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Gender in Employment: Case Study of Mali¹

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Executive Summary

1. **Overview and Background.** This report on Mali is the second of two country studies (the first concerns Botswana) that examine gender and employment in Africa. The study is informed by two broad development frameworks. The first is the Millennium Development Agenda that views Millennium Development Goal 3, Gender Equality and Women's Empowerment, as a critical determinant in the attainment of all the Millennium Development Goals (MDGs), and more broadly, poverty reduction. The second is the AfDB's Managing for Development Results (MfDR), the organization's blueprint for development effectiveness. In response to two evaluations that concluded that the Bank's efforts to mainstream gender into its operations were weak, and encouraged by the Bank's Board and senior management, this study comes at an opportune moment to ensure that gender equality becomes one of the Quality-at-Entry standards central to the achievement of its stated goals. Up-to-date data collection and research efforts that go beyond the biological to the social, political and economic dimensions of gender inequality, are, therefore, timely and will contribute to effective and efficient policy-making.

2. **Objectives and Rationale.** The three main objectives of this study are to: 1) explore representative data and qualitative information on employment in various economic industries, formal and informal sectors; 2) analyze the underlying relationships between gender and employment and their determinants; and 3) produce a comprehensive report in line with the ADF 11 commitment to collect gender-disaggregated data in two pilot RMCs and strengthen capacity to generate analytical studies.

3. Mali lags behind neighboring ECOWAS states and other countries in the region in

the attainment of most of the MDG indicators, especially the gender equality and empowerment goal. As well, it ranks low on the Human Development Index (HDI), despite government policies and laws intended to promote gender equality. Such limited progress raises concern that the country may fall short of attaining the MDG of gender equality in 2015.

4. **Methodology.** Data for this study come from the third Enquête permanente emploi auprès des ménages (EPAM), a cross-sectional survey conducted in 2007 and based on a nationally representative sample. Using multivariate analysis, the study examines: 1) gender inequality in various employment sectors (agriculture, salaried, private informal and formal) and at various levels of income (no income, minimum income, francs CFA 29,000 to 50,000 and francs CFA 50,000 to 75,000) and 2) the determinants of these relationships, focusing on factors such as human capital, demographic characteristics, structural/economic variables, agency (political, economic and social), intergenerational aspects and aspirations, and how these interact with sex.

5. **Principal Findings.** In Mali, men are more likely than women to be salaried workers, even when other potentially influential factors such as educational attainment, age, marital status, structural/economic factors, region/place of residence, agency (political, economic and social), intergenerational aspects and aspirations are taken into account. This highlights decreasing paid employment opportunities for women, which stem from economic policy adjustments, and a growing disadvantage faced by new labor market entrants. As in the informal sector, men and women have equal likelihood of access to the formal sector. This novel finding, which is contrary

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to conventional wisdom, requires further research. And while this evidence is encouraging, Mali's potential to attain the MDG related to gender inequality depends not only on the percentage of the female labor force that accesses the formal sector, but also the percentage that remains there. Women's earnings are more likely to be in the lower income categories, while men's earnings are more likely to be in the higher income categories. Women continue to be disadvantaged in access to high income levels.

6. Policy Implications. A stronger focus on education and training for women is needed, but it must be directed toward quality and labor market relevance. To make women competitive and confident labor market participants, their school subject choices and training/certification beyond school should result in their having skills that match demand rather than traditional job norms.

7. Because agriculture remains the chief employer of the majority of the Malian population, emphasis must be placed on making this sector economically profitable and sustainable. This must be done with a focus on women, because currently, most of the benefits from the determinants are greater for men. The interventions are well-known and include increasing access to credit, information and extension services. Such interventions must be either better targeted or increased.

8. Policies to increase women's earnings capability should be implemented to narrow gender inequality and lift large numbers of women out of poverty. Such policies would target equity in access to education, particularly secondary education; quotas for women in government and elected positions (e.g., Rwanda); economic empowerment programmes that provide a mix of access to productive resources and access and opportunity in both the public and private spheres. Affirmative action is an essential first step to level the playing field, which,

through a combination of traditional cultural values and practices and modern policies that maintain the status quo, has been tipped against women.

9. *Research Recommendations and Next steps.*

The results of this study underscore the importance of considering the correlates of employment addressed here as well as measures of household wealth, family organization of work, marital relations and ethnicity across fine employment distinctions. This study should not be regarded as the ultimate assessment of the relative importance of the factors examined here. Future research would benefit from employing alternative statistical methods to estimate the relative effects of these variables, as well as methods that account for factors that could not be taken into account. Future research should also focus on analyzing several waves of surveys in order to generate time series and trace historical trends. Finally, in Mali, where a labor force survey has been conducted every 3 to 4 years, it may be beneficial to combine several survey cycles to increase sample size and thereby improve estimates of employment indicators.

1 Introduction

1.1 Overview and Background

1.1.1 This report on Mali is the second of two country studies (the other concerns Botswana) of gender and employment in Africa. As the study terms of reference (TORs) note, "Promoting gender equality in employment is an important cornerstone to advance women's economic empowerment in Africa and elsewhere." Thus, the elimination of gender inequality in the labor market is a central goal and one of the key objectives of development strategies designed to reduce poverty while achieving economic growth with equity. Indeed, closing the gender gap in employment is one of the principal determinants in attaining

the Millennium Development Goals (MDGs), not just MDG 3, Gender Equality and Women's Empowerment.

1.1.2 Data collection and analysis that focus on gender inequality in sub-Saharan Africa are particularly timely given the continent's need for gender-related statistics to inform effective and efficient policy-making. However, earlier data collection and analysis efforts by the African Development Bank (AfDB, or the Bank), inter-alia, have used an analytical framework that relied on sex-disaggregated data, itself a reflection of the assumption that the principal differences between men and women are largely biological, and thereby discounting the influence of social, political and economic factors.

1.1.3 A gender equality and women's empowerment approach takes these latter macro-level variables as a starting point and examines women's and men's roles at the household and societal level in terms of power and how it is exercised. It is, therefore, necessary to have gender statistics that adequately reflect "differences and inequalities in the situation of women and men in all economic, social and political areas of life."

1.2 Situating the Study in AfDB's Gender Equality Agenda

1.2.1 In 2007/2008, around the time of the ADF-11 replenishment, the Bank began a series of major reforms in the way it does business. Managing for development results (MfDR) became the principal framework within which a range of organization-wide changes was launched. The emphasis is on achieving results and on measuring this achievement. However, broad-based reform of Bank operations and achievement of the new set of results set out in ADF-11, and under reformulation during ADF-12 negotiations, have necessitated addressing a principal constraint that has been identified internally and through external reviews.

1.2.2 Two recent organization-wide evaluations—the Mid-term Review of the first Gender Action Plan and the OPEV-conducted Independent Evaluation of Quality at Entry for ADF-11 Operations and Strategies—concluded that the Bank’s efforts to mainstream gender into its operations were weak. The Bank, led by the Quality Assurance and Results Department (ORQR) 4, and supported by departments such as Statistics (ESTA), has worked to ensure that gender mainstreaming is integrated into all aspects of Bank operations. The findings of the Mid-term Review of the Gender Plan of Action (GPOA), which served as the basis for the up-dated Gender Plan of Action, included the following:

- ♀ 60 to 70% of Bank projects do not include gender equality as a goal;
- ♀ Project log-frames miss gender-specific indicators and outcomes;
- ♀ Project and program designs lack activities to promote gender equality;
- ♀ Project Appraisal Reports lack gender-disaggregated data; and,
- ♀ Poverty analyses often exclude a gender dimension.¹

1.2.3 The present ESTA-sponsored study examines one of the most important dimensions of the gender equality and women’s empowerment goal. It comes at an opportune moment, as the Bank is strongly committed to ensuring that gender equality becomes one of the Quality-at-Entry standards, and thus, central to the achievement of its stated results.

1.3 Gender and Employment Study: The Rationale

1.3.1 Throughout the world and for much of history, women have had dual roles as income generators (workers) and wives/mothers/caregivers, while men

have largely functioned as income generators (Glick and Sahn 1998; Glick, 2002). Although women’s representation in the workforce has increased dramatically over the past 30 years, they continue to have most of the family and household responsibilities. Even in the developed world, significant inequality remains. This duality in women’s lives has resulted in gender inequality, not only in the household and the labor market, but also in women’s social position and well-being.

1.3.2 At the global level, efforts to address gender inequality include the 1979 Convention on the Elimination of All Forms of Discrimination Against Women, the 1994 Cairo International Conference on Population and Development, and the 2000 United Nations Millennium Development Summit. The outcome of this summit was formulation of the eight Millennium Development Goals (MDGs), which were adopted by all member countries, to serve as a framework to fight poverty and promote development. The target date for attaining these goals is 2015. One of the goals, elimination of gender inequality, especially in education and employment, while important in its own right, is viewed as critical to the attainment of the remaining goals (UNICEF 2003). Yet ten years after the goals were set and fewer than five years from the target date, sub-Saharan Africa lags behind its counterparts in the developing world. It is against this backdrop that the African Development Bank has undertaken pilot studies to examine gender inequality in employment in SSA, beginning with Botswana and Mali.

1.4 Purpose and Objectives

1.4.1 This study addresses “the limited availability of gender statistics in the Bank’s Regional Member Countries (RMCs) ... identified as one of the major

constraints for making progress in policy development, development planning and monitoring progress.” To remedy the situation, the Bank provides support to RMCs in the development of gender statistics through the Statistical Capacity Building (SCB) initiative.²

1.4.2 Thus, the studies of Botswana and Mali have three main objectives:

- a. To explore existing representative household sample surveys, standardized data and qualitative information on the employment of men and women in various industries and in the formal and informal sectors;
- b. To conduct a detailed analysis of the underlying relationships between sex and employment and the determinants of these relationships; and
- c. To produce comprehensive analytical reports of the findings in line with the ADF 11 commitment to collect gender-disaggregated data in two pilot RMCs.

2 Country Background and Context

2.1 The Regional Context: African Employment Trends and Gender

2.1.1 Education has intrinsic benefits, but lower long-term economic rewards (resulting from prolonged schooling/limited or unfavorable macro-economic policies) can reduce its value. Development strategies in Africa are being formulated under demographic, social and macro-economic duress. First, the expansion of education has been accompanied by growing school-age populations, reflecting the region’s historically high fertility. Africa’s share of the global school-age

¹ See, ORQR4, November 2010. Tracking Gender Equality Results and Resources: An AfDB Quality at Entry Tool, AfDB, Tunis.

² Multinational Statistical Capacity Building in Regional Member Countries for MDG Monitoring and Results Measurement.

population rose from 10% in 1950 to 16% in 2000 (United Nations 2003). This population momentum has created high dependency ratios, that is, a large cohort of young people relying on a small number of working adults.

2.1.2 Second, SSA has been undergoing demographic transitions, such as changes in age at marriage, family structure, and more recently, declining fertility. More schooling leads to increased age at first marriage and to a greater prevalence of non-marital unions and single- or female-headed households. These changes, in turn, increase women's propensity to participate in the labor market. As well, declining fertility makes more time available for non-child-rearing/-bearing activities.

2.1.3 Third, the urbanization of African countries has transformed economic activities and the meaning of paid work. Urbanization reduces reliance on subsistence agriculture and boosts the demand for consumer goods, thereby increasing the need for paid work. Indeed, urbanization affects not only the demand for agricultural products, but also the fundamental nature of agricultural work. What used to be viewed as non-economic work has now assumed an important place in the economy. A manifestation of this evolution is the shift from voluntary and unpaid farm labor at peak periods to paid labor.

2.1.4 Urbanization also indirectly influences work opportunities. Urban labor markets offer better economic prospects than do rural ones. However, whether women reap the benefits depends on their representation in various sectors, particularly the more profitable formal sector. At the same time, urbanization can weaken extended family and social networks that otherwise might ease the

pressure created by the incompatibility between women's outside work and their childcare and family obligations. In fact, childcare, domestic services, and activities such as hair-braiding, garment-sewing and embroidery that were once provided free of charge now involve a cost and fall under the umbrella of informal economic activities. While this improves the economic status of some who otherwise would not have been gainfully employed, it has implications for gender economic equality. In urban settings where childcare services are minimal or costly, women with more education will have to make trade-offs between intermittently withdrawing from formal work or paying heavily for these services. Such withdrawals from the workforce can reduce women's prospects for career advancement, and thus challenge policy efforts to close the gender gap in employment.

