Zanzibar Poverty Assessment

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Acronyms and Abbreviations

GDP	Gross Domestic Product
HBS	Household Budget Survey
HIV	Human Immunodeficiency Virus
ILFS	Integrated Labor Force Survey
LIC	Low-Income Country
MDG	Millennium Development Goal
MPI	Multidimensional Poverty Index
NBS	National Bureau of Statistics
NGO	Nongovernmental Organization
NPS	National Panel Survey
OCGS	Office of the Chief Government Statistician
PPP	Purchasing Power Parity
RIF	Recentered Influence Function
SACCOS	Savings and Credit Cooperative Organizations
SSA	Sub-Saharan Africa
TASAF	Tanzania Social Action Fund
TESS	Tanzania Enterprise Survey Study
TZS	Tanzanian shilling
UN	United Nations
WDI	World Development Indicators

Glossary

Poverty headcount or *monetary basic needs poverty rate*: measures the proportion of the population whose monthly (price-adjusted) total household consumption per adult is below the national basic needs poverty line of TZS 53,377 (in 2014/15). Basic need poverty rates represent official national poverty levels.

Extreme poverty headcount: proportion of the population whose monthly (price-adjusted) total household consumption per adult is below the food poverty line. The extreme poor are unable to meet the minimum nutritional requirements of 2,200 kilocalories (kcal) per adult per day.

Poverty gap or *depth of poverty:* measures the distance between the average consumption of the poor and the poverty line.

Severity of poverty: estimates the inequality among the poor.

International poverty: proportion of the population whose daily total household consumption per person is below the international poverty line of US$1.90 per person per day (in the 2011 Purchasing Power Parity exchange rate).

Dimension-specific deprivation: proportion of households (or individuals) who suffer from a deprivation or a shortfall from a threshold on a specific dimension of well-being such as education, access to basic services, consumption and so forth. For example, water deprivation is measured by the proportion of households that lack access to safe (or improved) drinking water.

Multidimensional poverty or *Multidimensional Poverty Indicator* (MPI): assesses the different deprivations that a person faces at the same time. A person is considered as multidimensionally poor if she/he suffers from deficiencies or deprivations in at least 30 percent of the indicators covering five dimensions of well-being, namely: education, housing conditions, access to basic services (water, electricity, and sanitation), assets ownership and consumption.

Severe deprivation: indicates deprivation in more than 50 percent of the indicators covering the five dimensions of well-being.

Vulnerability to multidimensional poverty: proportion of households (or individuals) who are deprived in between 10 and 30 percent of the indicators of well-being.

Executive Summary

Zanzibar recorded an important decline in urban poverty, while rural poverty did not change, and poverty increased on the island of Pemba

Basic needs poverty and extreme poverty both declined by 4.5 and 1 percentage points, respectively, at the national level in Zanzibar since 2010. Consumption also increased disproportionately among the poor, yet the absolute gains accruing to the poor and people in the bottom 40 percent remained limited. Poverty reduction was concentrated in urban areas, which was the main driver for Zanzibar's overall poverty reduction. Conversely, poverty rates remained steady in rural areas. As a result, the island of Unguja, where the main urban center of Zanzibar is located, recorded most of the decline in poverty. In contrast, the island of Pemba, which remains predominantly rural, experienced an increase of poverty (Figure ES.1). All in all, the evolution of poverty rates across the geographic locations and the islands points to an important decline of poverty in urban areas, which are primarily located on the island of Unguja, which in turn acted as a positive driving force to lower poverty rates for the rural areas of Unguja that are connected to these urban centers. Between 2010 and 2015, poverty declined by 11 percentage points in urban areas, but also by 3 percentage points in rural areas of Unguja (Figure ES.2). Meanwhile, rural areas of Pemba that lacked access to urban centers did not benefit from this driving force, and therefore saw an increase in their poverty rate by 8 percentage points.

Figure ES.1: Basic Needs Poverty Trends in Zanzibar, 2010 and 2015 (percentage)
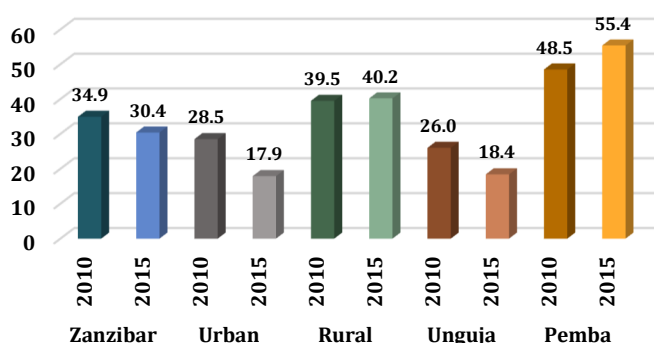
Figure ES.2: Basic Needs Poverty Trends by Area, 2010 and 2015 (percentage)
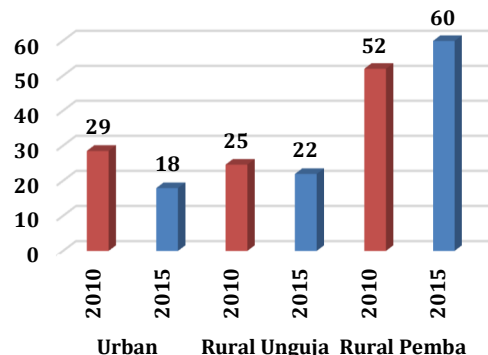
Sources: HBS 2009/10 and HBS 2014/15.

The main drivers of such a reduction in poverty were increases in returns to both the education and economic activity of the poor. Household businesses, followed by both the nonfarm sector and agriculture, have become more productive in recent years, inducing improvements in the economic situation of the poor. The decline in poverty has also been driven by an increase of returns to secondary education, which was coupled with improvements in the educational levels of the household's head and his/her spouse. While a large household size and the number of children continued to constrain households' well-being, their negative impact seems

to have declined. The latter was apparently driven by a higher engagement of spouses in nonfarming activities and an expansion of their returns. The improvements in ownership of and returns to assets, essentially cell phones, further contributed to welfare gains and poverty reduction.

Despite these improvements, households with large families and dependents employed in agriculture, and with lower education and lower access to infrastructure, continued to suffer from prevalent poverty. The poverty rate consistently increased as the number of people and children within the household increased. Over half of the households with five or more children under 14 years old lived in poverty compared to only 16 percent of those with two children or less. Poverty was also the highest among agricultural workers. It was around two times higher than among households that worked in the services and trade sectors, and over 14 percentage points higher than among those employed in construction and mining. There was also a considerable gap in poverty levels between households whose heads had secondary or higher education, and households whose heads only had primary or lower level education.

The situation in Pemba is particularly worrisome, where poverty and extreme poverty increased, pointing to the deterioration of the economic situation of the island. Poverty increased by respectively 5 and 9 percentage points in North and South Pemba between 2010 and 2015. This increase resulted mainly from a sharp increase of poverty in Pemba's rural areas, where the poverty rate rose by around 8 percentage points. The dynamic observed, and in particular the contrasting reduction of poverty witnessed in rural areas of Unguja that can be attributed to their good connection to urban centers, raises the question of the geographic, economic, and social integration of Pemba compared to Unguja. The underdevelopment of the urban sector on the island (83 percent of Pemba's population lived in rural areas) seemed to constrain the island's economic development and to prevent its rural areas from benefiting from spillovers as well as an economic outlet for its products.

Geographic disparities in poverty and living conditions may jeopardize poverty reduction and inclusion prospects

Poverty reduction was coupled with modest gains in living conditions and human development, but disparities in outcomes persisted across geographic regions. Access to safe drinking water, electricity, and sanitation moderately improved in Zanzibar, including for some poor and rural populations (Figure ES.3). Improvements were also observed in terms of housing conditions and ownership of modern assets. However, many poor households still had much lower access to safe drinking water, electricity, and sanitation than the rest of the population. Important gaps also remained between geographic regions, as the population of Pemba in particular continued to face sizeable deprivations in access to electricity and adequate sanitation. Likewise, the poor had significantly lower access to mobile banking and Savings and Credit Cooperative Organizations (SACCOS), a lending institution for rural micro-entrepreneurs. Obstacles to infrastructure and financial services seemed to seriously limit the possibilities of the poor to improve their living standards.

Figure ES.3: Access to Basic Services in Zanzibar (percentage of households)
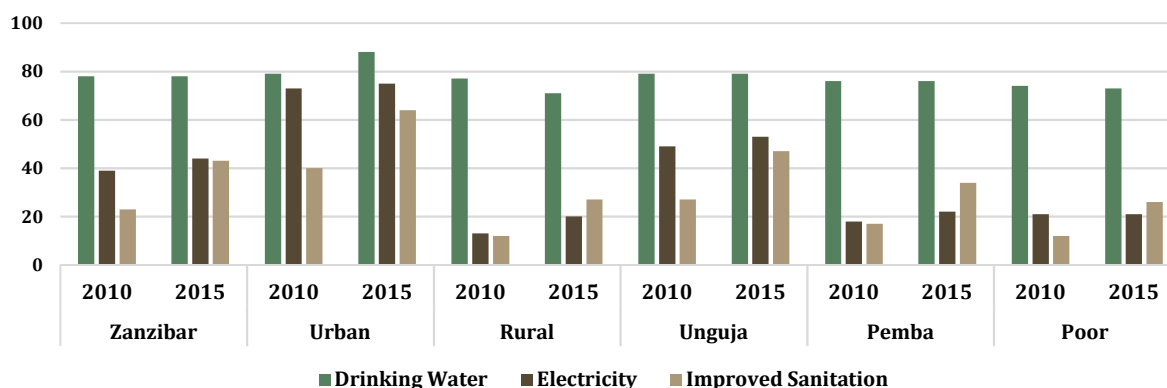
Sources: HBS 2009/10 and HBS 2014/15.
Note: "Drinking water" includes private piped water and public taps. "Electricity" refers to connection to the electrical grid. "Improved sanitation" follows the WHO definition and includes flush, ventilated, and pit latrines.

Education and health indicators compared favorably with Mainland Tanzania and Sub-Saharan Africa (SSA) averages, but progress remained slow and malnutrition continued to be a serious problem. The educational level of the population in Zanzibar compared favorably with Mainland and the rest of SSA. Half of the population had at least completed secondary education, and the share of the population that had not received any form of education was below 20 percent. However, there were concerns about the quality of education provided and about the level and breadth of skills achieved by students. Likewise, Zanzibar's health levels compared favorably with the SSA's averages and Mainland Tanzania. However, malnutrition continued to be widespread and represented a serious concern. The analysis of infant and child mortality rates revealed that most under-5 mortality was caused by deaths occurring during the first year of the child's life. Potential gaps in health services provided to infants, as well as a lack of support services for the young mothers, might explain the number of infant mortalities in the under-5 age group.

Geographic disparities in access to services affected people's endowments of productive characteristics and contributed to higher interregional inequality. Overall inequality was low in Zanzibar. However, inequalities between geographic regions were quite substantial and the urban-rural welfare gap increased. The persisting spatial inequalities were largely driven by differences in households' productive characteristics. Households in rural zones and in Pemba had lower living standards than their counterparts in urban areas and in Unguja due to the latter's higher education and assets ownership, but most importantly due to their better access to basic services and infrastructure. Differences in access to mobile banking and SACCOS also seemed to matter for interregional inequality. While households in Pemba and rural sectors had been able to partially catch up with their counterparts in urban areas and Unguja in terms of education levels and assets ownership, the improvements were partly offset by increasing differences in access to services. The geographic disparities in basic service delivery and differences in local geographic conditions also

affected the ability of poor households to improve their productivity and to increase their returns, aggravating the returns' gap among the poor and further deepening spatial inequalities.

Poverty was lower in Zanzibar than in Mainland, but both parts displayed similar patterns of high population density around the poverty line and wide geographic disparities

Basic needs poverty rates showed higher poverty in Zanzibar than in Mainland, but poverty measures based on the international line revealed lower poverty in Zanzibar. Official national poverty measures were respectively 28.2 percent in Mainland Tanzania in 2012 and 30.4 percent in Zanzibar in 2015. However, using the international poverty line of US$1.90 per person per day (in 2011 Purchasing Power Parity (PPP)), poverty appeared to be significantly lower in Zanzibar, where the international poverty rate was estimated at 43.5 percent compared to 48.8 percent in Mainland. A large share of the population in both Zanzibar and Mainland was clustered around the poverty line and is highly vulnerable to falling into poverty. Yet, an important proportion of the poor population was also fairly close to the poverty line and would likely have moved out of poverty with a small increase of their income (Figures ES.4 and ES.5).

Figure ES.4: Sensitivity of Poverty Rate from Change in Poverty Line in Zanzibar
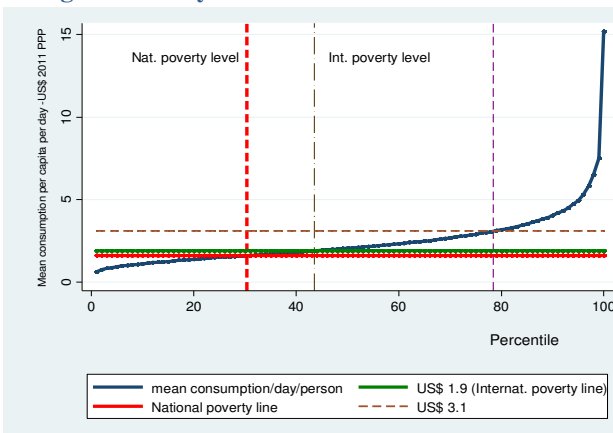
Figure ES.5: Sensitivity of Poverty Rate from Change in Poverty Line in Mainland

Source: Zanzibar HBS 2014/15.
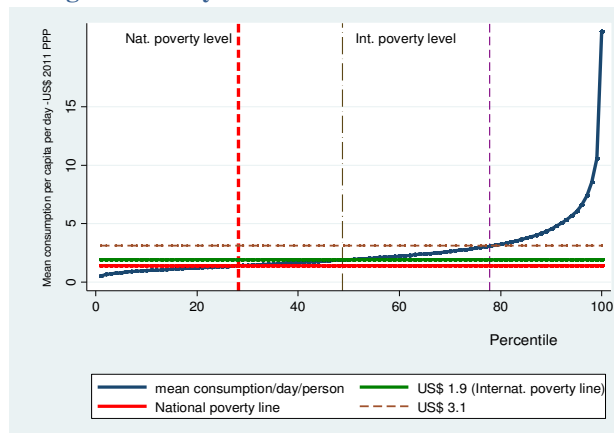
Source: Mainland HBS 2011/12.

Multidimensional poverty was also lower in Zanzibar than in Mainland. About 44 percent of the population in Zanzibar suffered from deprivations in at least one-third of the relevant dimensions of well-being—such as consumption, access to basic services, assets, and housing conditions—compared to 63 percent in Mainland (Figures ES.6 and ES.7). The share of deprivations experienced by the poor relative to the maximum range of deprivations among the whole population was also lower in Zanzibar, indicating a lesser breadth of the multiple deprivations encountered by the poor in Zanzibar compared to Mainland. Nevertheless, a large part of the population in Zanzibar was still at risk of falling back into poverty. Access to basic services, essentially electricity, efficient cooking fuels, and sanitation, followed by consumption, appeared to be among the most important dimensions of well-being for which the populations in Zanzibar and Mainland faced deprivations. Deprivations in education and assets remained limited; although nearly 40 percent of poor households in both parts of Tanzania continued to be deprived of school

attendance, meaning that at least one school-age household member (7 to 15 years old) was out of school.

Figure ES.6: Proportion of Multidimensional Poor and Vulnerable People in Zanzibar (percentage)
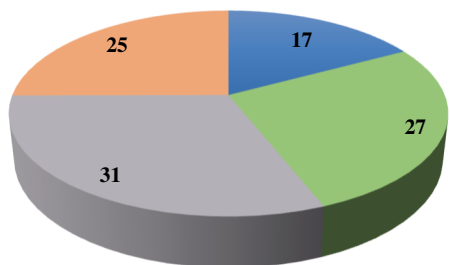
Figure ES.7: Proportion of Multidimensional Poor and Vulnerable People in Mainland (percentage)
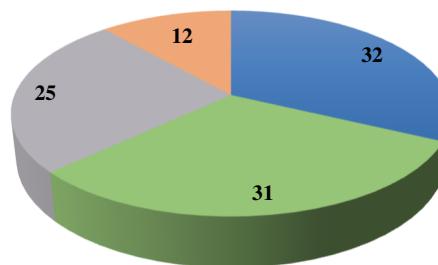
Sources: Zanzibar HBS 2014/15 and Mainland HBS 2011/12.

The labor market in Zanzibar seemed to be more diversified than in Mainland, though unemployment among educated youth and informal workers was concerning

The active labor force of Zanzibar was primarily employed in services, followed by agriculture. The sectoral composition of the labor market was more diversified in Zanzibar than in Mainland (Figures ES.8 and ES.9). The services sector (including trade and public administration) accounted for a significantly larger share of employment in Zanzibar than in Mainland, while employment in agriculture was considerably higher in the latter. Besides being more diversified than in Mainland, the labor market in Zanzibar also offered higher incomes. In both Zanzibar and Mainland, less-educated workers were generally concentrated in agricultural employment, while those with superior education were engaged in the services sector. Middle skilled workers with lower secondary education were more engaged in trade, the private services sector, and manufacturing; while higher educated workers, with upper secondary and university degrees, were more involved in wage employment, mainly in public administrations.

Figure ES.8: Sectoral Composition of Zanzibar, 2014 (percentage of the workforce)
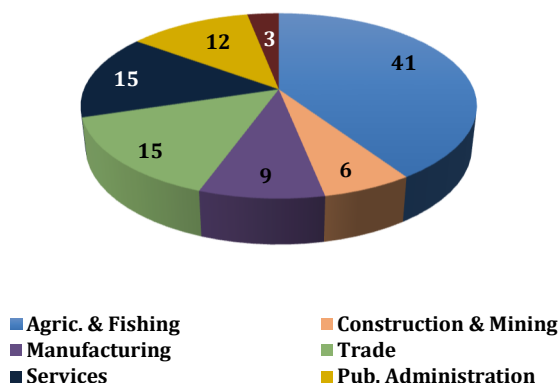
Figure ES.9: Sectoral Composition of Mainland Tanzania, 2014 (percentage of the workforce)

Agric. & Fishing	Construction & Mining
Manufacturing	Trade
Services	Pub. Administration

Source: ILFS 2014 Zanzibar.

Agric. & Fishing	Construction & Mining
Manufacturing	Trade
Services	Pub. Administration
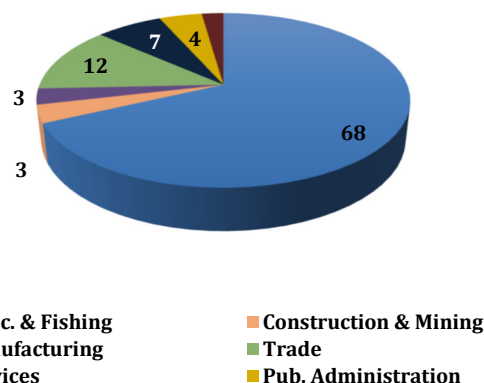
Source: ILFS 2014 Mainland.

Note: Trade includes retail and wholesale; services include accommodation and food, transportation, ICT, and financial and insurance; public administration includes education, health and other administrative services; and other includes art, entertainment and household activities.

As for the geographical distribution of poverty, a strong divide existed in terms of sectoral composition of employment between urban areas, rural areas of Unguja, and rural areas of Pemba, the latter being heavily dominated by agriculture. The services sector heavily dominated employment in Zanzibar's urban areas, which were mainly concentrated in West Unguja. Benefiting from spillovers, the rural areas of Unguja that were connected to the main urban center also had a fairly well developed services sector that represented one-third of employment. Conversely, the majority of the workforce in rural Pemba was predominantly employed in agriculture (Figure ES. 10). These results suggest that the proximity of rural areas to urban centers positively affected the sectoral composition of their employment and likely contributed to the expansion of higher productive job opportunities in rural zones, which had a better connection to urban places. The differences in the sectoral composition of employment across the geographic areas could potentially explain the discrepancies in the distribution of poverty between rural and urban regions and between Unguja and Pemba.

Figure ES.10: Sectoral Composition of Zanzibar by Area, 2014 (percentage of the workforce)
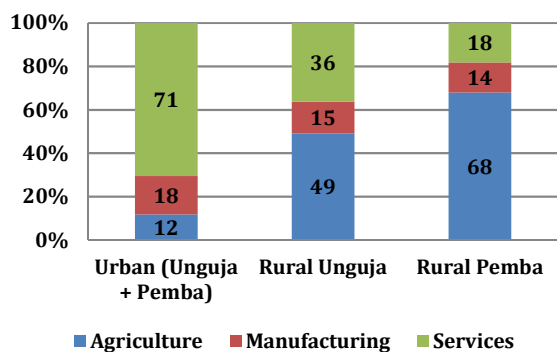
Figure ES.11: Unemployment Rate by Age and Area, 2014 (percentage of the workforce)

Source: ILFS 2014 Zanzibar.
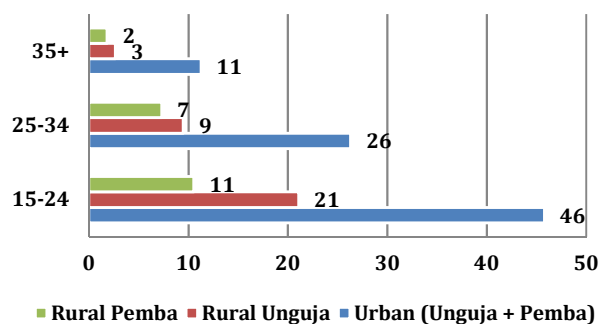
Source: ILFS 2014 Zanzibar.

The participation rate in the labor market was low and unemployment was quite high in Zanzibar. Only 45 percent of the total population of Zanzibar was in the labor force. The main factors behind such a low rate of participation were the young age of the population and the level of engagement in education. Despite the fairly good education levels of the labor force, unemployment remained quite high, primarily affecting the educated youth in urban areas. Conversely, rural areas where agricultural activities dominated tended to have much lower unemployment rates, underscoring the capacity of this sector to provide many jobs, albeit poorly paid, as highlighted by the high poverty rates in rural areas. A similar dual rural/urban and Pemba/Unguja divide was found, which evidenced the paradox of lower poverty rates in rural areas with a well-developed services sector, but that came at the price of higher unemployment rates, particularly for the youth (Figure ES.11). The results also revealed significantly higher labor force participation and employment rates in Mainland than in Zanzibar, but higher education levels in the latter. Informality in nonagricultural sectors seemed to be more prevalent in Zanzibar than in Mainland, primarily affecting the services sector in urban areas.

Existing contradictions between the increased returns to education that drove down poverty, and the persistent high levels of unemployment of educated youth, suggest that Zanzibar suffered from a problem of education's quality. The most striking apparent contradiction from an education and skills perspective was that while poverty reduction, particularly in urban areas, appeared driven by an increase in returns to education, unemployment of educated youth in urban areas remained very high. A possible interpretation of such a discrepancy might be related to the quality of education in Zanzibar. Indeed, returns to years of schooling were a purely quantitative measure of education and did not sufficiently reflect the quality of those respective years of schooling (Hanusheck and Wößmann 2010). The quality of primary and secondary (lower and upper) education in Zanzibar appeared low. For instance, in the most recent 2016 primary and secondary national exam results, many upper secondary students failed the A-level exams or scored only in the lowest divisions. Moreover, similar to Mainland and other SSA countries, the quality of primary and secondary education had been declining with the substantial expansion of the system's capacity over the past 10–15 years. It implied that years of schooling of slightly older adults were of better quality than the same years of schooling of youth and young adults today. However, much of the analysis of the relationship between education returns and poverty reduction was structured around the educational attainment of household heads, who were more likely to be older than the population's average and therefore more likely to have received an education of better quality. It indirectly influenced the results and probably overestimated the quality of education in the analysis of its returns effects. In order to improve education quality, Zanzibar recently undertook substantial efforts, which over the medium to long term should yield results in enhanced student learning achievement.

Women faced important challenges in the labor market

Gender inequalities in the labor market were widespread, particularly in Zanzibar. Women suffered from lower access to productive jobs and wage employment than men, in both Zanzibar and Mainland (Figure ES.12). They also faced higher unemployment than men and were more prone to work in the informal sector where employment conditions were less secure. Unemployment among women with lower secondary education was particularly high in Zanzibar. While working women had fairly similar education levels than working men, their income was substantially lower. The gender income differentials were particularly high in Zanzibar, where the ratio of women's income to men's was around 40 percent, compared to 56 percent in Mainland.

Figure ES.12: Sectoral Composition of Labor Market in Zanzibar and Mainland by Gender (percentage)
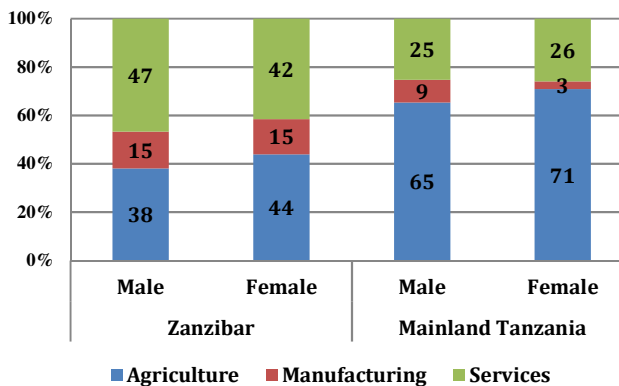
Figure ES.13: Contribution of Endowments and Returns to Gender Income Gap (percentage)
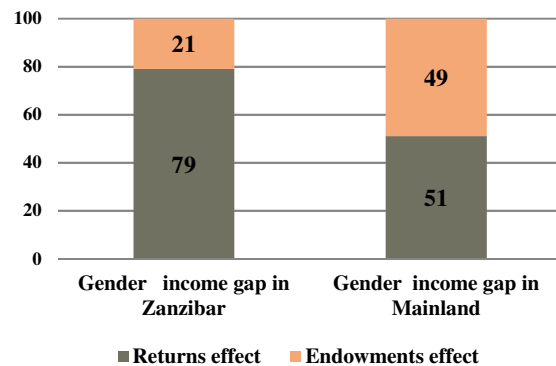
Source: ILFS 2014.

Source: ILFS 2014.

Gender income gaps were largely due to differences in earning rates between women and men, rather than differences in skills and productivity. Women had lower access to productive jobs, less assets, and slightly lower education levels than men, all of which partly contributed to the gender income gap. However, even if women had similar productive characteristics as men, they would have continued to receive significantly lower incomes. These (unfair) differences were particularly striking in Zanzibar where they represented 79 percent of the average gender income gap compared to 51 percent in Mainland (Figure ES.13). Gender gaps in terms of returns to productive characteristics (often called discrimination effects) were higher among poorer population groups than better-off ones. These gaps were essentially due to the fact that women in the two poorest quintiles of the income distribution received lower returns to their economic activity in manufacturing, services, and public administration compared to men. Temporary withdrawal from the labor market and family responsibilities also seemed to affect women's opportunities to obtain higher returns and incomes.

Concluding remarks: some policy insights and implications for research

The analysis in this report attempted to shed light on the extent and the evolution of poverty and inequality in Zanzibar, and examined their underlying causes. Based on the analysis of two recent waves of Household Budget Survey (HBS) data, the results showed improvements in households' living conditions and poverty since 2010. Nonmonetary dimensions of well-being also improved, resulting in relatively moderate multidimensional poverty.

The recent Integrated Labor Force Survey (ILS) for 2014 showed a fairly diversified labor market, with important employment in the services sector, though agriculture continued to be the mainstay for the majority of rural households. The poor who worked in agriculture and nonfarm businesses seemed to become more productive and experienced some improvements in their returns. Yet, most of the welfare improvements were concentrated in urban areas, and to a lesser extent in rural zones, which benefited from proximity to urban centers, resulting in a widening of geographic disparities in poverty and welfare. Inequalities in access to basic services and infrastructure seriously affected the productive capacity of poor households located in the less favored regions, constraining their ability to improve their economic well-being.

The progress made over the last years risked being reversed. The welfare gains among poor households were fairly modest, and vulnerability to fall back into poverty remained high. The widening geographic disparities of living conditions and poverty may seriously undermine prospects for accelerating poverty reduction and shared prosperity. Gender inequalities can further compound efforts to increase human development and well-being. Despite its fairly diversified sectoral structure, the labor market did not seem able to generate jobs commensurate with the education of the growing young workforce. With the expansion of education and the absence of a vibrant private sector to generate productive jobs, the educated workforce was left with very limited choices. The economic benefits of a growing labor force and expanding human capital could only materialize if the economy absorbed the additional workers productively.

Unemployment among the educated youth may be worsened if economic diversification does not increase. The acceleration and sustainability of poverty reduction require the development of a strong private sector able to create more productive and value-added jobs. Such an aspiration hinge, among others, on the reduction of the large infrastructure deficits, particularly regarding electricity supply. Promoting private sector development to enhance job creation and reinvigorate Zanzibar's economy may benefit the various population groups in different asymmetrical ways, based on their endowments and skills, and could potentially translate into larger welfare disparities. To offset those potential risks, economic growth and diversification need to be coupled with policies that promote more inclusion. Expanding service delivery and strengthening the connection between remote rural zones and urban centers can play an important role in furthering inclusion and alleviating poverty.

The analysis in this report provides policy pointers to accelerate poverty reduction and ensure sustainability of well-being.

- *Empower women and reduce gender inequality.* Economic empowerment of women is key to further develop human capital and reduce fertility. This would contribute toward alleviating the demographic pressures, reducing the economic cost of children and dependents, and stimulating socioeconomic development.

- *Reduce geographic disparities of welfare.* The key step in this process is to improve services and infrastructure delivery, and ensure a wider and more equitable access to basic services across geographic regions. This would need to be coupled with the development of the rural economy and farming sector, which is of critical importance for an effective poverty reduction strategy. There are also significant returns associated with undertaking business activities in rural areas. Nonfarm businesses seem more rewarding than agricultural activities. The role of diversification into nonfarm activities, particularly services, in improving poor households' living standards and reinvigorating the local economy, needs to be recognized and promoted. But more work is needed to better understand how diversification to nonfarm activities can be enhanced in Zanzibar.

- *Reduce youth unemployment through the creation of more productive jobs.* This hinges critically on supporting economic diversification and private sector development. A first step in this strategy is to assess Zanzibar's relative performance in the promising sectors for investment and development. Unused potential can be found in the tourism sector, where important opportunities exist for job creation through the multiplier (direct and indirect) effect associated with its development. Second, given the predominance of informality in the nonfarm sector, it is crucial to incentivize transition away from informality and to counter entry barriers into the formal sector. Third, it is critical to fill the large infrastructure gaps, particularly in power generation, and improve service delivery across the geographic regions to enhance private investment and promote a wider participation of the population to the growth process. An important additional step would be to assess the quality of the education system and foster its capacity to provide skills and qualifications necessary for the development process.

On the basis of the analysis in the report, the following areas call for further research and investigation:

- Given the importance of safety nets and social protection programs in enhancing the livelihoods of the most vulnerable population groups and advancing their inclusiveness in the growth process, it is important to investigate the contribution of existing safety net programs in Zanzibar, such as Tanzanian Social Action Fund (TASAF), to poverty and vulnerability alleviation.

- With the high clustering of the population around the poverty line, a more in-depth analysis of the dynamics of poverty and drivers of economic mobility would better inform the dialogue about the strategies for poverty reduction. The availability of multi-round National Panel Surveys (NPS) provides an invaluable opportunity to examine these issues. The NPS

are national level longitudinal surveys designed to collect data from the same households over time for monitoring poverty dynamics and welfare transitions to provide a better understanding of the determinants of living standard changes.

- A better understanding of the structure of the farming sector and its performance is critical for informing policy on incentives for increasing agricultural productivity and diversification. Exploring the effects of climate variability on farmers' productivity and poverty would help to better inform the design of strategies to strengthen resource management sustainability and a household's resilience. Examining these issues is particularly relevant for a better understanding of the poverty situation and its alleviation in Pemba.

- Furthermore, a deeper analysis is required to understand the reasons behind the diversification of many people into agriculture. As poverty seems to be more prevalent in this sector, the underlying reasons for such a diversification are not entirely clear and would require a specific work. The analysis would provide an opportunity to further analyze the diversification opportunities available in rural areas, in particular tourism and hotel businesses. It could also lead to critical insights in terms of potential public policies of economic diversification aimed at curbing the important rural-urban divide observed in Zanzibar.

- As high urban youth unemployment, even among educated youth, appears to be a supply and demand issue—the formal labor market is still small, but the quality and relevance of education and training is also low, and does not necessarily correspond to labor market demand—sustained efforts to improve the quality of primary and secondary education and the relevance of training could constitute a basis to improve employment prospects among the youth. Another potential policy could be to facilitate/provide incentives to firms to further develop in-house firm-based training, as it appears to be the preferred approach among companies in Zanzibar. Further analysis of potential existence of skill mismatches, and the impact of education quality and vocational trainings on skills development and returns, are needed.

- Further analysis is also needed to better understand the policy options for empowerment of women. Of particular interest would be an investigation of the complex interplay between women's education/employment and the country's productive structure and how it affects women's decision-making power, fertility, and human capital investments.

- Given the urbanization of Zanzibar, more analysis of internal migration movements and their potential contribution to welfare improvements, or risks of poverty displacement is required. In particular, it would be critical to better understand the different types of urban centers existing, their socio-economic and infrastructural characteristics, and how the latter relates to the reduction of poverty.

