migrants if schools in their (largely rural) places of origin are of lower quality than schools attended by non-migrants. If employers are aware of these differences, they may prefer to hire non-migrants for positions for which education is important.

received by boys and girls, and also the type of vocational training, may differ in important ways that affect occupational outcomes, as we discuss further below.

Discrimination in the labor market—in the hiring practices of formal sector employers—is also a possibility, as are differences in preferences or career aspirations of men and women. To examine this further we need to compare the probabilities of employment in each sector for men and women controlling for differences in education and other background characteristics. In Table 14, therefore, we use the estimates of the multinomial logit models for men and women to calculate the expected probabilities of employment in each sector for a man and woman with identical levels of schooling and other characteristics. This is done for different levels of education. All other variables from the logit models are set equal to their mean values for the pooled (male and female) urban sample. In this way we highlight differences in employment outcomes that are related solely to gender.

Considering self-employment first, the first row in the first column shows the probability of self-employment for a man with no schooling. The equivalent calculation for women is in the first row under the subheading for women. These probabilities are fairly similar: 68% for men and 74% for women.[25] As the level of education increases, the likelihood of being self-employed falls for both men and women, consistent with the negative schooling coefficients in the male and female multinomial logit models. Also reflecting the patterns in the estimates, the predicted male and female probabilities of working for households/individuals fall as schooling increases (column 4), while the probabilities of public sector or enterprise wage employment increase with additional schooling.

However, the table reveals that some important differences between men and women remain even after adjusting for male-female differences in educational attainment and other factors. Working women with a secondary or university education are more likely to be employed in the public sector than are men with the same qualifications: the probabilities of public sector employment for women in these educational categories are 0.38 and 0.41, compared with only 0.21 and 0.25 for men (column 2). On the other hand, women are less likely than men with equivalent backgrounds to work in state or private enterprises (column 3). This is the case for all levels of schooling. For example, for the no schooling and primary levels the probabilities of enterprise sector employment are just 0.01 and 0.10 for women, compared with 0.06 and 0.22 for men.

The table also shows that women with a primary education are more likely to be self-employed than men with a primary education (0.75 compared with 0.54) and somewhat less likely (14% vs. 19%) to work for other households/individuals. We can also aggregate the categories and compare overall probabilities of formal employment (public or enterprise sectors) and informal employment (self-employment or work for other

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[25] Note that the probabilities are calculated as conditional on being employed. Thus differences in predicted participation of women and women in a given sector are not due to the overall lower labor force participation of women.

household/individuals) for working men and women with the same backgrounds. Among primary completers in the labor force, women are more likely than men to be found in informal work, hence less likely to be formally employed: the estimated probability of formal employment for a woman with primary schooling is only 11% (adding the public and enterprise sector probabilities in columns 2 and 3) compared with 27% for men. Among workers with no education, a woman has just a 1% chance of formal employment compared with 6% for men. At higher education levels the likelihoods of working in the formal sector are roughly similar, but with women more likely to be in the public sector and men more likely to be in the enterprise sector, as already noted.

In sum, the calculations show, first, that women with low (primary) schooling or no schooling are much less likely than men to be in formal wage employment, that is, they are more likely to enter informal employment. Second, among better-educated members of the workforce, women have similar chances as men to be formally wage employed, but they are found disproportionately in the public sector. The second finding raises the possibility that educated women have difficulty getting jobs in the private formal sector (and in state enterprises). An unwillingness on the part of employers to hire women for traditionally non-female professional or administrative occupations could explain the tendency for educated women to work in the public sector, since this sector is where traditionally "female" professions, such as teaching and health care, predominate. In fact, no fewer than 42% of the women employed by the public sector are teachers or otherwise in the education field, compared with only 17% for men. Note, however, that this may not reflect actual discrimination in hiring women for other, traditionally male, occupations. Instead, it may reflect the prior decisions of women to train for careers in fields such as education and health care. Still, this may indicate discrimination of another sort, if young women are not granted the same access as men to vocational or professional training for traditionally male occupations.

This is a complex issue that demands additional study, but it is one that cannot be directly addressed using the EPM data. However, we can make at least one important inference from our results. If the size of the public sector (and the public sector workforce) is going to be reduced as part of Madagascar's ongoing economic restructuring efforts, the consequences will be more severe for women if, as our results suggest, they have fewer opportunities than men for private formal employment. That is, a change in the balance of formal sector employment away from the public sector will probably hurt educated women's opportunities relative to educated men's.[26]

With regard to the difference between men and women with no schooling or primary schooling, it appears that women with relatively poor educational backgrounds have fewer

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[26] This inference about public vs. private employment opportunities must be made with caution, since our "enterprise" sector actually includes state owned enterprises, not just private sector formal firms. Note as well that because of this aggregation in the data, we are unable to assess the potential effects on male and female employment of the current and planned privatization of many state enterprises in Madagascar.

opportunities in both the public sector and in state or private formal enterprises than do men. Here too, discrimination may be a factor. Many employers (including in the government) may consider the jobs they offer at this skill level to be unsuitable for women. Again, however, a caveat is necessary. Women (or their families) may share these attitudes, hence they may not desire or seek these jobs. In addition, women at low skill levels may prefer informal sector work, either in self-employment or working for other households/individuals, because it is more compatible with their childcare responsibilities. Uneducated or poorly educated women are likely to come from poor households, hence lack the resources to pay for childcare help that would make formal employment more feasible. Thus in this case as well, there may be a number of reasons for observed gender differences in employment, which the data at hand cannot distinguish. However, our results at the very least suggest the possibility of inferior opportunities for women in certain types of employment.

Wages

In this section we compare levels and determinants of hourly earnings in different sectors of the wage labor market in urban areas. Like the analysis of labor market participation and sector of employment, an examination of the determinants of earnings can have important policy implications. For example, do public investments in education yield benefits in the labor market (measured by the effects on wages of additional schooling)? The answer has implications not just for economic growth but for strategies to reduce poverty. Providing an education to children in poor households is widely thought to be the most the most effective long-term means of breaking the cycle of poverty. However, this depends, at least primarily[27], on the effects of schooling on earnings.

Questions of efficiency and equity in the operation of the labor market can also be addressed. For example, are wages, controlling for differences in background, unequal in different sectors of the labor market? A large gap in earnings between similarly qualified workers in different sectors would suggest that the labor market is not operating efficiently (or fairly). Such a gap would imply that there are barriers to the free movement of labor from low- to high-wage sectors, since the result of this labor reallocation would be the elimination of large wage differentials. Similarly, wage differentials between men and women with the same levels of human capital would be an indication of inefficiency and possibly also of gender discrimination in pay or in access to better-paying occupations.