2.1.5 Sub-Saharan Africa disproportionately bears the global HIV/AIDS burden. In 2004, of the 36.9 million people with HIV/AIDS, 23.6 million lived in SSA; two years later in 2006, the figure had risen to 24.7 million. The epidemic, which predominantly affects adults in their prime productive years, is eroding the region's gains in human development and its future socio-economic resources. Added to tight development budgets, the challenges of addressing HIV/AIDS hinders African governments' efforts to provide decent livelihoods for their citizens. As well, macro-economic forces increasingly define African labor markets. These forces include policy reforms following the economic crises of the 1980s and 1990s and the ensuing privatization of African labor markets (Eloundou-Enyegue and Davanzo 2003). Most countries have barely recovered from these crises, while others are grappling with the aftermath of the 2008 global recession.

2.2 The National Setting: Mali's Employment Profile

2.2.1 Mali is located in the Sahelian region of West Africa. With a population of 13.0 million in 2009, the country has one of the highest annual growth rates in the region: 2.4% (AfDB Database).³ A GNI per capita (US\$) of 580 in 2008 puts Mali among the low-income countries (AfDB Database). On the United Nations Human Development Index (HDI), a composite measure of health (life expectancy), education, and income, Mali rose from 0.165 in 1980 to 0.309 in 2010 (United Nations 2010). This is below the index for Sub-Saharan Africa as a whole, which increased from 0.293 to 0.389.

2.2.2 Between 2000 and 2009, Mali's GDP was lower and grew only marginally relative to the regional average of her neighboring Economic Community of West African States (ECOWAS) (Nabalamba 2010). Reflecting the economic crises, Mali's GDP per capita fell significantly between 2008 and 2009 (Nabalamba 2010). In this environment of macro-economic duress, Mali's capacity to provide decent jobs to its citizens has been severely constrained.

2.2.3 Gender parity in education and the reduction of gender inequality in society are the most crucial MDGs. The first is the most urgent and was to be achieved in 2005, ten years before the target date for the others. The ratio of girls to boys is used as an indicator to measure progress toward gender parity in education. Mali's ratio in primary education rose from 0.801 in 2006 to 0.828 in 2008, out-performing only Guinea and Niger among all ECOWAS member states for which data are available; in secondary education, the ratio rose from 0.608 to 0.639 (AfDB Database, 2010).

³ Mali's population growth rate is among the highest in the ECOWAS region, after Benin, Burkina Faso, the Gambia, Niger, Senegal and Sierra Leone. Females and males comprise 50.6% and 49.4% of the Malian population, respectively.

The percentage of seats held by women in national parliaments is used as an indicator of the reduction of societal gender inequality. Among ECOWAS member states, Senegal has the highest percentage of parliamentary seats held by women—around 20% in the 2006-to-2008 period. Mali's 10% for the same period surpasses the percentages of Nigeria, Cote d'Ivoire, The Gambia and Togo.

2.2.4 According to the International Labor Organization labor market database, Mali's employment-to-population ratio for individuals aged 15 or older is the lowest among all the ECOWAS states, stalling at 0.47 during the 2006-to-2008 period.

2.2.5 Against this backdrop, a detailed assessment of the 2007 Mali "Enquête permanente Emploi auprès des ménages" (EPAM) is imperative to obtain a better appreciation of the determinants of employment and to offer effective policy guidance for the AfDB.

3 Methodology

3.1 Conceptual Framework

3.1.1 Leading theories of labor force participation have been grounded either in economic assumptions about the role of human capital, modernization and institutional segregation in labor market outcomes or in cultural perspectives emphasizing discrimination.

3.1.2 **Human capital theory** provides a general framework for understanding the importance of education for development. The theory emphasizes the primacy of abilities, education, experience and skills for labor market success (Becker 1981; 1992; Mincer 1974). It hypothesizes that education is directly related to participation and returns in the labor market. Thus, women's increased human capital and experience should facilitate their entry into the labor market, and as gender inequality in education narrows, so should

inequality in the labor market. Extending the theory to the modernization perspective, as the occupational gender gap narrows, women's economic security and social status should improve (Goldin 1990). Such expectations have been buttressed by cross-country evidence showing a consistent association between women's education and the labor market returns (King and Hill 1993). As a result, education has become central in national and international strategies that address women's status and development (UNFPA 2002; UNICEF 2003; United Nations 2000).

3.1.3 **The theory of modernization**, a variant of the human capital perspective, relates employment outcomes to level of development or industrialization. Modernization theorists regard labor market expansion and increased labor supply as by-products of the modernization process. This expansion creates employment opportunities for women who make further investments in their education to take advantage of the increased demand for labor. Ultimately, the greater economic activity stemming from economic progress and industrialization reduce gender inequality in all spheres of society and thereby raise women's social status (Goldin, 1990).

3.1.4 Theories of **occupational segregation** further qualify the two neoclassical economic theories outlined above. Occupational segregation theorists suggest that women can continue to be marginalized in low-skill jobs with limited prospects for advancement because of employer discrimination and institutional and labor market segmentation, but also because of socialization (Anker 1997; Anker and Heim 1997). Women are presumed to self-select into less rewarding or less prestigious occupations because they have been socialized to have lower aspirations.

3.1.5 In contrast to the perspectives reviewed above, a common explanation

for women's limited labor market participation, especially in the formal sector, is **gender bias**, which is presumed to originate in patterns of social organization (Collver and Langlois 1962) based on socio-cultural norms and values that exist at the family, educational, occupational, and societal levels (Assie-Lumumba 2000; Birdsall and Sabot 1991; Boserup 1970; Stromquist 1990; Youssef 1972). Families, operating in accord with larger societal norms and in anticipation of lower returns to educating their daughters, are presumed to invest less in their daughters' than their sons' education (Stromquist 1990).

3.1.6 Relevance of Theoretical Perspectives in African Labor Markets

Proponents of the cultural perspective maintain that patriarchal values transcending education, marriage, fertility, employment structure, and development stage are the decisive factors in employment gender inequality. This explanation is relevant in African societies where a strong kinship network co-exists with male dominance. In such contexts, child-rearing is largely a female responsibility.

3.1.7 According to the neoclassical economic perspective, notably human capital, the gender-employment nexus extends beyond the absolute effect of education to interactions with the demographic (marriage, family size and structure) and cultural milieu in which individuals/couples assess economic opportunities and rewards and make employment decisions (Jah 2010a). Lower long-term economic rewards (resulting from prolonged schooling and limited or unfavorable macro-economic policies) can decrease the value of education. At the same time, delayed labor market entry can reduce labor supply and raise wages overall, and bring a subsequent rise in the demand for both education and labor. Increases in the number of educated women can lead to acceptance of women's changing economic

roles. However, this would not happen if increases in the number of educated women lead to greater competition for scarce jobs.

3.1.8 An assessment of the modernization perspective in the context of SSA, where an expansion in the labor market has not followed the educational and demographic transitions, is particularly salient. In countries with low labor demand but with rising educational attainment among women, female competition for scarce, prestigious jobs challenges the neo-classical theory of a monotonic link between education and employment. Instead, an inverted u-curve association (Standing 1983) or a negative relationship can prevail, as has been reported in the African literature (Siphambe 2000 for Botswana). The modernization theory assumes that development benefits men and women impartially, but the likelihood that individuals, particularly women, will be uniformly distributed across occupation sectors may not be as automatic as the theory implies.

3.1.9 The arguments of the occupational segregation proponents are important in Africa, where labor unions are weak, and markets are increasingly privatized and informalized. Training and acquisition of skills in non-traditional female occupations have been advocated to narrow the labor market gender gap. However, it is not clear if or how contemporary expansions in education have translated into employment prospects.

3.1.10 Thus, the relationship between gender and employment is not as straightforward as theory suggests. Further, these theories have typically been generated and tested in developed societies. For instance, the thesis of de-

mographic incompatibility based on the notion of competition between work and family roles, has received less attention in Africa (see Jah 2010b and Shapiro and Tambashe 1997 for exceptions). As noted earlier, the demographic, social and macro-economic environments in which development strategies in Africa are being devised and implemented are under duress. Demographic factors are likely to vary over an individual's lifetime, yet women's unique demographic roles as wives and mothers are barely mentioned by economic theorists even as they highlight socialization and aspirations as determining factors in labor force behavior.

3.2 An Assessment of the Data

3.2.1 Data for this study are from the "Enquête permanente emploi auprès des ménages" (EPAM),⁴ conducted in 2007 by the Ministère de l'Emploi et de la Formation Professionnelle, Agence Nationale pour l'Emploi (ANPE) et Département Observatoire de l'Emploi et de la Formation (DOEF). The 2007 EPAM data are based on a nationally representative sample of 3,000 households, obtained from a two-stage stratified sampling procedure. Using a household and an individual questionnaire, data were collected on a wide range of topics, including demographic characteristics of respondents and their households and indicators of income, employment, and educational attainment. The individual questionnaire was administered to all household members aged 10 or older. The resulting sample was weighted to the Mali national population aged 10 or older in 2007. For the questionnaires and a detailed discussion of the data collection, quality, coding, and classification of

occupations, see the "Gender in Employment : Preliminary Results from EPAM, Mali, 2007" Report (Nabalamba 2010); and "Termes de référence pour la réalisation de l'enquête permanente emploi auprès des ménages (EPAM)" Report 2007, and related survey documentation⁵.

3.2.2 Analytical Data

3.2.2.1 The Mali EPAM data pertain to individuals aged 10 or older living in private households, excluding residents in institutional settings (for example, military bases, hospitals, boarding institutions such as schools and prisons). However, for this study, an analytical data subset was created. First, respondents younger than 18 were eliminated in order to remove child workers. This also eliminated most respondents who were attending school (ascertained by running frequencies). Given the conceptual framework of the study in which the role of human capital in employment is examined, it is important that the analyses exclude people attending school. Next, the economic status variable (Etpop) was used to eliminate non-economically active adults. The resulting dataset was weighted to represent 5,178,725 economically active individuals, comprising 41.8% of the Mali population aged 18 or older.

3.2.3 Unlike the Botswana Labor Force Survey (BLFS), the Mali data permit an examination of income. Thus, income is also used to explore gender inequality. Unlike employment, this is a continuous variable, measured in FRANCS CFA and ranging from zero to 500,000 or more. To permit logistical regression analyses, the variable was divided into five categories.

⁴ EPAM 2007 is the third of three waves of cross-sectional employment surveys conducted in Mali since 2000.

⁵ These documents are available from the Mali Ministère de l'Emploi et de la Formation Professionnelle, Agence Nationale pour l'Emploi, and Département Observatoire de l'Emploi et de la Formation.

3.3 Measures: Dependent, Independent and Control Variables

3.3.1 **Dependent Variables:** Two main dependent variables were analyzed: employment and income.

3.3.1.1 Employment was measured as individuals who did some work during the “reference period.”⁶ Several economic sectors (as permitted by the data) were considered.

a. Given that the majority of the Malian population still lives in rural areas (Nabalamba, 2010) with agriculture as their main economic activity, the first outcome was agricultural employment, measured by activity in agriculture, fishing, livestock, etc., and coded “1”, with all other forms of non-agricultural employment as the reference (coded “0”).

b. The second dimension of employment distinguished between salaried and non-salaried employment. Salaried employment was coded s “1,” with non-salaried employment as the reference (coded “0”).

c. The third dimension distinguished between activity in the industrial sector coded “1,” with services as the reference (coded “0”).

d. Fourth, the private informal sector (coded “1”) was distinguished from the public sector (the reference coded “0”).

e. Fifth, formal employment (coded “1”) was distinguished from informal employment (the reference coded “0”).

The coding of occupations and the definition of the informal sector were derived from the 1988 International Standard Classification of Occupations (ISCO-88) and the 1993 System of National Accounts (SNA -1993), respectively (BLFS 2008).

3.3.1.2 **For income, four dimensions were measured:**

a. Receipt of no income (coded “1”) was distinguished from all other forms of income (coded “0”). For respondents who received income, three categories were measured.

b. Minimum income (29,000 francs CFA or less and coded “1”) was distinguished from higher income levels (the reference coded “0”).

c. Income of 29,000 to 50,000 francs CFA (coded “1”) was distinguished from higher income levels (the reference coded “0”).

d. Income of 50,000 to 75,000 francs CFA (coded “1”) was distinguished from higher income levels (the reference coded “0”).

3.3.1.3 Thus, nine outcomes—five employment-related and four income-related— were examined. Attempts to examine higher income levels were abandoned because the small proportions of the labor force earning income at these levels yielded unstable estimates.

3.3.2 **Independent Variable:** The main independent variable is sex of the respondent. It is measured dichotomously and coded “1” if male and “2” if female (the reference).

⁶ The reference period was the seven days before the survey.

3.3.3 **Control Variables:** Drawing from the theoretical perspectives and past studies reviewed, the study controls for several correlates of employment.