- There is need for a better understanding of the underlying drivers of diversification to non-farming activities, and how they can be enhanced and promoted. In particular, the critical development of new labor-intensive sectors could be addressed through the understanding of the existing obstacles and potential benefits of a large local tourism industry.

- Given the asymmetries existing between rural/urban areas and Pemab/Unguja, combined with a certain isolation of rural areas in general, and Pemba in particular, policy recommendations are required for the road network, with an emphasis on improving accessibility. A potential Five-year Strategy and Development Plan for the Road Network could be considered through:

  - The development of an integrated demographic, socioeconomic, and accessibility database for the road network. The database could help prioritize investment programs and should include the systematic geo-referencing of school data, health facilities, major agricultural facilities—such as storage, processing facilities, and local markets—business registry data, climate risk, gender issues data, and poverty. The concept of accessibility might also include urban accessibility ("urban" roads and accessibility indicators within urban areas).

  - The development of important connectivity indicators from each of the sector prospects. Using the above spatial data, different connectivity measurements could be developed and actually measured at the detailed subnational level, following the global or national norm or target. Using the developed connectivity indicators, a detailed analysis could examine how they relate to broader development objectives, such as agricultural growth or poverty reduction.

  - The development of a robust prioritization framework maximizing social and economic benefits based on the aforementioned connectivity indicators. This framework could be initially applied at the district level to identify priority areas.

Chapter 1 – Evolution of Poverty and Inclusion

Key Messages

- Poverty incidence declined between 2010 and 2015, particularly in urban areas, but remained fairly high in rural areas and increased on the island of Pemba, underlying the lack of connectivity of Pemba's rural areas to urban centers;

- The decline in poverty was essentially the result of improvements in returns to education and employment, followed by an increase of endowments in assets;

- In Pemba, the aggravation of poverty was largely due to the deterioration of households' returns and local conditions; and

- The decline of poverty was coupled with improvements of living conditions, but the geographic disparities in access to basic services were concerning.

This chapter examines the evolution of poverty and household's living conditions between 2010 and 2015. The analysis is performed at the national level of Zanzibar, as well as at different geographical sublevels (urban/rural and across the geographic regions), and is based on two successive Household Budget Surveys (HBSs) conducted in 2009/10 and 2014/15.[1]

The first section examines the evolution of monetary poverty, providing some underlying explanations to the changes in poverty. The second section examines the evolution of living conditions and human development outcomes over time.

I. Poverty and Inequality Trends since 2010

Decline in poverty and progress toward shared prosperity, but the welfare improvements were uneven geographically

Poverty declined by over four percentage points between 2010 and 2015. Zanzibar's poverty headcount declined from 34.9 percent in 2010 to 30.4 percent in 2015 (Figure 1.1). Extreme poverty also declined, but by a lower degree. The proportion of the population with consumption below the food poverty line declined from 11.7 percent in 2010 to 10.8 percent in 2015 (see Box 1.1 for details on poverty estimation). The depth of poverty was also slightly reduced, suggesting that households were able to narrow their consumption shortfall relative to the poverty line, while the severity of poverty or inequality among the poor did not seem to have significantly changed.

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[1] To avoid overburdening the text we refer to HBS 2009/10 as 2010 and HBS 2014/15 as 2015.

Figure 1.1: Poverty Indicator Trends in Zanzibar, 2010 and 2015 (percentage of the population)
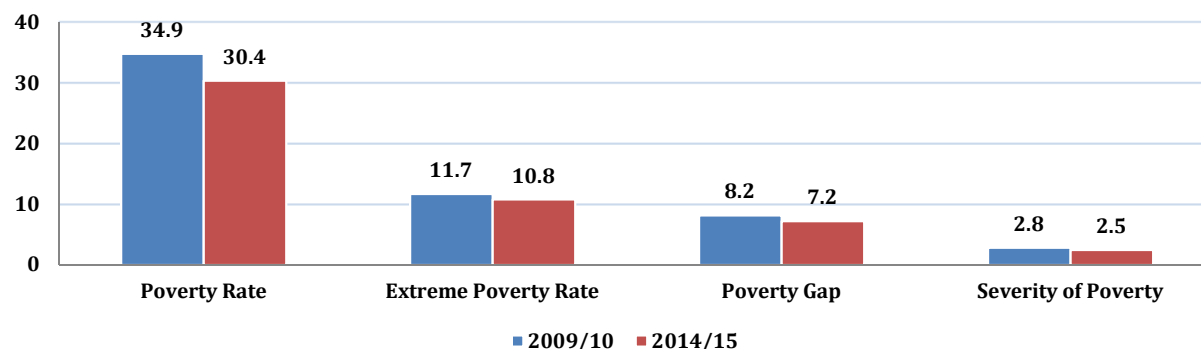
Sources: HBS 2009/10 and HBS 2014/15.

| Box 1.1 | Measuring Poverty in the Zanzibar HBS |

The HBS for 2009/10 and 2014/15 uses consumption as the key welfare measure to analyze poverty. This consumption aggregate comprises food consumption, including food produced by households themselves, as well as expenditures on a range of nonfood goods and services (e.g., clothing, utilities, transportation, communication, health, and education, etc.). However, the consumption aggregate does *not* include rent or other housing-related expenditures, nor does it include expenditures on larger consumer durable items (such as cars, TVs, and computers, etc.). To the extent that better-off households devote a larger proportion of their total consumption to durable goods, this omission creates certain biases and underestimates "true" consumption among wealthier families. This matters less for poverty analysis, where the focus lies on the bottom end of the distribution, but it can have a significant impact on estimated inequality.

Consumption data are collected at the level of households. For the purpose of poverty and welfare analysis, total household consumption needs to be adjusted for differences in household size and composition. This is to account for the fact that, for instance, a single-person household requires less consumption than a family of five. The HBS 2009/10 and 2014/15 use consumption "per adult equivalent" as the key welfare measure for the analysis of poverty. This requires equivalence scales to convert household members of different ages and sex into a standardized adult based on assumptions about caloric requirements. Food consumption is further adjusted by the number of days household members are present. Price deflators are used to adjust consumption per adult equivalent for differences in prices across geographic domains and over the course of the HBS fieldwork.

The *poverty lines* are based on the cost-of-basic-needs approach. The HBS 2014/15 *food poverty line* (TZS 38,070.6 per adult per month) is based on the cost of a food basket that delivers 2,200 calories per adult per day (given consumption patterns in a reference population). The *basic needs poverty line* (TZS 53,377.3 per adult per month) adds an allowance for basic nonfood necessities to the food poverty line. The 2009/10 poverty line is derived by deflating the 2015 poverty line backwards using a survey—internal Fisher price deflator, with food and nonfood weighted by the food/nonfood ratio of the total distribution. Further technical details on the surveys, construction of consumption aggregate, and similarities and differences between the 2009/10 and 2014/15 poverty methodologies can be found in Appendix A.

The basic needs headcount poverty rate (or as used in the text, *poverty rate*) measures the proportion of the population whose monthly (price-adjusted) total household consumption per adult equivalent is below the basic needs poverty line. The extreme headcount poverty rate (used in the text as *extreme poverty rate*) measures the proportion of the population whose monthly (price-adjusted) total household consumption per adult equivalent is below the food poverty line.

Zanzibar had also made some progress toward shared prosperity. The decline in poverty was accompanied by a slight reduction of inequality by 0.3 Gini percentage points (Figure I.2). Consumption levels improved to some extent for all population groups, but the improvements were greater among the poorest groups indicating some progress toward shared prosperity. The growth incidence curve for 2010–2015, which showed the percent change in average consumption for each percentile of the distribution, revealed a higher increase in consumption among the poor and bottom 40 percent population groups than among the better-off ones (Figure 1.3). The average consumption per adult equivalent increased by 3.5 percent between 2010 and 2015, while the average consumption of the bottom 40 percent of the population grew by 6.2 percent. However, while this suggests that poorer households benefited disproportionately from economic growth, the improvements were not even across all poor households. As can be seen from Figure 1.3, households in the poorest decile group experienced the most increase in their consumption level, which grew by about 12 percent, while those in the second decile only saw an increase of 3.8 percent. Consumption gains among the third and fourth poorest household groups were respectively 5.3 percent and 6.5 percent. The improvements were also tempered by the limited absolute gains accruing to the bottom 40 percent, which translated to an additional consumption of only Tanzanian shilling (TZS) 2,900 per adult equivalent per month, representing approximately 5 percent of the cost of basic consumption needs.[2]

Figure 1.2: Gini Coefficient, 2010 and 2015   **Figure 1.3: Growth Incidence Curve, 2010–2015**
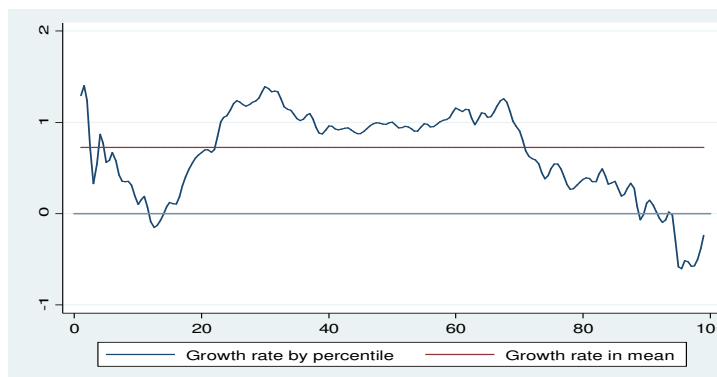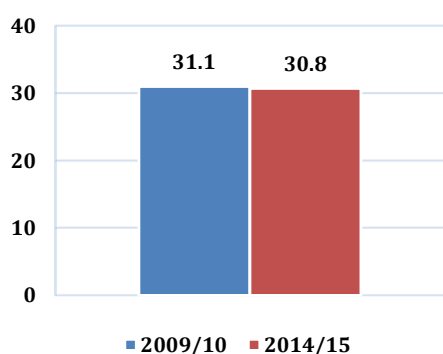
Sources: HBS 2009/10 and HBS 2014/15.   *Sources:* HBS 2009/10 and HBS 2014/15.

Poverty levels tended to be much more important in rural than in urban areas, and the spread had increased lately as significant progress was achieved in urban areas compared to limited or nonexistent changes in rural areas. Both the poverty and extreme poverty headcounts in rural areas remained stable between 2010 and 2015, respectively around 40 and 15 percent. Conversely, the poverty headcount in urban areas drastically decreased by more than 10 percentage points. This resulted in a widening of the existing gap, in terms of poverty, between rural and urban areas. The

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[2] Consumption among the poorest decile increased by about TZS 3,600 per adult per month, representing around 7 percent of the basic needs poverty line.

difference in poverty rates between the two areas almost doubled between 2010 and 2015, increasing from 11 percentage points to 22 percentage points. However, the situation in rural areas was not uniform and needed to be analyzed through the dual divide of urban/rural and Pemba/Unguja. Between 2010 and 2015, the poverty rate actually decreased in rural areas of Unguja while it increased in rural areas of Pemba (Figure 1.4). The underlying cause seemed to be linked to the proximity of rural areas to urban centers. Unguja's rural areas were connected to the main urban center of Zanzibar located in West Unguja and seemed therefore to benefit from positive economic and social spillovers. Conversely, rural areas of Pemba that were far away from large urban areas saw their poverty rates increase by 8 percentage points. While 16 percent of the rural population still lived in a state of extreme poverty, virtually none of the urban population did so, and the extreme poverty rate mainly increased in rural areas of Pemba.

Figure 1.4: Poverty and Extreme Poverty Headcount Ratio by Area, 2010 and 2015 (percentage of the population)
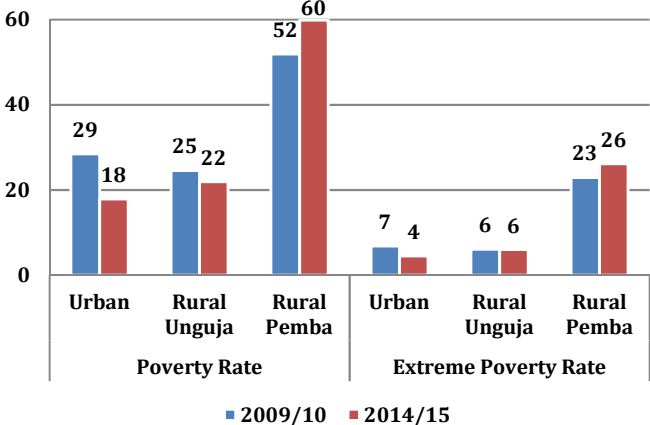
Figure 1.5: Poverty Headcount Ratio by Region, 2010 and 2015 (percentage of the population)

Sources: HBS 2009/10 and HBS 2014/15.
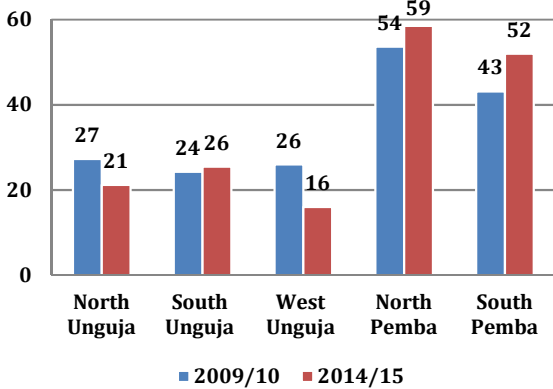
Sources: HBS 2009/10 and HBS 2014/15.

Major differences in terms of poverty levels existed across Zanzibar's regions, while the trends observed over the 2010–2015 period seemed to have aggravated the existing discrepancies. As shown by Figure 1.5, the levels of poverty were very uneven across the regions of Zanzibar. While it remained around 20 percent for the regions located on the island of Unguja, poverty was widespread on the island of Pemba (Figure 1.6). In 2015, more than half of the population of North and South Pemba lived in poverty. The lowest poverty levels were observed in West Unguja (that concentrates Zanzibar City, the main urban center) with 16 percent of the population living below the poverty line, a result consistent with the lower poverty levels found in urban areas. In terms of evolution, the opposite directions of poverty trends in Unguja and Pemba seemed to have aggravated the spread existing between the two islands and confirmed the aforementioned observations based on a two-factor divide. On the island of Unguja, poverty levels declined by about 8 percentage points, down from 26 percent in 2010 to 18 percent in 2015. Conversely, poverty dramatically increased on the island of Pemba, rising from 48 percent in 2010

to 55 percent in 2015. The increase was particularly striking in South Pemba. The same patterns were observed with regard to extreme poverty, which significantly deteriorated in Pemba, particularly in the northern part, while it improved in Unguja, essentially in the urban western part.

Figure 1.6: Poverty and Extreme Poverty Mapping by Districts, 2015 (percentage of the population)
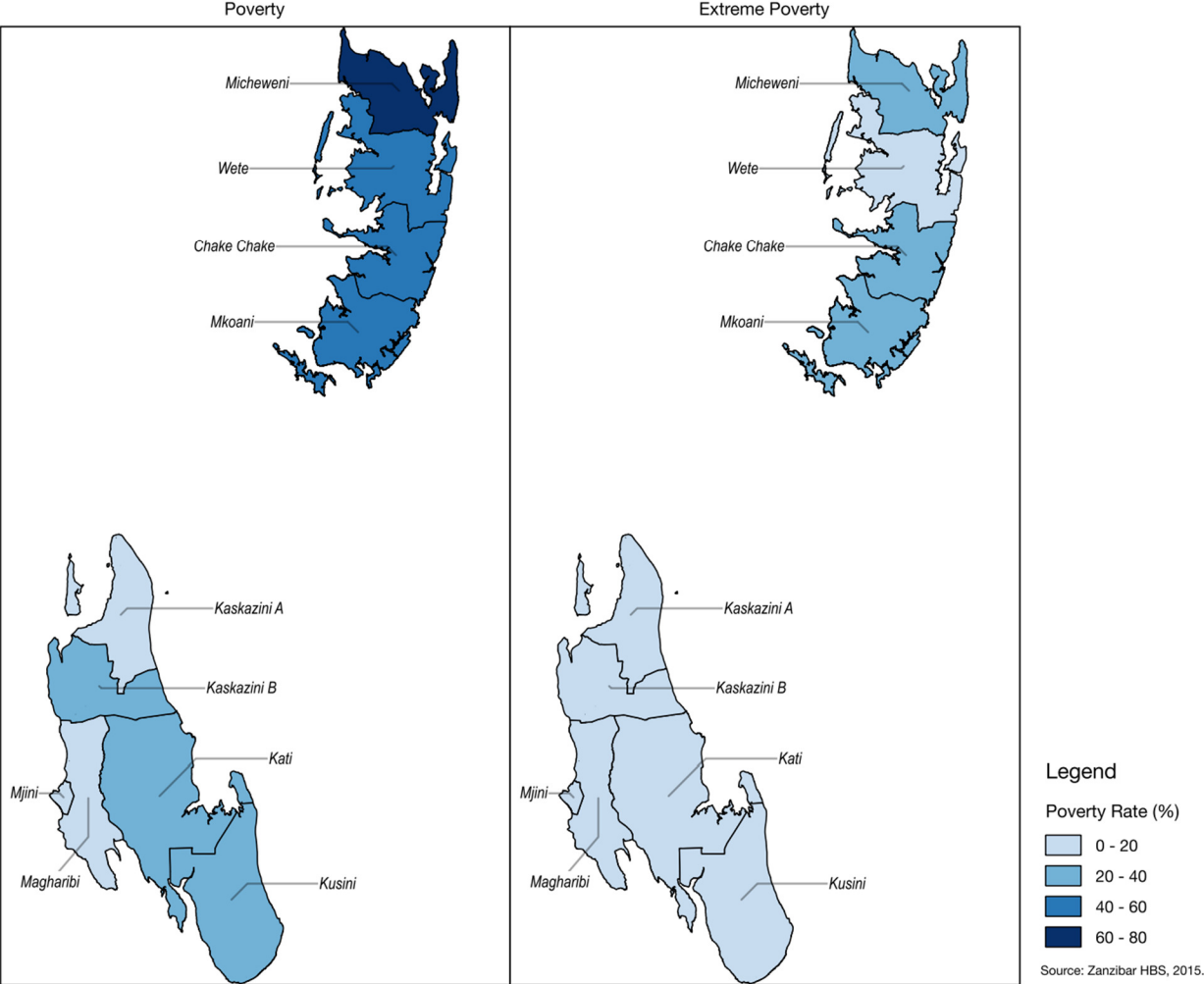
Source: HBS 2014/15.

Inequality remained lower in rural areas. In 2015, inequality measured by the Gini coefficient remained slightly higher in urban areas than in rural ones (Figure 1.7). The reduction in inequality that occurred between 2010 and 2015 was very limited in both areas as the Gini coefficient declined by less than 2 percentage points in urban zones, and less than half a point in rural sectors. At the regional level, inequality was lower in Pemba than in Unguja, though it remained low in both regions with the Gini coefficients hovering around 25 to 30 in 2015 (Figure 1.8). The evolution of the Gini coefficient between 2010 and 2015 at the regional level did not show any clear direction. While inequality decreased in South and West Unguja by 2 percentage points, it slightly increased in North Unguja and North Pemba, and remained stable in South Pemba. All in all, it appears that

the inequality picture did not vary much and that the poverty changes observed in some regions were not accompanied by fundamental changes in welfare distribution.

Figure 1.7: Gini Coefficient by Area, 2010 and 2015

Figure 1.8: Gini Coefficient by Region, 2010 and 2015
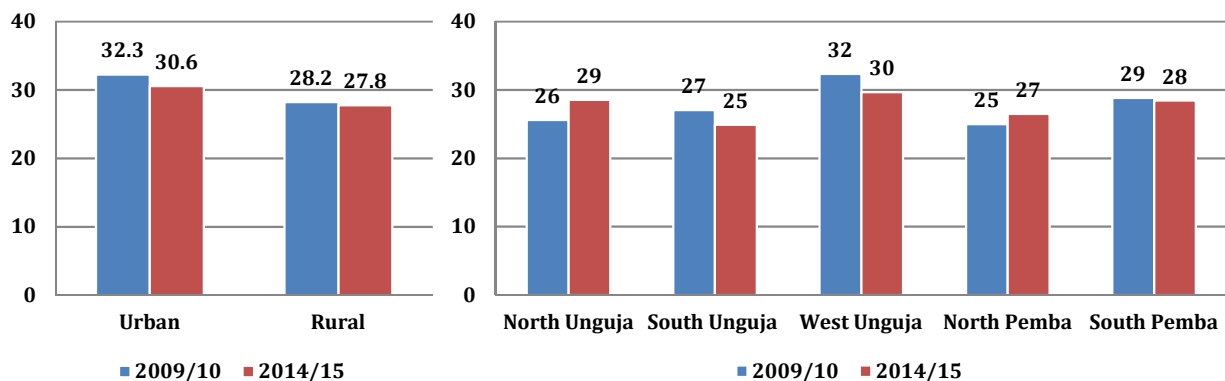
Sources: HBS 2009/10 and HBS 2014/15.

The decline in poverty was the result of improvements in returns, and to a lesser extent in endowments, for poor households

At the national level, the decline in poverty was essentially driven by the improvement of returns to basic services, employment, and demographic characteristics. Changes in individuals' income and consumption over time can be broken down into changes in their personal characteristics or endowments (for example, increased education levels, ownership of assets, and access to employment opportunities and basic services); and the returns that they got for those endowments (for example, the returns to education, assets productivity, and so forth)—see more technical details in Appendix B. Households from the two poorest quintiles experienced significant improvements in the returns to basic services, essentially returns to electricity, and in the returns to employment and education, with the improvements more marked among households from the poorest quintile (Figure 1.9). Households' businesses, followed by agricultural employment and self-employment in the nonfarm sector, seemed to have become more productive in recent years, inducing significant improvements in the economic situation of the poor (see Appendix B for detailed results tables). Returns to secondary education also appeared to have increased. While large household's size and numbers of children continued to be a constraint on households' well-being, their negative impact appeared to have diminished significantly, as was apparent from the positive change in the returns to demographic structure. The improvements in households' returns were coupled with a slight increase of their endowments in human capital, essentially lower secondary education of the household's head and his/her spouse, suggesting that better education levels among the poor contributed to the increase of their productivity.

Poverty reduction in urban areas stemmed to a large degree from improved returns to education and demographic characteristics followed by endowments in assets. There was a

slight increase in the education level of poor households' heads in urban areas, essentially in lower and upper secondary levels, which were coupled with a fairly marked increase of returns to these education levels—all of which contributed to an improved economic situation. The improvement of ownership and returns to assets, essentially cell phones, further contributed to welfare gains and poverty reduction (Figure 1.10). Moreover, there was an increase of spouses' engagement in nonfarm activities and an expansion of their returns, which seemed to have contributed not only to the improvement of the living standards of poor groups, but also to reduce the burden of children and dependents.

Figure 1.9: Main Determinants of Change in Consumption in 2010−15 at the National Level
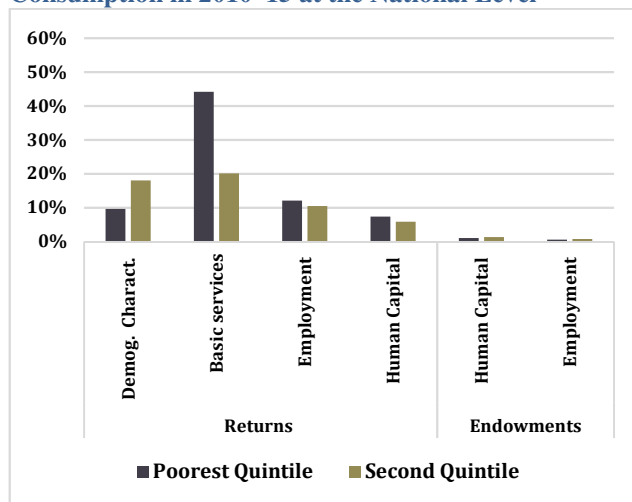
Figure 1.10: Main Determinants of Change in Consumption in 2010−15 in Urban Areas
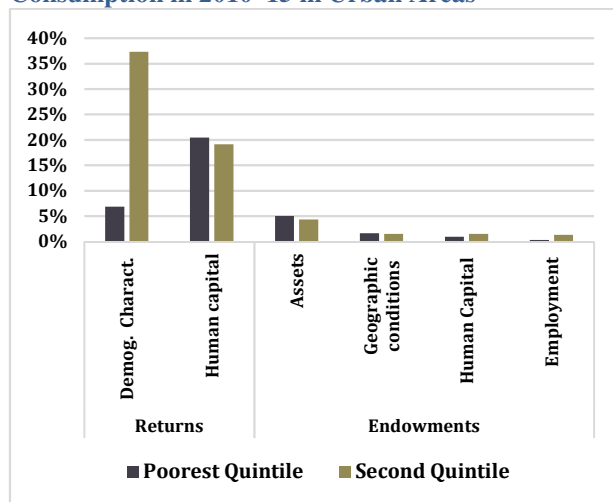
Sources: HBS 2009/10 and HBS 2014/15.
Sources: HBS 2009/10 and HBS 2014/15.
Note: Percentages indicate counterfactual changes. Effects that are not significant for the two bottom quintiles are not pictured. Detailed results of all the effects are in Appendix B Tables B.1 and B.2.

In Pemba, the aggravation of poverty was largely due to the deterioration of households' returns and local conditions. Some improvements in human capital coupled with an expansion of cell phone ownership and an increase of their returns occurred. However, these improvements were largely offset by the decline of household returns in Pemba, particularly in the southern part. This decline was largely due to the aggravation of the effects of poor sanitation conditions and limited access to health centers on households' productivity. Local geographic conditions—probably access to roads and quality of public services—combined with higher exposition to climate shocks seemed to also deteriorate, negatively affecting productivity and returns, and further aggravated poverty.

II. Evolution of Households' Living Conditions and Human Development Outcomes

Housing conditions and access to basic services and assets improved since 2010, but important discrepancies between geographic regions remained.

Housing and dwelling conditions improved between 2010 and 2015. The share of households with improved wall materials went up by 24 percentage points, from 52 percent in 2010 to 76 percent in 2015 (Figure 1.11). Significant improvements also occurred in terms of roof and floor material as improved floor material increased by 13 percentage points over the same period, while improved roof material increased by 9 percentage points. Urban households appeared to be better off than their rural counterparts, as all urban households virtually benefited from improved roof, wall, and floor materials in 2015. However, rural households experienced larger increases between 2010 and 2015, therefore progressively closing the gap existing between urban and rural households. For instance, improved wall materials went up by 30 percentage points for rural households versus about 15 percentage points for urban ones, and improved floor materials went up by 16 percentage points for rural households versus about 8 percentage points for urban ones. Finally, dwelling conditions also improved for poor households over the same period—for instance, improved wall and floor material respectively increased by 14 and 9 percentage points for poor households.

Figure 1.11: Trends in Dwelling Material by Area, 2010 and 2015 (percentage of households)
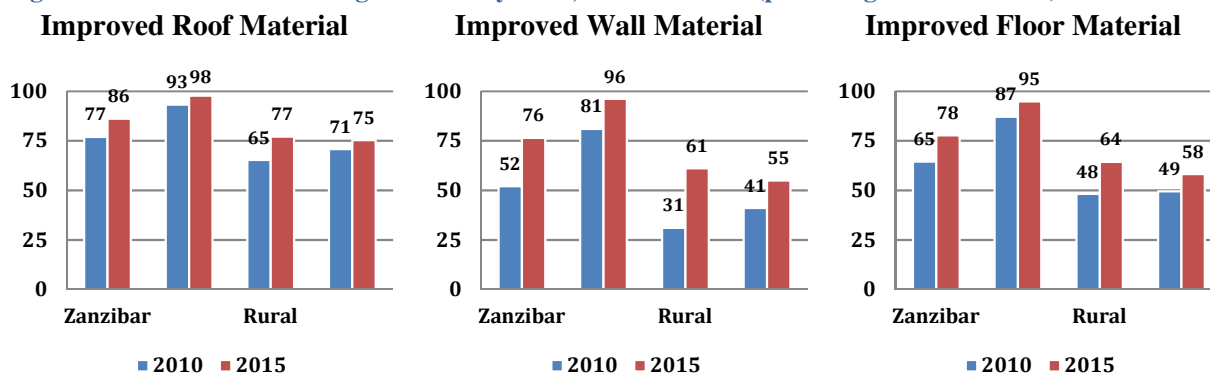
Sources: HBS 2009/10 and HBS 2014/15.

Note:
- Improved roof material refers to iron sheets and tiles versus grass, leaves, or mud.
- Improved wall material refers to concrete, cement, stone, and brick walls versus poles, mud, grass, or timber.
- Improved floor material refers to cement versus earth or sand.

Access to electricity slightly improved over time, although tremendous discrepancies still existed between rural and urban areas, as well as across regions. While 39 percent of the households were connected to the electrical grid in 2010, the rate reached 45 percent in 2015 (Figure 1.12). In particular, the connection rate increased by 7 percentage points for rural

households. However, major discrepancies remained between rural and urban areas. While three quarters of urban households were connected to the grid in 2015, only one-fifth of rural households were. Likewise, such important differences in terms of connection to the grid existed across Zanzibar's regions (Figure 1.13). Not surprisingly given its core urban characteristics, 73 percent of West Unguja's households were connected to the grids. All the other regions displayed much lower connection rates, varying between 18 and 30 percent in 2015. Interestingly, the connection rate of North Unguja increased tremendously between 2010 and 2015, jumping from 6 percent of connected households to 20 percent. Finally, the connection rate of poor households did not improve over the period of time considered, and even slightly decreased to reach 23 percent of poor households.

Figure 1.12: Connection to the Electrical Grid Rate by Area and for Poor, 2010 and 2015 (percentage of households)

Sources: HBS 2009/10 and HBS 2014/15.
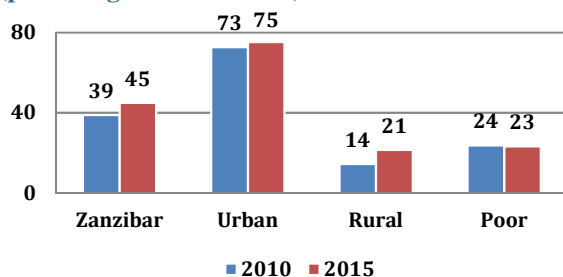
Figure 1.13: Connection to the Electrical Grid Rate by Region, 2010 and 2015 (percentage of households)
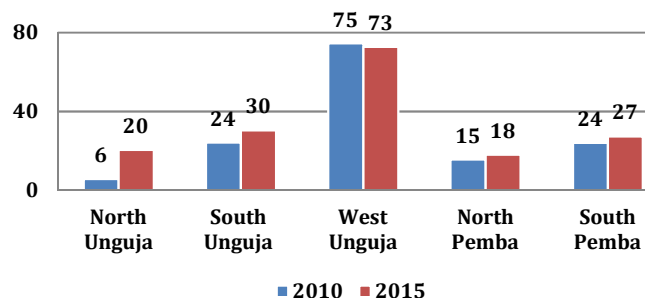
Sources: HBS 2009/10 and HBS 2014/15.

Only limited progress had been achieved regarding the use of improved sources of lighting, as well as efficient cooking fuels, and major discrepancies persisted between urban and rural areas. The share of households using electricity as their main source of lighting increased by 6 percentage points between 2010 and 2015, while the proportion of households using traditional sources such as oil lamps, candles, and fire decreased by 10 percentage points (Figure 1.14). Despite those light improvements, important discrepancies continued to exist between urban and rural areas. In 2015, only a small share (21 percent) of rural households used electricity as their main source of lighting, while 73 percent of them used traditional sources. The opposite is observed in urban areas where the vast majority of households (74 percent) used electricity for lighting, and only 23 percent used traditional sources. Likewise, very little progress occurred regarding the main source of cooking. Beyond a slight shift from firewood to charcoal between 2010 and 2015, nearly all households continued to rely upon traditional forms of combustible fuels such as firewood and charcoal, accounting for 96 percent in 2015 (Figure 1.15). The main difference between urban and rural areas primarily stemmed from the larger use of charcoal in urban areas compared to a nearly exclusive use of firewood in rural areas.

Figure 1.14: Main Source of Energy for Lighting by Area, 2010 and 2015 (percentage of households)
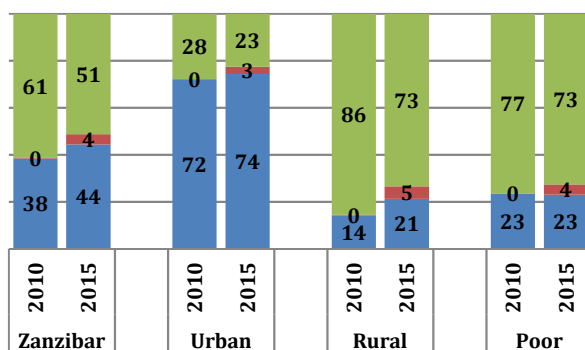
Legend:
- Oil lamp, candles, fire
- Private generator, solar, gas
- Electricity

Sources: HBS 2009/10 and HBS 2014/15.

Figure 1.15: Main Source of Energy for Cooking by Area, 2010 and 2015 (percentage of households)
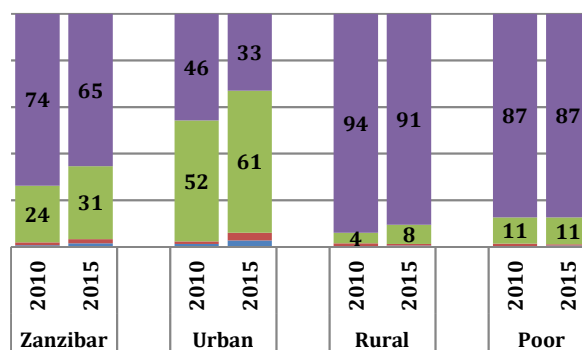
Legend:
- Electricity/Generator
- Gas/parafin
- Charcoal
- Firewood

Sources: HBS 2009/10 and HBS 2014/15.