Table 15 shows the median hourly earnings of men and women in the three urban wage sectors defined above.[28] In making intersectoral comparisons, is important to control

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[27] Education, especially of girls, also has important non-market benefits, including reduced fertility and better child health. Analysis of the Madagascar DHS survey (cited in World Bank 1996) reveals strong negative correlations of the level of maternal schooling, on the one hand, and fertility and child mortality on the other.

[28] Our focus on the urban wage labor market in this section is not meant to imply that analysis of earnings in self-employment, particularly in agriculture, is not equally (or even

for levels of schooling, since these vary across sectors. Therefore the median earnings are shown by level of education. Even controlling for education, there is a clear hierarchy by sector: for both men and women, wages are highest in the public sector, lower in state and private enterprises, and even lower among employees of other households or individuals. The premium enjoyed by public sector workers compared with those in enterprises appears to be large. The median earnings of male enterprise workers with less than a primary schooling (336 FMG) is only 68% that of men with similar schooling in the public sector (FMG 494). The public sector advantage declines somewhat as we move to higher education categories; for completed lower university or higher, median earnings of men in the enterprise sector is just under 80% that of those in public employment. This is in keeping with the relative compression of public sector salaries in Madagascar noted elsewhere.[29] This, in turn, reflects both the presumably greater adherence to minimum wage regulations by government employers, which would raise the mean earnings of the least educated workers in government, and the tendency of the authorities to let real wages of skilled civil service personnel fall more from inflation than the wages of less-skilled workers. For women there is more variation in the differences of public and enterprise earnings by education level, but overall the gap is of a similar magnitude as that for men.[30]

The finding of wage premia for public sector workers is striking, even surprising, in view of the dramatic and well-documented declines in real public sector wages in recent years. However, a similar result was reported in a study by Project Madio (Rarivoarivelomanana and Ramilison 1996) using different data. Based on estimates of

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more) important. However, the statistical analysis of earnings in family agricultural or non-agricultural enterprises presents particular difficulties, such as the need to account for the contributions to profits of the labor of multiple family members and of land or other business assets, and the problem of accurately measuring enterprise costs and revenues. Hence for this report we concentrate on wage earnings. However, Dorosh et. al. (1998) examine the determinants of per capita household income (or more precisely, consumption) in rural areas. While not the same as an explicit analysis of output or revenue in agricultural enterprises, their results do capture implicitly the effects of various factors on agricultural productivity because consumption by rural households is so strongly tied to farm activity.

[29] Analysis by the MADIO project (Rarivoarivelomanana and Ramilison 1996) indicates that the salary range from unskilled workers to management workers is smaller in the public sector than in the private formal wage sector.

[30] Note that the comparisons of median earnings control for schooling (and sex) but do not control for differences in experience and location as well as differences in unobserved characteristics that may affect both wages and the choice of sector of employment. A more precise comparison would be to compare predicted wages calculated from sector-specific wage regressions that control for differences in unobserved factors (that is, for sample selectivity) and include controls for experience and location. Such regressions are described below. Sectoral differences in predicted wages derived from these estimates revealed a pattern quite similar to that shown by the medians in the table so are not reported.

earnings functions for wage earners in Antananarivo in 1995 and 1996, Rarivoarivelomanana and Ramilison report wage premia for public sector workers over private formal employees (the latter consisting only of private businesses, unlike our enterprise sector category).[31] Nevertheless, one should be very careful about concluding from our data that employees in the public sector are better paid than those in the private sector (or at least the private formal sector), for two reasons. First, already noted, is the decline in real levels of public wages in the past several decades. Of course, better information on trends in formal private sector earnings would shed more light on the comparisons. Second, there is the problem that our enterprise sector does not consist only of private sector workers but those from state enterprises as well. Thus we may in part be comparing civil service salaries with pay in public enterprises rather than in private formal enterprises.

A less ambiguous conclusion from the table is that wage workers in what we have called informal wage labor are at a particular disadvantage relative to formal sector workers in either the public or enterprise sectors. At low skill levels, a factor that may be contributing to this gap is that most informal employers are unlikely to be bound by the official minimum wage. For women the disadvantage is very large and no doubt reflects the fact that the majority of women employed by households or individuals work as domestics. The apparently very large earnings premium for "formal" wage employment may explain in part why urban unemployment rates among individuals under 30 are so high, as discussed above. Recent entrants to the labor market may conclude that it is worthwhile to remain out of work and search for a lucrative formal sector job rather than entering less remunerative informal sector employment.[32] Note as well that the comparisons of hourly earnings do not even consider the value of such benefits as sick leave and pensions. As seen earlier, these tend to be much higher for formal sector wage work, especially in the public sector, making such employment even more attractive relative to informal employment.

Finally, Table 15 suggests that men enjoy an earnings premium over women in both the enterprise and household/individual employer sectors, irrespective of education level. However, in the public sector, there are no consistent gender differences in earnings, and the overall medians for men and women in the public sector are in fact practically the same (FMG 719 vs. FMG 713).[33] We return to the issue of gender gaps in earnings below.

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[31] However, the magnitude of the estimated public sector advantage was very different for the two years: 29% in 1995 and 10% in 1996.

[32] Note that this assumes that potential earnings in the other urban informal sector—self-employment—are also lower than in formal wage employment.

[33] The median public sector earnings of women with less than a completed primary education are substantially below those of men with this level of schooling, but the comparison is unreliable since there are only 7 women in this subsample.

Next we explore the determinants of wages in a multivariate framework. We estimate separate earnings functions for each sector, thus allowing the returns to education and experience to vary by sector. The results are shown in Table 16. The dependent variable in these regressions is the natural log of hourly compensation in money and kind, including the value of commissions and employer-provided housing where relevant. A standard set of explanatory variables is included in these models: occupational experience and its square, years of education by level (primary, secondary, university), and controls for location and month (the latter is included to control for inflation as well as seasonal factors affecting wages). The location and month controls are omitted to save space.[34]

We look first at the estimates for schooling. Because the dependent variable is in natural log form, the estimates indicate the percentage increase in the hourly wage from a unit (i.e., one year) increase in each type of schooling. This increase is often interpreted as the private return to an additional year of schooling[35]. In most cases, additional primary schooling does not appear to raise the hourly earnings of wage employees. There is no significant primary schooling effect for either men or women in the public sector (columns 1 and 2), and in the enterprise sector the coefficient is significant for men only. With regard to the public sector, however, the lack of any measurable primary school effect on wages is likely due simply to a lack of variation in this regressor: 86% of men and 96% of women in this high-skill sector have completed primary school. Thus one should be cautious about inferring that primary schooling has no impact on earnings in this sector.[36] The same may

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[34]   The models also include controls (not shown) for potential selection bias, that is, biases in the estimates that are caused by the non-random selection into wage employment or into a specific sector. We use the approach of Lee (1983) which extends the work of Heckman (1979). For the earnings functions shown in table 16 this involves estimating separate multinomial logit models of sector allocation for men and women like the ones discussed in the previous section and using the data and estimates to calculate the appropriate selectivity terms for each sector for each individual. These terms are included in the wage regressions run on the samples of male or female wage earners in each sector.