3.3.3.1 **Human capital characteristics.** The human capital characteristics measured by educational attainment and academic training. Educational attainment is measured at four levels: (i) primary; (ii) junior secondary; (iii) senior secondary; and (iv) non-formal/no-schooling, which serves as the reference. Academic certification (training) is measured as a dummy variable, coded “1” if respondent received any form of academic certification and “0” if not.

3.3.3.2 **Demographic characteristics.** The second set of correlates considers family/household structural variables that affect women’s capacity to engage in paid employment. The first, marital status, is measured by whether the respondent is married (coded “1”), living together (coded “2”), separated/divorced/widowed (coded “3”), or single (the reference coded “4”). Marriage is expected to create household demands on women’s time that compete with work, while the effect for men is expected to be the reverse. Conversely, separation, divorce and widowhood are expected to compel women, in particular, to seek employment. The second demographic variable measures whether the respondent is the household head, and the third measures whether the respondent is the spouse of the household head. The former is hypothesized to be positively associated with employment, regardless of gender. On the other hand, being the wife of the household head can be a deterrent to outside work because of household demands and potential reluctance of a husband that his wife should be employed outside the home.

3.3.3.3 **Structural/Economic labor environment.** The third set of correlates captures the structural/economic labor environment as measured by economic migration, region of residence, and individual agency. Economic migration is measured by whether the respondent migrated for economic reasons (coded “1”) or for non-economic reasons (the reference coded “0”). Economic prospects will likely depend on regional-level employment opportunities. While urban settings generally offer good work opportunities, this may not hold if urbanization is not matched by the growth of economic structures.

3.3.3.4 **Agency.** Agency was measured by whether an individual is aware of and engages in political, economic and social activities in his/ her community, coded as “1” if yes and “0” if no (the reference). Agency is expected to boost income and economic activity, especially among women.

3.3.3.5 **Intergenerational aspects and aspirations.** The fourth set of correlates concerns intergenerational factors and respondents’ career aspirations. Father’s employment in secure occupations is a proxy for intergenerational factors and the family’s socio-economic status, and is measured with a dummy variable indicating whether he was engaged in public and private formal (including non-governmental organizations) sector jobs and unionized jobs coded “1” and “0” if otherwise. A father’s employment in secure occupations is presumed to be more influential in a son’s than a daughter’s access to profitable and secure occupations. Career aspirations is measured by whether the respondent indicated having ambitions for a future career, coded “1” if yes and “0” if not (the reference), expected to show a stronger and positive association with employment prospects.

3.3.3.6 **Interactions.** Interactions between sex and several correlates were examined, based on the assumption that the effect of sex (the nature of the gender inequality) is apt to depend on the role of these correlates. The number of interactions that could be examined was limited by the data available for each correlate.

3.4 Data Strengths

3.4.1 Much empirical research on the relationship between gender and employment has focused on broad occupational classifications, in part, because of data unavailability. The more detailed classification that is possible with the Mali EPAM data permits comprehensive analyses of several dimensions of employment. The ability to examine these very fine distinctions using nationally representative data improves on the understanding of employment behavior in the country as well as permitting a generalization to the rest of the population. The measure of academic certification is another strength of the data. And despite a considerable number of missing cases, duration of unemployment is an important factor in employment analyses (Mincer 1974).

3.4.2 Data are available for some classic correlates of employment such as marital status and household headship. The survey collected data on two measures of educational attainment: highest level of school completed and academic certification. The data include information on migration and allow regional breakdowns. In addition, data were collected on political, economic and social agency, career aspirations, family background, intergenerational factors, and aspirations.

3.4.3 Thus, the Mali EPAM data complement the World Bank-sponsored Income/ Household Consumption Surveys in Regional Member Countries, which focus mainly on income. By facilitating detailed employment breakdowns, the survey helps fill gaps in the African household survey data systems and permits tracking of progress on the MDGs designed to enhance women's status and fight poverty.

3.5 Data Limitations

3.5.1 Because of their potential influence on mothers' time and on child-

care needs, variables measuring fertility family size and children's ages are crucial in employment analyses. The presence of other adult females in the household can mediate the fertility-employment link. In their study of Guinea, Glick and Sahn (2000) found that having very young children constrains a mother's ability to engage in paid employment. However, evidence from a recent study of 21 SSA countries of (a) the effect of a first birth on a mother's employment status and (b) the influence of another adult female in the household is mixed (Jah, 2010b).

3.5.2 Given this mixed evidence, these two factors should be considered in employment analyses. However, specific information about fertility was not collected in the 2007 Mali EPAM. And because of time constraints, data modifications that could have measured the presence of other adult females were not attempted. Similarly, no information is available on access to substitute child care (formal and informal) and household help, and should be collected in future surveys.

3.5.3 Socio-economic factors such as household amenities and assets and the education and employment status of spouses would be useful in determining household members' (including working age women's) need to work. As well, mother's and father's education and work status provide important intergenerational information. However, these variables are also absent. In SSA, spousal co-residence has been found to be important in employment analyses, but was not asked in the survey. The dataset is also limited in terms of variables that can capture cultural attributes and individual agency.

3.5.4 But the most significant limitation derives from missing data. This occurs when respondents refuse to answer a question, do not know the answer, or accidentally skip an item. In the latter two cases, data are "Missing Completely

at Random," that is, the missing data are unrelated to the values of any variables.

3.5.5 Because these missing values are a random sample of the full dataset, they can be ignored, and analysis of the data yields results identical to those that would have been obtained from the full dataset.

3.5.6 When a dataset is incomplete, the default is to analyze only cases with complete data and drop those with data missing on any variables. The result is a substantial reduction in sample size, and consequently, statistical power. In this study, the extent of missing data for some measures was as high as 98%. In such circumstances, the outcome variable may not be accurately measured, which results in estimated coefficients and standard errors from the regression that are too low. Missing data because of refusals are not random and cannot be ignored because simply eliminating them could yield highly biased results. Special techniques are needed to address potentially non-random, Non-Ignorable missing data.

3.6 Handling Missing Data

3.6.1 Imputation is often used to handle missing data, because it is conceptually simple and retains sample size. However, if missing data are non-random, imputation can bias parameter estimates (Allison 2000). To deal with missing data, this study adopted the maximum likelihood estimation technique. The utility of the maximum likelihood estimation technique permits use of observed data to calculate parameter estimates that would most likely have resulted in the complete dataset.

3.7 The Analytical Strategy

3.7.1 This study examines gender inequality in employment in Mali and thereby updates the progress the country is ma-

king toward attainment of the MGDs. The findings will also inform the design of the AfDB's programs and discussions with its RCMs.

3.7.2 Gender inequality is analyzed in nine employment and income outcomes. The analyses were performed in two steps. In the first, the gross and net size (gross and net extent) of gender inequality was measured in a multivariate framework incorporating the six sets of correlates discussed above. Because the determinants for men and women are apt to differ, in the second step, key correlates were interacted with sex.

3.7.3 Maximum likelihood models were employed in an attempt to partly overcome the problem of missing cases. Logistic regression was used to model the probability of each of the 12 employment outcomes as a function of gender, while controlling for several correlates.

3.8 The Size of the Gender Inequality

3.8.1 To estimate the size of gender inequality in the Malian labor force and in income distribution, seven logistic regression models were run sequentially, incorporating the sets of correlates outlined above. The first model (model 1) estimates the gross gender inequality for each employment outcome, adjusting only for age. Model 2 adds human capital characteristics; model 3, demographic influences; model 4, structural economic controls; model 5, measures of political, economic and social agency; and model 6, family/intergeneration factors and aspirations. The final

model, model 7, considers interaction terms between gender and key correlates. Thus, as equation 1 shows, each model is more complex than its predecessor. $P/1-P$ is the probability that a man as opposed to a woman is employed in a particular industry/sector/occupation; β_0 is the intercept (constant term); β_1G is the parameter estimating the gross gender inequality; β_2H is the parameter estimating the influence of human capital; β_3D is the parameter estimating the influence of demographic characteristics; β_4E , the parameter estimating the influence of structural economic factors; β_5Ag , the parameter estimating the influence of political, economic and social agency; β_6FAs , the parameter estimating the influence of family/intergeneration factors and aspirations; and β_7IAs , the parameter estimating the influence of correlates on the gender variable (interaction terms). The symbol ϵ refers to the residual or unexplained variance.

Equation 1

$$\text{Log } P/(1-P) = \beta_0 + \underbrace{\beta_1G + \beta_2H + \beta_3D}_{\text{Gross Inequality}} + \beta_4SE + \beta_5Ag + \beta_6FAs + \beta_7IAs + \epsilon$$

Net inequality

4 Study Analysis and Principal Findings

4.1 Descriptive Results

4.1.1 The descriptive results for employment and income are presented

graphically by gender and region of residence (Bamako, the capital city; urban villages and rural areas) in figures 1 to 5.

4.1.2 Figure 1 presents the distribution of women and men across the agricultural, industrial and services sectors. Employment in services is greater in Bamako (79%) and other urban areas (76%) than in rural areas (57%). While the representation of women and men in services is comparable in Bamako, women dominate this sector in other regions, particularly rural areas. On the other hand, agriculture (75%) is the major economic activity in rural areas, with men dominating the sector (42%). Industry, the smallest sector, accounts for 21%, 24% and 43% of workers in Bamako, other urban areas and rural areas, respectively. The high percentage for the industrial sector in rural areas may seem surprising, but this most likely reflects agricultural proces-

sing technology and the textile industry. Another important result is that while women are minimally represented in this sector in Bamako (4%) and other urban areas (8%), they make up 27% of industrial workers in rural areas, substantially outnumbering men (16%).

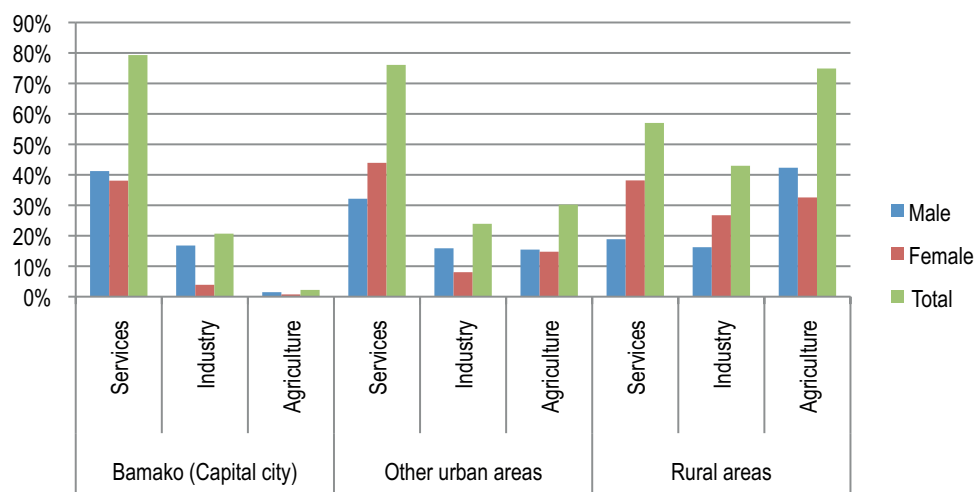
⁷ The coefficients generated from the logistic regression analyses are called logits, denoting changes in the log odds for a man to be employed relative to a woman with each unit increase in the explanatory variable. To facilitate interpretation, the coefficients are transformed into odds ratios (ORs) by exponentiation ($\text{Exp}(\beta)$). An odds ratio of 1.00 implies no difference between men and women in the odds of employment in the selected industry/occupation. Odds ratios greater than 1.00 mean that men are more likely than women to be employed in the selected industry/occupation. Conversely, odds ratios less than 1.00 mean that men are less likely than women to be employed in the selected industry/occupation.

4.1.3 Figure 2 shows the percentage of the labor force that is salaried as opposed to self-employed in the three regions. Self-employment is the chief economic activity in rural areas, accounting for 95% of wor-

kers 53% of whom are men. Self-employment is also common in other urban areas (77%), but less so in Bamako (56%); in both regions, women and men tend to be equally represented. Salaried employment

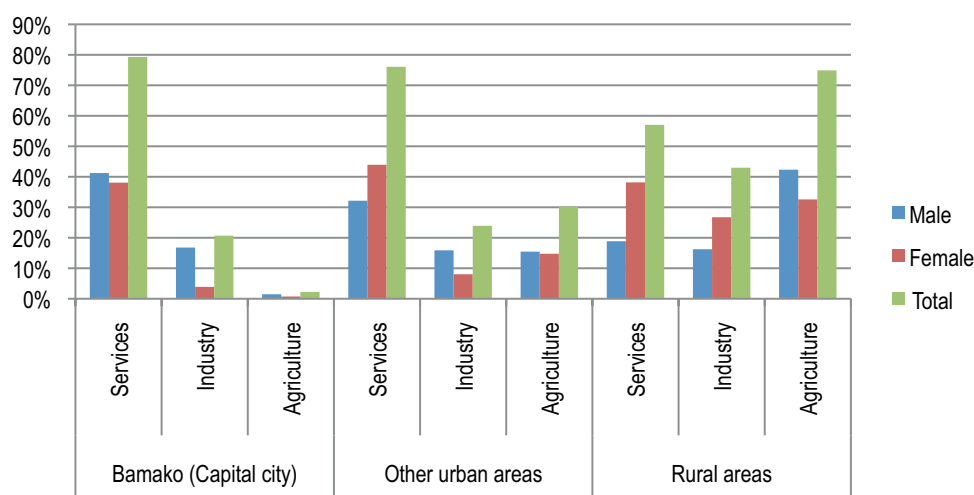
accounts for 44% of workers in Bamako, but only 23% and 5% of workers in other urban areas and rural areas, respectively. In each region, men outnumber women among salaried workers.