Access to safe sources of drinking water was widespread with very limited change over time, but urban households enjoyed much higher access to piped water directly into the household. Overall, the vast majority of Zanzibar's households (91 percent in 2015) had access to a safe source of drinking water, whether public or private, with nearly no changes between 2010 and 2015 (Figure 1.16). Urban areas displayed higher rates of access to safe sources of drinking water than their rural counterparts, and in particular regarding piped water. For instance, in 2015 more than half of urban households possessed a private access to piped water directly into the residence, while the majority of rural households had access to public safe sources of drinking water. The data showed a shift from privately piped water toward public safe sources among rural and poor households. These shifts were potentially due to the poor quality of piped water in rural areas, where households preferred to switch to public taps, whose provision and quality expanded due to the support provided by the Tanzania Social Action Fund (TASAF). Not surprisingly, considering its urban weight, the majority of West Unguja's households had access to privately piped water, and almost all of them had access to safe sources of drinking water (Figure 1.17). The rest of Zanzibar's geographic regions had similar profiles with widespread access to safe sources (around 90 percent of households) combined with a majority of households using public taps.

Figure 1.16: Main Source of Drinking Water by Area, 2010 and 2015 (percentage of households)
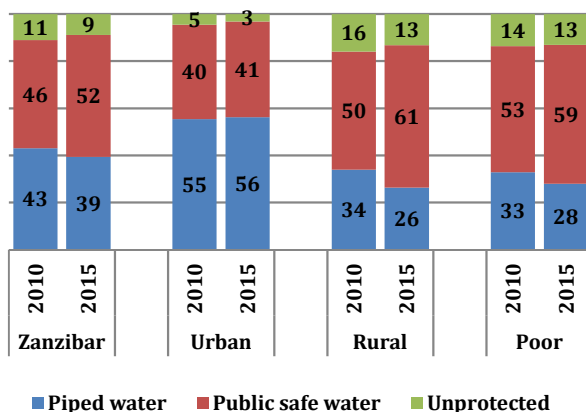
Figure 1.17: Main Source of Drinking Water by Region, 2015 (percentage of households)

Figure 1.16: Piped water, Public safe water, Unprotected

	Zanzibar 2010	Zanzibar 2015	Urban 2010	Urban 2015	Rural 2010	Rural 2015	Poor 2010	Poor 2015
Unprotected	11	9	5	3	16	13	14	13
Public safe water	46	52	40	41	50	61	53	59
Piped water	43	39	55	56	34	26	33	28

Figure 1.17: Piped water, Public safe water, Unprotected

	North Unguja	South Unguja	West Unguja	North Pemba	South Pemba
Unprotected	13	9	3	19	10
Public safe water	64	66	43	55	55
Piped water	23	25	54	26	35

Sources: HBS 2009/10 and HBS 2014/15. *Source:* HBS 2014/15.
Note: Public safe water includes public taps, protected wells, protected springs, and so forth.

Some progress was accomplished with respect to access to improved sanitation, but the situation remained very different across regions. The proportion of households with access to modern toilets went up by 16 percentage points between 2010 and 2015 (Figure 1.18), while only 17 percent of Zanzibar's households remained without any sanitation facility in 2015. However, although significant progress occurred both in urban and rural areas, 28 percent of rural households still lacked access to any sort of sanitation facility. All in all, the direction of the progress achieved was mixed: on the one hand, access to modern toilets had significantly improved, both in urban and rural areas (increasing by 14 percentage points in rural areas for instance), following a shift from improved/traditional latrines to modern toilets; on the other hand, the share of households lacking access to any sort of sanitation facility had not significantly diminished over time. This mixed direction was highlighted by important discrepancies existing across regions (Figure 1.19). In West Unguja, nearly all households had access to some sort of sanitation with modern toilets accounting for 50 percent of households' sanitation. In South Unguja, almost all households also had access to a form of sanitation facility, but the overwhelming majority of them used improved/traditional latrines. Finally, in Pemba, particularly the northern part, stood out with more than one-third of the households lacking access to any form of sanitation facility.

Figure 1.18: Sanitation Facility by Area and Poor, 2010 and 2015 (percentage of households)
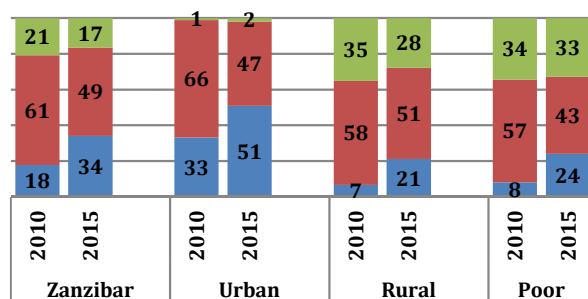
Figure 1.19: Sanitation Facility by Region, 2015 (percentage of households)

- ■ No facility
- ■ Improved/Traditional latrine
- ■ Modern toilet

Sources: HBS 2009/10 and HBS 2014/15.
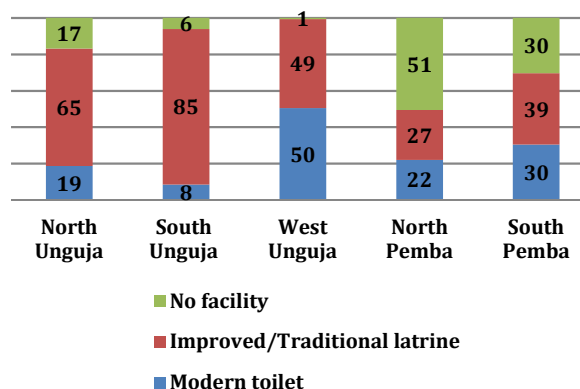
Sources: HBS 2009/10 and HBS 2014/15.

Ownership of modern assets improved while ownership of more traditional goods decreased, although the direction was sometimes mixed. There had been some improvements in ownership of communication assets, mainly cell phones, videos, computers, and televisions. Ownership of other selected modern household items, such as fridges and cooking stoves, also improved. Conversely, ownership of more traditional assets such as basic furniture items, radios, and bicycles declined. It seems that in some instances households replaced these items with more modern ones, as can be seen from the decline in radios and increase in televisions and videos (Figures 1.20 and 1.21). The ownership of some items, such as sewing machines, motorcycles, or water heaters was more mixed, revealing a small decline in the ownership of many of these items.

Figure 1.20: Decrease in Assets Ownership, 2010 and 2015 (percentage of households; percentage change)
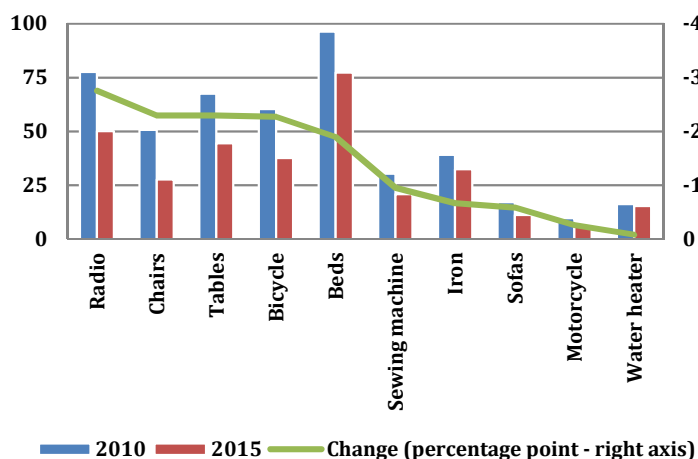
Figure 1.21: Increase in Assets Ownership, 2010 and 2015 (percentage of households; percentage change)

- ■ 2010 ■ 2015 — Change (percentage point - right axis)

Sources: HBS 2009/10 and HBS 2014/15.
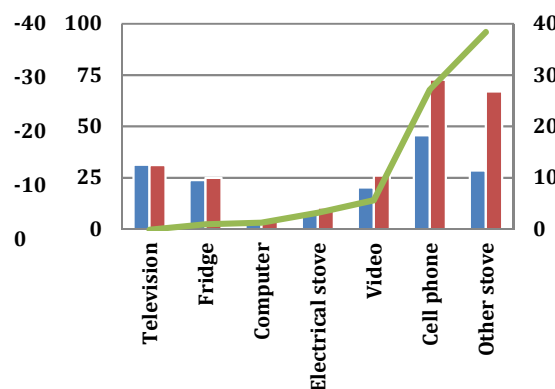
Sources: HBS 2009/10 and HBS 2014/15.

Possession of livestock improved since 2010. The proportion of households that owned livestock increased from 53 percent in 2010 to 69 percent in 2015 (Figure 1.22). Not surprisingly, ownership of livestock was more important in rural than in urban areas, with 76 percent of rural households owning at least one animal in 2015 compared to 61 percent of urban households the same year (Figure 1.23). Urban households also tended to own livestock that was not considered as large ruminants, such as poultry and pigs, or goats and sheep. Moreover, a large majority of poor households (75 percent) possessed livestock, with nearly half of them owning at least one chicken or pig, and one quarter of them owning at least one ruminant. The tendency of a significant share of poor households to own livestock probably stemmed from the fact that poorer households tended to be located in rural areas and work in agriculture.

Figure 1.22: Livestock Ownership, 2010 and 2015 (percentage of households)
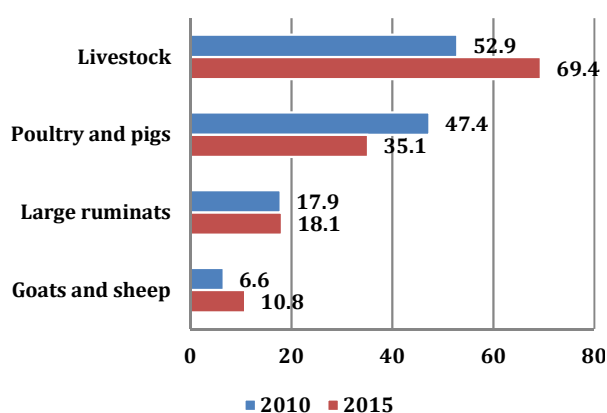
Figure 1.23: Livestock Ownership by Area and Poor, 2015 (percentage of households)
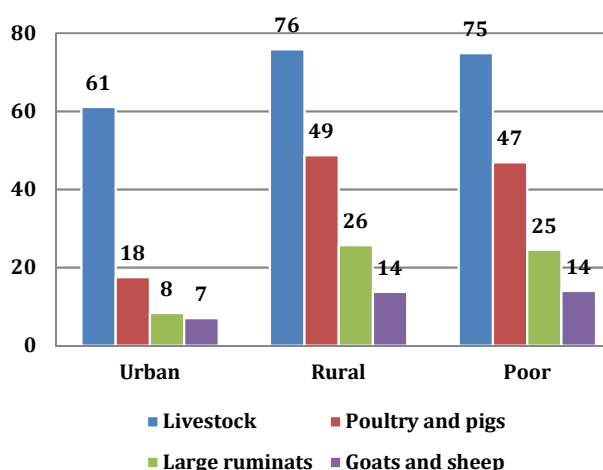
Sources: HBS 2009/10 and HBS 2014/15.   *Sources:* HBS 2009/10 and HBS 2014/15.
Note: "Livestock" includes large ruminants, goats and sheep, and poultry and pigs as well as any other kind of livestock.

Household size did not fundamentally change between 2010 and 2015, but the average number of children under 15 years old increased, with poor households characterized by a large number of dependents. The size of households measured by number of members did not change significantly between 2010 and 2015, across areas and for the poor (Figure 1.24). While urban and rural households had a similar size, poor households were characterized by a larger size with 8.6 members on average in 2015. The average number of children under 15 years old per household dramatically increased over the same period of time from 2 children to 3.2 children (Figure 1.25). Rural households tended to have slightly more children under 15 than their urban counterparts. Not surprisingly, poor households had more children under 15 than the rest of the population with an average of 4.2 children in 2015, an important increase compared to 2010 (2.8 children on average).

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Figure 1.24: Size of Households by Area and Poor, 2010 and 2015 (number of individuals per household)
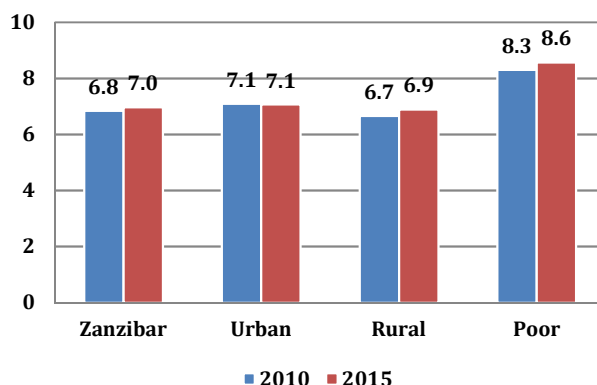
Sources: HBS 2009/10 and HBS 2014/15.

Figure 1.25: Average Number of Children Under 15 by Area and Poor, 2010 and 2015 (number of U15 per household)
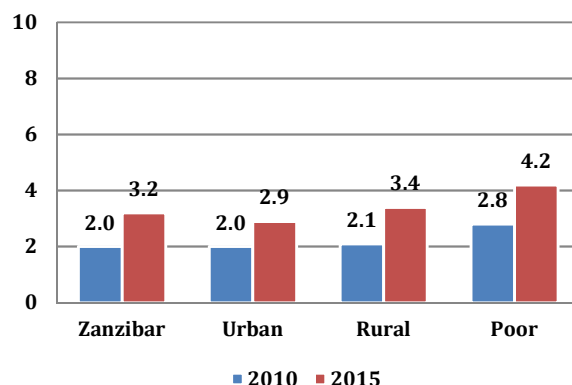
Sources: HBS 2009/10 and HBS 2014/15.

The proportion of households headed by women significantly increased, particularly in the case of rural and poor households, but female heads continued to lag behind their male counterparts in terms of human capital and level of education. Between 2010 and 2015, the proportion of households headed by women increased by almost 4 percentage points (Figure 1.26). The largest increase occurred in rural areas (4.3 percentage points) and for poor households (5.4 percentage points). However, despite such an increased presence of women, female heads still lagged behind male heads in terms of level of education. Thus, 42 percent of the female heads had never attended school, compared to only 19.5 percent of the male heads (Figure 1.27). The proportion of heads of household with primary education (i.e., with 7 years of education) reached 8.3 percent for female heads and 10 percent for male heads. Likewise, the share of male heads of households with lower secondary education (i.e., with 10 years of education), upper secondary education (i.e., with 12 years of education), and university level of education, was consistently larger than for female heads. For instance, 14 percent of the male heads had completed lower secondary education compared to 9 percent of the female heads, while 15 percent of the male heads had reached upper secondary education against 7 percent of the female heads.

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Figure 1.26: Households Headed by Women by Area and Poor, 2010 and 2015 (percentage of households)

Zanzibar
- 2010: 16.2
- 2015: 19.9

Urban
- 2010: 18.8
- 2015: 21.5

Rural
- 2010: 14.3
- 2015: 18.6

Poor
- 2010: 14.3
- 2015: 19.7

■ 2010 ■ 2015
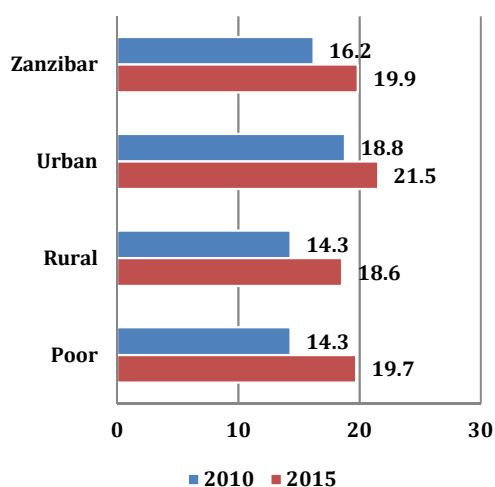
Sources: HBS 2009/10 and HBS 2014/15.

Figure 1.27: Years of Education of Head of Household by Gender, 2015 (percentage of households)

■ Male ■ Female
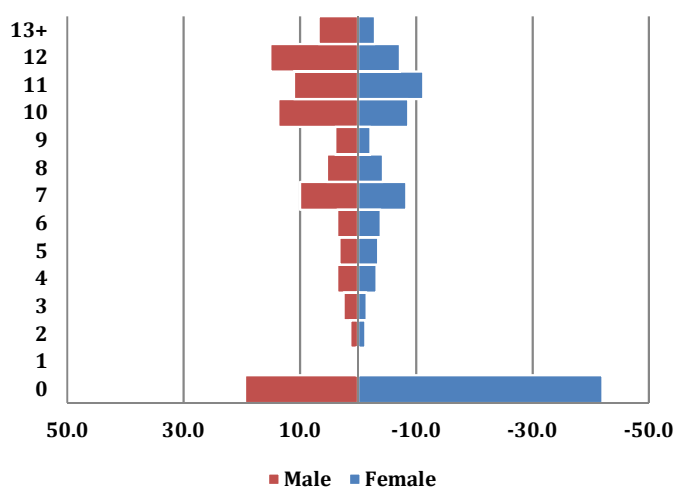
Sources: HBS 2009/10 and HBS 2014/15.

Educational levels were moderately high and slightly improved since 2010

School enrollment beyond lower secondary was very limited and improvements between 2010 and 2015 were slow. The enrollment rate for children age from 7 to 15 years old was stable between 2010 and 2015 (Figure 1.28), with enrollment rates in urban areas being higher by 10 percentage points on average than in rural areas. The enrollment rates by schooling levels needed to be analyzed in light of the specificities of Tanzania's school system. Children first attended primary school from 7 to 13 years old, then lower secondary school from 14 to 17 years old, and finally moved on to upper forms of study such as upper secondary school (18 to 19 years old) and university education (3 or more years of education). Therefore, the label "upper secondary" was more similar to a postsecondary level of education in other developing countries. While the net primary enrollment rate stood at 83 percent in 2015, it was lower in rural areas than in urban ones. The lower secondary enrollment rate remained at a rather low level (45 percent) with an important difference of 17 percentage points between rural and urban areas. The upper secondary and tertiary enrollment rates were virtually nonexistent with 4.1 percent for the former and 2.9 for the latter. Not surprisingly, individuals from poor households were worse off than the rest of the population and consistently displayed lower enrollment rates.

Figure 1.28: Enrollment Rate by Area and Poor, 2010 and 2015 (percentage)
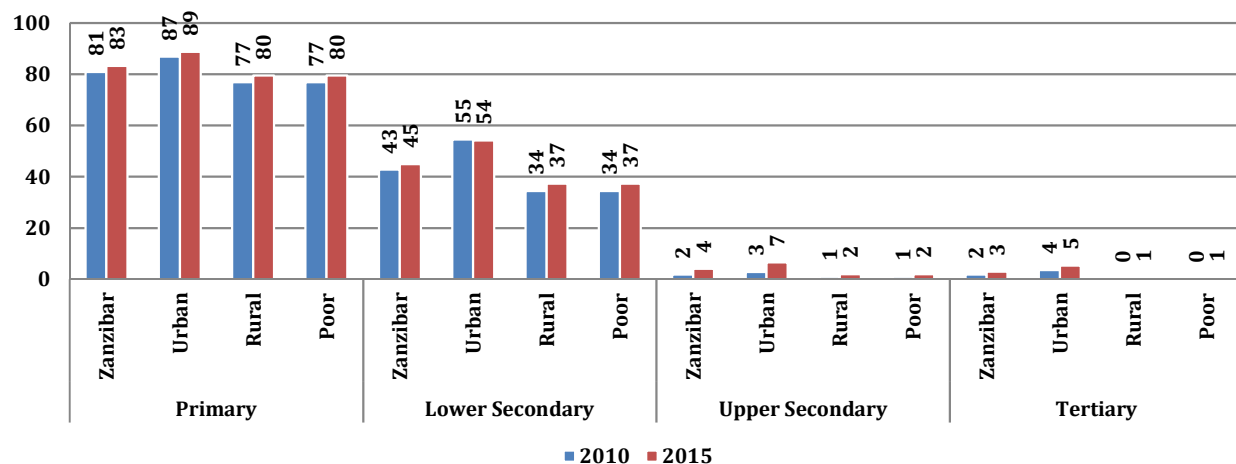
Sources: HBS 2009/10 and HBS 2014/15.   *Sources:* HBS 2009/10 and HBS 2014/15.

The educational structure of the population had not significantly evolved, with large discrepancies existing across areas and regions, but the majority of the population had at least completed lower secondary education. While no major changes occurred between 2010 and 2015 in terms of the educational attainment structure of the population (Figure 1.29), it still revealed that almost half of the population had at least completed the lower secondary educational level. Likewise, only 14 percent of the population had not completed primary school and 17 percent had not received any form of education. The population profiles in urban and rural areas were very distinct with many more individuals that completed at least the lower secondary level in urban areas (60 percent). Conversely, 24 percent of the urban population aged more than 15 years old remained uneducated, and an additional 18 percent had not completed primary school. The situation of the poor was also worrisome, as the share of individuals that had completed lower schooling appeared to decline over time. Mostly stemming from those discrepancies observed at the area and wealth levels, important differences existed in 2015 between Zanzibar's regions. While the population of West Unguja and South Unguja displayed fairly highly educated population profiles (Figure 1.30), other regions such as North Pemba lagged behind. In the latter, 34 percent of the population had not received any education and 21 percent had not completed primary schooling. It is worth mentioning that despite the slow improvements of the educational levels of the whole population aged 15 years and above, there were increases in the educational levels of the households' heads, including among rural and poor households.

Figure 1.29: Educational Attainment of 15 years+ by Area and Poor, 2010 and 2015 (percentage)
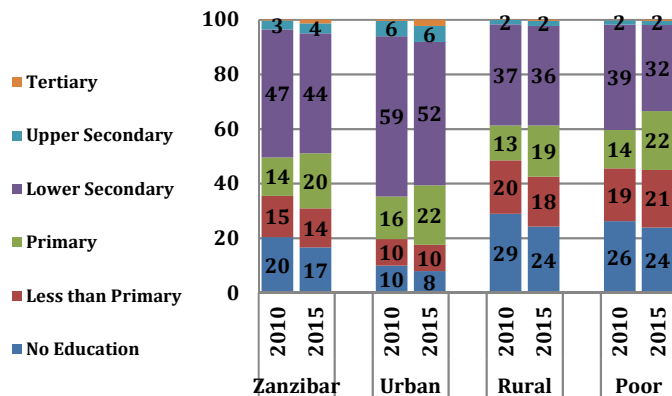
Figure 1.30: Educational Attainment of 15 years+ by Region, 2015 (percentage)

Sources: HBS 2009/10 and HBS 2014/15.
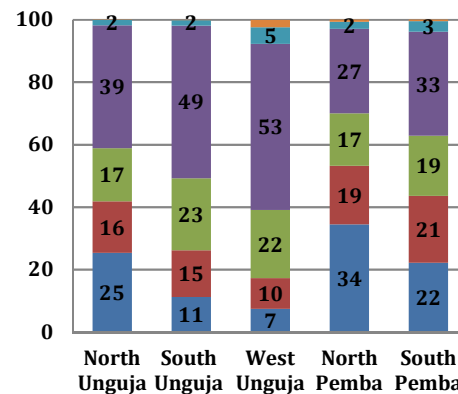
Source: HBS 2014/15.

However, despite fairly elevated levels of education measures in terms of years of schooling, the data available remain very limited regarding the quality of education provided. The main indicator of education was based on the number of years of schooling. Although this indicator showed a picture of the enrollment and the quantitative aspect of education, it did not provide any information regarding the quality of education and the real level reached by students at the end of their studies. In 2013 and 2015 two rounds of the Tanzania Enterprise Skills Survey (TESS), a survey conducted with Tanzania's companies to determine the needs of Tanzania's companies and to identify the bottlenecks they face, were conducted. In particular, the share of firms expressing to what extent an inadequate educated workforce was an obstacle to their current operations allowed a sense of the quality of education in Tanzania, and in particular in Zanzibar. The results revealed that the situation had improved in Zanzibar between 2013 and 2015, but also that many firms still declared that the education of their employees was inadequate for the proper conduction of their operations (Figures 1.31 and 1.32).

Figure 1.31: Share of firms expressing to what extent an inadequate educated workforce was an obstacle to their current operations (percentage of firms), 2015
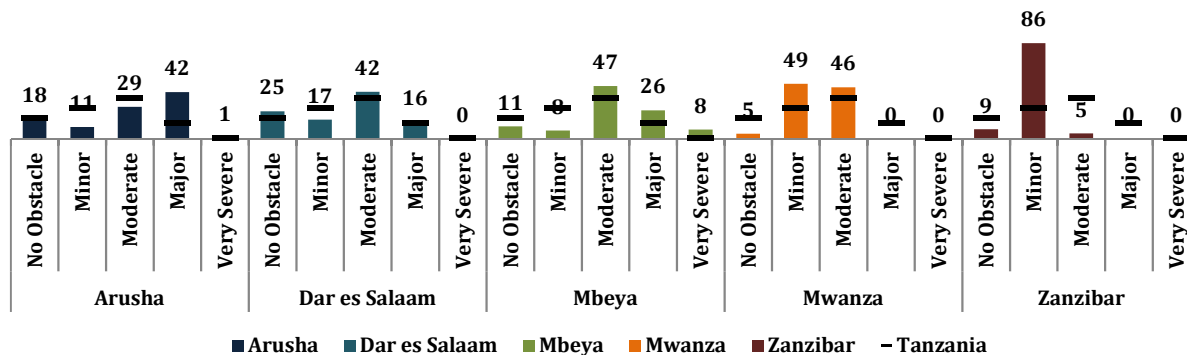
Source: TESS 2015.

Figure 1.32: Share of firms expressing to what extent an inadequate educated workforce was an obstacle to their current operations (percentage of firms), 2013

Legend: ■ Arusha ■ Dar es Salaam ■ Mbeya ■ Mwanza ■ Zanzibar − Tanzania
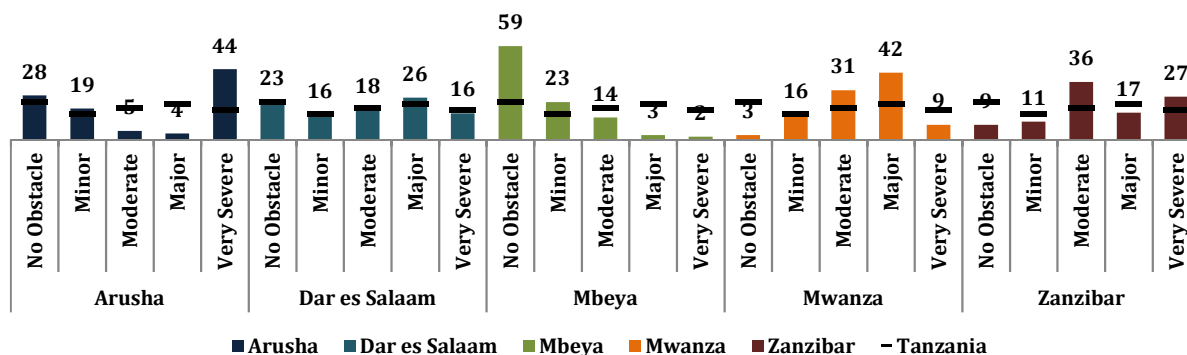
Source: TESS 2013.

Health and nutrition indicators were better than SSA averages, although malnutrition remained a serious concern in Zanzibar

The maternal mortality ratio remained quite low for Sub-Saharan Africa (SSA) standards, although important discrepancies existed between geographic regions. Based on the Population and Housing Census carried out in 2012, the maternal mortality ratio in Zanzibar was estimated at 350 deaths per 100,000 live births (Figure 1.33), which was lower than Mainland Tanzania's average of 434 deaths, as well as below the Sub-Saharan Africa average of 547 deaths. However, Zanzibar's rate did not reflect the variety of situations across regions. South Unguja had the lowest rate at 241 deaths per 100,000 live births, followed by the island of Pemba with around 267 deaths. Conversely, North Unguja stood out with a high ratio of 475 deaths. West Unguja, the most populated region of Zanzibar with the main urban center, had a maternal mortality ratio close to the average at 338 deaths.

Figure 1.33: Maternal Mortality Ratio by Region, 2012 (number of deaths per 100,000 live births)

Figure 1.34: Infant Mortality and Under-5 Mortality Rates, 1978–2012 (number of deaths per 1,000 live births)
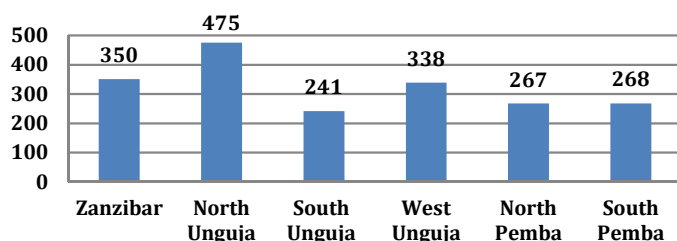
Source: 2012 PHC.

Source: 2012 PHC.

Note:
- The infant mortality rate is the number of deaths of infants under one year old per 1,000 live births.
- The under-5 mortality rate is the number of deaths of children under five years old per 1,000 live births.
- The child mortality rate is defined as the number of deaths of children aged between 1 and 5 years old per 1,000 live births.
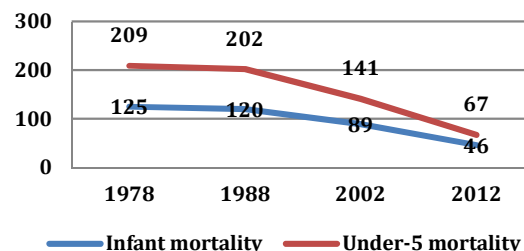
Infant and under-5 children mortality indicators had tremendously improved over the last 40 years with few discrepancies existing across areas and regions. Zanzibar experienced a tremendous improvement since 1978 in terms of infant mortality and under-5 mortality, which respectively declined from 125 and 209 to 46 and 67 deaths per 1,000 live births (Figure 1.34). Interestingly, the infant mortality rate and the child mortality rate, which measures the number of children dying between the age of 1 and 5 years old per 1,000 live births, did not vary significantly across urban and rural areas as well as across regions (Figure 1.35 and 1.36). The comparison of the infant and child mortality rates showed that most of the under-5 mortality was explained by deaths occurring during the first year of the child's life. Potential gaps in health services provided to infants, as well as lack of support services for the young mothers, might explain part of the important share of infant mortality in the overall under-5 mortality rate. Finally, South Unguja seemed to stand out from Zanzibar's other regions with an infant mortality rate and a child mortality rate higher than in other regions, respectively at 56.8 and 30.8 deaths per 1,000 births.

Figure 1.35: Infant Mortality and Child Mortality Rates by Area, 2012 (number of deaths per 1,000 live births)
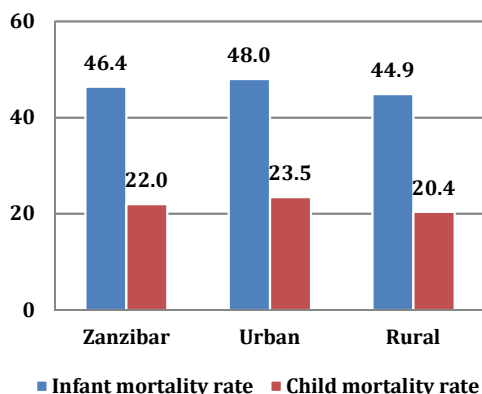
Figure 1.36: Infant Mortality and Child Mortality Rates by Region, 2012 (number of deaths per 1,000 live births)
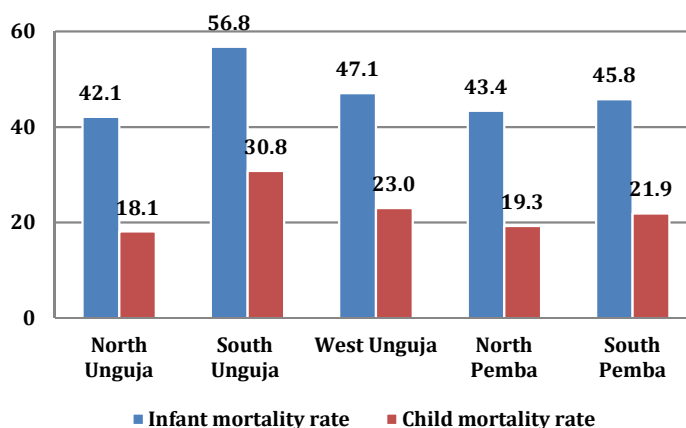
Source: 2012 PHC.

Source: 2012 PHC.

Anthropometric indicators for young children showed some slight improvements between 2009 and 2013, but the trends were uneven and malnutrition continued to be widespread. The three consecutive waves of the National Panel Survey, carried out in 2008/09, 2010/11, and 2012/13, tracked over time and across locations some key anthropometrics indicators such as stunting (reduced height for age), wasting (low weight for height), and underweight (low weight for age). The evolution of those three indicators showed mild improvements over the period as stunting, a key indicator of chronic malnutrition, and underweight respectively declined by 3 and 4 percentage points (Figure 1.37). Following a brief spike in 2011, wasting went back to its 2009 level. Compared to Mainland Tanzania, stunting was less prevalent among the population of under-5 children by more than 10 percentage points (Table 1.1). Conversely, the situation in terms of underweight and wasting was slightly worse in Zanzibar than in Mainland Tanzania, although the gaps tended to diminish.

Figure 1.37: Anthropometric Indicators, 2009–2013 (percentage of under-5 children)

Sources: NPS 2009, NPS 2011 and NPS 2013.