[35]   Strictly speaking, the estimate is not a private rate of return, since the latter refers to the *net* benefit (in terms of income) to the individual of another year of school. That is, calculation of private rates of return must also consider the costs of schooling to the individual, not just the benefits as measured by the schooling coefficient in a wage regression. In the case of free public provision of education, private schooling costs would consist primarily of income lost to the household by sending a child to school instead of work. In contrast, calculation of the social rate of return would also incorporate all additional costs and benefits to society of an additional year of schooling for the individual. Most importantly, this would include the cost to the government of providing the additional schooling.

[36]   Aside from any direct effect on wages in the public sector, primary schooling affects earnings by permitting entry into the relatively well-paid public sector, as seen in the multinomial logit estimates.

hold for the enterprise sector, since here as well most women and the majority of men have completed primary school. On the other hand, we also find that among wage employees working for other households or individuals, primary schooling has no effect on wages either for men or women (columns 5 and 6). In this case, the results cannot be attributed to inadequate variation in the data, since there is substantial variation in years of primary schooling in this subsample; it is secondary and especially university educated workers who are comparatively rare here.

In contrast to primary school, additional years of secondary education raise wages in all cases. In the public sector, the effects for women are larger than for men: an additional year of secondary schooling raises a woman's hourly earnings by 16% compared with 10% for men. There is less of a gap between men and women in the returns to secondary education in the enterprise sector. For men, the returns to secondary education are virtually the same in public and enterprise employment. Although we also see significant returns to years of secondary schooling in the household/individual sector, these are markedly lower for women than men (7% vs. 11.5%). There are also benefits to university schooling for public sector and enterprise sector employees. No effects of university are seen for employees of other households or individuals, but very few individuals in this sector have gone beyond secondary school.

Turning to the estimates for occupational experience, note first that the use of the quadratic specification (years of experience and its square) allows the incremental benefits of experience to first increase and then decrease with the number of years worked. This is the expected shape of the earnings-experience relation and in general gave the best fit to the data. In the public sector, the effects of occupational experience are virtually the same for men and women. One interpretation of this is that women in government employment can expect to advance in terms of promotion and pay at the same rate as men. In the enterprise sector, the returns to occupational experience are also similar for men and women, though slightly higher for men: an additional year of experience for a man with 10 years of experience raises earnings by 6.3% compared with 5.6% for a woman.[37] For both men and women, the benefits to experience appear somewhat greater here than in public employment. Among employees of households/individuals, we see once again a non-linear effect of experience on earnings for women. For men, in contrast, a simple linear specification gave the best fit. However, this estimate, while statistically significant, is very small: an additional year of experience raises the hourly wage of men in this sector by only about 1%. Note that much of the work of men employed by other households or individuals is likely to be "casual" or temporary (as table 11 suggests) as well as low-skilled. We would not expect large returns to experience in this type of work.[38]

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[37]   Because experience is entered in quadratic form in the regressions, the effect of an additional year of experience on the wage depends on the level of experience.

[38]   Of course, the same might be said of women in this sector, whose returns to experience are larger. The nature of the work done by men and women employed by other

In sum, we find differences both in wage levels and in the effects on wages of experience and education in different sectors of the wage labor market. Employees in the public sector enjoy a wage premium over those in the other two sectors. Given the composition of our "enterprise" sector, the difference in the earnings of employees in this sector and those in public employment is somewhat difficult to interpret, as noted. However, the distinction between informal wage work for other households/individuals and formal (public or enterprise) wage employment is unambiguous and important. Median levels of earnings by schooling level are considerably lower for workers in the household/individual employer sector than for other wage employees. In addition, there are only weak benefits to experience among men employed in this sector, and the earnings of both men and women in this sector do not improve with primary schooling. The latter is of concern since most urban wage workers with low but non-zero levels of schooling work for households or other individuals. It appears that they do not benefit from the primary schooling they do have. Low pay and weak incremental effects of experience and education no doubt reflect to a large extent the nature of work in this sector, especially for women, a majority of whom work as domestics for other families.[39] Since our household/individual category probably captures only the smallest firms in the informal sector, it is possible that the situation might be somewhat different in other, larger (but still relatively informal) enterprises.[40] Still, the findings for the small firms and household employers that our household/individual category does capture are important, as they make up a substantial fraction of urban wage employment. This is especially true for women wage earners in our sample, 46% of whom are found in this sector.

Returning to the question posed at the start of this subsection, we can say that investments in schooling overall do have benefits for men and women in the labor market. However, this conclusion is tempered by the finding of low or non-existent returns to schooling in informal wage employment, and the general lack of significant positive effects of primary school. The latter finding is troubling and bears further consideration, taking into account both the specific context of Madagascar and the recent empirical literature on schooling returns in Africa. Consistent with the present study, recent studies using micro data from a number of African countries generally report low returns to primary school: wage

households or individuals is quite different, however. As noted, most of the women work as domestics. Although this is poorly paid work, there may be a premium to experience not found in the type of work done by men in this sector.

[39] The low estimated effects of schooling also imply that the range of wages from uneducated to highly educated workers is narrower (in absolute terms, i.e., in FMG) in informal wage work than in either of the formal wage sectors.

[40] Some of these businesses may in fact be captured by our enterprise category, in which we found higher wage levels and stronger returns to schooling and experience than in the household/individual sector.

increases of 5% or less from an additional year of primary school are common.[41] In the present case, for particular subsamples of wage earners, as noted, the lack of a significant primary schooling effect may be due to inadequate variation in the data, but we also find no impact for informal workers, where this problem does not arise.[42]

Our results for primary schooling are also consistent with the widely noted decline in the quality of primary education in Madagascar (World Bank 1995). Note that this would only affect the earnings of younger workers, that is, individuals who received their primary schooling after school quality began to worsen. Equally plausible, however, is an explanation involving trends over the last two decades in supply and demand in the labor market. On the supply side, the impressive expansion of primary enrollments through the 1970s added unprecedented numbers of workers with some primary or completed primary education to the labor force. All things equal, this would have exerted downward pressure on the returns to primary schooling. On the side of labor demand, the stagnation of the formal sector has meant that the growth of jobs for educated workers has been weak. This combination of changes in schooling, labor demand, and labor supply may have worked as follows. With fewer jobs to go around and an overall better-educated labor force, formal employers would be able to demand a secondary education for positions formerly filled by those with only

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[41] See Moll (1995); Appleton, Hoddinott, and Knight (1996); and Appleton, Hoddinott, Krishnan and Max (1995). Knight, J., R. Sabot, and D. Hovey (1992) provide a discussion and critique of earlier studies, which tended to find very high private returns to primary school both absolutely and relative to post-primary education.