Figure 1. Employment in the Agricultural, Industrial or Services Sector by Gender and Region, Mali 2007



Source : Mali Enquête Permanente Emploi Au près des Ménages (EPAM), 2007.

Figure 2. Salaried Employment and Self Employment by Gender and Region, Mali 2007



Source : Mali Enquête Permanente Emploi Au près des Ménages (EPAM), 2007.

4.1.4 Figure 3 classifies the workforce into public sector and private informal sector employees. The predominance of the private informal sector in the Malian economy is reflected in the regional breakdowns—95%, 85% and 74% of workers in rural areas, other urban areas and Bamako, respectively, are engaged in private informal activities. By contrast, public sector work is rare in rural areas and uncommon even in Bamako and other urban areas. The

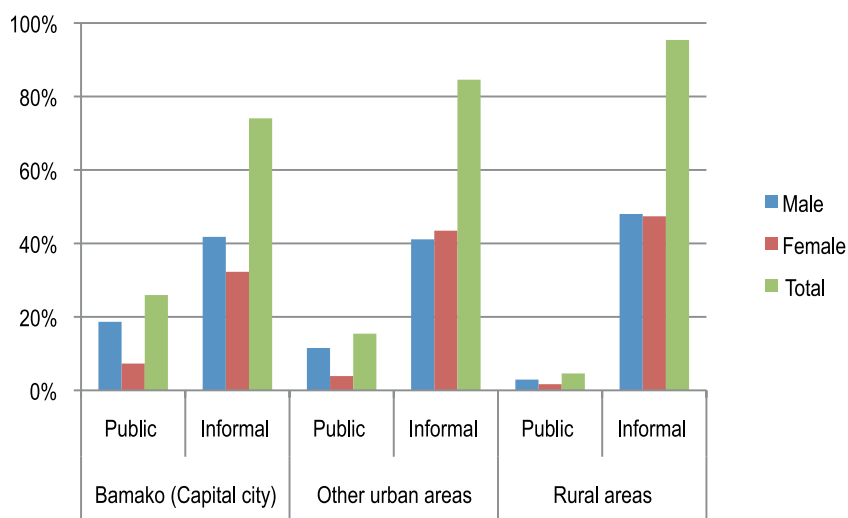
respective contributions of this sector to the labor economy are only 15% and 26%, with trivial percentages of women participating.

4.1.5 Figure 4 breaks down employment by formal and informal sector. The percentages of workers in the formal sector—50% in Bamako, 30% in other urban areas and 15% in rural areas—are higher than those noted above for the public sector. And unlike

the public sector and across all regions, comparable percentages of women and men are represented in formal sector work.

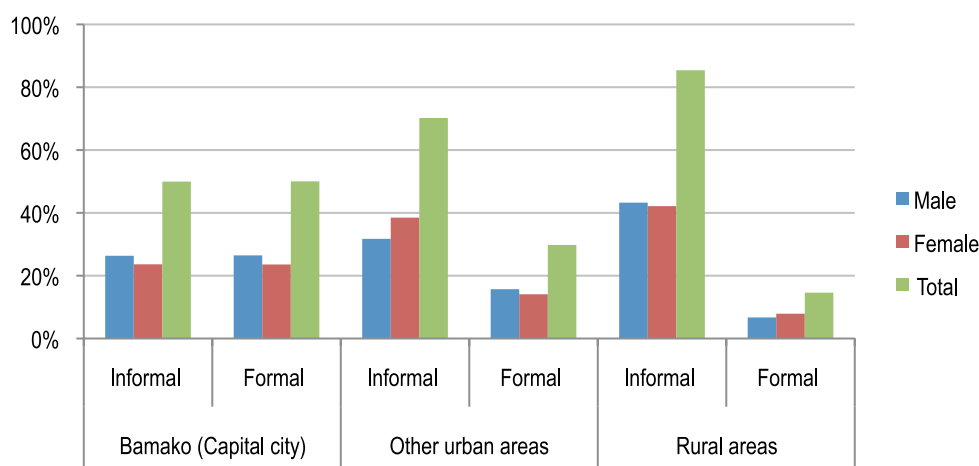
4.1.6 Figure 5 shows the distribution of women and men across various income levels in the three regions. Regardless of region, women are over-represented at low income levels, and under-represented at higher income levels.

Figure 3. Employment in the Public and Informal (Private) Sectors by Gender and Region, Mali 2007



Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

Figure 4. Level of Employment in the Formal and Informal Sectors by Gender and Region, Mali 2007



Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

4.1.7 In summary, the service sector is the dominant economic activity in urban areas, with women over-represented. Agriculture employment, in which women are under-represented, is the dominant activity in rural areas. Industry is the smallest sector of the economy, especially in Bamako, which is surprising given that it is the capital city. The private informal sector and self-employment account for the largest shares of workers in Mali.

4.2 Principal Findings from Multivariate Analyses

4.2.1 The descriptive results in section 4.1 do not explain how gender relates to employment and income. To do this, multivariate analysis is necessary. A series of multivariate logistic regression models was run sequentially to quantify gross and net gender inequality in: 1) agriculture, 2) salaried versus self-employment, 3) public versus private infor-

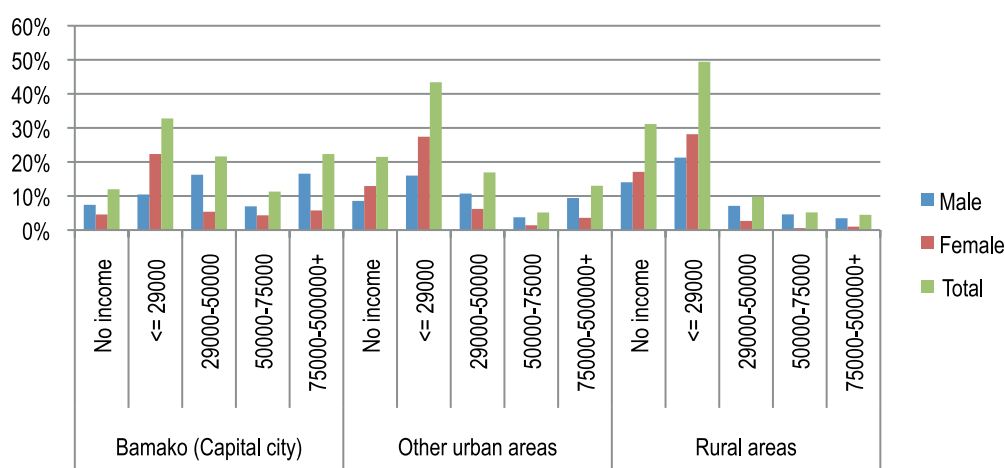
mal employment, and 4) formal versus informal employment. Finally, income inequality between women and men was examined at four levels: the gender differential in the probability of an employee receiving no income, and provided an employee was salaried, gender differentials in: 1) minimum income (francs CFA 29,000 or less versus higher income); 2) francs CFA 29,000 to 50,000 versus higher income; and 3) francs CFA 50,000 to 75,000 versus 75,000 or more.

4.2.2 *Gross and Net Size of the Gender Inequality in Employment.* For each outcome, models of gross inequality (model 1) control only for age. Controlling for duration of unemployment in this basic model was abandoned because of unstable estimates. Models 2 to 7 measure net inequality and control sequentially for the six sets of correlates. Model 2 controls for human capital, including educational attainment and professional/technical certification.

Model 3 controls for demographic factors, including marital status, household headship and whether a respondent is the spouse of the household head. Model 4 adds structural and economic factors, including economic migration and region of residence. Model 5 considers agency measured in terms of social, economic and political awareness. Model 6 controls for family/intergenerational characteristics and individual aspirations. Model 7, the most complex, incorporates possible interaction terms.⁸ The interactions considered are dependent on the distribution of women and men for each outcome.

4.2.3 Table 1 presents odds ratios for the gross and net inequality between men and women in all the above employment and income outcomes. For brevity, the table reports only the main effects of gender, not those of the correlates. The detailed results appear in Annex Tables 2 to 5. (Annex Tables can be found on the AfDB Data Portal.)

Figure 5. Distribution of Individuals Across Various Income Levels (in FCFA) from Main Economic Activity by Gender and Region, Mali 2007



Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

⁸ Model significance is determined by looking at the information on "Testing Global Null Hypothesis" that Beta=0. Very small p-values for the Chi-Squares indicate model significance and that at least one of the coefficients is not zero. Significance is evaluated at three levels: p<0.001 denoted by *** means the relationship is highly significant below the 99% level; p<0.01 denoted by ** means the relationship is significant at the 99% level; and p<0.05 denoted by * means the relationship is significant at the 95% level; p<0.10 denoted by # means the relationship is marginally significant at the 90% level.

4.2.4 Agricultural Employment. The odds ratios indicate that men are 58% more likely than women to be agricultural workers (model 1). When differences in human capital are taken into account (model 2), men are only 3% less likely than women to be employed in agriculture.

4.2.5 These results suggest two conclusions. First, the gender differences in agricultural employment appear to be tied to human capital. Second, and consistent with theoretical expectations, agricultural workers generally have little or no formal schooling. However, the apparent impor-

tance of schooling in how gender relates to agricultural employment disappears when the other correlates are considered, particularly the demographic factors. Based on the full model (model 7), men are significantly more likely than women to be agricultural workers.

Table 1. Odds Ratios of the Size of Gender Inequality in Employment and Income, with Female as the Reference, Mali 2007

		Model 1			Model 3			Model 4			Model 5			Model 6			Model 7					
		Gross Gender Inequality			Human Capital			Demographic Factors			Economic/Structural Factors			Individual Agency			Intergenerational Factors/Aspirations			Interactions		
		Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig
EMPLOYMENT																						
Agricultural Employment	Men	1.584	0.002	***	0.972	0.007	***	3.375	0.014	***	3.421	0.016	***	3.431	0.016	***	4.010	0.024	***	6.814	0.039	***
Salaried vs Non-Salaried Employment	Men	3.071	0.005	***	2.076	0.009	***	1.327	0.015	***	1.583	0.015	***	1.585	0.015	***	3.557	0.028	***	3.498	0.080	***
Industry vs Services	Men	1.203	0.004	***	2.107	0.008	***	1.695	0.014	***	1.693	0.014	***	1.711	0.014	***	1.596	0.023	***	0.507	0.035	***
Private Informal Employment vs Public Employment	Men	0.436	0.005	***	0.733	0.009	***	1.262	0.017	***	1.254	0.017	***	1.246	0.017	***	1.368	0.026	***	0.904	0.073	ns
Formal vs Informal Employment	Men	0.892	0.003	***	0.658	0.006	***	0.639	0.010	***	0.732	0.010	***	0.853	0.018	***	0.846	0.042	***			
INCOME																						
No Income	Men	0.547	0.00	***	0.972	0.01	***	1.066	0.012	***	0.963	0.01	**	0.994	0.013	Ns	0.021	0.021	***	3.29	0.04	***
Minimum Income (<=29,000 francs CFA)	Men	0.248	0.003	***	0.452	0.007	***	0.565	0.013	***	0.450	0.013	***	0.448	0.013	***	0.429	0.022	***	0.322	0.046	***
Income from 29,000 to 50,000 francs CFA	Men	0.672	0.005	***	0.811	0.010	***	1.255	0.018	***	1.243	0.018	***	1.243	0.018	***	0.884	0.029	***	0.253	0.102	***
Income from 50,000-75,000 francs CFA	Men	1.769	0.007	***	0.638	0.012	***	0.590	0.020	ns	0.536	0.021	ns	0.533	0.021	***	2.552	0.042	ns	1.484	0.099	***

*** Significantly different from the reference category (p<0.001), ** (p<0.01), * (p<0.05), # (p<0.10), ns Not Significantly different from the reference category (p<0.10 or better), (ref): Reference category, ... Not applicable. Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

4.2.6 It is equally important to understand how the correlates affect the gender-employment relationship in paid employment, the outcome deemed more critical in addressing gender inequality in the labor market.