Table 1.1: Anthropometric Indicators in Zanzibar and Mainland Tanzania, 2009–2013 (percentage of under-5 children)

	2008/09	2010/11	2012/13
Stunting			
Zanzibar	30.5	30.4	26.9
Mainland Tanzania	43.2	34.8	37.6
Wasting			
Zanzibar	7.0	9.8	7.7
Mainland Tanzania	2.6	6.5	4.1
Underweight			
Zanzibar	18.8	18.5	14.9
Mainland Tanzania	15.9	13.5	12.5
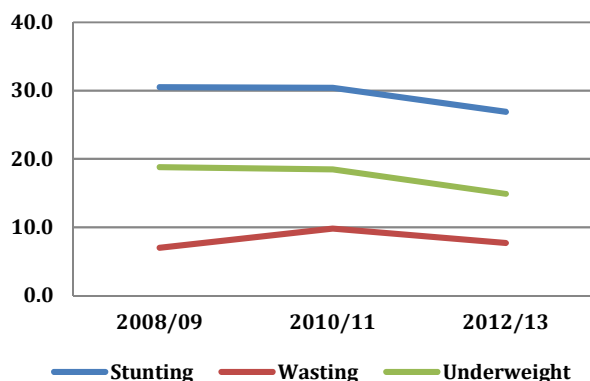
Sources: NPS 2009, NPS 2011 and NPS 2013.

Note:
- Stunting is defined as the percentage of children with lower than average height for a child's age.
- Wasting is defined as the percentage of children with lower than average weight for child's height.
- Underweight is defined as the percentage of children with lower than average weight for child's age.

Chapter 2 – The Structure of Poverty and Inequality

Key Messages

- Poor households in Zanzibar displayed the usual and expected characteristics—mainly large rural households with reduced access to infrastructures, and whose heads had low levels of education and primarily worked in agriculture;

- Zanzibar showed moderate and stable levels of overall consumption inequality, yet inequalities between geographic regions were deepening;

- Higher endowments of urban households compared to their rural counterparts caused inequality between urban and rural areas to worsen, essentially among the poorest groups; and

- Inequality between Unguja and Pemba seemed to be driven by differences in returns to households' assets as well as to differences in education and employment characteristics.

Poverty in Zanzibar impacted more than 30 percent of the population, while the extreme poor accounted for around 10 percent of the population. However, Zanzibar's poor were not a homogeneous group and poverty was not a single problem that could be solved with a stand-alone or uniform package of policy measures. In order for the government and other stakeholders to instigate appropriate pro-poor measures, it was necessary to understand the characteristics and profiles of the most disadvantaged groups and the different constraints they faced.

The first section focuses on the core socioeconomic characteristics of the poor, comparing them with the share of Zanzibar's population that was not poor. The second section investigates the evolution and structure of inequality. The section draws on the analysis of the differences in households' characteristics and returns to those characteristics to understand the sources of inequality between urban and rural areas as well as between the islands of Unguja and Pemba.

I. The Characteristics of the Poor

Poor populations were disproportionally concentrated in rural areas and on the island of Pemba

Geographic location strongly mattered as most of the poor lived in rural areas and on the island of Pemba. Despite fairly rapid urbanization in Zanzibar, over half of the population (56.4 percent) continued to live in the rural zones in 2015 (compared to 58 percent in 2010 and 71.2 percent in Mainland in 2012). Pemba in particular remained predominantly rural, with over 80 percent of its population being rural compared to only 43 percent for Unguja.[3] The poverty estimates indicated a disproportionate concentration of the poor in rural areas and in Pemba, with

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[3] Though Unguja concentrates the majority (68 percent) of Zanzibar's population.

nearly three quarters of the poor located in rural zones and 60 percent of them living in Pemba (Figures 2.1 and 2.3). This indicated that geographic location, particularly rural locations, mattered for welfare and poverty. These results were further confirmed by the multivariate regression analysis, which showed that regional and rural locations of households significantly affected their standards of living and likelihood to be poor. Controlling for other factors, households located in North Unguja were found to have higher standards of living and less chances to be poor than in the controlling region of West Unguja (the main urban center of Zanzibar). Conversely, rural status and locations in the north or south of Pemba were negatively correlated with the standards of living of households and positively correlated with the probability of living in poverty (Appendix C).

In particular, it appeared that poverty in Zanzibar was a two-factor phenomenon determined by the rural/urban divide as well as the Pemba/Unguja one. The poverty rates drew a picture where urban areas registered relatively low poverty rates. Those urban areas, primarily located on the island of Unguja, acted as a positive driving force for the rural areas of Unguja which benefited from deep economic connections to Unguja's urban centers. Conversely, rural areas of Pemba lacked access to urban centers and therefore did not benefit from this driving force. Consequently, the poverty rates in Pemba's rural areas remained very high, at 60 percent (Figure 2.2).

Figure 2.1: Proportion of the Poor by Area, 2015 (percentage)
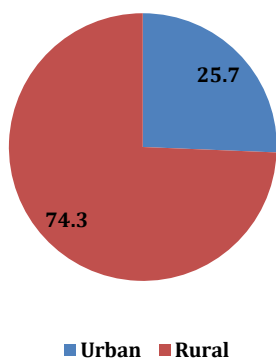
Source: HBS 2014/15.

Figure 2.2: Poverty Rates by Area, 2015 (percentage)
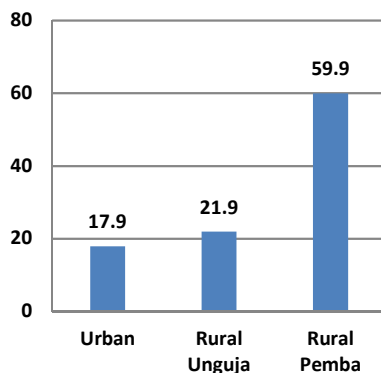
Source: HBS 2014/15.

Figure 2.3: Proportion of the Poor by Region, 2015 (percentage)
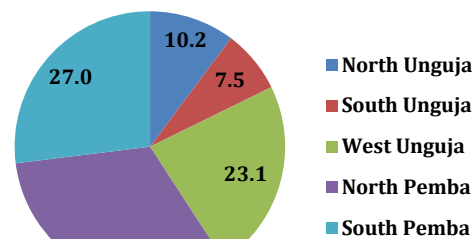
Source: HBS 2014/15.

Large family sizes, lower education, and engagement in subsistence agriculture contributed to poverty

The age and gender of the household's head did not significantly matter to explain poverty. The results from the multiple regression analysis showed that the age of the head of household did not significantly matter for living standards and poverty (Appendix C). Poverty rates were the highest in the cases of households whose heads are aged between 40 and 59 years old (Figure 2.4). Moreover, 60 percent of the poor households had a head that was between 40 and 59 years old. Such results were not surprising as the average age of household heads was 47.1 years old (Table 2.1). It is important to remember that these results were obtained by looking only at the age of the

head of household. Given the large size of Zanzibar's households and the prevalence of youth in these households, combined with the low employment status of young workers, it was highly likely that the total population of poor was much younger than when considering only heads of households. Likewise, there was no significant relationship between the gender of household head and economic welfare of the household. Although the proportion of households headed by women seemed to be larger among the poor and extreme poor, this effect was not confirmed by the multiple regression analysis.

Table 2.1: Households' Demographic Structure, 2015

	Zanzibar	Urban	Rural	Poor	Ext. Poor
HH size	7,0	7,1	6,9	8,6	9,3
Dependency ratio	0.9	0.7	1.0	1.0	1.0
No. children <14 years	3.2	2.9	3.4	4.2	4.6
No. adult	3.8	4.2	3.5	4.4	4.7
Age of HH head	47.1	47.2	47.0	48.9	48.8

Figure 2.4: Poverty Rate by Household Head Age, 2015 (percentage)

Source: HBS 2014/15.
Note: The dependency ratio was measured by the proportion of children below 14 years old and elderly above 65 years in the household.
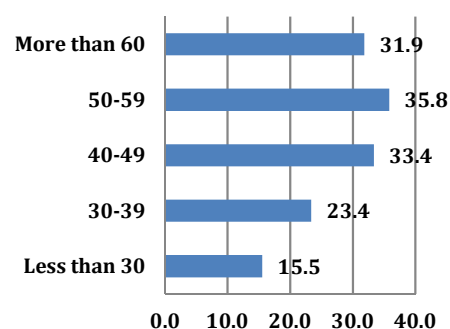
Source: HBS 2014/15.

Large households with a large number of dependents and more children under the age of 15 years old were poorer. The size and demographic structure of households significantly affected the standard of livings of households and increased the likelihood of falling into poverty (Appendix C). The poverty rate consistently and significantly increased as the size of the household increased (Figure 2.5). On average, poor and extreme poor households tended to have 8.6 and 9.3 individuals, respectively, compared to an average of 7 individuals in Zanzibar (Table 2.1). The number of children also followed the same pattern—the poverty rate increased as the number of children within the household increased (Figure 2.6). In particular, the poverty rate was extremely high among households with 5 or more children (54.3 percent). Overall, the interaction between family size and poverty was often bidirectional. On the one hand, the large number of children and dependents affected the ability of the poor to cover basic food needs and move out of poverty. On the other hand, poor households tended to have more children to compensate for their inability to invest in the human capital of their kids and as an insurance strategy against infant mortality, trapping them in a vicious circle of poverty. Other factors might also have been at stake, such as the lack of access to contraceptive methods, or the poor marketing associated with it. All in all, with one dependent per active individuals, poor and extremely poor households had higher dependency ratios than national averages (0.9).

Figure 2.5: Poverty Rate by Size of the Household, 2015 (percentage)

	1 person	2-4 persons	5-7 persons	8-10 persons	11-13 persons	14+ persons
	2.7	7.6	23.7	47.6	55.8	56.9
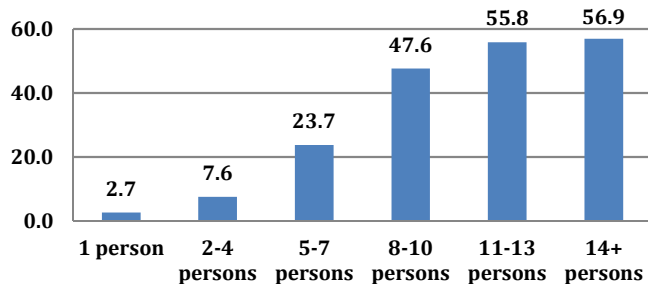
Source: HBS 2014/15.

Figure 2.6: Poverty Rate by Number of Children, 2015 (percentage)

	0 child	1 child	2 children	3-4 children	5+ children
	8.5	13.8	21.9	29.7	54.3
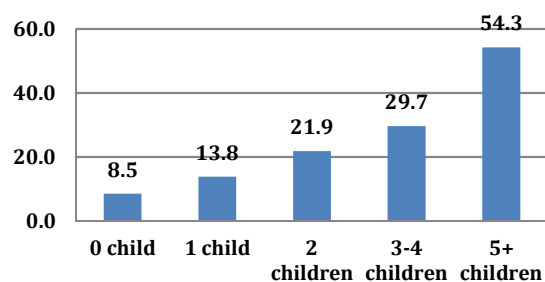
Source: HBS 2014/15.

Education also critically mattered, as the education level of household heads stood out as a very strong and significant correlate of poverty and welfare of households. Higher levels of education, and in particular secondary and university levels, were the most closely associated with higher levels of standards of living in both rural and urban areas (Appendix C). It was also a significant factor in the likelihood of living in poverty. Interestingly, completing primary school appeared to be of a limited significance to move out of poverty, while the real impact seemed to lie in completing lower and upper secondary education. A possible explanation for these results might be in the relatively poor quality of the education provided and therefore its limited impact on poverty. The significance of upper secondary schooling and a university diploma was particularly high in urban areas where these levels of education probably led to a higher status of employment and more importantly higher wages. As shown by Figure 2.7, poverty rates significantly decreased as the level of education of the head of the household increased, falling from 48.2 percent for heads with no formal education to 9.2 percent for those with upper secondary education.

Households whose heads worked in agriculture were poorer than households whose heads worked in other sectors of activity, particularly in rural areas. Employment in the services sector was positively associated with higher standards of living. The significance of services employment was particularly elevated in rural areas, highlighting a possible premium proceeding from the lower presence of services in rural areas. Thus, the poverty rate in the agricultural sector was much higher than in the other sectors, especially compared to the services sector (Figure 2.8). Consequently, almost two-thirds of heads of poor households were employed in agriculture (Figure 2.9) and one-fourth worked in services. Poverty also seemed to be associated with certain types of employment of the household's head. Lower poverty rates were found in the case of households' heads that were wage employees (18 percent) compared to heads working as nonfarm self-employees (26 percent) and agricultural self-employees (43 percent). Nevertheless, the difference in poverty rates observed between nonfarming and agricultural self-employment suggested that self-employment in nonfarming activities could constitute a way out of poverty.

Figure 2.7: Poverty Rate by Education of Household Head, 2015 (percentage)

Education	Value
University	10.0
Upper secondary	9.2
Lower secondary	19.1
Completed primary	30.9
Less than primary	41.3
No education	48.2
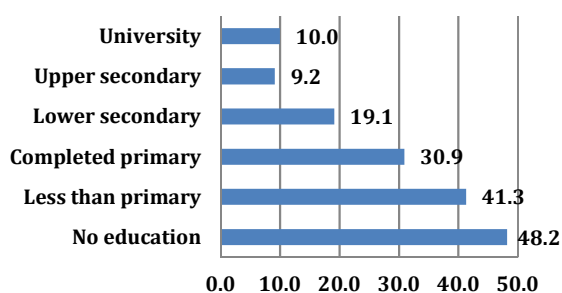
Source: HBS 2014/15.

Figure 2.8: Poverty Rate by Sector of Employment of Household Head, 2015 (percentage)

Sector	Value
Agriculture	43.5
Manufacturing	31.5
Services	18.2
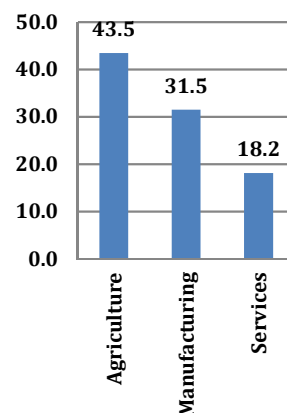
Source: HBS 2014/15.

Figure 2.9: Poor by Sector, 2015 (percentage)

Sector	Value
Agriculture	60
Manufacturing	13
Services	26
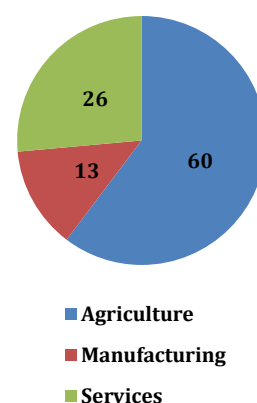
Source: HBS 2014/15

Poor households tended to have much lower access to critical public and private infrastructures. Poverty was associated with lower levels of access to safe sources of water, as well as electricity and sanitation (Figure 2.10). When controlling for the various socio-demographic effects in the regression model, access to modern sources of lightning and modern sanitation facilities appeared to be significant determinants of living standards and likelihood of household's poverty (Appendix C). In particular, households deriving their lighting from traditional sources such as candles or firewood were found to be significantly more prone to be poor, both in rural and urban areas. Likewise, the lack of access to any sort of toilet facility significantly increased the likelihood of being poor and was a major negative correlation of households' consumption level. While the possession of small appliances was not a significant factor of consumption or poverty, owning large appliances was associated with a higher consumption level and lower chances of poverty, both in rural and urban areas. As such, while 69.1 percent of poor households owned large appliances, 78.3 percent of nonpoor households did so (Figure 2.11).

Figure 2.10: Access to Key Private and Public Infrastructures by Poor and Non-Poor Households, 2015 (percentage)
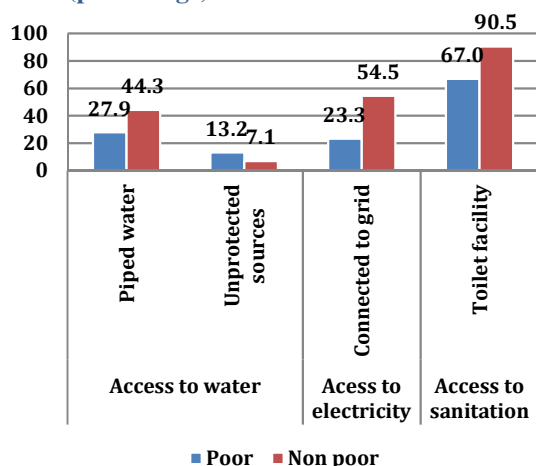
Source: HBS 2014/15.

Figure 2.11: Assets Ownership by Poor and Non-Poor Households, 2015 (percentage)
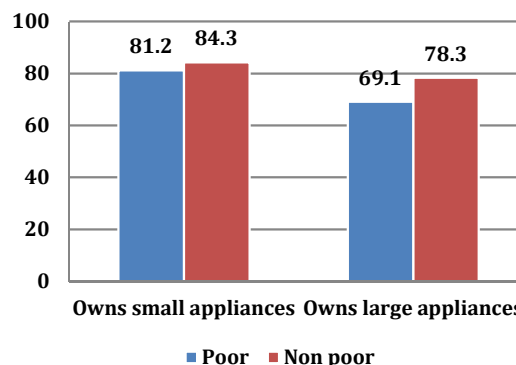
Source: HBS 2014/15.

II. The Structure of Consumption Inequality

Consumption inequality was fairly low, but disparities between education groups and geographic regions widened

Zanzibar showed moderate and stable levels of consumption inequality. With a Gini coefficient estimated at around 31 over the period 2010–15, inequality in Zanzibar was lower than in Mainland where the Gini coefficient was estimated at 36 in 2012, and significantly below the Gini coefficients of Sub-Saharan Africa (SSA) and Low-Income Countries (LIC), estimated respectively at 45.1 and 40.[4] However, the positive picture of fairly equitable welfare distribution may have hidden persisting inequalities between population groups. For instance, the uneven and increasingly unequal spatial distribution of poverty suggested widening welfare gaps between geographic regions that can undermine inclusive growth and shared prosperity prospects. It is important, thus, to examine the underlying structure of inequality and to investigate the extent to which consumption inequality is attributable to variations between population subgroups. This investigation can be carried out by the decomposition of overall inequality in the distribution of consumption into inequality within population subgroups and inequality between them. Figure 2.12 and Table 2.2 provide the summary results of the shares of inequality explained by the between-group differences across eight household attributes (gender, age, educational level, activity status and sector of employment of the household head, regional location, urban/rural status, and

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[4] World Development Indicators (WDI), 2016.

demographic composition of the household).[5] Technical details on the decomposition procedure can be found in Appendix D.

Figure 2.12: Shares of Inequality Between Groups Total Inequality in 2010 and 2015 (percentage)
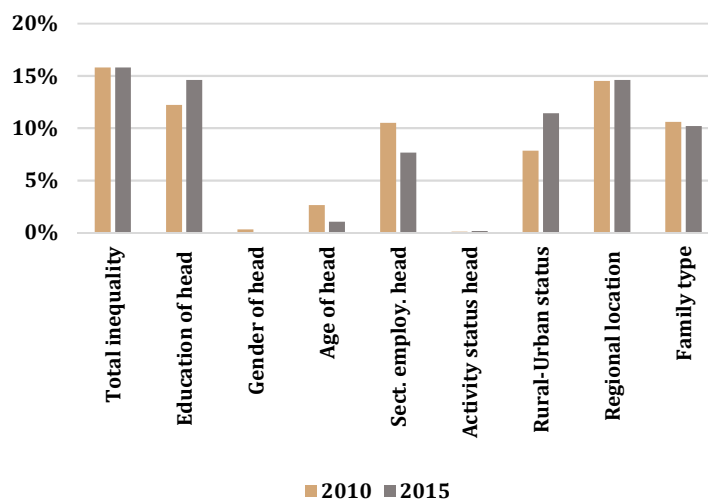
Table 2.2: Decomposition of Inequality by Household Attributes

	Share of Inequality Explained by (%)	
	2010	*2015*
Education of head	12.2***	14.6***
	(0.02)	(0.01)
Gender of head	0.3	0
	(0.00)	(0.00)
Age of head	2.6*	10.4*
	(0.01)	(0.01)
Activity status of head	0.1	0.1
	(0.00)	(0.00)
Employment sector of head	10.5***	7.7***
	(0.01)	(0.01)
Family type	10.6***	10.2***
	(0.02)	(0.01)
Urban/rural status	7.8***	11.4***
	(0.01)	(0.01)
Regional location	14.5***	14.6***
	(0.02)	(0.01)

Sources: HBS 2009/10 and HBS 2014/15.
Note: * Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in parentheses are bootstrap standard deviations based on 100 replications.

The regional location of the household, followed by the educational level of the head and urban-rural location, were the most important determinants of consumption inequality. Around 15 percent of total real per capita consumption inequality can be explained by inequality between the five geographic regions in Zanzibar (Figure 2.10 and Table 2.2). Average household consumption levels were the highest in West Unguja and the lowest in North Pemba, with average consumption being 1.7 times higher in the former compared to the latter. There were also substantial differences in average household consumption levels between North and South Unguja and North and South Pemba. Disparities between education groups were as substantial as interregional inequalities in 2015. Inequalities between households sorted by the educational attainment of their heads accounted for about 15 percent of the overall inequality, which was around 2.4 percentage points higher than in 2010. This increase was mainly driven by the widening disparities between household groups whose head had not completed primary education and those whose head had completed lower secondary. Inequalities between urban and rural areas were

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[5] Age is split into five categories: (i) under 30, (ii) 30–39, (iii) 40–49, (iv) 50–59, and (v) 60+ years. Education is classified into five categories: (i) no education & illiterate; (ii) less than completed primary; (iii) completed primary; (iv) lower secondary; and (v) upper secondary and higher. Three groups are considered for the activity status: (i) employed; (ii) unemployed; and (iii) inactive, disabled or retired. The employment sector comprises four categories: (i) wage employees, (ii) self-employed in nonfarm, (iii) farmers and workers in agriculture, and (iv) family helpers, apprentice & others. The regional locations are: (i) North Unguja, (ii) South Unguja (iii) Urban West, (iv) North Pemba, and (v) South Pemba. Household family types are: (i) single parent with no kids, (ii) single parent with kids, (iii) couple with no kids; (iv) couple with kids, and (v) families of elderly whose head is aged 65 years old or above.

already important in 2010 and increased by 3.6 percentage points by 2015. The deepening of area-based inequalities was driven by the expansion of the average consumption level of households in urban areas compared to a slight deterioration of average rural consumption levels.

Quite important welfare disparities also existed between family types and sectors of employment groups. Existing differences in the demographic composition of households accounted for a rather significant share of the total consumption inequality, amounting to over 10 percent in 2015. Households comprised of only adults that were older than 14 years old, whether single or in couples, were much better off than the rest of households' groups. Meanwhile, single parents, followed by elderly households whose head was 65 years old or over, seemed to face severe hardships and displayed the lowest mean per capita consumption levels. The share of total inequality attributable to the differences between the various employment sectors groups was around 11 percent in 2010. Inequality between these groups declined by about 3 percentage points in 2015 due to a reduction of the consumption gap between wage employees and self-employed workers in nonfarming activities. The gender, age, and activity status of the household head had marginal explanatory powers barely exceeding 1 percent.

The important and widening spatial inequalities were worrisome and required further investigation to identify their sources. Section I of Chapter 2 investigated the determinants of urban-rural inequality and explored the sources of inequality between Unguja and Pemba. The analysis used the unconditional quintile regression method proposed by Firpo, Fortin, and Lemieux (2009) to decompose the consumption gap between geographic regions into (i) a component that was due to differences in household characteristics only (endowment effects), considering, for example, the gap in consumption that was due to the fact that urban dwellers had higher education levels than rural ones but assuming that people with the same education levels received the same remunerations across the different locations; and (ii) a component that was due to differences in returns to those characteristics only (returns effect), considering, for example, the gap in consumption that was due to the fact that a secondary school graduate in the urban areas received a higher remuneration than a secondary school graduate in the rural areas. More technical details on the decomposition method can be found in Appendixes B and D.

Differences in households' productive characteristics impacted urban-rural welfare gaps

Inequality between urban and rural areas was essentially due to the fact that urban households had higher endowments than their rural counterparts. As shown in Figures 2.13 and 2.14, the contribution of the difference in households' endowments to the urban-rural gap significantly dominated the contribution of disparity in returns to those endowments across the entire distribution, indicating that urban households had higher consumption levels because they had superior characteristics. Differences in access to basic services—essentially access to markets, safe drinking water, and sanitation—and in assets ownership—mainly mobile phones and modern transportation means—mattered the most explaining the inequality observed between urban and rural households. Differences in access to mobile banking, ATMs and SACCOS also seemed to

significantly contribute to the urban-rural welfare gap, indicating the important role of financial inclusion in enhancing poverty and inequality reduction.[6] The difference between urban and rural areas in terms of market returns to household characteristics did not seem to be important for poor household groups, particularly in 2010. This was probably due to the fact that these households were generally employed in sectors that paid wages slightly above the subsistence level.

Figure 2.13: Sources of Urban-Rural Inequality in 2010 (percentage)
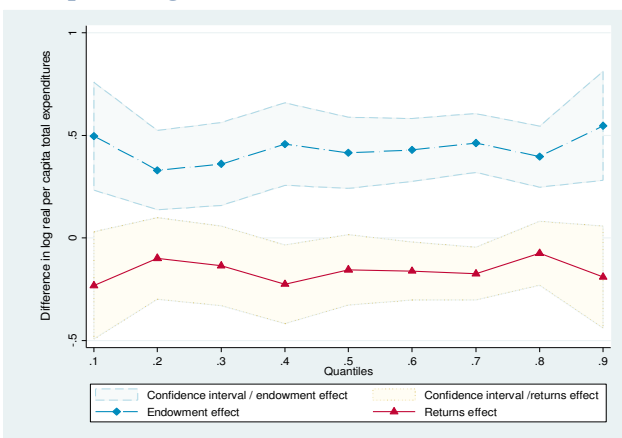
Figure 2.14: Sources of Urban-Rural Inequality in 2015 (percentage)
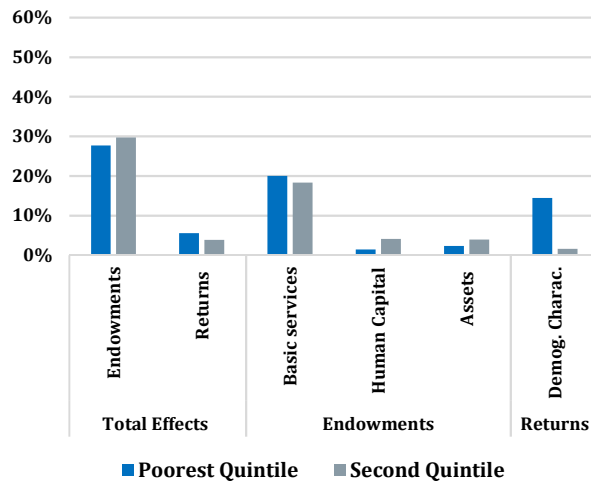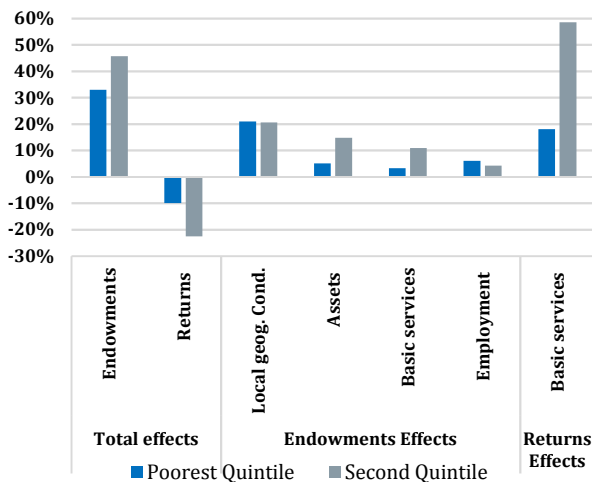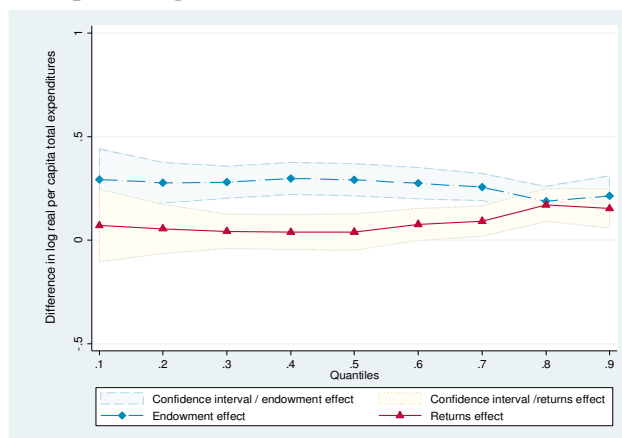
Source: HBS 2009/10

Source: HBS 2014/15

Note:

- Percentages indicate counterfactual changes. Effects that were not significant for the two bottom quintiles were not pictured. Detailed results of all the effects are in Appendix D, Table D.1.
- Geographic conditions fixed effects in 2010 may capture the effects of access to mobile banking, ATM and SACCOS as these variables were available in 2015 only.

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[6] Data on access to mobile banking, ATMs, and SACCOS were not available in HBS 2009/10. We suspect this effect to be captured by the geographic location fixed effects. This may explain the decline of the effects of geographic locations on rural-urban inequality in 2014/15 when observations on these variables were available.

The urban-rural gap widened for all populations groups, but inequality increased faster among the poorest groups. Rural households at the lower tail of the distribution experienced an improvement over time in their endowments in assets and access to nonfarm business. Moreover, signs of convergence in household endowments between the urban and rural sectors were detected. Yet, these improvements were partly offset by a widening gap in access to basic services and in endowments in human capital. Urban-rural differentials in returns to households' characteristics also increased in 2015, essentially due to the increase of the gap in returns to demographic structure, suggesting that the negative impact on households' productivity of large household size and numbers of children was stronger in rural than in urban areas.

Inequalities between islands was the result of widening gaps in returns to households' characteristics

Inequality between Unguja and Pemba was essentially driven by differences in returns to households' characteristics. As revealed by Figures 2.15 and 2.16, the gap in returns between households living in Unguja and those living in Pemba was larger and increased faster than the gap in endowments. Households in Unguja were better off than their counterparts in Pemba because they benefited from higher returns to their assets as well as to their education and employment in the nonfarm sector, although the effect of the two latter vanished in 2015. Households in Unguja also seemed to benefit from a higher productivity caused by better local geographic conditions, as was apparent from the significant positive impact of local geographic fixed effects on the returns gap. There were also important differences in endowments in human capital, access to basic services, and employment opportunities between the two islands. While differences in access to employment opportunities seemed to have declined in 2015, disparities in access to basic services increased, leading to a widening of the endowments' gap among the poorest groups.

Figure 2.15: Sources of Inequality between Unguja and Pemba in 2010 (percentage)
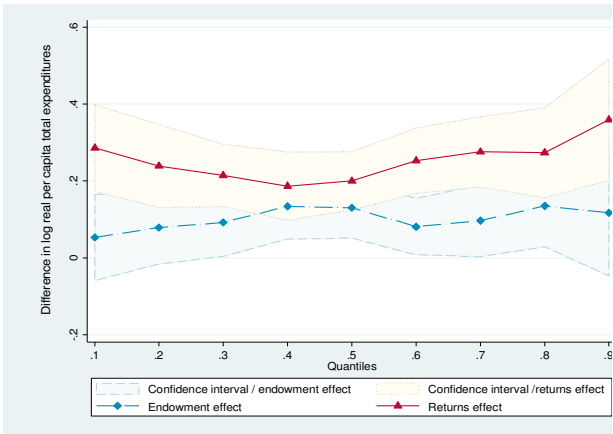
Figure 2.16: Sources of Inequality between Unguja and Pemba in 2015 (percentage)
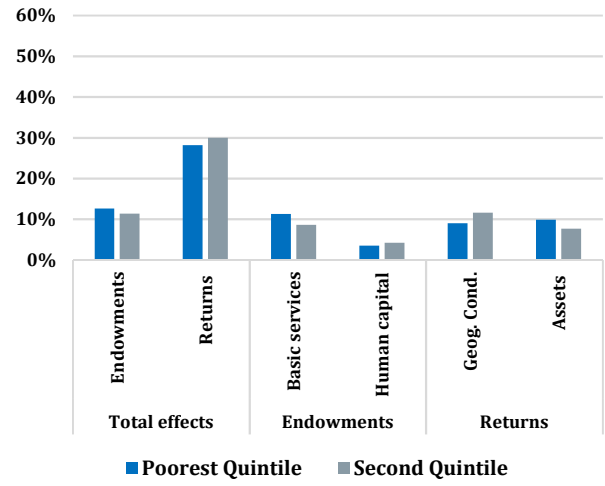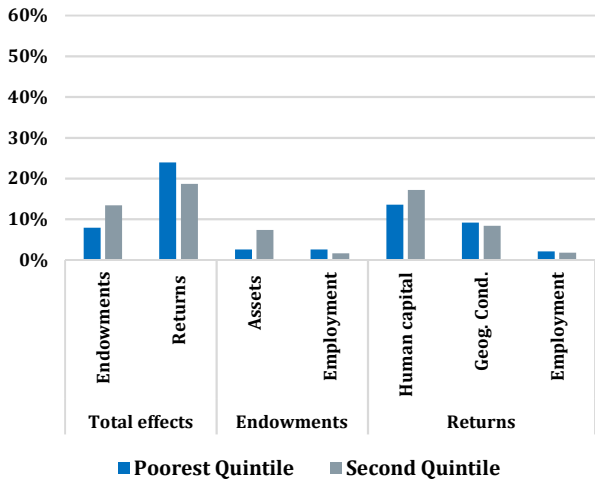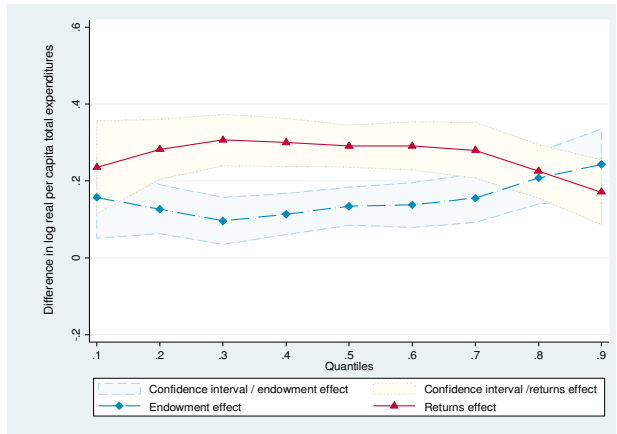
*Note:* Percentages indicate counterfactual changes. Effects that were not significant for the two bottom quintiles were not pictured. Detailed results of all the effects are in Appendix D, Table D.2.