[42] Alternatively, as in some studies of earnings, one can ignore sector divisions and estimate the earnings function on the entire sample of male or female wage earners. Regressions on the aggregated wage-earner samples (using the same set of independent variables and adding the appropriate selection controls) do yield significant effects for years of primary schooling for men and women. However, these remain low both absolutely and relative to returns to secondary and (usually) university education. An additional year of primary education in these regressions raises hourly wages by about 5% and 6% for men and women, respectively, compared with 11% and 13% for secondary schooling. Further, part of the estimated impact of schooling on the wage in this case comes from the effect of educational attainment on entry into certain better-paid sectors (e.g., the public sector). These entry effects may reflect the direct effects of schooling on productivity, but may also arise for other reasons. For example (extending an argument often applied to the association of schooling and earnings), formal sector employers may use education in the hiring process as a signal of desirable worker characteristics that are associated with, but not caused by, schooling. If dummy indicators of sector of employment are added to control for sector entry effects, the returns to primary school fall to just 3% for both men and women. We conclude that the private benefits to primary schooling, both in an absolute sense and relative to post-primary schooling, are at best modest.

primary schooling.[43] Labor force entrants with no more than a primary schooling increasingly may have been forced to enter less remunerative employment in informal wage or self-employment, where (in the former case at least) the benefits to a primary education are low or nonexistent, as we have seen. In turn, excess supply of such labor to this sector may be partially responsible for the lack of measured returns to primary school in informal wage work.[44]

Finally, an important issue raised by the examination of median hourly earnings in Table 15 is the existence of differences in the earnings of men and women. The simplest way to statistically assess gender effects on earnings—that is, the differences in earnings due solely to gender rather than to differences in education and experience—is to pool male and female observations and add a dummy variable for gender. This was done for each wage sector. We just summarize the results for gender here. In the public sector, no differences in the earnings of men and women controlling for background were found; that is, the dummy variable for being female was not significant. In the other two sectors, however, the gender dummy was negative and highly significant. Among employees of public and private enterprises, the impact on hourly earnings of being female is about -0.20, that is, a women can expect to earn only 80% of what a man earns, controlling for schooling and other factors. The difference is even larger among employees of other households or individuals: here the "gender effect" is -0.35. The fact that so many women in this sector work as domestics, presumably a very low-paid occupation, is relevant. Note that these estimated percentage differences in male-female wages, which are based on multivariate analysis, are similar to the gaps in median earnings within each sector seen in Table 15.[45]

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[43]   This process is thought to have occurred in many developing countries with similar trends in education and employment growth. Knight et. al (1992) give an illustration for Kenya.

[44]   To examine these issues further, interactions of potential labor market experience (calculated as age – years of school + 6) with years of schooling for each education level were added to the wage regressions on the samples of all male and female wage earners. In both cases, the coefficient on the interaction of experience and primary years was positive and highly significant, and this result was largely unchanged by addition of the dummy variables for sector. In other words, the benefits to primary education are higher for older workers. In contrast, no significant interactions of experience and secondary or university schooling were found. These results, while intriguing, do not allow us to choose between the two explanations giving in the text because they are consistent with both of them: i.e., they may indicate that more recent entrants have received a lower quality of primary schooling than older workers, or that the balance of supply and demand for labor of those with primary schooling has changed over time. Further, note that a third interpretation is also possible, that there is a complementarity of experience and primary training, such that the benefits of primary schooling for a worker's productivity increase with years worked.

[45]   One can also compare wages of men and women by using the estimates from the separate male and female wage regressions to calculate predicted wages for men and women

with identical schooling and other background factors. Further, decomposition analysis can assess which portion of the male-female gap in mean wages is due to differences in rewards to different factors (e.g., education) and which portion is due to differences in the levels of these factors for men and women. These approaches yielded differences in average expected wages of men and women within the enterprise and household/individual sectors that were similar to the gaps estimated by using the pooled regressions with a dummy variable for gender.   For the public sector, however, they yielded a large male wage advantage. Essentially, this occurred because the intercept term in the male regression (which represents the base wage, i.e., the wage at zero years of schooling and experience) was much larger for men. This difference does not seem plausible in view of the lack of any significant gender effect in the pooled regressions and the fact that the medians of actual wages are similar for men and women. The comparison of medians, as noted, does not control for schooling, experience, and other factors that may differ between men and women, but in the case of the public sector years of school and experience are almost identical for men and women. Thus we consider the medians, together with the estimate from the pooled model, to be more reliable indicators of gender-based differences (or rather, the lack of them) in male and female public sector earnings.

4. SUMMARY AND POLICY IMPLICATIONS

1.   <u>Agriculture on family farms is the most important source of employment in Madagascar</u>.

        Four-fifths of working adults nation-wide are engaged in agricultural self-employment as their primary work activity. Most households involved in agriculture, as in Madagascar overall, are poor in an absolute sense, so improvements in agricultural incomes remains a major path to reducing absolute poverty. In terms of *relative* poverty or inequality, raising agricultural incomes across the board will not have highly disproportionate benefits for the poorest households, since they are only slightly over-represented in agriculture. On the other hand, the poor are very much *under*-represented in formal wage employment (the public and enterprise sectors) while the wealthiest are over-represented; improvements in earnings in these wage categories will tend, all else equal, to disproportionately benefit better-off households[46]. This does not mean that there are not many poor households involved in wage employment, as least in urban areas. However, individuals from such households are more likely to be found in informal wage work for other households or individuals.

2.   <u>Unemployment is a serious problem among the young in urban areas</u>.

        This is especially the case in Antananarivo.   There is also an association of unemployment and level of education in Antananarivo, at least among young men. Unlike in an earlier era, educated labor force entrants cannot count on getting a position in the public sector. Thus the unemployment problem is likely to persist or worsen as long as formal private sector wage employment growth remains weak. The country's rapid population growth will exacerbate the problem by adding to the supply of new labor force participants. Moreover, privatization of state enterprises can be expected to aggravate the unemployment problem in the short term, since the new managers of these enterprises are likely to reduce staff in an effort to increase efficiency.

        Because of the connection of education level and unemployment, the prevalence of open unemployment may actually be alleviated to an extent in the near future by the declines in school enrollments that have occurred in recent years. These declines probably reflect a combination of overall economic deterioration and the fall in school quality. Less educated entrants to the workforce will be less likely to wait for high-wage formal sector job openings and will lack the resources to remain out of work.   But a reduction in open unemployment arrived at by this means could hardly be considered a positive development for Madagascar.