4.2.7 Salaried versus Non-Salaried Employment. Model 1 indicates that men are significantly more likely than women to be paid workers. Moreover, as reflected in the estimates from models 2 through 7, this difference persists regardless of adjustments for the other correlates.

4.2.8 Industry versus Services. Model 1 indicates that men are 20% more likely than women to be employed in the industrial sector. Even when adjustments are made to account for human capital, demographic, economic/structural, family/generational factors, and aspirations or agency, this interpretation persists. But when interactions between gender and these correlates are considered, the association is reversed: men are less likely than women to be industrial sector workers. This reveals that men's apparent advantage in access to the industrial sector (and disadvantage in access to

the service sector) reflects a failure to control for mediating factors. The way in which gender relates to employment in the industrial and service sectors is conditioned by a complex web of factors that will be examined in detail in "Gender and Employment: Mediating Influences."

4.2.9 Private Informal Employment versus Public Employment. The differential gender access to the informal sector is important because, compared with the public sector, it is relatively insecure and may not foster career growth or economic security (especially during retire-

ment). Model 1 shows gross inequality in women's likelihood versus that of men in access to the private informal sector, compared with the formal sector. However, when interactions between gender and key variables are incorporated in the model (model 7), no significant gender differences in employment in the private informal or public sector emerge. Thus, observed differential access to either sector is explained by gender differences in key correlates. This multivariate finding is contrary to the differences that appeared in the descriptive analysis (figure 3).

4.2.10 Formal versus Informal Employment. The likelihood of employment in the formal relative to the informal sector is a broader distinction than private informal employment versus public employment. The multivariate results reveal that women's likelihood of being formal sector employees is significantly lower than that of men. This is consistent with recent evidence in the region (Botswana Study 2011).⁹

4.2.11 Gender and Employment: Mediating Influences. Tables 2 and 3 show the detailed findings of each set of correlates for the employment outcomes considered in the study. For conciseness, only the gross estimates from model 1 and the final net estimates from model 7 (full model) are presented and discussed. (See the annex tables for the detailed results on the intermediate models, found on the AfDB data portal.)

4.2.12 Agricultural Employment and Salaried versus Non-Salaried Employment. Table 2 presents the detailed estimates for the correlates of agricultural employment (panel 1). Model 7 indi-

cates that younger men (aged 18 to 29) are more likely than men aged 55 or older to be agricultural workers.

4.2.13 Men aged 40 to 54 are less likely than older men to be agricultural workers. The young age profile of workers in this sector can be explained by the physical demands of agricultural activity combined with low levels of mechanization. Individuals aged 30 to 39 years do not appear to be contributing to gender inequality in this sector, perhaps (although it cannot be confirmed in the study) because women in this age range are in their reproductive years and are less likely than their male contemporaries to be actively involved in agriculture.

4.2.14 The relationship between agricultural employment and the human capital variables is in the expected direction. As individuals acquire more schooling, they become less likely to engage in agricultural activity. Similarly, individuals with higher levels of academic certification are less likely to engage in agricultural activities, compared with people with lower or no certification. However, this differs for women and men. The interaction reveals that at all levels of academic certification, women are more likely than men to be agricultural workers.

4.2.15 The demographic correlates that were analyzed are related to agricultural employment, but in differing ways. Being married and living together enhance agricultural activity, while separation/divorce/widowhood or being the spouse of the household head reduces it. Similarly, being the household head depresses activity in this sector. However, this is more so for female household than male household heads.

4.2.16 Economic migrants are significantly less likely to be engaged in agriculture. And as expected, urban residents, especially those in Bamako, are less likely to work in agriculture. Based on the interaction terms, urban residence reduces the likelihood of agricultural work more for men than women.

4.2.17 Political, social and economic agency is inversely related to agricultural employment. However, the interaction terms suggest that the dividends of such agency may be greater for men than women. Intergenerational factors (specifically, father's occupation) and having career aspirations tend to steer individuals toward the agricultural sector, but again, gender differentials are apparent. Based on the interaction terms, father's secure employment and having career aspirations benefit sons/men more than daughters/women.

4.2.18 Salaried versus Non-Salaried Employment. The estimates for the correlates of salaried versus non-salaried employment are shown in table 2, panel 2. Model 7 demonstrates gender inequality in men's favor in this sector. Further, the likelihood of employment in this sector rises with level of academic certification. Men with higher levels of certification are less likely than their female counterparts to be engaged in salaried work, a finding that holds for each of the three categories of certification considered. Demographic factors reduce the likelihood of salaried employment. However, male household heads are substantially more likely than female household heads to find salaried work.

⁹ The AfDB 2011 Botswana study of gender and employment found that access to legislative positions and professional occupations is significantly greater for men as opposed to women, even when adjustments for several classic correlates of employment were made.

Table 2. Odds Ratios of the Size of the Gender Inequality in Agricultural, Salaried and Industrial Sectors, Mali, 2007.

	Panel 1 Agricultural Employment						Panel 2 Salaried vs Non Salaried						Panel 3 Industries vs Services					
	Model 1			Model 7			Model 1			Model 7			Model 1			Model 7		
	Gross Gender Inequality			Interactions			Gross Gender Inequality			Interactions			Gross Gender Inequality			Interactions		
	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig
SEX																		
Male	1.584	0.002	***	6.814	0.039	***	3.071	0.005	***	3.498	0.080	***	1.203	0.004	***	0.507	0.035	***
Female (ref)
AGE																		
18-24 yrs	1.052	0.004	***	2.405	0.037	***	1.929	0.008	***	0.325	0.048	***	0.735	0.007	***	0.620	0.043	***
25-29 yrs	0.852	0.004	***	2.087	0.035	***	1.998	0.008	***	0.912	0.041	*	0.658	0.007	***	0.863	0.040	***
30-39 yrs	0.774	0.004	***	0.963	0.032	ns	2.180	0.007	***	0.319	0.037	***	0.704	0.006	***	0.862	0.036	***
40-54 yrs	0.898	0.004	***	0.670	0.031	***	1.490	0.007	***	0.561	0.037	***	0.864	0.006	***	0.807	0.036	***
55-99yrs (ref)
HUMAN CAPITAL																		
No Schooling (ref)
# of Years of Schooling	0.706	0.007	***	...	...	...	0.635	0.011	***	...	...	...	1.540	0.010	***
# of Years of Schooling Squared	1.014	0.000	***	...	...	...	1.028	0.001	***	...	...	...	0.965	0.001	***
Academic Certification																		
No Academic Certification (ref)
CEP	13.631	0.057	***	...	...	...	8.362	0.091	***	...	...	...	1.395	0.022	***
DEF/BEPC,CAP or BT	2.359	0.040	***	...	...	...	57.256	0.058	***	...	...	...	1.790	0.029	***
DUTS/BTS/DUT/et autre niveauBAC+2/+1, DES, Autres	1.504	0.064	***	...	...	...	38.237	0.068	***	...	...	...	3.509	0.039	***
DEMOGRAPHIC FACTORS																		
Marital Status																		
Single (ref)
Married	2.409	0.033	***	...	...	...	0.302	0.033	***	...	...	...	1.102	0.028	***
Living Together	3.614	0.036	***	...	...	...	0.144	0.040	***	...	...	...	1.112	0.034	**
Separated, Divorced or Widowed	0.511	0.051	***	...	...	...	0.862	0.080	#	...	...	...	0.264	0.050	***
Is not the Household Head (ref)
Is the Household Head	0.153	0.055	***	...	...	...	0.227	0.070	***	...	...	...	0.438	0.028	***
Is not the spouse of Household Head (ref)
Is the Spouse of Household Head	0.711	0.038	***	...	...	...	0.772	0.049	***	...	...	...	0.364	0.035	***
ECONOMIC/STRUCTURAL FACTORS																		
Migration																		
Non Economic Migrant (ref)
Economic Migrant	0.397	0.024	***	...	...	...	182.571	0.080	***	...	...	...	1.222	0.018	***
Rural Areas (ref)
Bamako (Capital)	0.081	0.057	***	...	...	...	5.000	0.107	***	...	...	...	0.746	0.020	***
Other Urban Areas	0.105	0.026	***	...	...	...	3.045	0.056	***	...	...	...	1.148	0.017	***
Agency																		
Not Politically, Economic and Socially Active (ref)
Political, Economic and Social Awareness	0.204	0.030	***	...	...	...	2.136	0.049	***	...	...	...	1.738	0.022	***
INTERGENERATIONAL FACTORS/ASPIRATIONS																		
Father's Occupation not Public, Private, Unionized NGOs (ref)
Father's Occupation is Public, Private, Unionized NGOs	1.546	0.025	***	...	...	...	0.404	0.052	***	...	...	...	0.839	0.028	***
No Promising Career Ambitions (ref)
Promising Career Ambitions	1.104	0.021	***	...	...	...	2.185	0.038	***	...	...	...	0.781	0.023	***
INTERACTION TERMS																		
Sex * CEP	0.093	0.061	***	...	...	...	0.826	0.094	*	...	...	...	...	...	...
Sex * DEF/BEPC	0.090	0.044	***	...	...	...	0.573	0.056	***	...	...	...	...	...	...
DUTS/BTS/DUT/et autre niveauBAC+2/+1, DES, Autres	0.793	0.069	***	...	...	...	0.759	0.068	***	...	...	...	...	...	...
Sex * Household Head	3.623	0.055	***	...	...	...	3.491	0.071	***	...	...	...	...	...	...
Sex * Economic Migration	0.012	0.084	***	...	...	...	...	...	...
Sex * Bamako	0.149	0.073	***	...	...	...	0.509	0.112	***	...	...	...	...	...	...
Sex * Other Urban Areas	0.957	0.031	ns	...	...	...	1.210	0.061	***	...	...	...	...	...	...
Sex * Agency	2.361	0.032	***	...	...	...	1.332	0.046	***	...	...	...	...	...	...
Sex * Father's Occupation	0.466	0.029	***	...	...	...	3.883	0.053	***	...	...	...	2.053	0.029	***
Sex * Career Ambitions	0.471	0.026	***	...	...	...	0.896	0.042	**	...	...	...	2.498	0.029	***
Father's Occupation * Agency	3.432	0.030	***	...	...	...	0.258	0.038	***	...	...	...	0.654	0.030	***

*** Significantly different from the reference category (p<0.001), ** (p<0.01), * (p<0.05), # (p<0.10), ns Not Significantly different from the reference category (p<0.10 or better), (ref): Reference category, ... Not applicable. Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

4.2.19 Economic migrants are significantly more likely to be engaged in salaried work. Similarly, residents of Bamako and other urban areas are more likely than rural residents to have salaried employment. However, the interaction terms for both economic migration and residence in Bamako reveal that they both yield greater economic dividends for women than men. Conversely, residence in other urban areas benefits men more than women.

4.2.20 Political, economic and social agency facilitates salaried employment. The interaction term indicates that men benefit more from agency than do women. Father's employment in secure occupations is inversely related to an individual's likelihood of salaried employment, but this inverse relationship holds more for women than men. Having career aspirations enhances the likelihood of salaried employment, but the interaction with sex suggests that women benefit more from agency than men do.

4.2.21 **Industrial versus Service Sector Employment.** Table 2, panel 3 shows how the correlates are related to employment in the industrial versus the services sector. According to the full mo-

del (model 7), men are less likely than women to be industrial sector workers. The human capital factors suggest that certification enhances access to industrial sector jobs. Some of the demographic factors enhance access to this sector (marriage and living together), while others hinder access (separation/divorce/widowhood, being a household head or the spouse of the household head). Economic migration, residing in urban areas other than Bamako, and individual agency foster access to industrial sector jobs. Data limitations preclude an examination of gender dynamics related to the four sets of correlates. Father's secure employment and having career aspirations are negatively related to employment in the industrial sector.

4.2.22 The interaction terms indicate that women with promising career aspirations and whose fathers held secure jobs are less likely than their male peers to be employed in industry.

4.2.23 **Private Informal Employment versus Public Employment.** Panel 1 in Table 3 presents the estimates for the correlates of private informal employment versus public employment. Contrary to conventional wisdom, women are not si-

gnificantly more likely than men to be informal sector workers. The estimate for number of years of schooling, and corroborated by Jah (2007), shows that increases in education tend to channel individuals to the informal rather than the formal sector. Conversely, certification steers individuals away from the less secure private informal sector. However, the interaction terms indicate that at all levels of certification, men are funneled toward the private informal sector. All marital statuses tend to push individuals toward the private informal sector, while being the head of the household or the spouse of the household head deters individuals, particularly male household heads, from working in the sector.