Chapter 3 – Poverty in Mainland and Zanzibar

Key Messages

- **While poverty based on basic needs poverty lines appeared to be more important in Zanzibar, the conversion to international poverty lines showed that poverty was more prevalent in Mainland Tanzania;**

- **Sensitivity tests also revealed that a large part of poor populations was clustered around the poverty line, creating a double-edge situation—poor might be prone to escape poverty but were also vulnerable to fall back into it; and**

- **Zanzibar also appeared to be better off than Mainland in terms of multidimensional poverty, yet households in both parts continued to face important deprivations in access to basic services and consumption.**

This chapter draws on the conclusions from the previous chapters regarding the extent of poverty and inequality in Zanzibar and intends to expand the analysis by comparing Zanzibar's levels with Mainland Tanzania. The analysis is based on the previously used HBS 2014/15 for Zanzibar and a Household Budget Survey carried out in 2011/12 in Mainland Tanzania (labeled Mainland HBS 2011). Important differences in terms of living standards and structure of the economy existed between Mainland and Zanzibar. Such differences create distortions when estimating poverty and inequality incidence based on national poverty lines and leads to comparability issues. The objective of the chapter is to resolve those comparability issues by using the international poverty line, but also by exploring nonmonetary poverty through the concept of multidimensional poverty.

The first section of this chapter provides a comparative analysis of the poverty levels in Zanzibar and in Mainland. In particular, the section uses international poverty lines to address the comparability issue between the two locations. Moreover, the data allows us to run some sensitivity tests and to underline the clustering of a large share of the population right below and above the domestic and international poverty lines. The second section examines the incidence and evolution of multidimensional poverty, and investigates the areas where households are facing important deprivations.

I. Comparison of Monetary Poverty between Zanzibar and Mainland

Poverty was higher in Zanzibar than in Mainland when using basic needs headcounts, but lower when using international poverty rates

Basic needs poverty headcounts appeared to be higher in Zanzibar than in Mainland, but poverty based on the international poverty line was less prevalent in Zanzibar. Using the basic needs poverty lines, the poverty headcount stood at 28.2 percent in Mainland in 2012 and

30.4 percent in Zanzibar in 2015. While these figures may suggest a higher prevalence of poverty in Zanzibar than in Mainland, several factors need to be considered when comparing the two ratios. First, the average consumption level as well as the food and basic needs poverty lines were significantly higher in Zanzibar even after adjusting for price differences between the surveys' years (Figure 3.1). This was partly due to the larger number of items in the food basket of the reference population in Zanzibar compared to Mainland, and to the higher cost of some food and basic needs nonfood items which were imported from Mainland and so forth.[7] Second, while both surveys in Mainland and Zanzibar used the same adult equivalent scales to adjust for household composition, only Zanzibar HBS further adjusted food consumption by the presence in days of household members. When addressing these comparability issues and using the international poverty line of $1.90 per person per day in 2011 adjusted for purchasing power parity (PPP), poverty appeared to be significantly lower in Zanzibar, where the international poverty rate was estimated at 43.5 percent compared to 48.8 percent in Mainland (Figure 3.2).

Figure 3.1: Monthly Average Consumption per Adult and Levels and Poverty Lines in Mainland and Zanzibar (TZS)
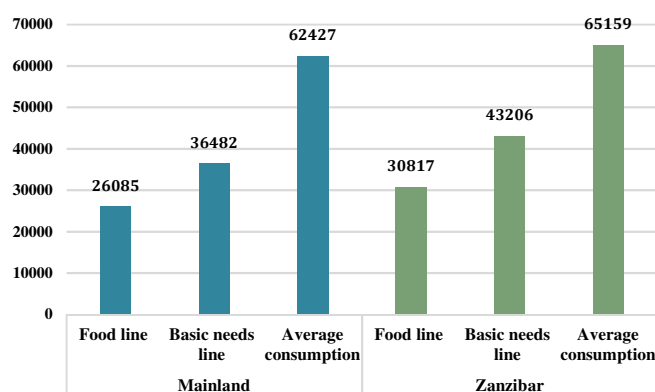
Figure 3.2: National and International Poverty Rates in Mainland and Zanzibar (percentage)
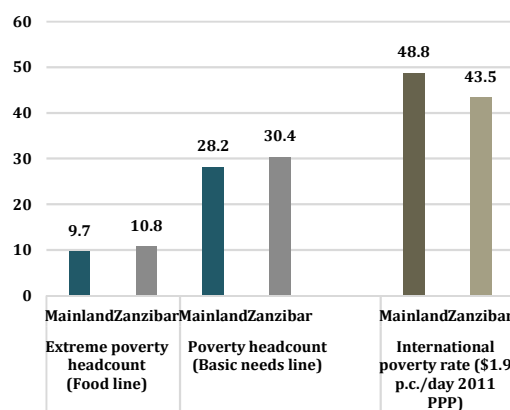
Sources: Zanzibar HBS 2014 and Mainland HBS 2011.
Note: Figures on monthly average consumption per adult equivalent and poverty lines for Zanzibar were adjusted by the CPI for 2011/12–2014/15. Monthly average consumption per adult, and food and basic needs poverty lines in Zanzibar HBS 2014/15 were respectively: TZS 80,497; 38,071; and 53,377.

A large share of the population, in both Zanzibar and Mainland, was clustered around the poverty line and was highly vulnerable to fall into poverty. Around one-fourth of the nonpoor populations in both Mainland and Zanzibar stagnated at consumption levels right above the basic needs poverty lines within a range of less than TZS 400 per adult equivalent and per day, and were therefore prone to fall back into poverty in case of unexpected economic shocks (Figures 3.3 and

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[7] The food basket for the reference population—the 2nd to 5th quintile of the distribution of total consumption per adult equivalent—in Zanzibar included 199 items compared to 153 items in Mainland.

3.4). However, the opposite was also true, as a large proportion of the poor population was fairly close to the poverty line and could move out of poverty if their income slightly increased.[8]

The clustering of the population around the poverty line translated into a significantly higher level of international poverty incidence. Mainland and Zanzibar basic needs poverty lines were slightly lower than the international poverty line of US$1.90 per person per day.[9] Based on the international poverty line, poverty was respectively 21 and 13 percentage points higher than the national (basic needs) headcounts in Mainland and Zanzibar. [10] This discrepancy was the consequence of a large share of the population being clustered between the national poverty line and the international poverty line, and highlighted the vulnerability of a large share of the Tanzanian population.

Figure 3.3: Sensitivity of Poverty Rate from Change in Poverty Line in Mainland
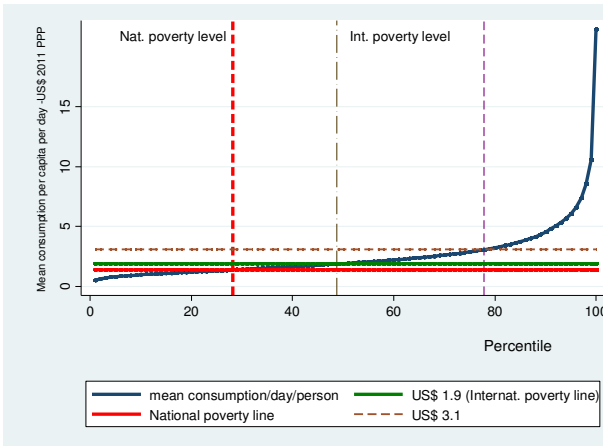
Figure 3.4: Sensitivity of Poverty Rate from Change in Poverty Line in Zanzibar

Source: Mainland HBS 2011.
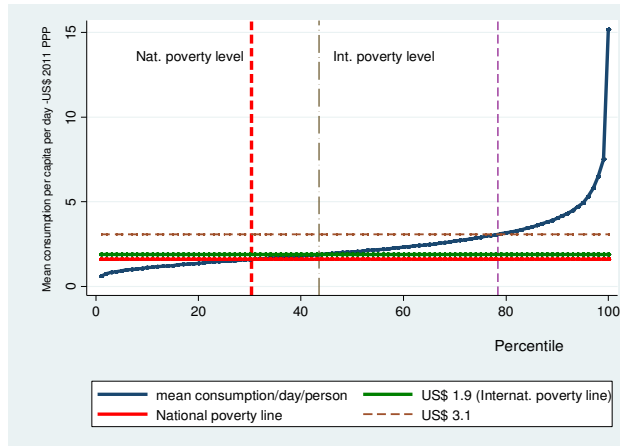
Source: Zanzibar HBS 2014.

II. Extent of Multidimensional Poverty in Mainland and Zanzibar

Multidimensional poverty was lower in Zanzibar than in Mainland, but both parts displayed similar patterns of high deprivations in access to basic services and consumption

In order to have a broader picture of poverty and a more thorough comparison of the poverty situation between Mainland and Zanzibar, this section extends the analysis to cover the multidimensional aspects of poverty. The approach of multidimensional poverty was based on the idea that the well-being of a population can be jeopardized not only by severe shortfalls in consumption and income, but also by deficits in many living conditions dimensions. Efforts to

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[8] One-fourth of the poor people, in both Zanzibar and Mainland, were living just below the poverty line and were positioned to move out of poverty if their income were to increase on average by respectively TZS 400 and TZS 600 per adult equivalent per day.
[9] The Mainland and Zanzibar basic needs poverty lines translated respectively into approximately US$1.40 and US$1.60 per capita per day at 2011 PPP (based on 2011–12 and 2014–15 CPI inflation rates in the World Development Indicators).
[10] Which represented 8.7 million people in Mainland and 190 thousand people in Zanzibar.

sustainably address poverty needed to go beyond the proximate causes of deficits in consumption, to understand the different forms of deprivation and address the multiple underlying causes to poverty and vulnerability. However, the multitude of dimensions in which people suffered deprivation and the complicated ways in which these dimensions are intertwined made such analysis challenging. We used a relatively simple methodology proposed by Alkire and Foster (2011) to measure multidimensional poverty based on two elements: *shortfalls in each of the relevant dimensions of well-being,* and *the extent of deprivation in the different dimensions.*

We considered five main dimensions and thirteen indicators for the measurement of the Multidimensional Poverty Index (MPI) (Figure 3.5).[11] The MPI reflects the prevalence of poverty and the breadth of multiple deprivations among the poor.[12] We considered as multi-dimensionally poor all individuals deprived in at least 30 percent of the indicators. Those deprived in over 50 percent of the indicators were identified as in *severe deprivation*, and those deprived in between 10 and 30 percent of the indicators were considered as *vulnerable to deprivation*. More details on the approach can be found in Appendix E.

Figure 3.5: Welfare Dimensions and Indicators of the Method

Schooling achievement	School attendance	Dwelling floor	Dwelling roof	Dwelling wall	No Sleeping rooms per HH size	Water	Sanitation	Electricity	Cooking fuel	Consumption	Agricultural & non-agricultural assets
Education (1/5)		**Housing conditions (1/5)**				**Access to basic services (1/5)**				**Living standard (1/5)**	**Assets ownership (1/5)**

Five Welfare Dimensions
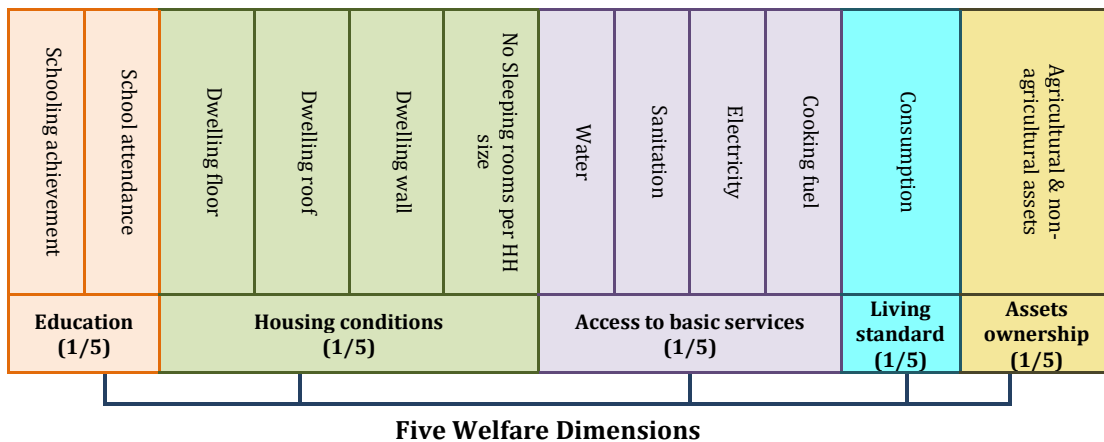
Multidimensional poverty remained limited in Zanzibar compared to Mainland, but households in Pemba continued to face important deprivations

About 44 percent of the population in Zanzibar suffered from deprivations in at least one-third of the relevant dimensions of well-being compared to 63 percent in Mainland.[13] In Zanzibar, the incidence of deprivation, which informed on the prevalence of multidimensional

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[11] Each dimension was equally weighted and each indicator within each dimension was equally weighted.

[12] The MPI was calculated by multiplying the incidence of deprivation (or poverty) (H) by the average intensity of deprivation (A), where H represents the headcount or the proportion of the population that was deprived or poor in a multidimensional way, and A represents the average breadth or multiplicity of deprivation people suffered at the same time, measured by the average proportion of indicators in which poor people were deprived (see www.ophi.org.uk for more details).

[13] Given that the surveys in Mainland and Zanzibar were conducted at 3 year intervals, some of the differences may be data-driven. However, we expected these differences to be limited as consumption had been adjusted by CPI, and evolution over time of nonmonetary indicators was generally slow. This was further confirmed by the information in the 2012 Population Census which covered both Mainland and Zanzibar and showed better living conditions and human development outcomes in Zanzibar.

poverty, stood at 44 percent, which was significantly lower than in Mainland where the incidence of deprivation attained 63.1 percent (Table 3.1 and Figures 3.6 and 3.7). The proportion of the population suffering from severe deprivations was also significantly higher in Mainland, where it attained 32 percent compared to 17 percent in Zanzibar. However, an important part of Zanzibar's population remained at risk of falling back into multidimensional poverty with a high vulnerability rate of 30.9 percent—exceeding the vulnerability level in Mainland by around 5 percentage points.

Table 3.1: Multidimensional Deprivations Indicators for Mainland (2011) and Zanzibar (2014)

	MPI		Incidence of Deprivation		Average Intensity across the Poor		Vulnerability to Deprivation		Severe Deprivation	
	Main.	Zanz.	Main.	Zanz.	Main.	Zanz.	Main.	Zanz.	Main.	Zanz.
Overall	30.7	20.0	63.1	44.0	48.6	45.5	25.4	30.9	32.1	17.1
Urban	10.7	8.2	24.8	20.8	43.1	39.3	40.0	31.6	7.2	4.0
Rural	38.8	29.2	78.6	62.0	49.3	47.2	19.4	30.4	42.1	27.3
By Regions										
North Unguja	—	22.6	—	48.5	—	46.7	—	43.8	—	21.0
South Unguja	—	23.5	—	55.0	—	42.7	—	40.0	—	14.4
West Unguja	—	8.0	—	20.6	—	39.0	—	31.8	—	3.7
North Pemba	—	37.9	—	75.9	—	49.9	—	18.1	—	40.4
South Pemba	—	30.1	—	64.9	—	46.4	—	25.0	—	27.9

Sources: Mainland HBS 2011 and Zanzibar HBS 2014.

Figure 3.6: Proportion of Multidimensional Poor and Vulnerable in Mainland, 2011 (percentage)

■ Severe deprivation   ■ Moderate deprivation
■ Vulnerable   ■ Non deprived
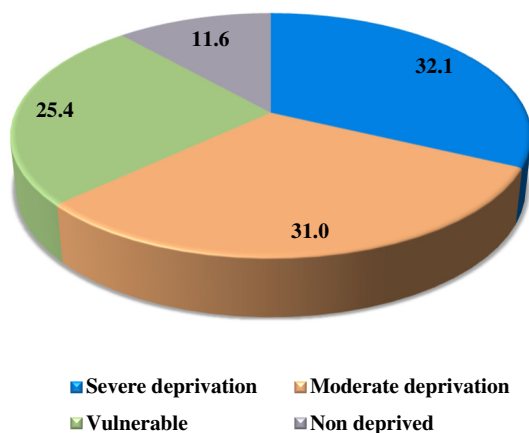
Source: Mainland HBS 2011/12.

Figure 3.7: Proportion of Multidimensional Poor and Vulnerable in Zanzibar, 2014 (percentage)

■ Severe deprivation   ■ Moderate deprivation
■ Vulnerable   ■ Non deprived
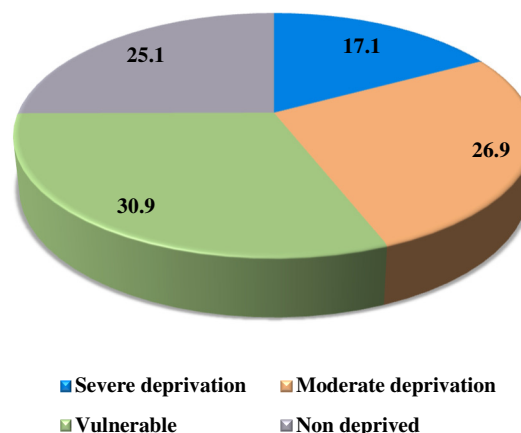
Source: Zanzibar HBS 2014/15.

Likewise, important differences existed between Mainland and Zanzibar in terms of the multidimensional poverty rate. The MPI rate, which measures the share of deprivations experienced by the poor relative to the maximum range of deprivations among the whole population, was more than 10 percentage points lower in Zanzibar than in Mainland, indicating that the poor in Mainland were experiencing a greater breadth of multiple deprivations than in Zanzibar. Rural populations were experiencing higher poverty and deprivations than their urban counterparts in both Mainland and Zanzibar. However, while the difference in multidimensional poverty between Mainland and Zanzibar urban sectors was fairly low, it was quite significant between the

rural sectors (Figure 3.8). There were also large disparities in multidimensional poverty between the geographic regions of Zanzibar. As is apparent in Figure 3.9, the MPI was significantly higher in Pemba than in Unguja. Multidimensional poverty seemed to be significantly high in West Unguja and very high in North Pemba. While this pattern was in line with the pattern of monetary poverty observed in the first chapter—i.e., high poverty rates on the island of Pemba and low poverty rates in West Unguja—the gap between the different regions was less important in the case of multidimensional poverty. Such findings suggested that the interregional disparities in monetary welfare indicators (e.g., income and consumption) were larger than the disparities in livings conditions and other nonmonetary aspects of welfare such as education, access to basic services, housing conditions, and so forth.

Figure 3.8: MPI Rate by Area in Mainland, 2011, and Zanzibar, 2014
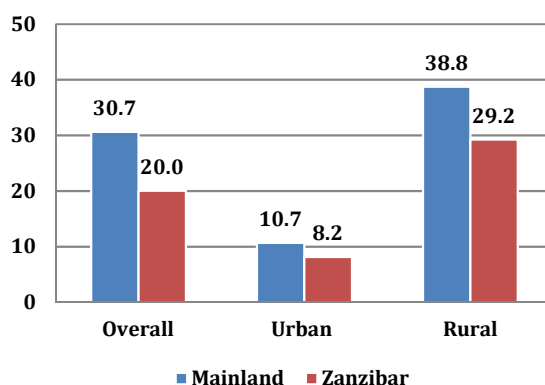
Figure 3.9: MPI Rate by Regions in Zanzibar, 2014
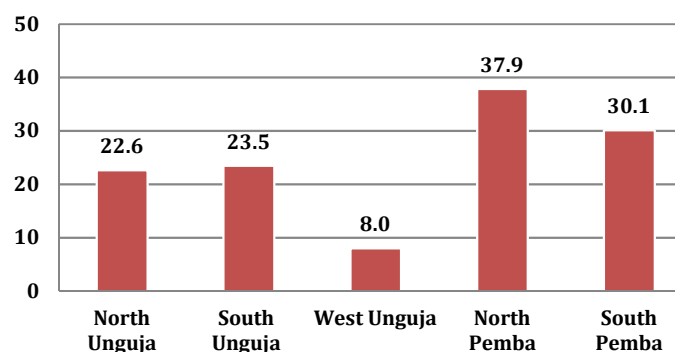
Sources: Mainland HBS 2011/12 and Zanzibar HBS 2014/15.

Source: Zanzibar HBS 2014/15.

Most of the multidimensional poverty observed in Zanzibar stemmed from a lack of access to basic services such as electricity and/or sanitation, and low levels of consumption

Poor segments of Zanzibar's population were experiencing high deprivations in a number of important dimensions of well-being, including first and foremost in access to electricity and efficient cooking fuels, followed by sanitation and consumption. As shown by Figure 3.10, more than 80 percent of the (multidimensional) poor of Zanzibar were deprived in access to consumption, electricity, efficient cooking fuels such as gas, kerosene or charcoal, and improved sanitation; and more than 40 percent of them were deprived from improved dwelling conditions such as improved walls and floors. Moreover, around one-third of the poor population remained deprived in school attendance, meaning that at least one school-age household member (7 to 15 years old) was out of school. Not surprisingly, the levels of deprivations for the whole population, including the nonpoor, followed the same trends, albeit at a lower level (Figure 3.11). For instance, Zanzibar's population experienced high levels of deprivations in cooking fuels, access to electricity, and access to sanitation. Nevertheless, Zanzibar's deprivation levels were consistently better than Mainland's figures, across almost all categories. It seemed that the only dimensions in which the

multidimensional poor of Zanzibar were worse off than their Mainland's counterparts were assets, walls, and consumption. The largest contribution of the consumption dimension suggested that all things considered, poor from Zanzibar seemed to particularly benefit from extra nonmonetary welfare compared to the poor of Mainland.

Figure 3.11: Deprivation Levels for Total Population in Zanzibar, 2014 (percentage)
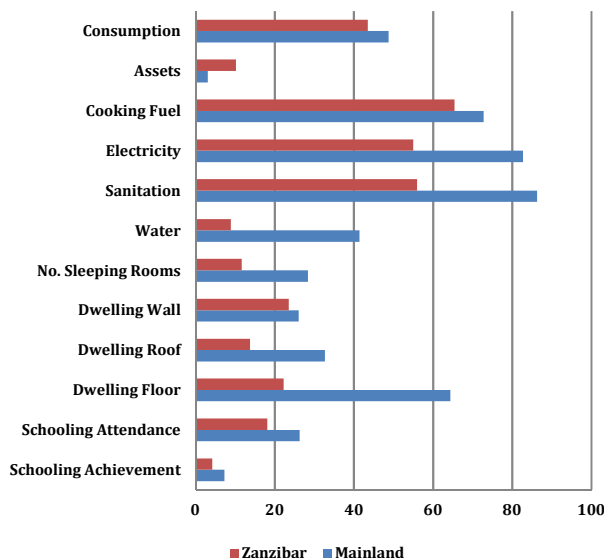
Figure 3.10: Deprivation Levels among the Poor in Zanzibar, 2014 (percentage)
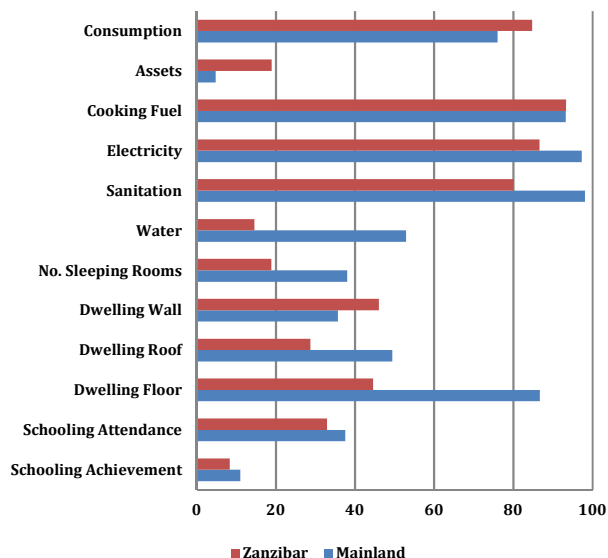
Sources: Mainland HBS 2011 and Zanzibar HBS 2014.   *Sources:* Mainland HBS 2011 and Zanzibar HBS 2014.

Zanzibar was mostly deprived in access to basic services and consumption, while deprivation in education and assets ownership remained relatively low. The contributions of access to basic services and consumption to multidimensional poverty had the highest share, each one accounting for around one-third of multidimensional poverty (Figure 3.12). In this regard, the contribution of the different dimensions was roughly similar to the breakdown observed in Mainland Tanzania. A notable difference was the highest share represented by dwelling conditions, which was 7 points higher in Mainland than in Zanzibar. All in all, the respective contributions of education and assets ownership remained very limited, pointing in a direction of good results in those areas. While sustainable and continuous efforts should be pursued and even furthered in all five dimensions, the results suggested that special emphasis should be put on developing the infrastructures that facilitated access to services and to productive jobs, and that increased the living standards of the households.

Figure 3.12: Contribution of the Different Dimensions to the MPI in Zanzibar and Mainland (percentage)
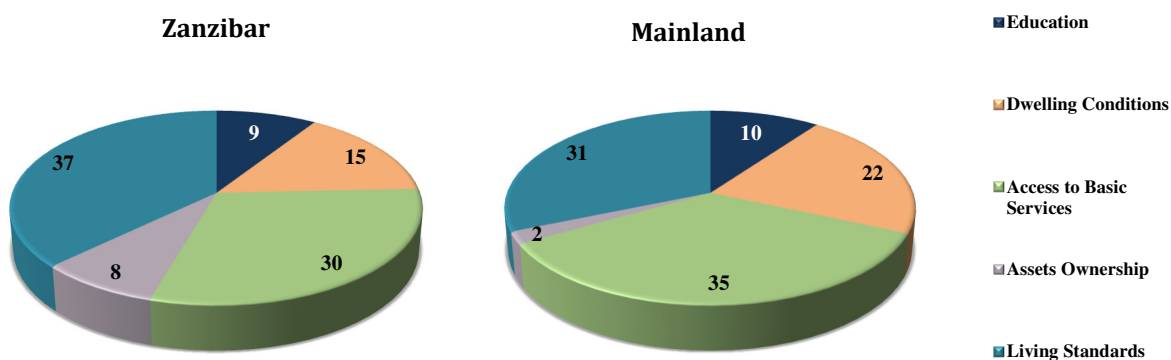
Sources: Mainland HBS 2011 and Zanzibar HBS 2014.

The regions and areas of Zanzibar had roughly the same contribution profile, with consumption and access to basic services dominating. The main difference between urban and rural areas was in the larger contribution of consumption in urban areas, which accounted for 45 percent of multidimensional poverty (Figure 3.13). Not surprisingly, such a weight of the consumption dimension was also found in West Unguja, the main urban area of Zanzibar. The contribution of dwelling conditions was also higher in rural regions than in urban centers, underlining the usual lower access to construction materials experienced by rural households compared to urban ones.

Figure 3.13: Contribution of the Different Dimensions to the MPI by Area and Region (percentage)
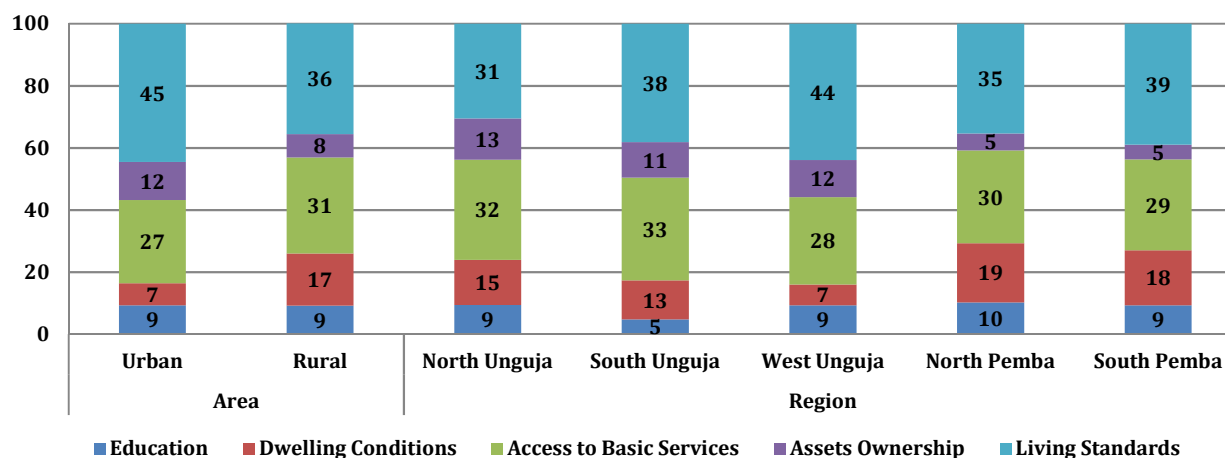
Sources: Mainland HBS 2011 and Zanzibar HBS 2014.

Chapter 4 – Labor Market and Informal Sector

Key Messages

- **The labor force in Zanzibar was fairly well educated, but it remained small, young, and disproportionately concentrated in urban areas and West Unguja;**

- **Compared to Mainland, the economy was primarily oriented toward the services sector, in particular the retail and accommodation industries, highlighting the key role played by tourism in the economic development of Zanzibar and the expansion of its labor market;**

- **The private sector remained very limited with self-employment and farm businesses dominating the labor market. Meanwhile, the public sector represented a significant share of the employment that concentrated most of the educated population;**

- **Informality in the nonagricultural sectors was much more urban- and services-oriented than in Mainland;**

- **High unemployment among the educated youth in Zanzibar was concerning;**

- **Gender inequalities in the labor market were high in both Zanzibar and Mainland, but were more substantial in the former; and**

- **Gender income gaps were largely due to differences in earning rates between women and men, rather than differences in skills and productivity.**

The Integrated Labour Force Survey (ILFS) was carried out in 2014, using the same questionnaire in both Zanzibar and Mainland Tanzania, which allowed for comparison across the two regions. The quality of the data produced reliable and significant statistics regarding the current economic situation of individuals and the state of the labor market.

Chapter 4 presents the main characteristics of Zanzibar's labor market, analyzing the key indicators such as labor force participation rate, unemployment rate, secondary employment rate, and sectoral composition, across a variety of individual-based variables such as rural/urban status, gender, and regional location. The first three parts of this chapter will focus on those key indicators and present a comparison of the labor market situation in Zanzibar and Mainland Tanzania. The fourth part will turn to the analysis of the informal sector. As in many developing countries and regions of the world, informality was overly widespread in the local agricultural sector. Many households relied on agriculture as a complementary source of income or a source of subsistence, creating distortions in the sectoral weight of the informal sector. Therefore, the collection of data on informality was limited to the nonagricultural sector and the fourth part of this chapter will focus on the informal workers only in the manufacturing and services sectors. The fifth and final part will explore the extent and underlying causes of gender revenue gaps in both Zanzibar and Mainland. The analysis will explore whether observed men-women income differentials were due to gender differences in productivity or whether equally productive workers were having different returns.

I. Snapshot of Employment in Zanzibar

Zanzibar's labor force was relatively small, young, and concentrated in urban areas

In relative terms, the labor force of Zanzibar remained small. Only 44.9 percent of the total population was in the labor force, and the working-age population (15+) accounted for slightly more than half (56.6 percent) of the total population. Therefore, in 2014, around 616,000 individuals were actively engaged in the labor force (Figure 4.1). Out of the 160,000 individuals considered as inactive, around 62 percent were pursuing studies. The level of Zanzibar's labor force participation rate and the limited size of the working-age population were primarily explained by the persistent high fertility rates, which continuously increased the weight of the non-working population. In 2014, 54.3 percent of Zanzibar's population was found to be less than 20 years old, and 30.3 percent was less than 10 years old.