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[46]   These distributional implications do not mean that such wage workers are paid "too much". Their higher earnings reflect, at least in part, their superior schooling and higher productivity.

3.   Children's labor may be detrimental to their schooling.

        In rural areas, 39% of boys and 30% of girls age 7 to 14 work in a given week, and
the hours they work are substantial. Employment rates for children are lower in urban areas,
but still substantial for those in the poorest quintiles. It is highly likely that this labor,
necessary though it may be for subsistence, has negative effects on school attendance or
performance.   Investments in human capital, in particular schooling, are essential for
reducing poverty, but children from poor households are the most likely to have work
obligations. This sets up a vicious cycle of poverty leading to low schooling leading to
continued poverty in the next generation. If the work of children is essential for poor
households, ways need to be explored to make schooling more compatible with such work.
This might involve building more schools, thereby reducing the time it takes to travel to
school (since travel time equals lost work time), or permitting flexible scheduling of classes
that would make school interfere less with work obligations.   Future work with the EPM
data will examine the decisions of households to send children to school (and to work) and
may provide more guidance to such policies.

4.   Investments in education raise earnings

        This finding for urban wage employees is hardly surprising, as it confirms what has
been found in countless other empirical studies of earnings in developing countries. It is also,
of course, what one hopes to find, since it indicates that public and private investments in
education raise individuals' productivity and incomes, thereby reducing poverty and
enhancing economic growth. What is of more interest, and concern, is that we do not find
positive effects on earnings across the board, that is, for each level of schooling in each wage
sector. In particular, returns to primary school overall seem low, as are returns to schooling
in general in informal wage work. Our inability to find much of an effect of primary
education on wage earnings (consistent with several recent studies of other countries in the
region) may in part reflect declines in the quality of education since the early 1980s as well
changes in labor demand and supply. The quality problem has been received a fair amount of
attention (see World Bank 1995). We cannot infer very much about this issue from the data
used for this report.   Of course, to the extent that poor returns to primary education do reflect
quality problems, policies that improve the quality of primary education will benefit earnings.
Beyond this, if these improvements serve to raise primary enrollments after the sharp declines
experienced in the 1980s and early 1990s, they will enable more children to go on to
secondary school, for which the effects on earnings are (currently, at least) stronger.[47]

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[47]   Unfortunately, standing in the way of major improvements in the education system is
the fact that government spending on education has been rather low as a percentage of GDP
(for example, under 2% in 1996; IMF 1997). This is lower than the average for Sub-Saharan
African countries and developing countries generally and reflects the relatively modest size
of the government in Madagascar. This in turn points to the need to raise total government
revenues (World Bank 1995).

5.   Urban labor markets are segmented

        Although human capital (schooling and experience) overall pays off in the labor
market, there is evidence of segmentation in the urban labor market, suggesting inefficiencies
in labor allocation. The evidence is in the form of differences in the hourly earnings of
workers in different portions of the labor market that remain even after controlling for
differences in workers' human capital. Public sector employees have the highest pay,
followed by state and private enterprise workers and (some distance behind) informal sector
employees of other households or individuals. The gap between public and enterprise
employees is large but cannot be strictly interpreted as showing a public advantage over
private wages since the enterprise category includes state as well as private enterprises. Less
ambiguous is the large difference between wages of workers in the formal sectors (the public
and enterprise sectors), on one hand, and informal wage workers, on the other. This gap in
earnings is consistent with rationing of high-wage formal sector jobs (especially public sector
jobs), leading to excess supply and consequently, lower earnings in other sectors.

        In addition to their higher earnings (with the caveat just noted), public sector workers
receive higher non-wage benefits than do other wage workers. They have a high level of job
security, as indicated by the prevalence of contracts and the fact that almost all government
employees report that they are permanent employees, and they are entitled to benefits such as
paid sick leave and pensions in greater numbers than other wage employees. The other side
of the coin of job security for employees in the public sector is a lack of employer flexibility
in hiring and dismissing workers, hence a potential for overstaffing and inefficiency in labor
allocation; few observers would doubt that these problems characterize the public sector in
Madagascar. In addition, we have found a tendency for public sector workers (relative to
other wage employees) to take second jobs. This may be an indicator of poor motivation and
productivity in their primary, government, jobs.

        With respect to policy toward employment practices in the civil service, two facts
should be kept in mind. First, the role of the public sector as an employer will, or should,
decline in relative importance in favor of the private sector. Fiscal deficits and the need for
macroeconomic stability dictate that the government will not be able to absorb educated labor
force entrants as it once did. Such employment growth instead must come from the private
sector. Second, the fact that public employees seem to enjoy a salary premium does not mean
that wage levels should actually be reduced. This would certainly not help the low
motivation that is said to plague the civil service (IMF 1997). The already substantial erosion
of real public sector salaries in recent years also needs to be kept in mind. Addressing the
problems in the civil service would go well beyond the bounds of this report (and well
beyond what can be addressed with our data), but a comprehensive civil service reform
would encompass greater flexibility in hiring and pay, performance-based promotion, and a
change in the wage structure to eliminate wage compression.[48]

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[48]   IMF (1997) outlines a strategy for civil service reform.

As noted, the private sector is expected to be the primary source of non-agricultural employment growth in Madagascar. Policies to encourage investment and growth in the private sector will therefore have important ramifications for employment and earnings.[49] If these policies are not successful in raising investment by formal sector firms, job growth (to the extent it occurs at all) will come primarily from self-employment or informal wage employment in small enterprises. We have shown that, controlling for background, earnings are low for individuals working in what is probably the "most" informal kind of wage employment—that is, work for other households or individuals. Further, the incremental benefits to schooling and experience among these workers are small. Based on our results, it does not seem as if employment expansion in this sector would be an effective path to growth and poverty reduction. We must repeat our caveat, however, that earnings and productivity elsewhere in the informal economy, in somewhat larger businesses and even in self-employment, may be different. Further, low earnings within informal enterprises may reflect (in addition to factors such as an excess supply of workers) constraints to productivity that can be addressed by policy. It has been pointed out that small firms in Madagascar—which tend to be labor intensive, hence able to absorb more labor—suffer numerous disadvantages in comparison with larger enterprises.[50] Policies that encourage the expansion and especially, the productivity of small enterprises have the potential to increase both labor absorption and wages in that sector.