4.2.24 As expected, economic/structural factors are negatively related to employment in the private informal sector, but the lack of estimates for the interaction term precludes further examination of gender relationships. Agency, father's secure occupation and career aspirations are all inversely linked to working in the private informal sector. Additionally, the interaction terms reveal that father's secure occupation and career aspirations reduce the negative effect of women's overrepresentation.

Table 3. Odds Ratios of the Gender Inequality in Private Informal and Formal Employment, Mali, 2007

	Panel 1						Panel 2					
	Private Informal Employment vs. Public Employment						Formal vs. Informal Employment					
	Model 1			Model 7			Model 1			Model 6		
	Gross Gender Inequality			Interactions			Gross Gender Inequality			Intergenerational Factors/ Aspirations		
	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig
SEX												
Male	0,436	0,005	***	0,904	0,073	ns	0,892	0,003	***	0,846	0,042	***
Female (ref)	...	...	...	...	...	...	...	...	...	...	...	...
AGENCY												
55-99yrs (ref)	...	...	...	...	...	...	...	...	...	...	...	...
18-24 yrs	0.963	0.009	***	0.423	0.048	***	1.805	0.005	***	0.820	0.034	***
25-29 yrs	0.827	0.008	***	0.405	0.043	***	1.515	0.005	***	0.820	0.032	***
30-39 yrs	0.664	0.007	***	0.797	0.039	***	1.408	0.005	***	0.475	0.029	***
40-54 yrs	0.726	0.007	***	0.427	0.038	***	1.181	0.005	***	0.755	0.029	***
HUMAN CAPITAL												
No Schooling (ref)												
# of Years of Schooling				1.154	0.011	***				0.796	0.008	***
# of Years of Schooling Squared				0.982	0.001	***				1.018	0.000	***
Academic Certification												
No Academic Certification (ref)				...	...	...				...	...	...
CEP				0.009	0.127	***				1.755	0.050	***
DEF/BEPC,CAP or BT				0.009	0.070	***				8.212	0.033	***
DUTS/BTS/DUT/et autre niveauBAC+2/+1, DES, Autres				0.025	0.074	***				5.159	0.046	***
DEMOGRAPHIC FACTORS												
Single (ref)				...	...	...				...	...	...
Married				1.861	0.033	***				0.327	0.028	***
Living Together				2.304	0.040	***				0.351	0.032	***
Separated, Divorced or Widowed				1.529	0.058	***				1.936	0.038	***
Not the Household Head (ref)				...	...	...				...	...	...
Is the Household Head				0.929	0.050	#				0.109	0.046	***
Not Spouse of the Household Head (ref)				...	...	...				...	...	...
Is the Spouse of Household Head				0.583	0.044	***				1.329	0.032	***
ECONOMIC/STRUCTURAL FACTORS												
Migration												
Non Economic Migrant (ref)				...	...	...				...	...	...
Economic Migrant				0.240	0.020	***				988.414	0.088	***
Region of Residence												
Rural Areas (ref)				...	...	...				...	...	...
Bamako (Capital)				0.665	0.021	***				157.924	0.070	***
Other Urban Areas				0.700	0.020	***				1.498	0.029	***
AGENCY												
No Political, Economic and Social Awareness (ref)				...	...	...				...	...	...
Political, Economic and Social Awareness				0.674	0.029	***				8.691	0.027	***
INTERGENERATIONAL FACTORS/ASPIRATIONS												
Father's Occupation not Public, Private, Unionized NGOs (ref)				...	...	...				...	...	...
Father's Occupation is Public, Private, Unionized NGOs				0.245	0.042	***				0.491	0.028	***
Promising Career Aspirations				0.397	0.033	***				3.615	0.025	***
INTERACTION TERMS												
Sex * CEP				26.538	0.131	***				2.010	0.056	***
Sex * DEF/BEPC				8.324	0.071	***				1.317	0.033	***
Sex * DUTS/BTS/DUT				4.961	0.076	***				1.561	0.045	***
Sex * Household Head				0.214	0.051	***				16.711	0.049	***
Sex * Economic Migration										0.051	0.077	***
Sex * Bamako										0.826	0.062	**
Sex * Other Urban Areas										1.413	0.035	***
Sex * Agency				1.766	0.036	***				0.200	0.027	***
Sex * Father's Occupation				0.123	0.044	***				1.602	0.030	***
Sex * Career Aspirations				1.636	0.037	***				0.813	0.030	***

*** Significantly different from the reference category (p<0.001), ** (p<0.01), * (p<0.05), # (p<0.10), ns Not Significantly different from the reference category (p<0.10 or better), (ref): Reference category, ... Not applicable. Source : Mali Enquête Permanente Emploi Auprès des Ménages (EPAM), 2007.

4.2.25 **Formal versus Informal Employment.** Table 3, panel 2 presents the estimates for the correlates of formal versus informal employment. Number of years of schooling is negatively associated with formal sector employment, consistent with the results of recent studies of the relationship in SSA (Jah 2007). However, higher levels of certification facilitate access to formal sector jobs. Given that men are less likely to be engaged in formal sector work, the interaction of sex and certification implies that the benefits of certification are greater for men than women.

4.2.26 Marriage, living together and being a household head are negatively associated with employment in the formal sector, while being separated/divorced/widowed and being the spouse of the household head are positively related to formal sector work. The gender nuances stemming from interactions with sex can be explored only for household headship—being a male household head enhances formal sector prospects, compared with being a female household head.

4.2.27 The economic/structural correlates all behave in the expected direction, but residing in Bamako and economic migration tend to intensify the disadvantage faced by men while residing in other urban areas lessens their disadvantage. Agency is positively related to formal sector work, particularly among women. Father's employment in secure occupations hinders formal sector prospects, a disadvantage that is worse for women than men. As anticipated, having career aspirations enhances formal sector prospects, particularly for women.

4.2.28 **Gross and Net Size of the Gender Inequality in Income.** Analyses of income disparities between women and men were conducted at four levels of income. First, the difference in the probability of earning no income as opposed to earning some form of income was

quantified. Next, for those earning some income, the probability of earning at three progressive income levels was examined: minimum (francs CFA 29,000 or less versus higher income; francs CFA 29,000 to 50,000 versus higher income; and francs CFA 50,000 to 75,000 versus higher income. An analysis of income at levels higher than francs CFA 75,000 was abandoned because of the small percentage of workers at those levels. The findings cover the gross and net estimates of gender inequality in income. For brevity, the lower portion of Table 1 reports the main effects of gender only (the independent variable), not those of the correlates. (The detailed findings are reported in annex tables 7 to 10. Annex Tables can be found in the AfDB Data Portal.)

4.2.29 **No Income.** According to Table 1, model 1, men are about 45% less likely than women to receive no income from employment. Model 2, which takes account of differences in human capital, shows a sharp drop in inequality—men are only 3% less likely to earn no income. This suggests that much of the overall inequality may be attributable to differences in human capital. Subsequent adjustment for differences in demographic factors actually reverses the direction of the inequality: men are 6% more likely to receive no income from employment. This switch highlights the importance of demographic factors in the gender-income link.

4.2.30 In models 4 and 5, which incorporate economic/structural factors and agency, respectively, the association reverts to a negative direction, although the effect of agency on the gender inequality is non-significant. Adjusting for intergenerational/family influences intensifies the inequality—men are significantly less likely (92%) than women to receive no employment income.

4.2.31 The full model, which considers gender interactions, shows the most dra-

matic results. Not only does the association switch back to positive, but the size of the inequality is substantially increased. Men are considerably more likely than women to receive no income from economic activities. These results are consistent with the descriptive analyses presented earlier. The striking changes in the behavior of the gender inequality estimate across the various models highlights the importance of considering as many measures as possible of theoretically important explanations of gender inequalities in income.

4.2.32 **Minimum Income.** As observed for no income, the gross gender inequality in earning minimum income (francs CFA 29,000 or less) is negative (model 1). Men are about 75% less likely than women to receive minimum income from employment. Models 2 through 7 indicate that the inequality changes little with progressive controls. According to the final model that also allows for interactions, men are significantly less likely (68%) than women to earn minimum income from economic activities.

4.2.33 **Income:** francs CFA 29,000 to 50,000. In the francs CFA 29,000 to 50,000 income range, the same complexity in the dynamics of the relationships is evident. When all the correlates are considered, men are 75% less likely than women to earn francs CFA 29,000 to 50,000. Again, as observed for no income, demographic and intergenerational/family factors appear to be the most critical.

4.2.34 **Income:** francs CFA 50,000 to 75,000. The estimates generated across the seven models for the francs CFA 50,000 to 75,000 category are also dynamic, albeit slightly less so. Under model 1, the gross gender inequality in income is positive and large—men are 77% more likely than women to earn income in this category. The final model (model 7) indicates that men are 48% more likely than women to earn between

francs CFA 50,000 to 75,000 (the highest income bracket that could be analyzed).

4.2.35 The demographic, economic/structural and intergenerational factors are non-significant. This suggests that at higher income levels (francs CFA 50,000 to 75,000), differences in family factors and region of residence are not related to gender inequality in income, although they are influential at lower income levels. The sections that follow investigate the estimates generated for the correlates, with particular emphasis on the interactions.

4.2.36 **Gender and Income: Mediating Influences.** Table 4 reports the findings about the role of correlates on gender inequality in income. Again, for conciseness, the discussion focuses on the final net estimates from model 7.

4.2.37 **No Income.** Panel 1 shows that men are significantly more likely than women to earn no income from employment. As individuals acquire more years of schooling, they are less likely to receive no income. Similarly, as level of academic certification rises, the likelihood of receiving no income declines. The exception is at the lowest level of certification, where individuals are more likely to receive no income from employment than are those with no certification, mirroring the U-shaped nature of the relationship between human capital and employment/earnings (Standing 1983). However, based on the interactions, the disadvantage faced by men eases.

4.2.38 Being the spouse of the household head greatly increases the likelihood of receiving no income. All the other marital statuses and being the head of the household decrease the likelihood of earning no income. However, the interaction term for sex and household headship indicates that male household heads are more likely than their female counterparts to receive no income.

4.2.39 Compared with people in rural areas, Bamako residents are more likely to receive no income, while residents of other urban areas are less likely to do so. The interaction terms suggest that male economic migrants and male residents of Bamako and other urban areas are gradually becoming less likely than their female counterparts to receive no earnings from work.

4.2.40 People who are politically, economically and socially active are more likely than those who are not active to receive no income from work. Moreover, women who are active in these spheres are more likely than their male counterparts to earn no income.

4.2.41 Father's secure employment increases the likelihood of receiving no earnings from work, particularly for women. Having career aspirations increases the odds of earning no income, an association that is stronger for men than for women.

4.2.42 **Minimum Income**

Panel 2 in table 4 shows the final estimates of the role of the correlates on gender inequality in minimum income (francs

CFA 29,000 or less). Men are 68% less likely than women to have earnings in this category. As women and men acquire more years of schooling, their odds of earning minimum income decline by 22%. Women and men with the highest and lowest levels of academic certifications are less likely than those with no certification to earn minimum income. By contrast, those with DEF/BEPC, CAP or BT certification are more likely than those without academic certification to earn minimum income. However, at successively higher levels of certification, women gradually become less likely than men to receive minimum income.

4.2.43 All the marital statuses examined decrease the odds of earning minimum income, while household headship or being the spouse of the household head raises the odds. However, male household heads are less likely than female household heads to receive minimum income.

4.2.44 Economic migrants and residents of Bamako and other urban areas are less likely than non-economic migrants and workers residing in rural areas to earn minimum income. This advantage is greater for women than men. Father's secure employment is associated with higher odds of earning minimum income. As well, the odds are greater for men, suggesting that women tend to benefit more than men do from family background as measured by father's occupation. Career aspirations are also positively related to the odds of earning minimum income, and the income disadvantage is greater for women than men.

Table 4. Odds Ratios of the Influence of Correlates on the Size of the Gender Inequality in Income, Mali, 2007.