Figure 4.1: A Snapshot of Jobs in Zanzibar
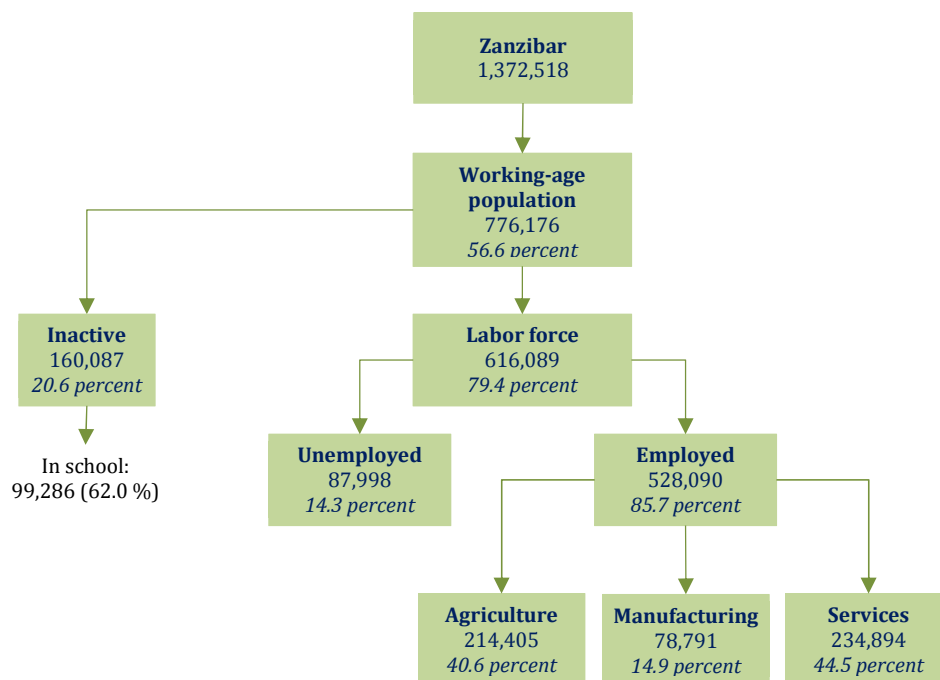
Source: ILFS 2014.

Zanzibar's labor force was very young. As new generations entered the labor market and joined the labor force, the age profile of Zanzibar's labor force became younger. As shown by Figure 4.2, half of the labor force was less than 35 years old, and almost three-quarters of it was less than 45 years old. In addition, the labor force participation rate, which represented the ratio of the population that was either employed or unemployed—that is, either working or actively seeking

work—to the inactive share of the working-age population, was only 58.4 percent in 2014 for the age group 15–24 years, meaning that a large part of the individuals from this age group were still inactive. Conversely, the labor force participation rates of the age groups 25–34, 35–44, and 45–54 stood at more than 90 percent. Those figures point in the direction of a potentially even younger labor force as individuals from the age group 15–24 progressively entered the job market.

There are some disparities in terms of labor force participation across gender and geographic areas in Zanzibar. The labor force participation rate was much higher in rural areas than in urban sectors. In 2014, the labor force participation rate of the urban population was 74.3 percent of the working-age population, almost 10 percentage points lower than the rate for rural population that stood at 83.7 percent (Figure 4.3). Labor force participation was also higher for men than women, with a difference estimated at 8 percentage points.

Figure 4.2: Labor Force by Age in Zanzibar (percentage of total labor force)
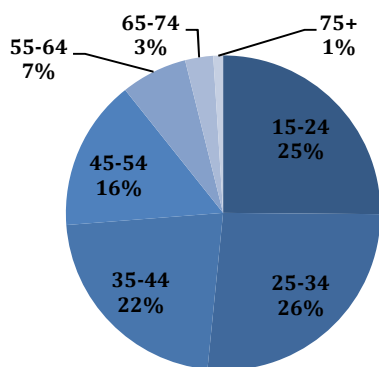
Figure 4.3: Labor Force Participation Rate by Area and Gender, Zanzibar and Mainland (percentage of working-age population)
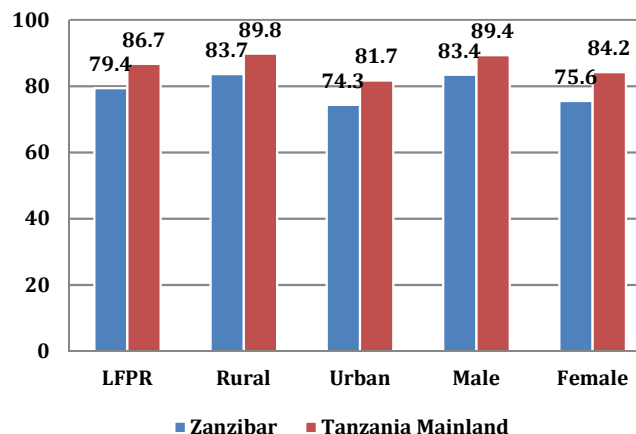
Source: ILFS 2014.

Source: ILFS 2014.
Note: The labor force participation rate represents the ratio of the population that is either employed or unemployed—that is, either working or actively seeking work—to the inactive share of the working-age population.

Zanzibar had a lower labor force participation rate compared with Mainland. The labor force participation rate in Mainland was around 7 percentage points higher than in Zanzibar (Figure 4.3). Differences between Zanzibar and Mainland in terms of participation rates were consistent across gender and areas. For instance, the urban participation rate of Zanzibar was 74.3 percent compared to 81.7 percent in Mainland. Likewise, women participation to the labor market was nearly 9 percentage points higher in Mainland than in Zanzibar.

There were discrepancies across geographic regions in terms of labor force participation, with most of the labor force being concentrated in West Unguja. In 2014, South Unguja had

the highest labor participation rate, estimated at 91.4 percent, thus more than 10 percentage points higher than Zanzibar's average (Figure 4.4). Conversely, the participation rate in West Unguja was only 75.3 percent. The other regions of Zanzibar had a labor participation rate hovering around 80 percent in 2014. However, because of the higher concentration of the population in West Unguja, nearly half of the total labor force was concentrated there (Figure 4.5). Conversely, only 10 percent of the total labor force lived in South Unguja and around 30 percent was in Pemba.

Figure 4.4 Labor Force Participation Rate by Regions (percentage of regional working-age population)
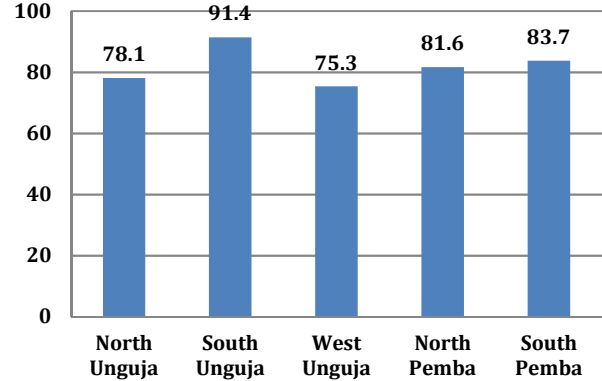
Figure 4.5: Concentration of Labor Force Population across Regions (percentage)
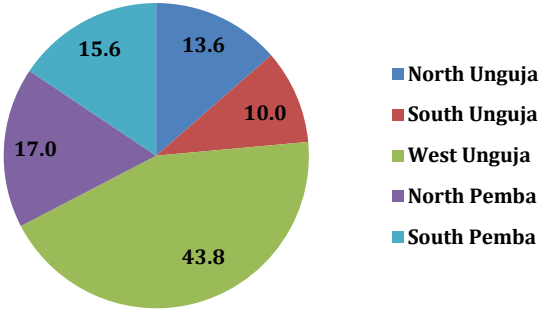
Source: ILFS 2014.

Source: ILFS 2014.

Note:
- Regional labor force participation rates measured, within each region, the ratio of the population that was either employed or unemployed to the inactive share of the working-age population, regardless of the absolute size of the population.
- Concentration of the labor force measured the geographical repartition of the labor force by regions.

Zanzibar's labor force had better education levels than in Mainland, with internal discrepancies existing across rural-urban areas and between genders.

Zanzibar's labor force was fairly well educated. Only 16 percent of the workforce had no formal education and nearly 48 percent had reached lower secondary education. Education levels in Zanzibar seemed to be higher than in Mainland. The proportion of the labor force with no formal education in Mainland was similar to that in Zanzibar, yet fewer workers in Mainland (only 14 percent) had attained lower secondary education levels (Figure 4.6). Similarly, while around 3 percent of Mainland's labor force had reached university levels, the share rose to 6 percent in Zanzibar.

Figure 4.6: Educational Attainment of Labor Force in Zanzibar and Mainland Tanzania, 2014 (percentage of labor force)
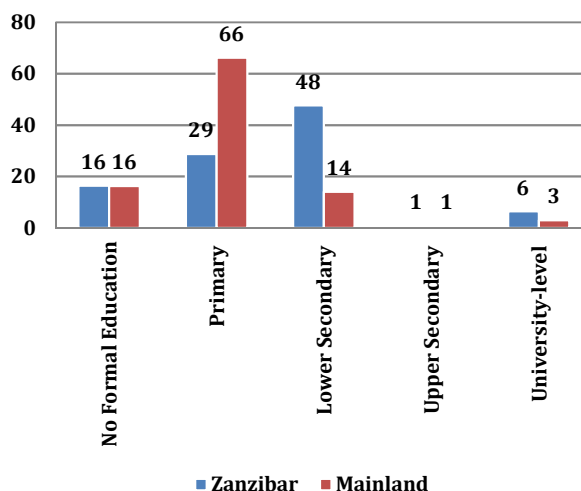
Figure 4.7: Educational Attainment of Labor Force by Area and Gender in Zanzibar, 2014 (percentage of labor force)
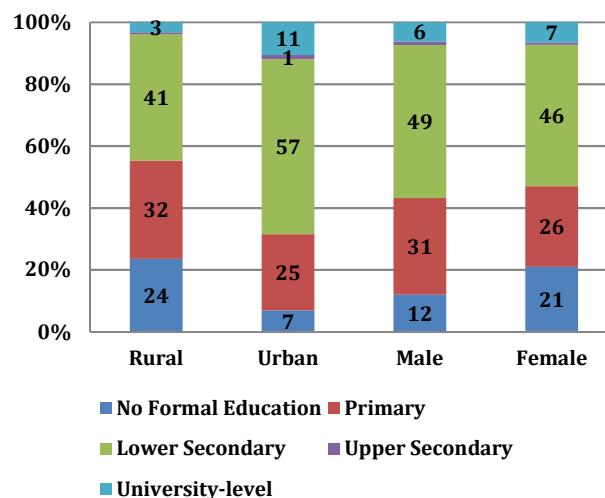
Source: ILFS 2014.

Source: ILFS 2014.

Urban and male workers in Zanzibar had higher education levels than their rural and female counterparts. Around one quarter of rural workers had no formal education compared to only 7 percent of urban workers (Figure 4.7). Conversely, two-thirds of urban workers had at least reached lower secondary education compared to slightly less than half of rural workers. Likewise, tertiary education was much more important in urban areas. Aside from the overall structural differences existing between Zanzibar and Mainland in terms of educational achievement, Mainland displayed the same discrepancies as Zanzibar, as 22 percent of rural workers did not have any formal education compared to 7 percent of urban workers, whereas one-third of Mainland's urban workers reached at least lower secondary education against only 10 percent for rural workers. Some discrepancies in education levels were also observed between men and women, particularly for those who had not received any formal education: while 12 percent of male workers had no formal education, the share reached 21 percent for female workers. However, the shares of male and female workers that completed lower secondary education and tertiary education were fairly close: nearly half of male workers attained lower secondary education compared to 46 percent for female workers; and 6 percent of men reached university levels compared to nearly 7 of women.

A lower proportion of workers benefited from training in Zanzibar compared to Mainland. While 11 percent of Mainland's workers received training, the same figure only attained 4 percent in Zanzibar (Figure 4.8). Training delivered in Zanzibar tended to take more informal forms than in Mainland. In Mainland, 36 percent of trained workers received college- or certificate-type training, compared to 14 percent in Zanzibar. While the proportion of trained workers that received training through informal apprenticeship was similar (around one-third in Mainland and Zanzibar), only 12 percent of the training received by Mainland Tanzania's workers was carried on the job

compared to 35 percent in Zanzibar, which suggests the existence of less formal ways of training in Zanzibar, mostly carried out by employers that trained the workforce according to the needs of their business (Figure 4.9).

Figure 4.8: Training Rate (percentage of labor force)
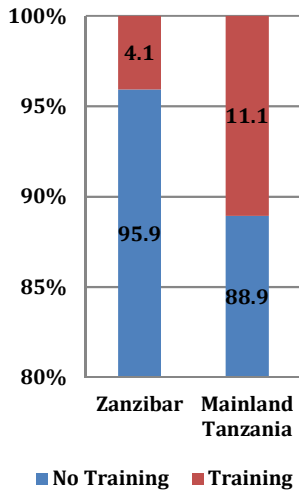
Figure 4.9: Type of Training Received (percentage of labor force trained)
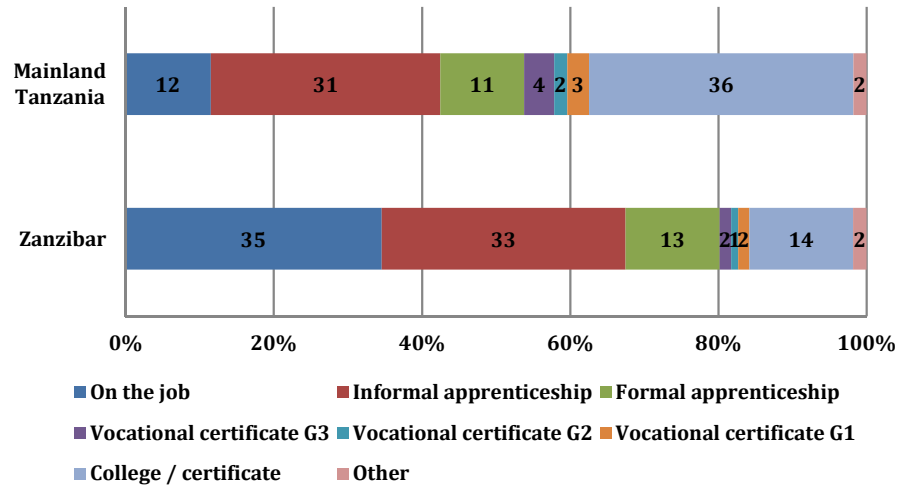
Source: ILFS 2014.

Source: ILFS 2014.

II. Sectoral Composition of the Labor Market

Services, followed by agriculture, were the largest sectors in Zanzibar, and employment in services and manufacturing was much more prevalent than in Mainland

While the bulk of Zanzibar's labor force was employed in services and agriculture, the latter weighed much less than in Mainland. Out of the 528,000 employed Zanzibaris (Figure 4.10), around 44 percent worked in services, 41 percent in agriculture, and 15 percent in manufacturing. The size of the service sector was particularly important compared to Mainland, where the services sector accounted for only one quarter of the jobs (Figure 4.11). Likewise, employment in manufacturing was lower in Mainland, where the sector employed only 6.3 percent of the employed workforce. Interestingly, while the agricultural sector employed two-fifths of the population in Zanzibar, it was significantly less than in Mainland where agriculture was dominant and employed more than two-thirds of the employed workforce. Finally, aside from the existing structural differences between Zanzibar and Mainland, no major discrepancies existed across gender at Zanzibar and Mainland's level. The profiles of men and women in Zanzibar in terms of sectors of activity displayed similarities. The same was true in Mainland where roughly the same share of men and women were employed in the different sectors of the economy (Figure 4.12).

Figure 4.10: Sectoral Composition of Zanzibar, 2014 (percentage of the workforce)

■ Agriculture ■ Manufacturing ■ Services
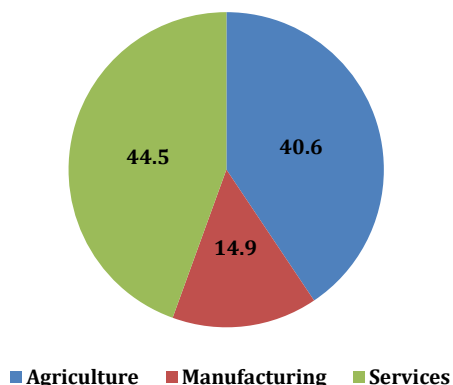
Source: ILFS 2014 Zanzibar.

Figure 4.11: Sectoral Composition of Mainland Tanzania, 2014 (percentage of the workforce)

■ Agriculture ■ Manufacturing ■ Services
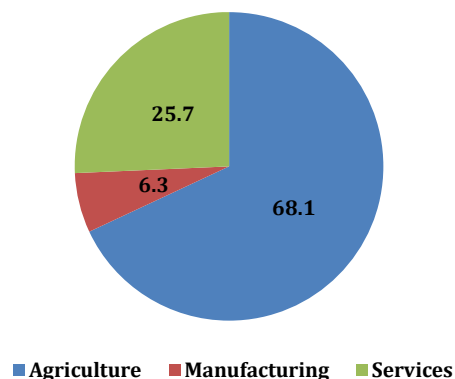
Source: ILFS 2014 Mainland.

Important differences existed between rural and urban areas in terms of sectoral composition of employment. Zanzibar's rural and urban areas had very different sectoral compositions. In the rural sector, nearly 59 percent of the employed labor force was in agriculture compared to only 11 percent in urban areas (Figure 4.13). Conversely, the service sector represented only 28 percent of rural employment, while it accounted for 71 percent of urban work. Furthermore, the urban sectoral composition of Zanzibar was very similar to the sectoral composition of Dar es Salaam. Likewise, the sectoral composition of Zanzibar's rural sector roughly followed the same pattern as the sectoral composition of rural areas in Mainland, although the services and manufacturing sectors in rural Zanzibar had larger employment shares than in rural Mainland. For instance, while only 9 percent of the employed labor force of rural Mainland worked in the services sector, almost 28 percent of the rural labor force of Zanzibar did so.

Figure 4.12: Sectoral Composition of Zanzibar and Mainland Tanzania by Gender, 2014 (percentage of labor force)
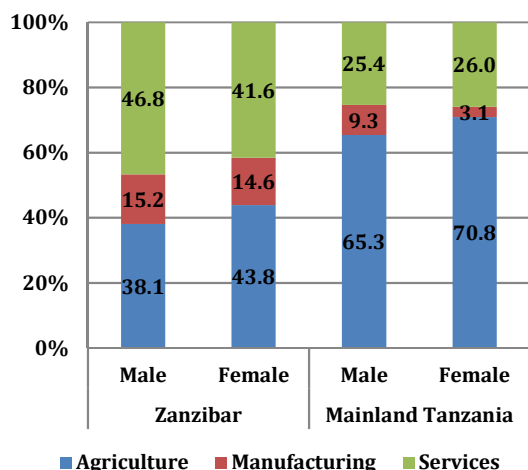
Source: ILFS 2014.

Figure 4.13: Sectoral Composition of Zanzibar and Mainland Tanzania by Area, 2014 (percentage of labor force)
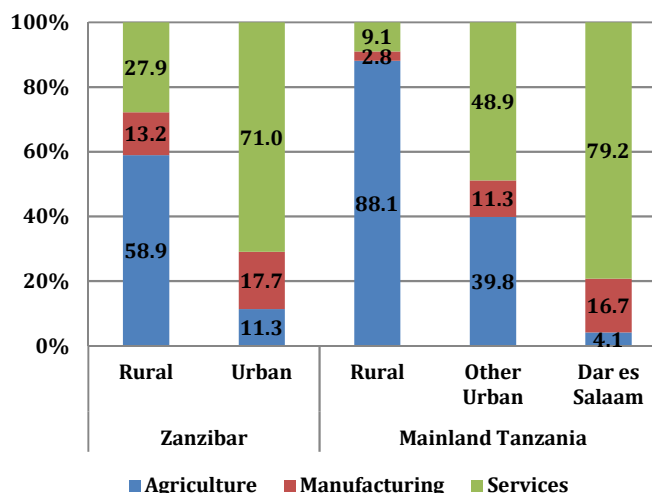
Source: ILFS 2014.

Significant differences also existed between the various regions of Zanzibar in terms of the sectoral composition of employment. The sectoral composition of the different regions of Zanzibar directly drew on the urban/rural divide identified and the rate of urbanization of these regions. Concentrating most of Zanzibar's urban population, West Unguja had about 72 percent of its workforce employed in the service sector, 18 percent in manufacturing, and only 11 percent in agricultural (Figure 4.14). The rest of the regions had a sectoral composition of employment that was similar to rural areas, with most of the employment concentrated in agriculture, followed by services.

Figure 4.14: Sectoral Composition by Regions, 2014 (percentage of labor force)
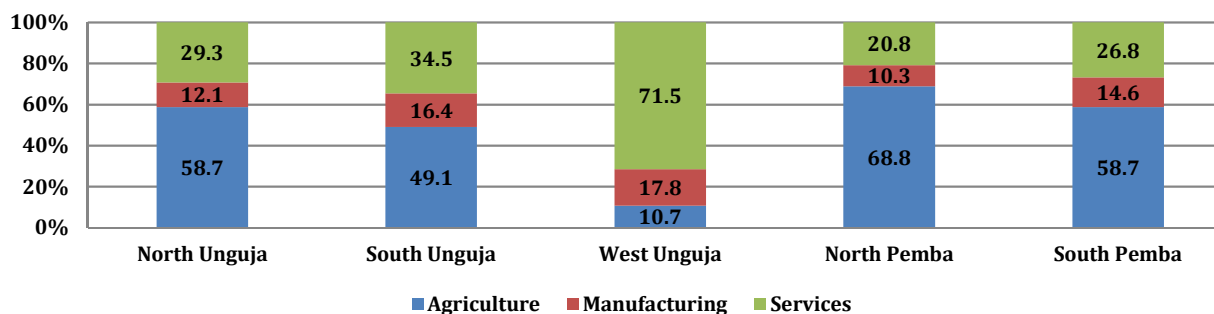
Source: ILFS 2014.

The size of the service sector in Zanzibar was primarily explained by the importance of the accommodation industry. A more detailed look at the sub-sectoral composition at the national and regional levels in Zanzibar revealed the importance of the accommodation and food service

activities, and to a lesser extent, of manufacturing, construction and wholesale industries. The share of accommodation and food service activities in Zanzibar was around 6 percentage points higher than in Mainland, employing 10 percent of the labor force in the former, compared to 4 percent in the later (Table 4.1). The share of accommodation activities was particularly important in the urban region of West Unguja as well as in South Unguja, where it respectively accounted for 15 percent and 10 percent of employment. The discrepancies between Zanzibar and Mainland highlighted the importance of the tourism sector in Zanzibar. To a lesser degree, manufacturing, construction, and wholesale activities also contributed to the differences in sectoral composition of employment observed between Zanzibar and Mainland. The manufacturing and construction's employment shares were respectively 5.7 and 3 points higher in Zanzibar than in Mainland, explaining most of the nearly 9-point differential in terms of employment share of the manufacturing sector between Zanzibar and Mainland. Likewise, the share of wholesale and retail trade activities in Zanzibar was 2.5 percentage points higher than in Mainland Tanzania.

Table 4.1: Sub-Sectoral Composition in Zanzibar and Mainland Tanzania, 2014 (percentage of labor force)

	Zanzibar (A)	Mainland (B)	Δ (A–B)
Agriculture	**40.6**	**68.1**	**−27.5**
Agriculture, forestry and fishing	40.6	68.1	−27.5
Manufacturing	**14.9**	**6.3**	**8.7**
Mining and quarrying	0.8	1.1	−0.3
Manufacturing	8.7	3.0	5.7
Electricity, gas, steam and air conditioning supply	0.2	0.1	0.1
Water supply, sewerage, waste management and remediation activities	0.3	0.1	0.2
Construction	5.0	2.1	3.0
Services	**44.5**	**25.7**	**18.8**
Wholesale and retail trade, repair of motor vehicles and motorcycles	14.7	12.2	2.5
Transportation and storage	4.3	2.5	1.8
Accommodation and food service activities	9.6	3.8	5.8
Information and communication	0.5	0.2	0.3
Financial and insurance activities	0.5	0.4	0.1
Real estate activities	0.0	0.0	0.0
Professional, scientific and technical activities	0.1	0.1	0.0
Administrative and support service activities	0.9	0.6	0.2
Public administration and defense; compulsory social security	5.9	0.9	5.0
Education	4.0	2.0	2.0
Human health and social work activities	1.1	0.8	0.4
Arts, entertainment and recreation	0.5	0.1	0.4
Other service activities	2.2	1.0	1.2
Activities of Household as employers	0.4	1.1	−0.8

Source: ILFS 2014.

The economy was dominated by self-employment, while the private sector remained limited

Apart from the share of the population engaged in agriculture, the majority of Zanzibar's labor force worked under the form of self-employment, while better forms of employment seemed to accrue individuals with higher levels of education. The dominant form of employment outside of agriculture was self-employment, accounting for around one-third of the labor force (Figure 4.15). Interestingly, the public sector represented a significant share of Zanzibar's employment, representing 11 percent of the workforce. Conversely, the private sector,

which actually entails waged employees engaged in private activities, only represented 15 percent of the labor force. Not surprisingly, higher levels of education were associated with better and more secure jobs, in particular in the public sector. The descriptive statistics of education crossed with the type of employment revealed that higher levels of education were primarily found in the public sector, and to a lesser extent in the private sector (waged employees). As the type of employment declined in attractiveness and quality—which refers to self-employment and farm businesses—the level of education appeared to decline (Figure 4.16). Almost half of the self-employed and three quarters of those working in farm businesses had a lower level of education than lower secondary.

Figure 4.15: Type of Employment, 2014 (percentage of labor force)

Source: ILFS 2014.

Figure 4.16: Type of Employment by Education, 2014 (percentage of labor force)
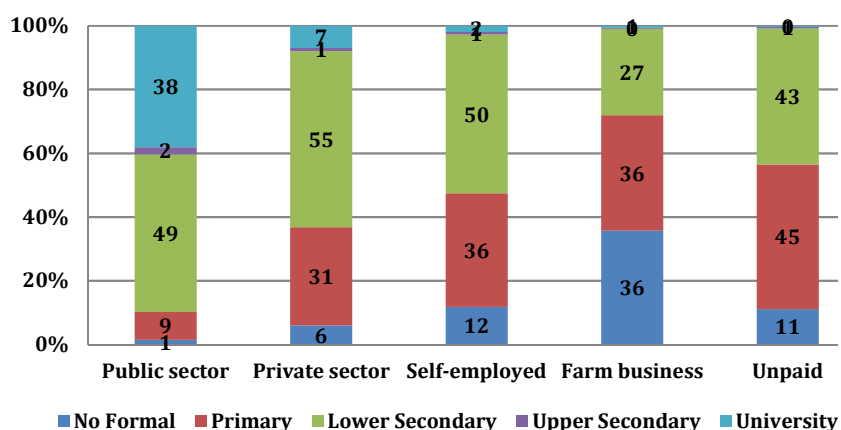
Source: ILFS 2014.

Around one quarter of the labor force had a secondary job, primarily diversifying in agriculture

Employment diversification under the form of secondary employment was quite high in Zanzibar, particularly among male workers and in rural areas. Around 27 percent of Zanzibar's labor force had a second job (Figure 4.17). The secondary employment rate of male workers was 16 percentage points higher than the rate of female workers, and workers from rural areas were also more prone to have a second job than workers from urban areas—the secondary employment rate in rural areas was 37 percent, compared to 13 percent in urban areas. Secondary employment was also slightly more prevalent in Zanzibar than in Mainland, by around 4 percentage points.

Figure 4.17: Rate of Secondary Employment by Gender and Area in Zanzibar and Mainland Tanzania, 2014 (percentage of labor force)
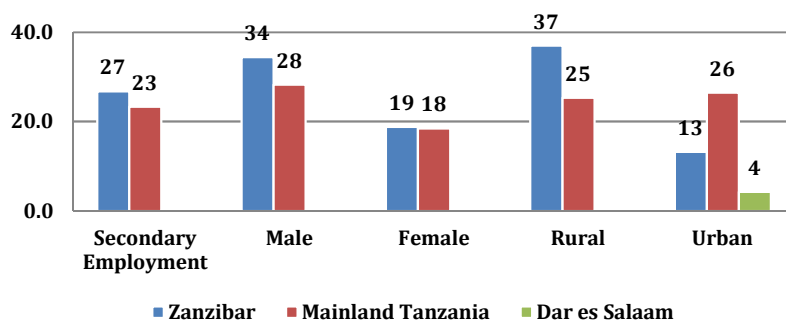
Figure 4.18: Sectoral Composition of Secondary Employment in Zanzibar and Mainland, 2014
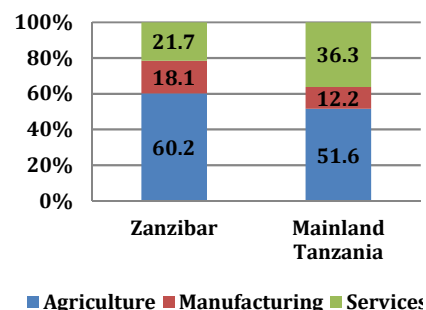
Source: ILFS 2014.

Source: ILFS 2014.

Secondary employment was primarily oriented toward agricultural activities. As shown by Figure 4.18, more than 60 percent of the workers with a second job diversified in agriculture, 22 percent in services and 18 percent in manufacturing. Additionally, no matter the primary sector of employment, most of the diversification observed in Zanzibar occurred toward agriculture (Figure 4.19). Half of the workers whose main job was in agriculture also had a secondary job in agriculture, while 70 percent and 63 percent of the workers whose main job was respectively in manufacturing and services had their secondary job in agriculture. In comparison, diversification through secondary employment tended to be less oriented toward agriculture in Mainland. More than one-third of the secondary employment occurred in services, a significantly higher rate than in Zanzibar.

Figure 4.19: Sectoral Composition of Secondary Employment by Primary Sector of Employment in Zanzibar, 2014 (percentage)
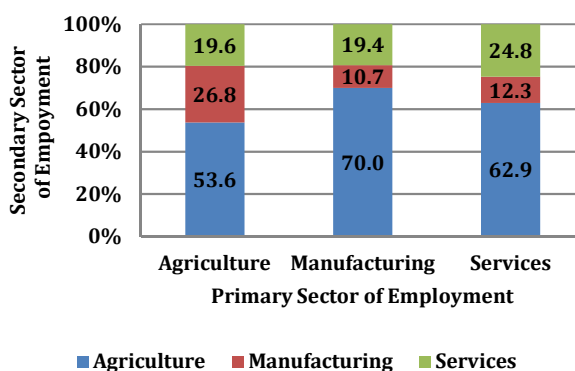
Figure 4.20: Rate of Secondary Employment by Monthly Total Income of Households in Zanzibar, 2014 (percentage of households)
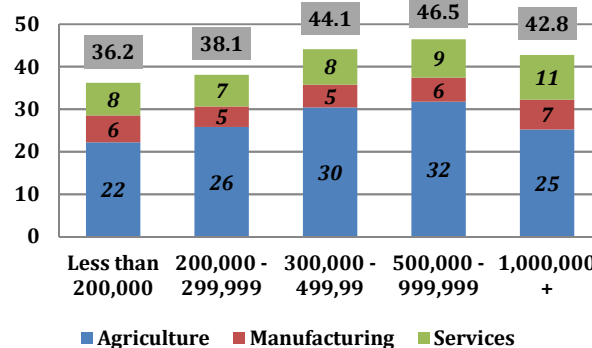
Source: ILFS 2014.

Source: ILFS 2014.

Employment diversification also tended to happen across all households' income groups. The secondary employment rate for heads of households hovered between 35 and 45 percent across all

levels of income, and seemed to be slightly higher among households with higher income levels. As shown by Figure 4.20, the rate of households' heads with a second job tended to increase as the monthly total income of the household increased. For instance, around 36 percent of the heads of households' with a monthly total income of less than TZS 200,000 had a secondary job, while 43 percent of heads of households with a monthly total income superior to TZS 1 million had a second job. However, the underlying reasons explaining this phenomenon were not entirely clear, as the household's monthly income was susceptible to a natural increase when the head had a secondary job, deepening the existing discrepancy between poor and richer households in terms of secondary employment rate. Moreover, the target sector of diversification did not seem to be influenced either by the level of revenues as the shares of the different sectors remained more or less constant across the income groups.

Differences in terms of households' sources and levels of income seemed to be primarily driven by gender and education

Income derived from wages and nonfarm business in Zanzibar was much more important than in Mainland Tanzania. Around one-third of the households in Zanzibar derived their main source of income from paid employment and the other two-thirds, respectively 29 percent and 33 percent, derived their main source of income from nonfarm business and agriculture (Figure 4.21). Conversely, nearly 60 percent of households in Mainland had their main source of income from agriculture, while paid employment was the main source of income for only 16 percent of the households (Figure 4.22). Finally, remittances seemed to have a slightly larger contribution to households' livings standards in Zanzibar than in Mainland as they represented the main source of income for 5 percent of the households in Zanzibar compared to less than 3 percent in Mainland.[14]

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[14] The data available displayed some shortcomings in the cross analysis of migration status and remittances. A central question concerning the resources of Zanzibar's households had been the extent of the phenomenon of members of households from Zanzibar migrating to Mainland and sending back remittances. While the data allowed knowing which household received remittances, it was not possible to identify if those remittances were the product of an internal migration within Tanzania, from Zanzibar to Mainland. Moreover, the data from Mainland allow us to identify how many households migrated internally from Zanzibar to Mainland. The results were strikingly low, as only 0.5 percent of the migrant households seemed to come from Zanzibar. Such results raised the question of the quality of the data when it came to internal migration and the difficulty to capture the phenomenon of internal remittances.

Figure 4.21: Main Source of Income of Households in Zanzibar, 2014 (percentage of households)

- ■ Paid employment
- ■ Non-farm business
- ■ Agricultural income
- ■ Remittances
- ■ Pensions and other
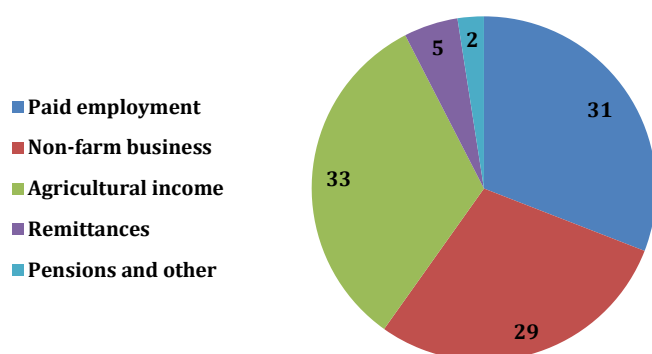
Source: ILFS 2014.