6.   <u>Women may be disadvantaged in terms of pay and opportunities.</u>

There are important differences in the wages of men and women and in the determinants of men's and women's entry into different portions of the urban labor market. Policymakers need to be aware of these differences, as they suggest that women suffer certain disadvantages in the labor market. Women and men with equivalent characteristics appear to receive similar pay in the public sector. However, female wage employees in the enterprise sector (state and private enterprises) as well as in our household employer sector earn less than men with similar levels of schooling and experience. This may represent outright gender discrimination in pay by private (or state enterprise) employers or, more subtly, a predominance of women in types of jobs that pay less. Either way, it is clear that the public sector represents an island of pay equity for women in an urban economy that is otherwise unequal.

The earnings gap between men and women is especially large in informal wage employment. Most female workers with little or no schooling who are working for wages are found in this sector. Improving economic opportunities in wage employment is likely to be hard for this group of low-skilled women. There currently do not seem to be many options

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[49]   See World Bank (1996) and IMF (1997) for discussions of measures to encourage private sector development.

[50]   They lack the resources to deal with investment regulations, have less access to foreign exchange, and have less access to bank finance than do larger enterprises (World Bank 1996).

for formal wage employment for such women (something that is not the case, at least to the same extent, for men with low schooling), and the informal wage positions they can get more often than not are as domestics, an occupation in which the scope for improving earnings is very limited. For women with little or no education, therefore, it may be more fruitful for policy to focus on improving self-employment opportunities and earnings, for example though credit or training programs. In the long term, policy must focus on raising the educational attainment of women as well as men.

With regard to the distribution of urban labor force participants among sectors of the labor market, overall the factors determining this distribution (in particular, schooling) are similar for men and women. Nevertheless, after controlling for male-female differences in education and other factors, significant gender differences remain. Among poorly educated labor force participants, women are less likely than men to be working in the formal wage sectors. Among the segment of the workforce with relatively high educational attainment (secondary or higher), access to formal wage employment overall appears about equal for men and women. However, women in this group are substantially more likely to be in public sector employment and less likely to be employed by state or private enterprises than are men. These patterns may reflect gender discrimination in hiring. Alternatively or additionally, sector allocation differences may reflect differences in the types of occupations entered by men and women, and by implication, in the occupational training they receive. For example, educated women are more likely to be in fields such as teaching and health services that are associated with the public sector.

The trend to privatization, which implies an increase in the importance of private sector employment relative to public sector employment, may put women at a particular disadvantage, since they seem to fare best in the public sector with respect both to entry possibilities and earnings parity with men. Thus conditions for women in private employment—with respect both to access to jobs and pay levels—need to be closely monitored if women are to be able to fully participate in structural change and private sector development. In the education sector, policies must insure that women receive training for occupations that will be demanded by private employers. The same is true of men, of course, but our findings suggest that this is likely to be of concern especially for women.

A potentially important constraint on women's labor market participation, or participation in certain types of work, is the burden of domestic work represented by the presence of young children. In rural areas, the presence of young children in the household inhibits participation in paid work. In urban areas, children reduce the probability that a woman will enter some types of formal employment (e.g., the enterprise sector) while encouraging entry into self-employment, where childcare and work are more likely to be compatible. Children thus may be acting as a constraint on women's ability to enter better-paid forms of employment. This constraint can be addressed by policy, most obviously through the provision of childcare services for women by the state or by employers. However, the patterns in the data may in part reflect the preferences of women who have more young children to stay at home, or to not seek careers in formal employment. Further

study of women's attitudes and existing childcare arrangements is needed to understand the reasons for the observed relationships of women's work and children.

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Table 1: Employment Rates of Men and Women 15-65

	Rural		Urban	
	Men	Women	Men	Women
Wage or Self-Employment	64.6%	33.7%	61.6%	45.3%
Family Labor	25.7%	48.5%	10.9%	17.6%
All	90.3%	82.2%	72.5%	62.9%

Note: Based on work status in the previous week. "Family labor" denotes work in household agricultural or non-agricultural enterprises for which the individual is not directly compensated.

Table 2: Employment Status by Age and per capita Expenditure Quintile

	Expenditure Quintile					
	Q1	Q2	Q3	Q4	Q5	All
Males						
7-14	37%	40%	39%	28%	15%	34%
15-65	89%	89%	89%	85%	79%	86%
over 65	75%	70%	68%	66%	57%	68%
Females						
7-14	30%	32%	28%	20%	17%	27%
15-65	82%	84%	80%	74%	65%	78%
over 65	43%	37%	53%	39%	48%	44%

Note: Shows rates of participation in paid work or in unpaid family labor in household enterprises in the previous week.

Table 3: Unemployment Rates by Age and Area

	Rural		Antananarivo		Other Urban	
Age	Men	Women	Men	Women	Men	Women
15-20	0.01	0.02	0.21	0.17	0.11	0.08
21-30	0.02	0.02	0.16	0.14	0.07	0.09
31-50	0.01	0.01	0.06	0.06	0.03	0.04
51-65	0.01	0.01	0.02	0.01	0.04	0.01
65+	0.01	0.00	0.03	0.03	0.00	0.05

Table 4: Urban Men and Women Age 15 to 30: Unemployment Rate by Educational Attainment

Highest Degree Obtained	Antananarivo		Other Urban	
	Men	Women	Men	Women
None	10%	14%	9%	7%
Primary (CEPE)	24%	12%	9%	11%
Secondary (Baccalaureate)	28%	47%	8%	0%
Other Secondary	19%	10%	9%	11%
University	14%	39%	n.a.	n.a.

Note: n.a.: insufficient sample size

Table 5: Sector of Employment of Heads of Households by per capita Expenditure Quintile

Sector	Expenditure Quintile					
	Q1	Q2	Q3	Q4	Q5	All
Agricultural Activities	24%	24%	22%	18%	12%	100%
Non-agricultural self-employment	11%	12%	13%	24%	40%	100%
Wage Employment (public sector)	2%	5%	12%	23%	58%	100%
Wage Employment (enterprise)	2%	6%	15%	29%	48%	100%
Wage Employment (households/ individuals)	21%	18%	24%	20%	18%	100%

Table 6: Multiple Job-Holding: Proportion of Workers Engaged in More than One Activity by Area

Reference Period	Rural	Antananarivo	Other Urban	All
Past week[a]	36%	21%	26%	34%
Past year[b]	52%	38%	40%	50%

[a]Shows percentage of workers engaged in more than one income-earning activity in the past week.

[b]Shows percentage of workers engaged in more than one income-earning activity in the past year.

Table 7: Multiple Job Holding by Area and per capita Expenditure Quintile

	Expenditure Quintile				
Area	Q1	Q2	Q3	Q4	Q5
Rural	33.7%	35.5%	32.1%	37.4%	40.4%
Urban	25.6%	28.9%	24.2%	21.2%	15.5%

Note: Shows the percentage of workers in each quintile working in more than one activity in the past week. Separate quintiles calculated for rural and urban areas.