	Panel 1 No Income			Panel 2 Minimum Income (29000 FCFA or less)			Panel 3 29000 to 50000 FCFA			Panel 4 50000 to 75000 FCFA		
	Model 7 Interactions			Model 7 Interactions			Model 7 Interactions			Model 7 Interactions		
	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig	Odds Ratio	SE	Sig
SEX												
Homme	3.290	0.037	***	0.322	0.046	***	0.253	0.102	***	1.484	0.099	***
Femme (ref)	...	...	...	...	...	...	...	...	...	...	...	...
AGE												
18-24 yrs	0.348	0.034	***	1.055	0.035	#	10.530	0.052	***	0.738	0.070	***
25-29 yrs	0.257	0.032	***	0.859	0.031	***	2.891	0.043	***	1.547	0.053	***
30-39 yrs	0.348	0.029	***	0.757	0.029	***	3.018	0.039	***	0.811	0.046	***
40-54 yrs	0.266	0.029	***	0.814	0.028	***	1.514	0.039	***	0.792	0.044	***
Older Adults (55+ yrs) ref	...	...	...	...	...	...	...	...	...	...	...	...
CAPITAL HUMAIN												
No Schooling (ref)	...	...	...	...	...	...	...	...	...	...	...	...
# of Years of Schooling	0.888	0.007	***	0.782	0.003	***	0.924	0.011	***	1.470	0.016	***
# of Years of Schooling Squared	1.007	0.000	***				1.000	0.001	ns	0.986	0.001	***
Academic Certification												
No Academic Certification (ref)	...	...	...	...	...	...	...	...	...	...	...	...
CEP	2.147	0.061	***	0.591	0.058	***	658.105	0.128	***	0.771	0.045	***
DEF/BEPC,CAP or BT	0.355	0.043	***	1.288	0.038	***	0.860	0.058	**	0.150	0.055	***
DUTS/BTS/DUT/et autre niveau BAC+2/+1, DES, Autres	0.874	0.049	***	0.254	0.061	***	0.277	0.072	***	0.073	0.058	***
CARACTERISTIQUES DEMOGRAPHIQUES												
Marital Status												
Single (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Married	0.275	0.040	***	0.550	0.026	***	0.276	0.042	***	0.304	0.046	***
Living Together	0.123	0.044	***	0.434	0.030	***	0.299	0.049	***	0.147	0.056	***
Separated, Divorced or Widowed	0.411	0.044	***	0.142	0.049	***	0.569	0.080	***	0.090	0.094	***
Not the Household Head (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Is the Household Head	0.228	0.065	***	9.670	0.050	***	0.776	0.104	*	0.213	0.045	***
Not Spouse of the Household Head (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Is the Spouse of Household Head	2.163	0.042	***	3.415	0.035	***	5.245	0.057	***	1.365	0.056	***
ECONOMIC/STRUCTURAL FACTORS												
Migration												
Non Economic Migrant (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Economic Migrant	0.996	0.047	ns	0.018	0.059	***	0.109	0.096	***	2.319	0.060	***
Region of Residence												
Rural Areas (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Bamako (Capital)	1.819	0.057	***	0.048	0.066	***	0.009	0.197	***	0.781	0.030	***
Other Urban Areas	0.844	0.022	***	0.536	0.034	***	0.102	0.102	***	0.661	0.032	***
INITIATIVE												
No Political, Economic and Social Awareness (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Political, Economic and Social Awareness	...	...	...	2.455	0.037	***	0.754	0.061	***	7.093	0.064	***
ASPECTS INTERGENERATIONNELS ET ASPIRATIONS												
Father's Occupation is not Public, Private, Unionized NGOs (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Father's Occupation is Public, Private, Unionized NGOs	1.088	0.024	***	1.440	0.033	***	23.045	0.058	***	1.311	0.081	***
No Promising Career Aspirations (ref)	...	...	...	...	...	...	...	...	...	...	...	...
Promising Career Aspirations	1.895	0.020	***	1.909	0.029	***	1.444	0.056	***	0.528	0.052	***
INTERACTIONS												
Sex * CEP	0.114	0.069	***	6.086	0.060	***	0.001	0.130	***			
Sex * DEF/BEPC	0.654	0.050	***	1.879	0.039	***	0.076	0.061	***			
Sex * DUTS/BTS/DUT	0.854	0.052	**	4.544	0.067	***	0.339	0.075	***			
Sex * Household Head	1.842	0.069	***	0.078	0.054	***	2.067	0.103	***			
Sex * Economic Migration	0.101	0.070	***	19.865	0.063	***	9.025	0.100	***	0.523	0.065	***
Sex * Bamako	0.140	0.037	***	5.563	0.072	***	116.198	0.201	***			
Sex * Other Urban Areas	0.546	0.032	***	2.091	0.038	***	14.517	0.106	***			
Sex * Agency	0.482	0.032	***	0.412	0.037	***	0.165	0.055	***	0.369	0.059	***
Sex * Father's Occupation	1.386	0.026	***	1.069	0.035	#	9.787	0.060	***	1.390	0.082	***
Sex * Career Aspirations	0.604	0.062	***	0.729	0.032	***	1.540	0.060	***	2.411	0.056	***
Father's Occupation * Agency	0.809	0.034	***	0.283	0.031	***	17.135	0.043	***	0.386	0.048	ns

*** Significantly different from the reference category (p<0.001), ** (p<0.01), * (p<0.05), # (p<0.10), ns Not Significantly different from the reference category (p<0.10 or better), (ref): Reference category, ... Not applicable. Source : Mali Enquête Permanente Emploi Aupres des Ménages (EPAM), 2007.

4.2.45 Income: francs CFA 29,000 to 50,000. Panel 3 in table 4 shows that men are less likely than women to have earnings in the francs CFA 29,000 to 50,000 range. Years of schooling and having the second or the highest levels of certification examined in this study decrease the odds of earning income in this range, while certification at the lowest level substantially raises the odds. The interactions suggest that men with some certification are less likely than their female counterparts to have earnings in this income bracket.

4.2.46 With the exception of being the spouse of the household head, all the demographic factors decrease an individual's odds of earning income between 29,000 and 50,000 francs CFA. Female household heads are less likely than male household heads to have earnings in this range. Economic migrants and residents of urban centers including Bamako are less likely to earn income in the 29,000 to 50,000 francs CFA range. However, male economic migrants and male residents of these centers are more likely than their female counterparts to earn incomes in this range. Agency also decreases the odds of an individual earning income between 29,000 and 50,000 francs CFA, especially for men. On the other hand, intergenerational effects and career aspirations tend to increase the odds of receiving income in this range, particularly for men.

4.2.47 Income: francs CFA 50,000 to 75,000. Panel 4 of table 4 shows that the estimates of the correlates of income 50,000 to 75,000 francs CFA (the highest level examined in this study) favor men. The prospects of earning income in this range were enhanced by more schooling, but the association was negative for all levels of certification. The estimates for the interactions were unstable because of the small number of women with earnings in this category. All the demographic factors except being the spouse of the household head are asso-

ciated with decreased odds of having income in this range.

4.2.48 Economic migration enhances the prospects of receiving earnings in this range, but the opposite holds for residing in Bamako and other urban areas. The interaction indicates that female economic migrants tend to earn more than their male counterparts do. Agency and father's secure employment increase the likelihood of having earnings in this category, but career aspirations tend to decrease the likelihood. Women with more political, economic and social agency are more likely than their male counterparts to receive earnings in this range. On the other hand, intergenerational and family factors tend to benefit men more than women.

4.3 Summary of Principal Findings

4.3.1 Employment

4.3.1.1 **Agricultural Employment.** Men are significantly more likely than women to be agricultural workers. While younger cohorts contribute to gender inequality in favor of men in this sector, older workers tend to narrow it. The young age profile of agricultural workers reflects the physical demands of agricultural activity and its low degree of mechanization in Africa. Certification helps individuals access more profitable non-agricultural jobs, but the advantage is greater for men than women. Human capital facilitates men's access to non-agricultural work; the reverse holds for women.

4.3.1.2 Being married and living together enhance agricultural activity, while being the household head or spouse of the household head and separation/divorce/widowhood depress the likelihood of engaging in agricultural activity. The effect of household headship may be greater for female household heads.

4.3.1.3 Economic migrants and urban residents, especially those in Bamako,

are less likely to work in agriculture, but the economic benefits of this are greater for men than women. Consistent with theoretical expectations, agency is inversely related to agricultural employment, and the dividends may be greater for women. Father's secure employment and having career aspirations tend to benefit sons/men more than daughters/women.

4.3.1.4 **Salaried versus Non-Salaried Employment.** Men are significantly more likely than women to be paid workers. The likelihood of access to the paid sector rises with higher levels of certification, but less so for men than women.

4.3.1.5 The demographic factors considered in this analysis hinder access to paid employment. However, male household heads are substantially more likely than female household heads to find paid work. As expected, economic migrants and urban residents, including those in Bamako, are significantly more likely than rural residents to have paid work. Excluding "other" urban areas, the advantage is for women.

4.3.1.6 Agency facilitates access to paid employment, but men tend to benefit more from agency. Father's secure employment is inversely related to an individual's access to paid employment, but this relationship holds more for women than men. Having career aspirations enhances paid employment prospects, with women benefiting more than men.

4.3.1.7 **Industry versus Services.** Contrary to evidence in the literature and conventional wisdom, men are less likely than women to work in the industrial sector. This finding emerges only when the full set of correlates is considered. Thus, the relationship between gender and employment in the industrial and service sectors is influenced by a complex web of human capital, demographic, economic, structural, intergenerational, agency, and aspirational factors. Women with ca-

reer aspirations and those whose fathers had secure employment are less likely than their male counterparts to be employed in industry.

4.3.1.8 Private Informal Employment versus Public Employment. The differences in gender representation in the informal sector is important because, compared with the public sector, it is relatively insecure and so may not support career growth or economic security (especially during retirement) in ways that eliminate gender inequalities. The most compelling findings emerge after interactions between sex and key variables are incorporated in the final model (model 7). These findings emphasize the importance of focusing on gender differences in the determinants of employment that were highlighted in the Botswana study (AfDB, 2011). The full model reveals no significant gender differences in access to the private informal or public sector. Thus, the differences in access to these sectors are tied to gender differences in the key correlates.

4.3.1.9 The results for number of years of schooling, and corroborated in earlier studies (for instance, Jah 2007), show that contemporary expansion in education tends to channel individuals to the informal rather than the formal sector. Conversely, and as expected, certification steers individuals away from the less secure private informal sector. However, the interaction terms indicate that at all levels of certification, men are funneled toward the private informal sector. The net outcome of certification is to reduce women's over-representation in this sector. All marital statuses tend to push individuals toward the private informal sector, while being the head of the household or the spouse of the household head deter individuals, particularly male household heads, from being engaged in the sector.

4.3.1.10 The economic/structural factors, as expected, are negatively related to access to the private informal sector, but lack of estimates for the interaction terms precludes further examination of the association with gender. Agency, father's secure employment, and having career aspirations are all inversely linked to private informal sector work. Additionally, women's overall economic disadvantage arising from their over-representation in the informal sector is lessened, as father's secure employment and having career aspirations reduce the effect of women's over-representation.

4.3.1.11 Formal versus Informal Employment. Men are less likely than women to be employed in the formal sector. This is contrary to recent evidence from Botswana (Botswana Study, 2011).¹⁰ This finding highlights the importance of considering as many distinctions across sectors as possible in survey designs and data analysis. To tease out some of the nuances of the inequality, the correlates of employment considered in this study should be critically examined.

4.3.1.12 Academic certification benefits men more than women and so reduce men's initial disadvantage. Conversely, economic migration, residing in Bamako, agency and having career aspirations all tend to favor women more than men with respect to enhancing formal sector advantage. A cautionary note is warranted. Although these findings are encouraging, the implications for Mali's potential to attain the MDG related to gender equality depends on the proportions of the female labor force that actually access and remain in the formal sector. Indeed, the study finds that male household heads and those whose fathers worked in secure occupations have greater formal sector prospects relative to women.

4.3.2 Income

4.3.2.1 No Income. Men are considerably more likely than women to receive no income from economic activities. The multivariate results are consistent with the descriptive findings. The striking changes in the gender inequality estimate across the various models highlight the importance of considering as many measures of theoretically important explanations as possible in gender analyses of income.

4.3.2.2 The evidence for human capital factors is consistent with theoretical expectations. Individuals are less likely to receive no income as they acquire more schooling. Similarly, as level of certification rises, the likelihood of receiving no income declines. The only exception is at the lowest levels of certification, at which individuals are more likely to receive no income from employment than are individuals with no form of certification (Standing 1983). But based on the interactions, the disadvantage faced by men is diminishing, so that more women are earning no income than previously. Being the spouse of the household head tends to greatly increase the likelihood of receiving no income, while the other marital statuses and being the head of the household decrease the likelihood of earning no income. However, further explorations indicate that male household heads are more likely than their female counterparts to receive no income.

4.3.2.3 Minimum Income. Based on the final model, men are significantly less likely (68%) than women to earn minimum income. However, as women and men acquire more certification, women gradually become less likely than men to receive minimum income. An important implication is that the acquisition of higher levels of certification would reduce

¹⁰ The AfDB Botswana Study (2011) found that access to legislative positions and professional occupations is significantly greater for men than women even when adjustments for several classic correlates of employment were made.

women's greater propensity to receive minimum income.

4.3.2.4 All the marital statuses examined decrease the odds of having minimum income, while household headship and being the spouse of the household head raise the odds of receiving income in this range. However, male household heads are less likely than female heads to receive minimum income.