Figure 4.22: Main Source of Income of Households in Mainland, 2014 (percentage of households)
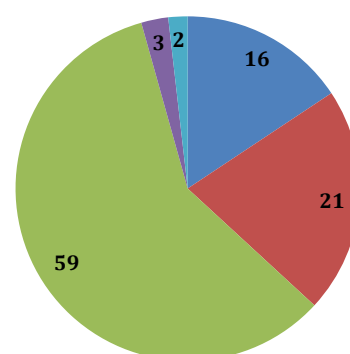
Source: ILFS 2014.

Interestingly, paid employment and nonagricultural income in rural areas of Zanzibar were much more developed than in Mainland's rural areas. While the bulk of rural households in Mainland (82.4 percent) derived their primary income from agriculture, only half of Zanzibar's rural households did so (Figure 4.23). Conversely, about two-fifths, respectively 22 percent and 20 percent, of rural households in Zanzibar had their main sources of income stemming from non-farm business and wage employment. Urban households in Zanzibar showed similar profiles of income source as households in Dar es Salaam, with 45 percent of households deriving their main income from paid employment, 38 percent from nonfarm business and only 8 percent from agriculture.

Figure 4.23: Main Source of Income by Area in Zanzibar and Mainland Tanzania, 2014 (percentage of households)
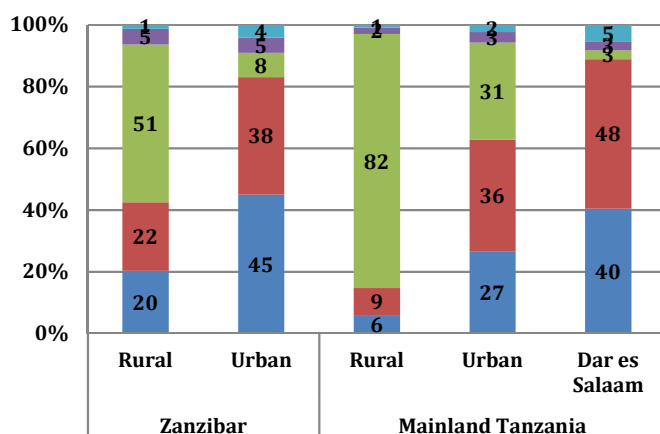

Figure 4.24: Households Receiving Remittances from Within Tanzania by Heads' Gender, 2014 (percentage of households)
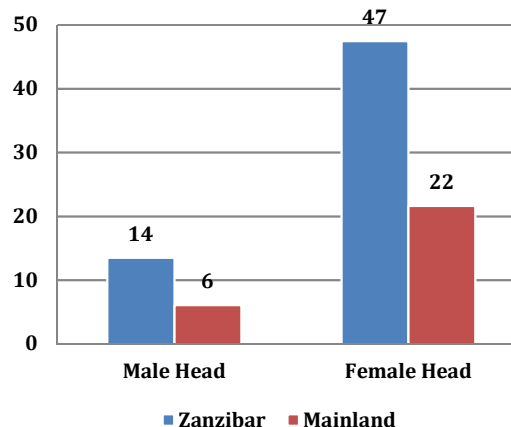
Source: ILFS 2014.

Source: ILFS 2014.

Households headed by women were less likely to have paid employment as their main source of income but were more prone to rely on remittances. While 34 percent of households headed by men derived their main source of income from paid employment, only 21 percent of women-headed households did so (Figure 4.25). Interestingly, 16 percent of households headed by women had their main source of income stemming from remittances, which was 14 percentage points higher than for households headed by men. Moreover, almost half of Zanzibar's households headed by women received some sort of remittances from within Tanzania, whether it was their main source of income or not (Figure 4.24). In comparison, only 22 percent of Zanzibar's households headed by men received such remittances. The reason behind such a high proportion of women-headed households receiving remittances could be the presence of the spouse in other regions of Mainland sending back remittances to Zanzibar. Finally, while differences in terms of income source and depending on the gender of the head did also exist in Mainland, they were less pronounced than in Zanzibar. Households headed by females were more prone to receive remittances (22 percent of female-headed households against 6 percent of male-headed households), but the proportion of households, whether headed by men or women, for which remittances constituted the main source of income remained very limited (1 and 6 percent respectively).

Figure 4.25: Main Source of Income by Gender, 2014 (percentage of households)
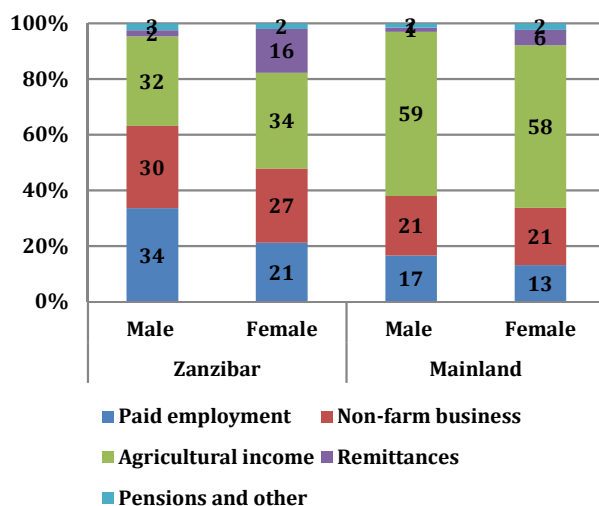
Source: ILFS 2014.

Figure 4.26: Main Source of Income by Education, 2014 (percentage of households)
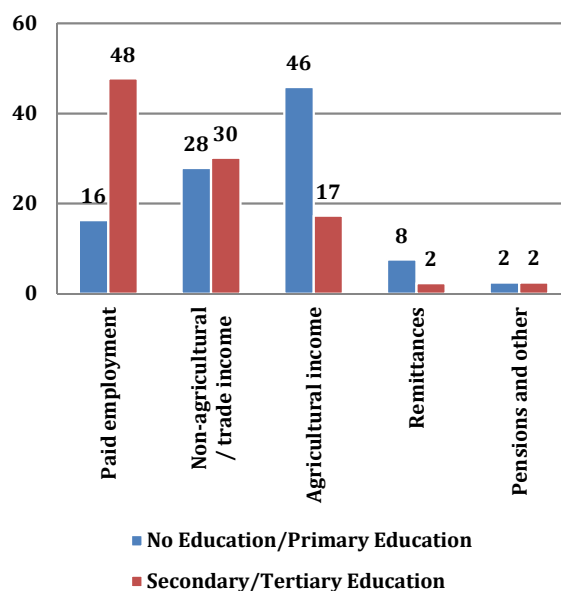
*Source:* ILFS 2014.

Households whose heads had higher educational levels were more likely to rely on paid employment as their main source of income. Only 16 percent of households whose heads had no education or completed primary education derived their main source of income from paid employment compared to almost half of households whose heads had completed secondary or

tertiary education (Figure 4.26). Conversely, 46 percent of households whose heads had no education or had completed primary education derived their main source of income from agriculture-related activities, compared to only 17 percent of households whose heads had completed secondary or tertiary education.

Zanzibar's level of household income was higher than in Mainland. Around one-fifth of Zanzibar's households had a total monthly income that was less than TZS 200,000 compared to almost three-fifths in Mainland (Figure 4.27). Furthermore, households with a total monthly income superior to TZS 500,000 accounted for 27 percent compared to 15 percent in Mainland. Interestingly, while huge differences in terms of level of income existed across rural and urban households in Mainland, it did not appear to be the case in Zanzibar (Figure 4.28). For instance, 19 percent of Zanzibar's urban households earned less than TZS 200,000, compared to 23 percent of rural households. Likewise, 27 percent of rural households had a monthly total income comprised between TZS 300,000 and TZS 500,000 compared to 30 percent in urban areas of Zanzibar.

Figure 4.27: Monthly Total Income of Households in Zanzibar and Mainland Tanzania, 2014 (percentage of households)
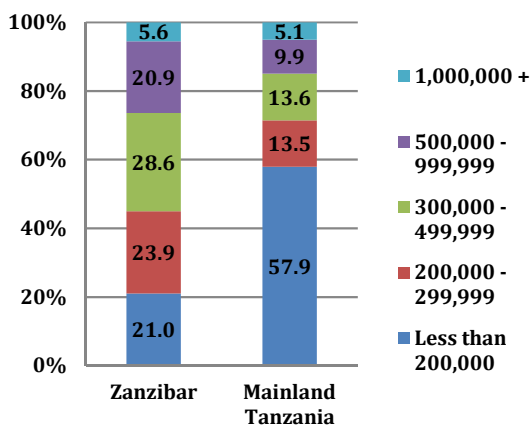
Source: ILFS 2014.

Figure 4.28: Monthly Total Income of Households by Area in Zanzibar and Mainland Tanzania, 2014 (percentage of households)
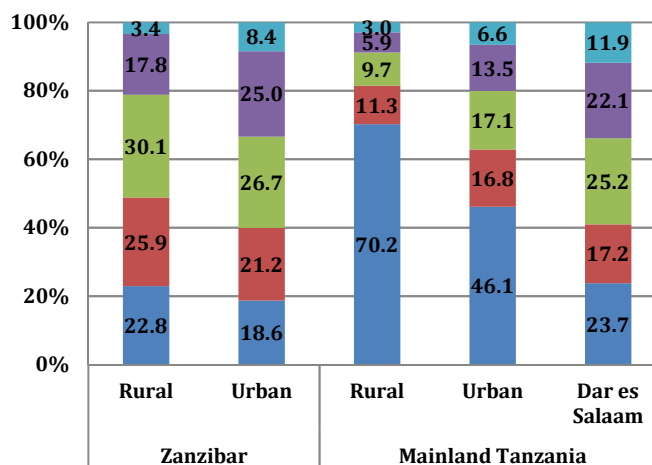
Source: ILFS 2014.

Households whose heads worked in services and derived their income from paid employment tends to have higher revenues than households working in agriculture. As shown by Figures 4.29 and 4.30, the proportion of heads working in agriculture and deriving their income from agricultural activities progressively dropped as the monthly income of the household increased. Heads working in the agricultural sector accounted for around half of the households with a monthly total income lower than TZS 200,000, and only 21 percent of those with a total income superior to TZS 1 million per month. The pattern was inverted for services as the proportion of heads working in services increased as the monthly income of the household increased—around 70 percent of heads whose monthly income was superior to TZS 1 million worked in services. Likewise, half of the households that had a monthly total income superior to TZS 1 million derived

their main income from paid employment compared to only 15 percent from agricultural activities. Interestingly, the poorest households tended to rely more heavily on remittances. The share of households with an income lower than TZS 200,000 whose main source of income was 13 percentage points higher than for households with an income superior to TZS 1 million.

Figure 4.29: Monthly Total Income of Households by Sector, 2014 (percentage of households)
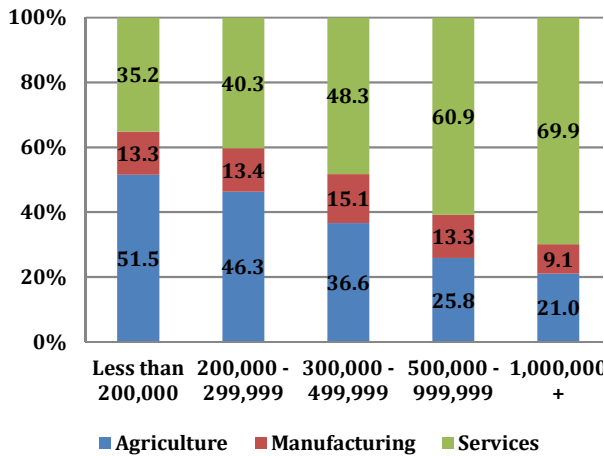
Figure 4.30: Monthly Total Income of Households by Main Source of Income, 2014 (percentage of households)
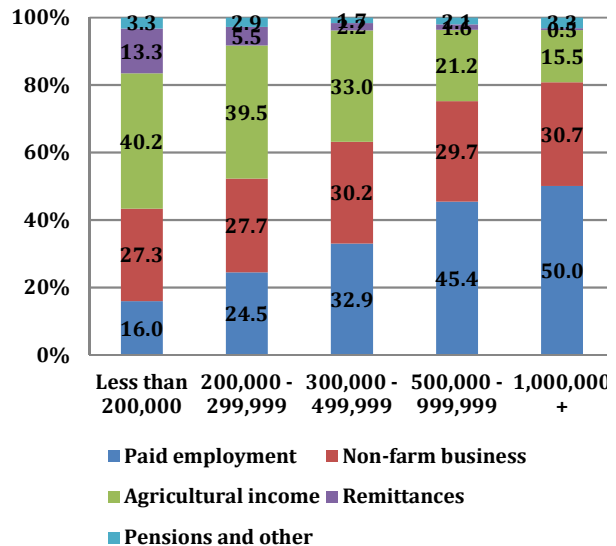
Source: ILFS 2014.

Source: ILFS 2014.

III. Unemployment and Underemployment

Unemployment primarily affected young urban women with lower secondary education

Zanzibar suffered from high unemployment rates that primarily affected the youngest workers, and unemployment was consistently higher in Zanzibar than in Mainland. The unemployment rate stood at 14 percent in Zanzibar, which was 9 percentage points higher than the unemployment rate of Mainland (Figure 4.31). Figure 4.32 suggested that unemployment particularly affects youngest workers. The unemployment rate for the age group 15−24 in Zanzibar was estimated at 27 percent, compared to 9 percent in Mainland for the same age group. Likewise, the unemployment rate of the age group 25−34 in Zanzibar stood at 17 percent compared to 6 percent in Mainland.

Figure 4.31: Unemployment Rate in Zanzibar and Mainland Tanzania, 2014
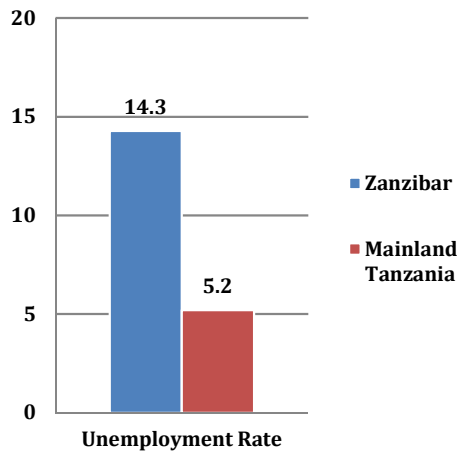

Source: ILFS 2014.

Figure 4.32: Unemployment Rate by Age in Zanzibar and Tanzania, 2014
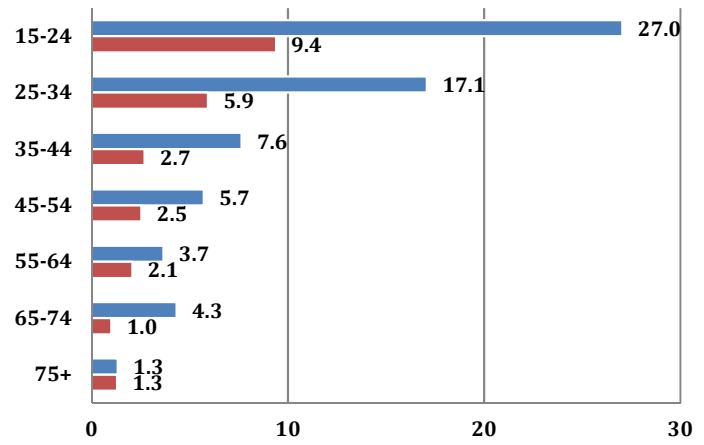
Source: ILFS 2014.

Unemployment significantly affected more women than men, which was a common feature with Mainland. While the unemployment rate of male workers in Zanzibar was 6 percent in 2014, the unemployment rate of female workers was more than 15 percentage points higher (Figure 4.33). Although male workers from Zanzibar had a higher unemployment rate than their counterparts from Mainland by around 3 percentage points, the differential between Zanzibar and Mainland was much more important in the case of women. The unemployment rate of female workers in Mainland was 7 percent, which represented a difference of 15 percentage points with the unemployment rate of female workers in Zanzibar. Sociocultural norms might have played a role in explaining such an important unemployment rate among women in Zanzibar. While 87 percent of the unemployed men were single, only around one-third of unemployed women were single (Figure 4.34). The vast majority (59 percent) were married, underlining potential causes for women's unemployment related to early marriage or a husband's authority keeping married women away from work.

Figure 4.33: Unemployment Rate by Gender in Zanzibar and Mainland Tanzania, 2014
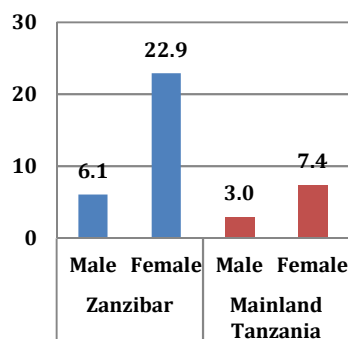
Figure 4.34: Marital Status of Unemployed Men and Women, 2014 (percentage of population)
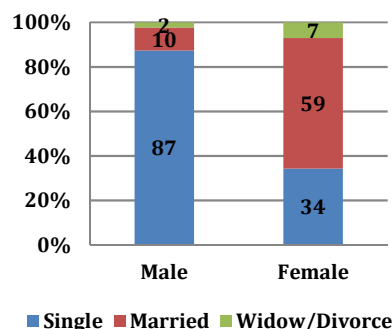
Figure 4.35: Unemployment Rate by Area in Zanzibar and Mainland Tanzania, 2014
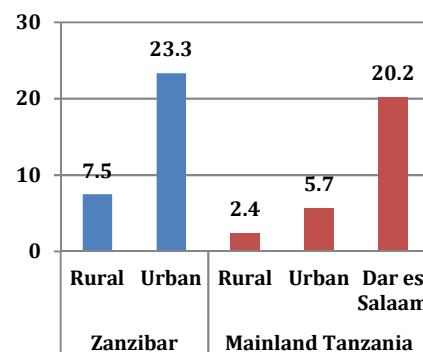
Source: ILFS 2014.

Source: ILFS 2014.

Unemployment was also much more significant in urban areas than in rural areas, which triggered important discrepancies across Zanzibar's regions. The unemployment rate in Zanzibar's rural areas was 7.5 percent, compared to 23.3 percent in urban areas (Figure 4.35). Compared to Mainland, Zanzibar's rural areas had higher unemployment rates by around 5 percentage points. Interestingly, the unemployment rate of Zanzibar's urban area compared to the rate observed in Dar es Salaam (20 percent), rather than to the ones of other urban centers of Mainland (6 percent). The consequence of those high unemployment rates in urban areas led to high unemployment rates in West Unguja (23.1 percent) where most of the urban population was concentrated. Compared to Zanzibar's other regions, it represented a differential superior to 10 percentage points (Figure 4.36). The second highest unemployment rate was found in North Unguja at 10.1 percent. Conversely, South Unguja exhibited the lowest unemployment rate with 3.9 percent.

Unemployment in Zanzibar primarily affected individuals with lower secondary education. The unemployment rate of individuals with no formal education was 7 percent compared to 12 percent for those with primary education, 19 percent for those with lower secondary education, and 11 percent for those with university-level education. However, given the predominance of individuals with lower secondary education, the majority of unemployed individuals in Zanzibar had lower secondary education (Figure 4.37). Around two-thirds of Zanzibar's unemployed individuals completed lower secondary and one quarter had completed primary education. Conversely, only 8 percent of the unemployed had no formal education. These results pointed to the inability of the labor market in Zanzibar to generate jobs commensurate with the education and aspirations of a young workforce.

**Figure 4.36: Unemployment Rate by Regions, 2014**
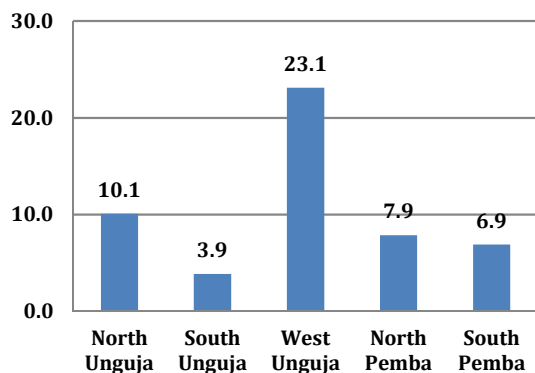
Source: ILFS 2014.

Figure 4.37: Educational Level of Unemployed Labor Force (percentage of unemployed individuals)
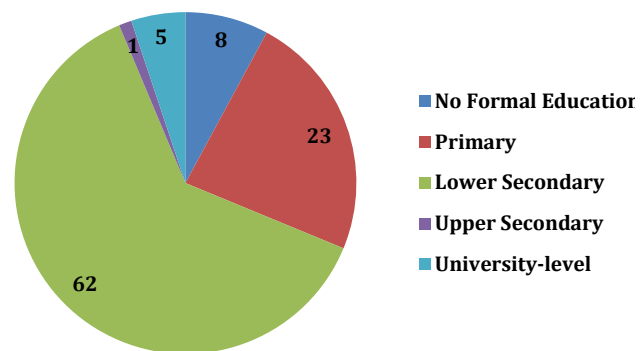
Source: ILFS 2014.

The high unemployment rates of urban and educated young people also raised the question of the education's quality. While most of the poverty reduction, particularly in urban areas, seemed to have been driven by increased returns to education that drove down poverty, unemployment of educated youth in urban areas remained very high. A possible interpretation of such a contradiction might be related to the quality of the education in Zanzibar. Similarly to Mainland and other SSA countries, the quality of primary and secondary education had been declining with the substantial expansion of the system's capacity over the past 10–15 years. Consequently, the low quality of education primarily affected the young generations, as the years of schooling of slightly older adults were of better quality than the same years of schooling of youth and young adults today. Therefore, the relative poor quality of the education in Zanzibar and the subsequent mismatch existing between the education provided and the needs of the hiring companies might have explained the high unemployment rates, in particular when it came to young workers. This dynamic also directly influenced the training landscape. The low quality of the education received by young workers forced companies to undertake training programs in order to level up the skills of their employees to the level required by their operations. It was therefore not surprising that 35 percent of the trainings in Zanzibar were carried out on the job and organized by the employers.

Long-term unemployment appeared more prevalent in Zanzibar than in Mainland, with no major differences across gender and areas. While 63 percent of the unemployed labor force in Mainland had been unemployed for more than a year, the proportion rose to 81 percent in Zanzibar, underlying a larger phenomenon of long-term unemployment in the latter (Figure 4.38). Conversely, 12 percent of the unemployed labor force of Mainland Tanzania had been unemployed for less than 3 months whereas there were only 6 percent in the same case in Zanzibar. The duration of unemployment did not vary significantly across gender. However, important discrepancies existed across rural areas in Zanzibar and Mainland. While 77 percent of the unemployed rural labor force in Zanzibar had been out of a job for more than a year, the proportion fell to 45 percent

in rural areas of Mainland. Likewise, 15 percent of the unemployed rural labor force in Zanzibar had been unemployed for less than 6 months, whereas more than 30 percent of the rural unemployed labor force in Mainland was in the same situation.

Figure 4.38: Duration of Unemployment by Gender and Area in Zanzibar and Mainland Tanzania, 2014 (percentage of unemployed labor force)
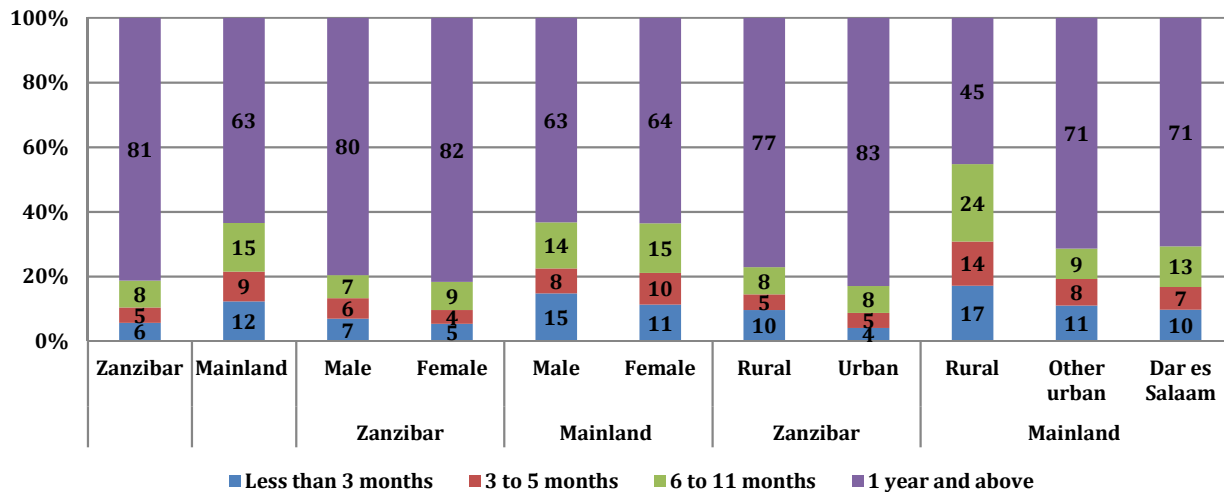
Source: ILFS 2014.

Some important discrepancies in terms of duration of unemployment also existed across the different regions of Zanzibar. North Unguja's unemployed labor force was characterized by heavy long-term unemployment, as most of the unemployed had been unemployed for more than a year (Figure 4.39). Conversely, only 58 percent of South Unguja's individuals suffered from long-term unemployment while the share of individuals unemployed for less than 3 months was 23 percent. Likewise, the share of unemployed individuals from South Pemba that had been unemployed for more than a year appeared lower than the other regions while the share of people unemployed for less than 3 months amounted to 17 percent. Finally, West Unguja and North Pemba had similar profiles in terms of duration of unemployment with around 80 percent of the unemployed individuals from those regions that had been unemployed for more than a year, and only around 5 percent of them that had been unemployed for less than 3 months.

Figure 4.39: Duration of Unemployment by Regions, 2014 (percentage of unemployed labor force)

Legend:
- Less than 3 months
- 3 to 5 months
- 6 to 11 months
- 1 year and above
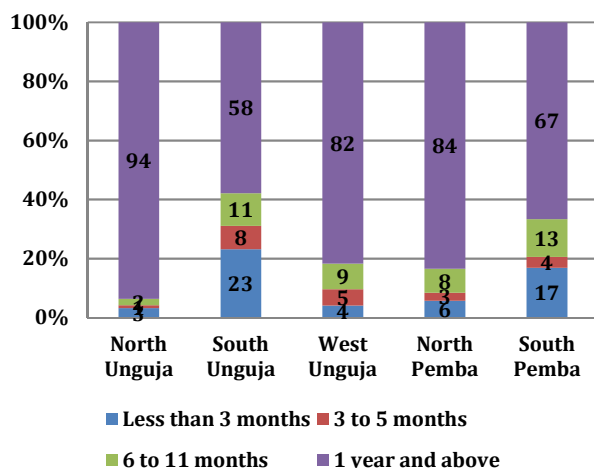
Source: ILFS 2014.

Figure 4.40: Underemployment by Area and Gender in Zanzibar and Mainland, 2014 (percentage of labor force)

Legend:
- Zanzibar
- Mainland Tanzania
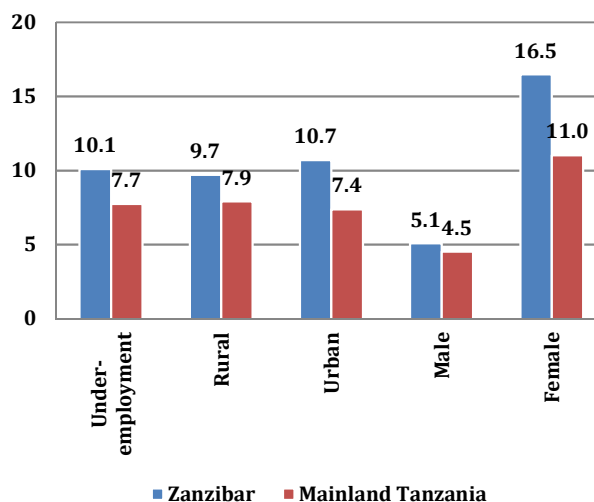
Source: ILFS 2014.

Underemployment was slightly higher than in Mainland and primarily affected women

Usual underemployment appeared more prevalent in Zanzibar than in Mainland, and particularly affected female workers. According to ILO, the time-related usual underemployment indicator tracked workers who usually worked less than 40 hours a week, and would be available and willing to work more. The underemployment rate in Zanzibar stood at 10 percent, 2.4 percentage points higher than the underemployment rate of Mainland (Figure 4.40). Zanzibar's underemployment rate was rather similar across rural and urban areas. However, high discrepancies existed between men and women. While only 5 percent of male workers were underemployed (a rate similar to the one of Mainland), the underemployment rate of female workers in Zanzibar was around 11 percentage points higher, standing at nearly 17 percent.

While the sector of employment did not seem to affect the chances of being underemployed, the underemployment rate strongly varied across the different regions of Zanzibar. In Zanzibar, all three sectors of the economy had underemployment rates hovering around 10 percent (Figure 4.41). Conversely, the rate of underemployment in Mainland strongly varied from one sector to another; while the rate stood at 3 percent for manufacturing workers, it attained 9 percent for agricultural workers. The underemployment rate differed strongly across the different regions of Zanzibar, attaining its highest level in South Unguja and being the lowest in North Unguja (Figure 4.42).

Figure 4.41: Underemployment by Sector of Employment in Zanzibar and Mainland Tanzania, 2014 (percentage of labor force)
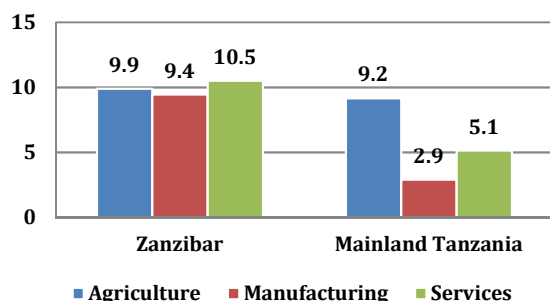

Source: ILFS 2014.

Figure 4.42: Underemployment by Regions, 2014 (percentage of labor force)
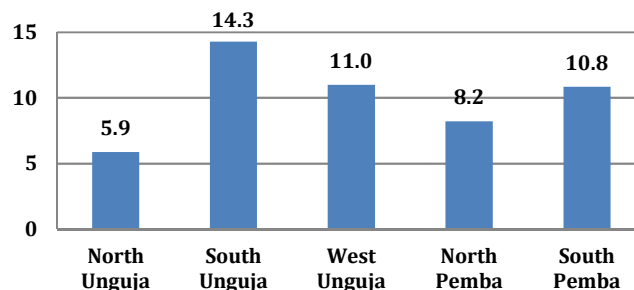
Source: ILFS 2014.

IV. Informality in the Nonfarming Sector

Around two-fifths of the employed workers from the nonagricultural sector of Zanzibar worked in informality, with important discrepancies across areas and gender. The ILFS 2014 showed that around 200,800 people worked in the informal sector, which represented 38 percent of the employed workers (Figure 4.43). In comparison, the rate of informality in Mainland was 16 percentage points lower, standing at 22 percent, which represented around 4,350,000 people. The informality rate for women was higher by 7 percentage points than for men in Zanzibar. However, in absolute terms, as many men and women worked in informality in Zanzibar.

Figure 4.43: Informality Rate and Size of Informal Sector by Area and Gender, 2014 (percentage of employed workforce; number of people)
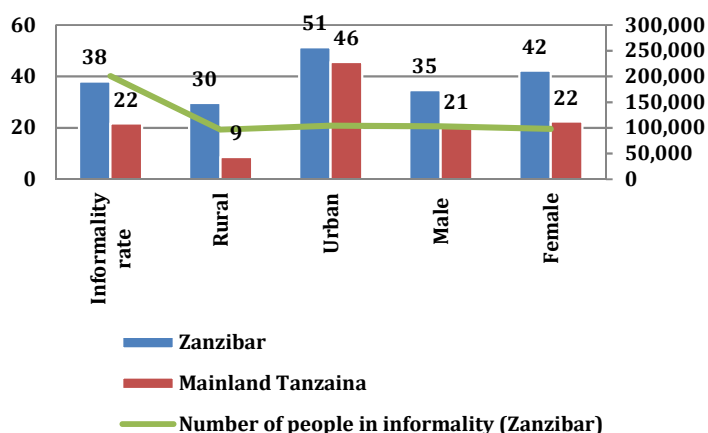
Source: ILFS 2014.

Figure 4.44: Share of Informal Workforce by Area in Zanzibar and Mainland Tanzania, 2014 (percentage of the informal workforce)
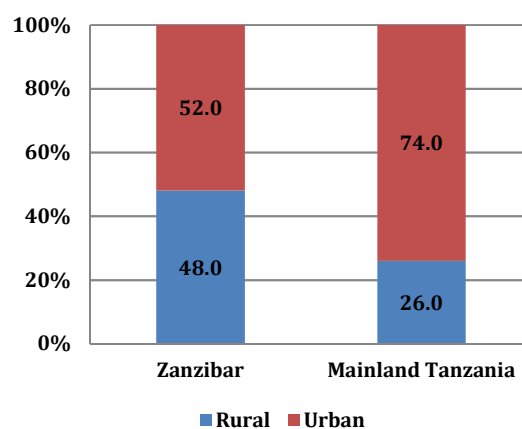
Source: ILFS 2014.