Table 8: Multiple Job Holding by Urban Wage Employees by Sector of Primary Employment

Sector/Employer	Antananarivo	Other Urban	All
Public	18.1%	39.1%	28.6%
Enterprise	14.6%	20.9%	17.6%
Households/Individuals	14.5%	28.5%	20.4%

Note: Shows percentage of workers in each sector engaged in a secondary activity in the past week.

Table 9: Employment Rates and Hours Worked per Week by Age and Area

	Rural		Urban	
	Employment Rate[a]	Hours of Work[b]	Employment Rate[a]	Hours of Work[b]
Males				
7-14	39%	25.5	16%	20.3
15-65	90%	40.2	72%	43.2
over 65	70%	33.2	57%	38.2
Females				
7-14	30%	19.1	17%	17.8
15-65	82%	30.0	63%	34.9
over 65	32%	25.3	26%	25.5

[a] Participation in an income-generating activity (including family labor) in the past week.

[b] Employed subsample only: average hours of work per week in the past year (see text for details)

Table 10: Determinants of Female Employment: Probit Model Results

Variable	Rural		Urban	
	Marginal Effect[a]	t-statistic	Marginal Effect[a]	t-statistic
Intercept	-0.089	2.20**	-0.022	0.45
Age (Excluded=<25):				
25 to 40	0.177	8.21***	0.379	15.89***
41 to 50	0.308	10.34***	0.476	13.72***
51 to 65	0.346	11.60***	0.301	8.60***
over 65	0.278	5.51***	-0.003	0.04
Education: Years of				
primary	0.008	1.84*	-0.004	0.68
secondary[b]	0.042	5.00***	-0.006	1.12
university	----	----	0.008	0.61
Non-labor income/100000 FMG	-0.001	0.43	-0.003	3.28***
Agricultural Assets/10000000 FMG	-0.149	3.45***	----	----
Household Structure:				
Children <5	-0.020	2.19**	-0.003	0.24
Girls 5 to 14	-0.015	1.51	-0.033	2.9***
Boys 5 to 14	-0.019	2.02**	-0.022	2.04**
Women 15 to 65	-0.021	2.20**	-0.036	3.84***
Men 15 to 65	-0.064	6.75***	-0.032	3.55***
Adults > 65	-0.118	4.71***	-0.052	1.80*
No. of Observations	3458		3111	

Notes: Dependent variable is participation in paid work in the previous year.

      Models also include dummy variables for region and month.

[a]Equals the change in the probability of participation resulting from a unit change in the independent variable.

[b]For rural estimates, includes university

  *significant at 10% level

 **significant at 5% level

***signficant at 1% level

Table 11: Urban Wage Employees: Terms and Conditions of Employment by Sector

	Sector/Employer		
	Public	Enterprises	Households/Individuals
Permanent employee	97%	76%	42%
Employment contract	61%	51%	5%
Union member	37%	31%	1%
Paid sick leave	76%	62%	19%
Pension	74%	49%	4%

Note: Shows percentage of employees in each sector with the given job characteristic.

Table 12: Determinants of Sector of Employment of Women in Urban Areas: Multinomial Logit Model Results (t-statistics in parentheses)

Variable	Self-Employment	Public Sector	Enterprises	Households/Individuals
		Sector/Employer		
Intercept	0.3578	-0.0677	-0.2134	-0.0718
	(5.93)***	(1.95)*	(4.81)***	(2.01)**
Age	0.0007	0.0006	0.0013	-0.0011
	(0.88)	(2.30)**	(3.13)***	(2.23)**
Education: years of				
Primary	-0.0147	0.0053	0.0172	-0.0133
	(2.40)**	(1.59)	(3.65)***	(3.74)***
Secondary	-0.0272	0.0027	0.0082	-0.0083
	(4.30)***	(2.42)**	(3.50)***	(2.12)**
University	-0.0359	0.0006	0.0149	-0.0138
	(1.40)	(1.15)	(3.32)***	(0.74)
Non-labor Income/100000 FMG	-0.0048	-0.0000	-0.0002	0.0000
	(3.97)***	(0.33)	(0.44)	(0.05)
Children<5	0.0320	-0.0000	-0.0162	0.0074
	(2.89)***	(0.04)	(2.67)***	(1.19)
Children 5 to 14	0.0331	0.0014	-0.0032	-0.0067
	(4.55)***	(1.98)**	(0.97)	(1.59)
Males 15 to 65	-0.0008	-0.0006	-0.0107	-0.0098
	(0.09)	(1.06)	(2.48)**	(1.65)*
Females 15 to 65	-0.0318	-0.0003	-0.0038	-0.0002
	(3.36)***	(0.56)	(0.91)	(0.03)
Males over 65	0.0443	-0.0059	0.0001	-0.0195
	(1.12)	(1.46)	(0.00)	(0.83)
Females over 65	-0.1022	-0.0108	-0.0093	-0.0301
	(2.65)***	(2.00)**	(0.59)	(1.21)
Recent Migrant	-0.0046	-0.0010	0.0064	0.0009
	(0.21)	(0.89)	(0.70)	(0.07)
Antananarivo	-0.1616	-0.0008	0.0273	0.1049
	(7.03)***	(0.71)	(2.87)***	(6.31)***

Notes: Marginal effects and their t-statistics from a multinomial logit model of sector of employment. Shows the change in the probability of employment in a sector resulting from a unit change in the independent variable.
Model also includes dummy variables for month. (Number of observations: 3086)
  *significant at 10% level
 **significant at 5% level
***signficant at 1% level

Table 13: Determinants of Sector of Employment of Men in Urban Areas: Multinomial Logit Model Results (t-statistics in parentheses)

Variable	Sector/Employer			
	Self-Employment	Public Sector	Enterprises	Households/Individuals
Intercept	0.4799	-0.2088	-0.2329	-0.0886
	(7.12)***	(4.53)***	(3.81)***	(1.87)*
Age	-0.0014	0.0033	0.0052	0.0008
	(1.61)	(4.96)***	(6.25)***	(1.44)
Education: years of				
Primary	-0.0402	0.0135	0.0317	-0.0146
	(5.51)***	(3.32)***	(4.29)***	(3.20)***
Secondary	-0.0173	0.0083	0.0118	-0.0137
	(2.90)***	(4.32)***	(2.87)***	(3.06)***
University	-0.0220	0.0047	0.0097	0.0101
	(1.46)	(2.46)**	(1.26)	(1.13)
Non-labor Income/100000 FMG	-0.0026	0.0003	-0.0005	-0.0014
	(1.76)*	(1.35)	(0.50)	(1.11)
Children<5	0.0093	0.0077	0.0215	0.0157
	(0.79)	(2.25)**	(2.35)**	(2.09)**
Children 5 to 14	0.0342	0.0014	-0.0197	-0.0123
	(4.54)***	(0.70)	(3.16)***	(2.33)**
Males 15 to 65	-0.0125	-0.0140	-0.0079	-0.0104
	(1.28)	(3.51)***	(1.04)	(1.50)
Females 15 to 65	0.0033	0.0004	-0.0242	0.0015
	(0.30)	(0.15)	(2.74)***	(0.20)
Males over 65	0.1793	-0.1692	-0.1441	-0.1011
	(4.01)***	(3.90)***	(3.30)***	(2.75)***
Females over 65	-0.0059	0.0137	-0.1779	0.0295
	(0.10)	(1.06)	(2.84)***	(0.84)
Recent Migrant	0.0017	-0.0078	-0.0424	0.0439
	(0.07)	(1.36)	(2.43)**	(2.56)**
Antananarivo	-0.1284	-0.0019	0.0031	0.0805
	(5.42)***	(0.33)	(0.18)	(4.70)***