4.3.2.5 Economic migrants and residents of Bamako and other urban areas are less likely to earn minimum income than are non-economic migrants and residents of rural areas. This advantage is greater for women than men. Unexpectedly, father's secure employment enhances the odds of receiving minimum income, especially among men. Thus, women tend to benefit more than men from this intergenerational effect. However, having career aspirations increases the odds of earning minimum income.

5 Conclusions, Policy Implications and Proposed Future Research

5.1 Conclusions

5.1.1 The main aim of this study was to examine the relationship between gender and employment in various economic sectors in Mali. The conceptual framework was guided by the literature on the relationship between the employment of women and men and a wide range of factors that bear on economic opportunities: human capital, demographic, structural/economic, intergenerational and individual agency.

5.1.2 *Employment*

5.1.2.1 **Agricultural Employment.** Agriculture dominates the Malian economy. As expected, men are significantly more likely than women to be agricultu-

ral workers, and younger people are more likely than older people to work in this sector. The correlates examined in this study explain much of the inequality. Years of schooling, household headship, separation/divorce/widowhood, being the spouse of the household head, economic migration, residence in Bamako and other urban areas, and civic awareness/agency are negatively related to agricultural activity. Conversely, and surprisingly, certification (particularly at lower levels), marriage, living together, father's employment in secure occupations and having career aspirations are positively related to agricultural activity. These findings signal Malians' growing difficulty in accessing jobs outside the more profitable non-agricultural sector. Male household heads and men with more agency are more likely than their female counterparts to be agricultural workers. On the other hand, for men, all levels of certification, residence in Bamako and other urban areas, fathers' secure employment and having career aspirations reduced the likelihood of being agricultural workers, compared with their female peers.

5.1.2.2 **Salaried Work.** Men are also more likely than women to be salaried workers. Compared with workers aged 50 to 59, workers in all age groups are less likely to be salaried. This points to the decreasing paid employment opportunities stemming from economic policy adjustments and the growing disadvantage faced by new labor market entrants. As expected, increasing levels of certification, economic migration, residing in Bamako and other urban areas and agency enhance an individual's likelihood of having a salaried job. Father's secure job and all the demographic factors decrease prospects for salaried employment. However, academic certification, economic migration, residence in Bamako and having career aspirations narrow women's disadvantage in securing salaried employment, while household headship, residence in other urban

areas, agency and father's secure occupation reinforce their disadvantage.

5.1.2.3 **Industrial Sector.** Contrary to the situation in the agricultural and salaried sectors, women are more likely than men to work in the industrial sector. While this could plausibly be explained by the globalization of economic activities, people aged 55 or older are more likely than all other age groups to work in the industrial sector. Schooling, certification, marriage, living together, economic migration, residence in other urban areas and agency all enhance participation in the industrial sector. By contrast, separation/divorce/widowhood, household headship, spouse of the household head, residence in Bamako, father's secure employment and having career aspirations are associated with lower odds of participation. However, men with career aspirations and whose father had secure employment are more likely than their female counterparts to be industrial workers.

5.1.2.4 **Private informal sector.** No gender differences emerge in employment in the private informal sector—men are as likely as women to work in this sector. People aged 55 or older are more likely than younger age groups to have private informal employment. Contrary to years of schooling (which works in the opposite direction), certification, household headship, spouse of the household head, economic migration, residence in Bamako and other urban areas, agency, father's secure job and having career aspirations are all negatively related to employment in the private informal sector. Conversely, marriage, separation/divorce/widowhood and living together enhance participation in this sector. The results for marriage are contrary to historical evidence (Jah 2010b) that finds marriage to be unrelated to overall employment in the mid-1990s and negatively related to it in the early 2000s. Such inconsistencies call for the continued use of historical as opposed to snapshot evi-

dence in employment analyses. Despite the absence of gender differences in access to the private informal sector, the interaction terms reveal that certification, agency and career aspirations enhance men's access to this sector relative to women's, while household headship and father's secure employment dampen access.

5.1.2.5 Formal Sector. Unexpectedly and contrary to conventional wisdom, men are less likely than women to work in the formal sector. This finding is novel, but also inconsistent with evidence from other countries in the region (Appleton, Collier and Horsnell for Cote d'Ivoire; AfDB 2011 for Botswana; Glick and Sahn 1997 for Guinea; Jah 2010 for Cameroon), although the inconsistency can be explained partly by timing and partly by research design. Again, people aged 55 or older are more likely than other age groups to work in the formal sector. As anticipated, certification, economic migration, residence in Bamako and other urban areas, agency and promising career enhance the odds of participation in the formal sector. The same holds for separation/divorce/widowhood and being the spouse of a household head. On the other hand, marriage (and inconsistent with Jah 2010b), living together, household headship and father's secure employment tend to hinder formal sector participation. However, these associations vary by gender. Certification, household headship, residence in other urban areas and father's secure employment reduce women's advantage over men. By contrast, economic migration, residence in Bamako, agency and having career aspirations reinforce women's advantage.

5.1.2.6 A cautionary note is warranted. Although the formal sector evidence is encouraging, Mali's potential to attain the MDG related to gender equality depends on the proportions of the female labor force that actually enter and remain in the formal sector.

5.1.3 *Income*

5.1.3.1 No Income. Net of the correlates included in the analyses, men are considerably more likely than women to receive no income from economic activities. These multivariate findings are consistent with the descriptive results. People aged 55 or older are more likely than younger individuals to receive no income, perhaps because they are retired. The evidence conforms with theoretical expectations. As schooling and certification levels rise, so does the likelihood of receiving income from work. All the demographic factors (excluding spouse of the household head), economic migration and residence in urban areas other than Bamako decrease the likelihood of earning no income.

5.1.3.2 Surprisingly, residing in Bamako, father's secure occupation, and having career aspirations appear to increase the likelihood of earning no income. Based on the results of the interactions, certification, economic migration, residence in Bamako and other urban areas, agency and positive career aspirations decrease men's disadvantage. Unexpectedly, household headship and father's secure employment tend to reinforce the male advantage. These unexpected findings may be due to an increasing squeeze in the jobs previously available to men and to the fact that female household heads, and women in West Africa generally, are more enterprising.

5.1.3.3 Minimum Income. Men are significantly less likely than women to earn minimum income. Individuals in all age groups except 18 to 24 are less likely to receive minimum income. More schooling, certification (except the middle levels), marriage, living together, separation/divorce/widowhood, economic migration and residence in Bamako and other urban areas are negatively related to earning more income. On the other hand, household headship or being the spouse of the household head, agency,

father's secure employment and having career aspirations increase the odds of earning minimum income. Men with certification are more likely than men without certification as well as women with certification to receive minimum income. Economic migration, residence in Bamako and other urban areas and father's occupation increase men's odds of earning minimum income more than is the case for women. Conversely, household headship, agency and promising career goals decrease men's likelihood of earning minimum income.

5.1.3.4 Income: 29,000 to 50,000 francs CFA. Men are considerably less likely than women to earn 29,000 to 50,000 francs CFA. People younger than age 55 are more likely than older individuals to have earnings in this income bracket. Likewise, CEP certification, being the spouse of the household head, father's secure occupation and having career aspirations increase the odds of earning 29,000 to 50,000 francs CFA. By contrast, years of schooling, higher levels of certification, almost all the demographic and all of the economic/structural factors and agency reduce the odds of earning income in this range. However, men with certification and agency are less likely than their counterpart females to have this level of income. Conversely, men who are household heads, economic migrants, residents of Bamako and other urban centers, who have career aspirations and whose father had secure employment are more likely than their female peers to receive earnings in this range.

5.1.3.5 Income: 50,000 to 75,000 francs CFA. The results show substantial gender inequality in favor of men with respect to earnings between 50,000 to 75,000 francs CFA (the highest income that could be analyzed in this study). Employees in all age categories except 25 to 29 are less likely than those aged 55 or older to have earnings in this range. Unexpectedly, the odds of having earnings at

this level, while enhanced by more years of schooling, are reduced by more certification. With a few exceptions, the demographic factors examined here are also associated with low odds of earning 50,000 to 75,000 francs CFA.

5.1.3.6 Consistent with expectations, economic migration, agency and father's secure employment enhance prospects of having earnings in this range. Surprisingly, the opposite holds for residence in Bamako and other urban areas and having career aspirations. The fact that urban residence is not associated with high earnings can be linked to competition and unfavorable economic policy adjustments by African governments in the wake of recent economic crises in the region. Further evidence shows that the prospects of earning income within this range are enhanced more for female than male economic migrants. As well, compared with their male counterparts, women with political, economic and social agency are more likely to have earnings in this range. On the other hand, intergenerational and family factors tend to benefit men more than women.

5.2 Policy Implications

5.2.1 The foregoing conclusions have policy implications for accelerating efforts toward the provision of secure and profitable jobs to both women and men, and ultimately, for attaining the gender equality MDG. Mali must critically examine the factors that emerge as influential in this study:

5.2.2 *With Respect to Employment*

5.2.2.1 Greater attention to education is needed, but it must focus on quality, and especially for women, labor market relevance. Further, to make women competitive and confident labor market participants, it is urgent to promote school subject choices and training/certification that meet demand rather than traditional than job norms.

5.2.2.2 Policies that target marriage and the family as they relate to the organization of work are also urgent. This must be done by examining the successes and failures of relevant measures already in effect.

5.2.2.3 Given that the dividends of residence in urban areas (the recipients of spillovers from Bamako) besides Bamako are greater for men than women, efforts to promote female migrants' success in the labor market hold promise toward closing economic gender inequality.

5.2.2.4 Because agriculture remains the chief employer of the majority of the population, greater emphasis must be placed on making this sector profitable and sustainable. This must be done in conjunction with a focus on women, as most of the benefits from the determinants examined in this analysis are greater for men. The interventions are well-known—for instance, increased access to credit, information and extension services—they simply must be either better targeted and increased.

5.2.3 *With Respect to Income*

5.2.3.1 Women are more likely than men to have earnings in the lower-income, while men are more likely than women to have earnings in the higher-income categories. Thus, women continue to be disadvantaged in terms of income, which reinforces gender inequality in the labor market and challenges gender equity efforts. Policies that increase women's earning capability should be implemented, including policies that target equity in access to education, particularly secondary and higher levels, quotas for women in government and elected positions (for example, Rwanda), economic empowerment programs that provide access to a mix of resources, and policies that ensure equal access and opportunity in both the public and private spheres. Affirmative action poli-

cies are an essential first step to leveling a playing field that, through a combination of traditional cultural values and practices and more modern policies that maintain the status quo, has been tipped against women.

5.3 Proposed Further Research

5.3.1 Contrary to past evidence in the literature and conventional wisdom, men are less likely than women to work in the industrial sector. And inconsistent with recent findings for Botswana (AfDB 2011) and entrenched gender inequality in paid employment, men are less likely to be employed in the formal sector. However, these findings emerge only when the data are adjusted for the full set of correlates that were included in this study. This reveals the multi-faceted nature of the dynamics of gender inequality in employment. Moreover, the way in which the correlates are associated with gender is not straightforward. A number of methodological/analytical issues emerge from this study:

5.3.1.1 It is necessary to consider the role of as many correlates of employment (intergenerational factors, family/social organization of work, husband's attitudes, impact of urban areas other than Bamako, attitudes and ambitions, agency and civic awareness) as possible in survey design to support rigorous analyses across various economic sectors, in particular the formal sector, to deepen insight about the employment behavior of women and men.

5.3.1.2 The finding that demographic factors hinder access to salaried employment raises the question of family-work incompatibility. This calls for qualitative and quantitative research into the role of formal and non-formal (through extended networks within and outside of households) daycare and household help in women's employment behavior.

5.3.1.3 Ethnicity should be part of future

surveys and research to determine the role of ethnic background in the gender-employment nexus.

5.3.1.4 The evidence generated is equivocal. This is not the conclusive assessment of the relative importance of each of the factors examined here. Future research should explore decomposition methods to estimate the relative weight of the various theoretical explanations to enhance effective policy targeting.

5.3.1.5 A growing literature indicates that failure to account for these confounding factors in African employment analyses can alter research conclusions (Jah 2007; 2010a; 2010b). Fixed effects modeling in SAS, capable of handling these unmeasured influences (Allison 1996), should be employed to determine if this method would yield different interpretations.

5.3.1.6 Beyond the caveats mentioned

in the data section, another limitation of the study must be noted. The analyses are based on cross-sectional data, and therefore, the evidence is a snapshot of the situation at the time of data collection and is liable to temporal fallacy (Thornton 2001). To monitor the progress of development efforts, and in the absence of longitudinal data, the AfDB and partners should consider facilitating country cross-sectional surveys across several periods.

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