Notes: Marginal effects and their t-statistics from a multinomial logit model of sector of employment. Shows the change in the probability of employment in a sector resulting from a unit change in the independent variable.
Model also includes dummy variables for month. (Number of observations: 2763)
 *significant at 10% level
 **significant at 5% level
***significant at 1% level

Table 14: Urban Areas: Predicted Sector of Employment of Men and Women by Level of Education

Sex/Level of Education	Wage Employment				
	Self-Employment[a]	Public Sector	Enterprises	Households/ Individuals	All
Men					
None	0.68	0.004	0.06	0.26	1.0
Primary	0.54	0.05	0.22	0.19	1.0
Secondary	0.38	0.21	0.33	0.09	1.0
University	0.32	0.25	0.34	0.09	1.0
Women					
None	0.74	0.00	0.01	0.25	1.0
Primary	0.75	0.01	0.10	0.14	1.0
Secondary	0.38	0.38	0.18	0.06	1.0
University	0.29	0.41	0.26	0.04	1.0

Note: Shows the predicted probabilities of employment in each sector based on multinomial logit model estimates for men (first four rows) and women (last four rows), using data means for the pooled (male and female) working sample. Probabilities are calculated as conditional on being in the working sample.

[a]Includes agriculural and non-agricultural self-employment

Table 15: Urban Wage Employees: Median Hourly Compensation by Education and Sector of Employment (FMG)

Sex/ Highest level of education completed	Sector/Employer		
	Public Sector	Enterprises	Households/ Individuals
Men			
None	494	336	205
Primary	602	417	260
Secondary	893	673	567
University[a]	1281	1004	563
Women			
None	314	219	125
Primary	651	313	208
Secondary	722	663	450
University[a]	1529	969	274

[a] three or more years of university

Table 16: Determinants of Hourly Earnings of Urban Wage Employees
         (t-statistics in parentheses)

Variable	Sector/Employer					
	Public Sector		Enterprises		Households/Individuals	
	Men	Women	Men	Women	Men	Women
Intercept	5.578	4.55	4.922	4.85	4.891	4.086
	(14.03)***	(6.07)***	(18.72)***	(11.18)***	(15.12)***	(12.54)***
Occupational Experience	0.062	0.061	0.08	0.069	0.01	0.056
	(4.84)***	(3.18)***	(8.88)***	(3.9)***	(2.28)**	(3.85)***
$(Experience)^2$	-0.001	-0.001	-0.002	-0.001	------	-0.001
	(3.28)***	(1.85)*	(5.92)***	(1.83)*		(3.19)***
Education: Years of						
Primary	-0.002	0.071	0.06	0.012	0.024	0.03
	(0.06)	(0.69)	(2.4)**	(0.29)	(1.04)	(1.26)
Secondary	0.098	0.16	0.095	0.124	0.115	0.068
	(4.66)***	(4.64)***	(7.38)***	(5.67)***	(4.35)***	(2.34)**
University	0.121	0.09	0.067	0.144	0.044	-0.023
	(6.17)***	(3.31)***	(2.83)***	(4.36)***	(1.16)	(-0.24)
No. of Observations	282	163	528	255	348	359
Adjusted R^2	0.4783	0.3687	0.3432	0.3923	0.2478	0.1323

Notes: Dependent variable is the log of hourly compensation. Regressions are corrected for sample selection.
Models also include controls for region (Faritany) and month.
   *significant at 10% level
 **significant at 5% level
***signficant at 1% level

Figure 1
Sector of Primary Employment

Men

Wage Employment
(households/
individuals)
6%

Wage Employment
(enterprises)
6.3%

Wage Employment
(public sector)
3.6%

Non-agricultural
Self-employment
5.1%

Agricultural Activities
79%

Women

Wage Employment
(households/
individuals)
6.1%

Wage Employment
(enterprises)
2.6%

Wage Employment
(public sector)
1.7%

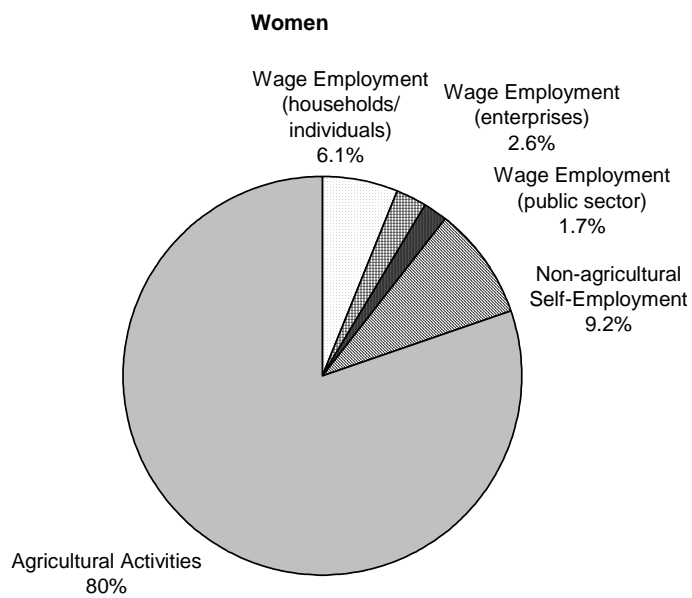Non-agricultural
Self-Employment
9.2%

Agricultural Activities
80%

50

Figure 2
Sector of Employment of Men and Women in Urban Areas

Men

Wage Employment (households/individuals) 16.5%

Wage Employment (enterprises) 21.7%

Wage Employment (public sector) 11.9%

Self-Employment 49.9%

Women

Wage Employment (households/individuals) 16.1%

Wage Employment (enterprises) 10.5%

Wage Employment (public sector) 6.7%

Self-Employment 66.7%