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In both Zanzibar and Mainland, informal employment was significantly more widespread in urban areas than in rural ones. In Zanzibar, while the informal employment rate in rural areas was 30 percent, it was around 20 percentage points higher in urban areas (Figure 4.43).[15] Likewise, important discrepancies existed across areas in Mainland with an informality rate of 46 percent in urban areas (including Dar es Salaam) compared to only 9 percent in rural areas. However, in absolute terms, there were around the same number of people working in informality in rural and urban areas in Zanzibar, which was not the case in Mainland. Indeed, in terms of size, Zanzibar's informal workforce was fairly divided between rural and urban areas (Figure 4.44). The picture was different in Mainland where three quarters of the informal workforce was located in urban areas, while rural areas hosted only one quarter of the informal workforce.

High discrepancies also existed across Zanzibar's regions, both in terms of informality rate and absolute number of informal workers, with West Unguja being primarily affected. Around half of West Unguja's nonagricultural workforce worked in informality, followed by South Unguja (41.1 percent). Conversely, only one-fifth of North Pemba's workforce worked in informality (Figure 4.45). North Unguja and South Pemba's rates hovered around 30 percent. However, given the large size of the labor market in West Unguja, the majority of Zanzibar's informal workers were located in this region (108,232), which represented half of Zanzibar's total informal workforce (Figure 4.46). Other regions of Zanzibar had around the same share of informal workers, as well as an absolute number of workers in the informal sector. For instance, around 20,000 workers were in the informal sector in North Unguja and North Pemba, each representing shares of around 10 percent. Likewise, around 27,000 people worked in the informal sector in the region of South Pemba, which represented 13 percent of the informal workforce.

Figure 4.45: Informality Rate and Size of Informal Sector by Regions, 2014 (percentage of employed workforce; number of people)
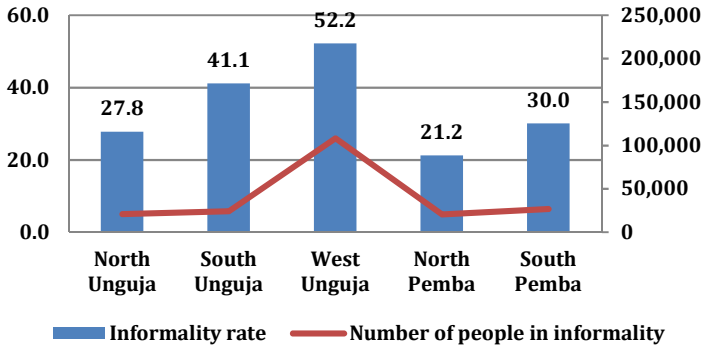
Source: ILFS 2014.

Figure 4.46: Share of Informal Workforce by Regions, 2014 (percentage of the informal workforce)
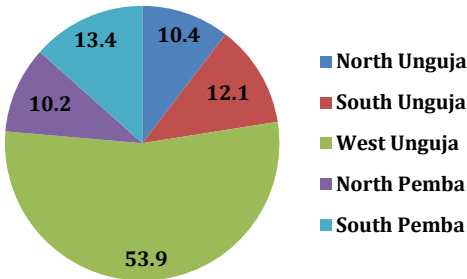

Source: ILFS 2014.

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[15] As per the constraints of the data, these results excluded the agricultural informal sector, which underestimated the informal sector in rural areas and partly explained the higher rates observed in urban areas.

Informal employment primarily affected the services sector, especially in urban areas. The analysis by sector only took into account the manufacturing and services sector as agriculture had been excluded from the data collection for the informal sector. Most of the informal workers (65 percent) worked in services (Figure 4.47). In particular, half of the informal workforce was concentrated in retail and accommodation services. That was significantly more than the shares of these two sub-sectors in the total employment (Table 4.1 for formal and informal workers), meaning that workers from these sectors were proportionately more prone to have an informal status. Furthermore, while the sectoral composition in rural areas roughly followed the same profile with around two-fifths and three-fifths of rural informal workers, respectively, in manufacturing and services, urban informal workers were more likely to work in the services sector (Figure 4.48). Only 30 percent of them worked in manufacturing, compared to around 70 percent in the services sector, with a high prevalence of them in retail and accommodation sub-sectors.

Figure 4.47: Sectoral Composition of Informal Workforce, 2014 (percentage of informal workforce)
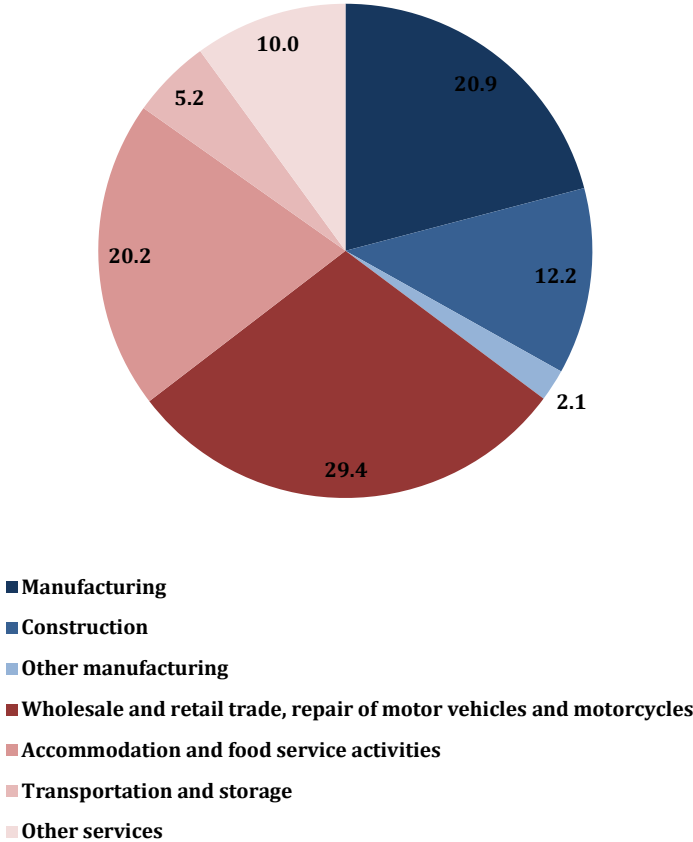
Figure 4.48: Sectoral Composition of Informal Workforce by Area, 2014 (percentage of informal workforce)

Rural

Urban

- ■ Manufacturing
- ■ Construction
- ■ Other manufacturing
- ■ Wholesale and retail trade, repair of motor vehicles and motorcycles
- ■ Accommodation and food service activities
- ■ Transportation and storage
- ■ Other services
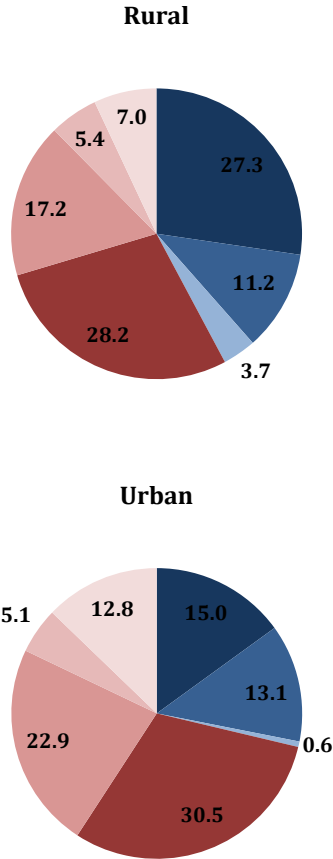
Source: ILFS 2014.

Source: ILFS 2014.

V. Sources of Gender Income Differentials

Important gender inequalities prevailed in the labor market

The income gap between men and women was substantial in both Zanzibar and Mainland. In Zanzibar the total average income of men was 2.5 times higher than the average income of women.[16] The gender income differential was lower in Mainland, but still the ratio of women's earnings to men's was about 56 percent. The gender income gap was larger among the poorest groups than well-off ones. Similar gender gaps were also observed in wage incomes, though lower as the ratio of women's wage to men's was around 74 percent in both Zanzibar and Mainland. The observed income differentials between men and women could have been due to gender differences in productivity and related to the fact that women had lower education levels, higher family responsibilities, lower access to productive jobs than men, and so forth. However, the income differences were driven by gender discriminations in the labor market. These discriminations took place when equally skilled and productive workers had different income or wage rates. Since productivity was not observed, measures of income discrimination generally adjusted for all measurable individual's characteristics that were expected to affect productivity such as education level, experience, child responsibility, and so forth.   In order to measure gender income discrimination, the observed income gap was decomposed into two parts; the part due to differences in characteristics or productivity (*endowments effect*) and the part due to differences in returns to these characteristics (*returns effect*). The latter part was then used to evaluate the extent of gender income discrimination. The *endowment* and *return* effects could be further decomposed into the contribution of individual specific characteristics or groups of some characteristics. The decomposition was conducted for both total income and wage income and was applied at the mean and various quantiles of the income/wage distribution (see Box 4.1 for more details).

Box 4.1	Decomposition Approach for the Analysis of Gender Income Differentials

The analysis of the gender income/wage gap is based the Oaxaca decomposition. It consists in splitting the gender income gap as the sum of two terms, one reflecting differences in endowments or productivity and the other measuring differences in returns or discrimination. The difference between male and female unconditional mean income can be expressed as:

$$w_m - w_f = \left(\overline{X}^m - \overline{X}^f\right)\hat{\beta}_m^{'} + \overline{X}^f\left(\hat{\beta}_m^{'} - \hat{\beta}_f^{'}\right)$$

where w_m and w_f are the unconditional means of men and women log monthly income/wage respectively, $\overline{X}$ represents the vector of covariate or characteristics averages and $\hat{\beta}_{m,f}$ the estimate of the return to those covariates. Subscripts *m, f* designate respectively men and women. The first term on the right-hand side of the equation, we denote by **E₀**, represents the differences in endowments of productive characteristics. The second

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[16] Total income included income from cash earnings and salary employment, self-employment in the nonfarm sector and agricultural employment. The ratio of women's income to men's was about 39 percent in Zanzibar.

term of the right-hand side of the equation, we denote by R_0, measures income differences due to the return to characteristics, generally attributed to discrimination.

The covariates include seven groups of variables: (1) demographic characteristics including the marital status, proportion of members aged below 15 years in the individual's household, and the individual's age; (2) human capital measured by the level of education and language literacy, and a dummy indicating whether the individual benefited from training; (3) the employment sector and occupation status recoded as categorical variables indicating whether the individual is self-employed or a paid employee, employed in manufacturing, services, agriculture, etc.; (4) transportation and communication asset ownership including car, cart, and cell phone; (5) individual's characteristics indicating whether the individual is migrant, affiliated with a labor union, or benefits from maternity leave; (6) other individual's characteristics including dummies indicating whether the individual was out of work for family reasons, and duration of stop working; and (7) external factors to the individual capturing the community characteristics and geographic location fixed effects.

Oaxaca's measure of discrimination can be expressed as[17]: **$D_0 = \exp(R_0) - 1$**. It measures the gender income gap that would have prevailed if men and women had similar characteristics or productivity. As D_0 is an absolute measure and is insensitive to the magnitude of the endowment gap, we also measure the relative discrimination ratio, or proportion of the gender income gap due to different returns to the same endowments of productive characteristics between men and women: **$G_0 = R_0/(E_0 + R_0)$**.

A similar decomposition is applied on the unconditional quantiles to estimate the contribution of the endowment and return effects to the gender income (wage) gap among the different income (wage) groups of the population (see Appendix B for the estimation of unconditional quantiles).

If men and women had the same productivity, then income of men would be, on average, twice as high than women's income in Zanzibar and 35 percent higher in Mainland. Seventy-nine percent of the average gender income gap in Zanzibar was explained by returns to characteristics while 21 percent was explained by differences in productivity (or observed characteristics). Discrimination seemed to be significantly lower in the Mainland's labor market, where only 51 percent of the gender income gap was explained by differences in returns (see Box 4.1 for details on estimation procedure). Gender gaps in returns were higher among the poorest groups, in Zanzibar, suggesting more discrimination against poor women in the labor market. As shown in Figure 4.49 and Table 4.2, the contribution of the difference in returns to the gender income gap significantly dominated the contribution of differences in endowments across the entire distribution, with the gender returns gap being strikingly high among the poorest quantiles. This indicated that men would have received significantly higher income even in the absence of gender endowments differentials. The findings revealed fairly important differences in access to economic activities and ownership of assets between men and women, among the poorest groups, that were affecting women productivity and contributing to the gender income gap. However, the main source of the income gap between men and women was the lower returns to economic activity, essentially in manufacturing, services, and public administration faced by women compared to men. In Mainland, endowment effects seemed to dominate at the lower tail of the distribution, suggesting that the gender income gap among the poorest groups was mainly due to the fact men

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[17] See Gardeazabal and Ugidos (2005) for similar analysis on Spanish gender wage differences.

had superior characteristics and endowments (Figure 4.50). In addition to the lower access of women to economic activity, mainly nonfarm business and employment in construction and mining, lower education and lower ownership of productive assets, they also faced significantly lower returns to nonfarm business and employment in manufacturing. In both Zanzibar and Mainland, women had lower access to trainings compared to men and their temporary withdrawal from the labor market seemed to affect their productivity and their chances to obtain higher revenues. Likewise, being married negatively affected women's economic conditions and contributed to the gender income gap.

Figure 4.49: Returns and Endowments Effects on Gender Income Gap in Zanzibar (percentage)
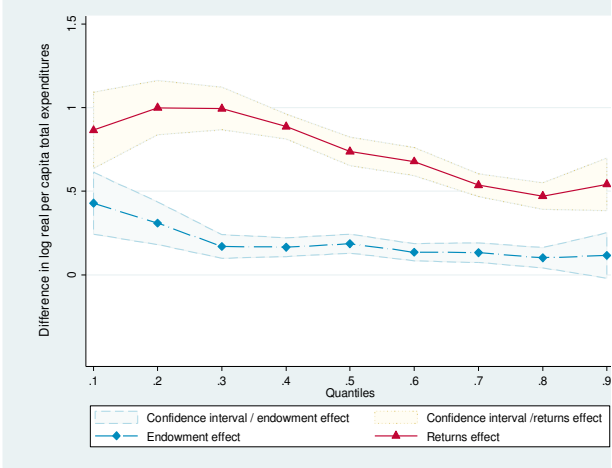
Figure 4.50: Returns and Endowments Effects on Gender Income Gap in Mainland (percentage)
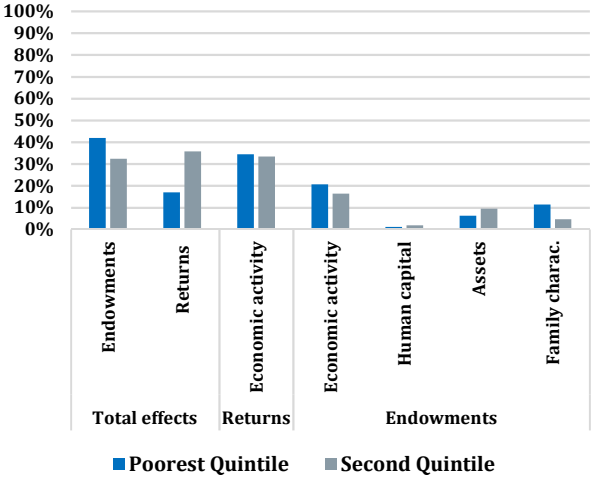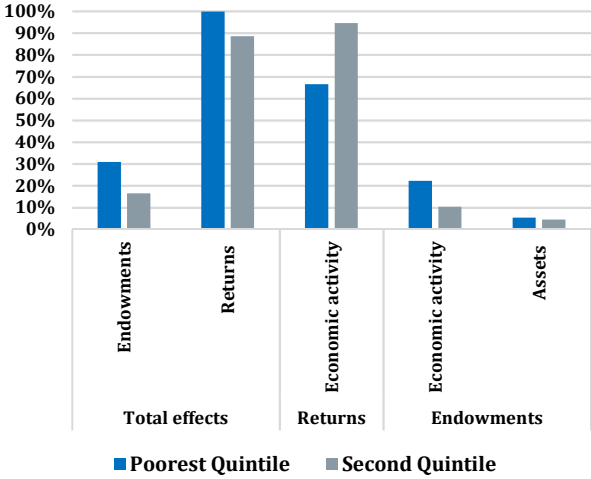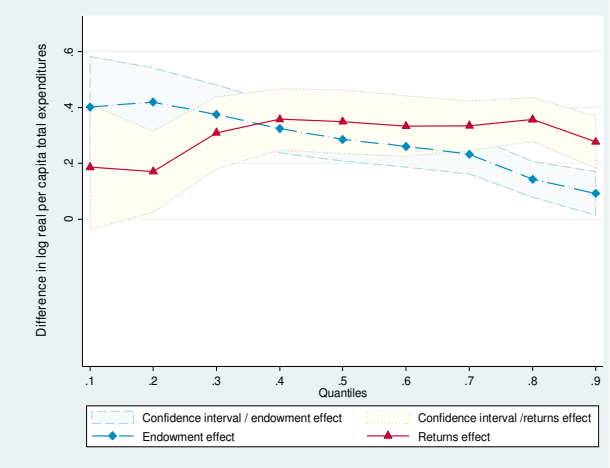
Note: Percentages indicate counterfactual changes. Effects that are not significant for the two bottom quintiles are not pictured.

Table 4.2: Determinants of Gender Income Differentials (percentage)

	Zanzibar				Mainland			
	Endowment Effect		Returns Effect		Endowment Effect		Returns Effect	
	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile
Number of children	−0.002	−0.002**	0.074	0.009	−0.001	−0.000	0.011	−0.032
	[0.002]	[0.001]	[0.066]	[0.049]	[0.001]	[0.000]	[0.046]	[0.039]
Other family characteristics	−0.027	−0.017	−0.032	−0.145	0.115***	0.046**	0.050	−0.228**
	[0.023]	[0.012]	[0.140]	[0.105]	[0.025]	[0.020]	[0.114]	[0.097]
Human capital	−0.012*	−0.011***	−0.077	−0.141	0.007	0.009*	−0.141**	−0.189***
	[0.007]	[0.004]	[0.203]	[0.153]	[0.006]	[0.005]	[0.069]	[0.058]
Training	0.017**	0.018***	−0.031*	−0.018	0.005	0.010***	0.001	−0.002
	[0.007]	[0.004]	[0.018]	[0.014]	[0.004]	[0.003]	[0.011]	[0.009]
Economic Activity								
Construction & mining	0.022	0.007	0.022***	0.013**	0.035***	0.033***	0.000	0.001
	[0.016]	[0.008]	[0.008]	[0.007]	[0.008]	[0.007]	[0.004]	[0.003]
Manufacturing	−0.025	0.005	0.146**	0.130***	−0.000	−0.000	0.013	0.030**
	[0.021]	[0.011]	[0.062]	[0.049]	[0.001]	[0.001]	[0.014]	[0.013]
Trade	0.003	0.001	0.012	0.047	−0.016**	−0.014**	0.008	0.077
	[0.010]	[0.005]	[0.048]	[0.038]	[0.008]	[0.006]	[0.062]	[0.054]
Services	−0.004	−0.005	0.078	0.172***	−0.016***	−0.015***	0.001	0.042
	[0.011]	[0.006]	[0.075]	[0.060]	[0.005]	[0.004]	[0.038]	[0.033]
Public administration	0.006	0.005**	0.093*	0.113***	−0.000	−0.000	−0.005	0.019
	[0.004]	[0.002]	[0.048]	[0.038]	[0.001]	[0.001]	[0.022]	[0.019]
Other economic activity	0.208***	0.084***	0.304***	0.413***	0.204***	0.149***	0.342**	0.150
	[0.036]	[0.019]	[0.107]	[0.084]	[0.025]	[0.020]	[0.167]	[0.145]
Out of work	0.039***	0.025***	0.007	0.024**	0.021***	0.015***	0.041**	0.064***
	[0.010]	[0.005]	[0.017]	[0.011]	[0.006]	[0.005]	[0.017]	[0.015]
Individual characteristics	0.000	−0.005	0.030	−0.055*	0.029**	0.005	−0.062**	0.017
	[0.019]	[0.010]	[0.044]	[0.032]	[0.013]	[0.010]	[0.029]	[0.024]
Geographic location	0.016***	0.009***	−0.160	−0.074	−0.027***	−0.020***	0.378***	0.532***
	[0.005]	[0.003]	[0.110]	[0.083]	[0.005]	[0.004]	[0.070]	[0.061]
Assets	0.054*	0.045***	0.009	0.024	0.063***	0.095***	0.015	0.023
	[0.032]	[0.017]	[0.026]	[0.020]	[0.017]	[0.013]	[0.024]	[0.020]
Total	0.309***	0.166***	0.998***	0.886***	0.419***	0.324***	0.170***	0.358***
	[0.050]	[0.027]	[0.061]	[0.038]	[0.038]	[0.031]	[0.047]	[0.038]
Difference	1.307***	1.051***			0.589***	0.682***		
	[0.039]	[0.030]			[0.030]	[0.027]		
Constant			0.513	0.315			−0.469	−0.161
			[0.390]	[0.303]			[0.333]	[0.289]
Observations	10,171	10,171	10,171	10,172	16,826	16,826	16,826	16,826

Source: ILFS 2014.

Note: Other family characteristics variables include marital status and other sources of family responsibilities. Other economic activity include occupation status, informal employment and access to nonfarm business. Individual characteristics include migration status, whether the worker is part of a labor union, benefit from maternity leave, etc. Positive signs indicate that the gap is in favor of men. * Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in brackets are bootstrap standard deviations based on 100 replications.

Men's wages were on average 52 percent higher than women's wages in Zanzibar and 20 percent higher in Mainland, when men and women had the same characteristics.[18] The decomposition of total income allowed a wider coverage of the working population. However, incomes from self-employed and agriculture may not be accurate and may have induced biases in the analysis. Moreover, labor market discrimination was better reflected by differences in wage to salary workers.[19] The proportion of employment as salary jobs was low for both men and women, representing respectively 33 percent and 14 percent in Zanzibar, and 20 percent and 10 percent in Mainland. Yet, the gender decomposition of wage helped to complement the analysis of the income gender differentials and check the robustness of the findings. The results showed that 130 percent of the average gender income gap in Zanzibar was explained by returns to characteristics while differences in productivity and skills were in favor of women. This suggests that despite the low participation of women to wage employment, those working in this sector had slightly higher skills than men, yet they received lower returns. Discrimination seemed to be significantly lower in Mainland, where 61 percent of the gender wage gap was explained by differences in returns. The pattern of the gender wage differences at the different quantiles of the distribution was fairly similar to the pattern of the gender income gaps. In Zanzibar, the returns effects dominated the endowments effects across the entire distribution and the gender returns gap was significantly higher among the poorer groups compared to the better off ones (Figure 4.51). Women in the poorest group seemed to receive lower returns to their economic activity, particularly in the public administration, compared to men. Although overall endowments of women were slightly higher than those of men, they still faced lower access to employment in manufacturing and services as well as lower participation to trainings than men. In Mainland, except in the poorest and 7th deciles, the gender wage gap was mainly due to differences in returns between women and men (Figure 4.52). Even if women had the same characteristics as men, they received lower earnings. The gender wage gap among the poorer groups was essentially due to lower returns to women's education and their work in the service sector and public administration. Women also faced lower access to trainings than men, benefited from lower returns to migration, and had fewer assets, mainly cell phones.

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[18] We refer to wage as cash earnings from salary and wage employment.
[19] Yet self-employment income could also reflect customer discrimination.

Figure 4.51: Returns and Endowments Effects on Gender Wage Gap in Zanzibar (percentage)
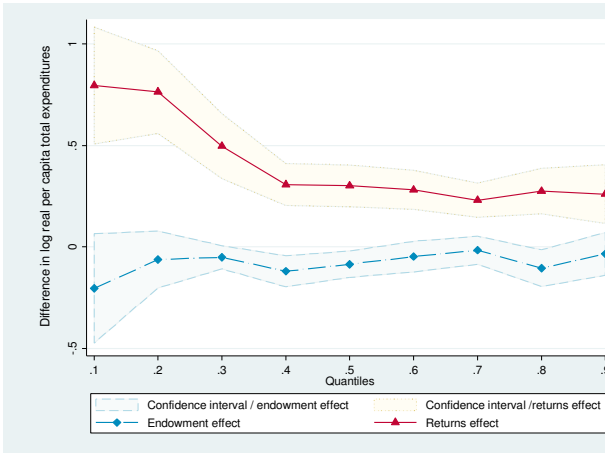
Figure 4.52: Returns and Endowments Effects on Gender Wage Gap in Mainland (percentage)
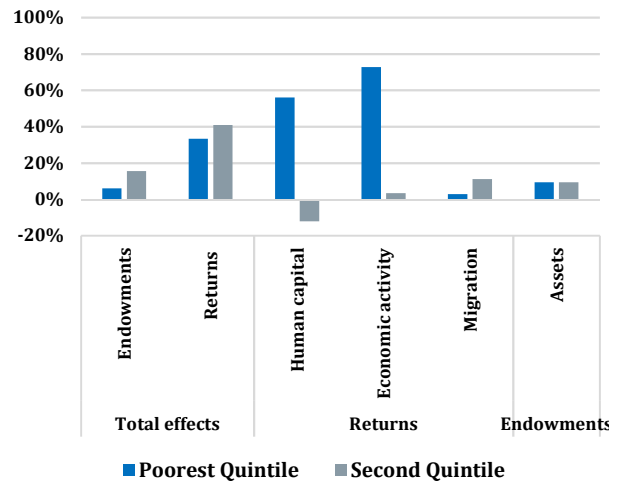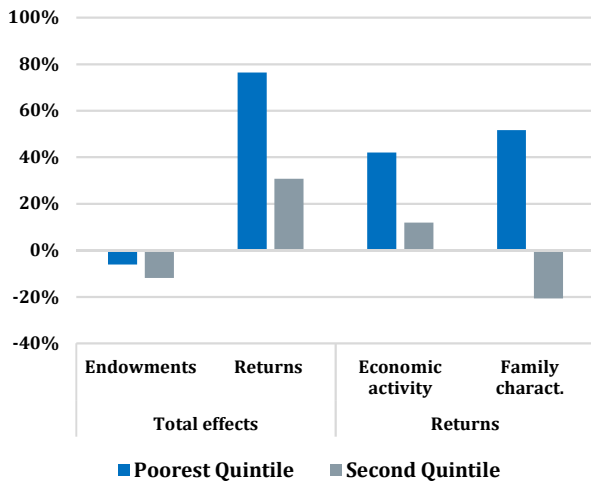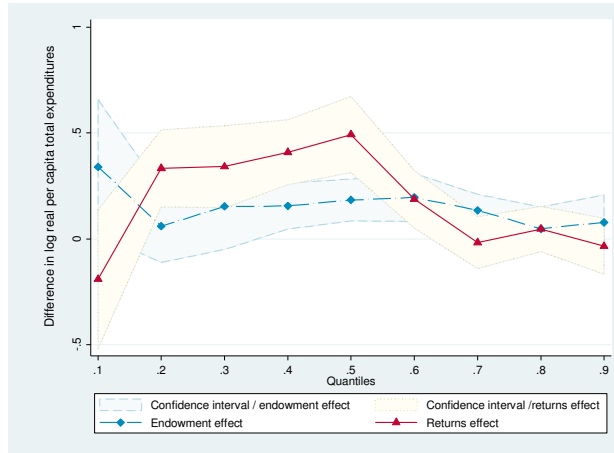
Source: ILFS 2014

Note: Percentages indicate counterfactual changes. Effects that are not significant for the two bottom quintiles are not pictured.

Appendix A – Poverty Estimation in HBS 2009/10 and HBS 2014/15

This appendix covers technical issues in the design, implementation, and poverty estimation methodology of the two surveys which affect the analyses and comparability of poverty numbers over time. These issues have been mentioned in the body of the report as well, but are elaborated here.

Introduction

Official estimates of poverty in Zanzibar are based on the Household Budget Surveys (HBS), which go back to the 1980s and early 1990s. The HBSs are a series of repeated cross-sectional surveys conducted by the Office of the Chief Government Statistician (OCGS) in collaboration with the Planning Commission of Zanzibar. As shown in Table A.1 there have been five HBS rounds in Zanzibar so far—1981/82, 1991/92, 2004/05, 2009/10 and 2014/15. All HBSs collect data on household consumption, demographics (including education and health), asset ownership, and housing, etc.

There exists a second survey series suitable for poverty analysis, the National Panel Survey, which had four rounds so far (2008/09, 2010/11, 2012/13 and 2013/14). The NPS is a longitudinal survey (tracking individuals) conducted every two years by the NBS and has a smaller sample size than the HBS. Due to differences in the way the HBS and NPS surveys capture consumption, we follow the NBSs approach in that we draw (mainly) on the HBS data to measure poverty trends over time, though we make use of the NPS to analyze some poverty movements and dynamics such as the evolution of anthropometrics indicators for children under five.

Table A.1: Overview of Consumption Household Surveys in Zanzibar

Survey	Period	Coverage	Type	No. of households
Household Budget Surveys:				
1981–82 HBS		Zanzibar	Cross-section	420
1991–92 HBS	Dec. 1991–Nov. 1992	Zanzibar	Cross-section	2,376
2004–05 HBS	May 2004–April 2005	Zanzibar	Cross-section	12,617
2009–10 HBS	June 2009–May 2010	Zanzibar	Cross-section	4,296
2014–15 HBS	Oct. 2014–Oct. 2015	Zanzibar	Cross-section	4,555
National Panel Surveys:				
2008–09 NPS	Oct. 2008–Sept. 2009	Tanzania (incl. Zanzibar)	Panel	3,265
2010–11 NPS	Oct. 2010–Sept. 2011	Tanzania (incl. Zanzibar)	Panel	3,924
2012–13 NPS	Oct. 2012–Sept. 2013	Tanzania (incl. Zanzibar)	Panel	5,088

Note: HBS denotes Household Budget Survey. NPS denotes National Panel Survey. Number of households can differ slightly from official NBS publications.

The HBSs use a diary approach to collect consumption, where every individual in a household is asked to record (on a daily basis) all food and nonfood consumption transactions that occurred over the course of (approximately) one month, including consumption of self-produced items. [20]

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[20] The 2007 HBS used a 28-day diary and staggered the start date of the diary, while previous HBS fielded the diary over the course of one calendar month.

Enumerators visited the households regularly to check and code the individual records. The HBSs further included a recall module for nonfood expenditures, particularly (semi-) durables and other irregularly purchased items.

The HBS instrument has evolved over time, often creating comparability issues. The main problem that arose in 2014/15 was the adoption of the Tanzania Mainland questionnaire (particularly the usage of Form II to improve the reporting of nonfood expenditure), which introduced the issue of noncomparability between HBS 2009/10 and HBS 2014/15. To address the changes made in calculating total household consumption, the 2009/10 data was reanalyzed using the revised method for calculating 2009/10 consumption against the relevant poverty line for 2009/10.

HBS 2014/15 design and implementation and comparison to 2009/10

The 2014/15 HBS differs from the preceding 2009/10 HBS in the following ways:

- The HBS 2014/15 questionnaire used close ended questions in Form II for nonfood expenditure to improve the reporting of nonfood items.
- The HBS 2014/15 questionnaire used food consumption in the diary in addition to food purchases in order to get more accurate data on actual household food consumption.
- Estimates are based on a consumption aggregate which excludes explicit and imputed housing rents, housing maintenance cost, expenditures on durable goods, and ceremonies.
- Spatial and temporal price deflators were derived from survey data, while in previous methodology official CPI was used for temporal deflation.

The HBS 2014/15 poverty estimation methodology

A. Calculation of the Consumption Aggregate

The Zanzibar poverty estimates are based on aggregate household consumption as the key welfare indicator. As in many other parts of Sub-Saharan Africa, consumption is considered a more reliable indicator of welfare than income. First, consumption is typically less fluctuating than income and gives a better and steadier picture of long-term welfare. Second, individuals feel more comfortable answering questions related to consumption than to income. Third, income measurement in countries with a large agricultural or informal sector is often highly inaccurate. The consumption aggregate captures both food, and nonfood consumption.

B. Food Consumption

Food consumption is based on food transactions recorded in the 28-day diary (Form V) of the HBS 2014/15. The food consumption aggregate captures food consumed by household members during the day, including consumption from purchases and own-production (Section B1) and food consumed outside the household (Section B3). Households recorded all food consumed—either the

total amount paid (in the cases of purchases) or an estimate of the monetary value in TZS[21] (for own-produced food and gifts received). Total food consumption sums both actual expenses and estimated monetary values. Food consumption consists of 199 different items and includes the following Classification of Individual Consumption by Purpoes (COICOP) categories.[22]

(1) Bread and cereals, (2) Meat, (3) Fish, (4) Milk, cheese and eggs, (5) Oils and fats, (6) Fruits, (7) Vegetables, (8) Sugar, jam, honey, chocolate and confectionary, (9) Food products not elsewhere classified, (10) Coffee, tea and cocoa, (11) Mineral waters, soft drinks, fruit and vegetable juices.

C. Nonfood Consumption

The nonfood consumption aggregate of the HBS 2014/15 captures expenditures on the following goods and services:

(1) Alcoholic beverages and tobacco, (2) Clothing and footwear, (3) Housing, water, electricity, gas and other fuels, (4) Furnishings, household equipment, maintenance of the house, (5) Health, (6) Transport, (7) Communication, (8) Recreation and culture, (9) Education, (10) Restaurants and hotels, (11) Miscellaneous goods and services.

The recall periods of these items in Form II are 12 months, 3 months or 1 month, based on the assumed frequency of purchase. All spending on nonfood goods and services is converted to monthly expenditure. The majority of nonfood consumption (unweighted) is based on the non-food recall module (Form II). However, a limited set of small nonfood items (matches, washing powder, etc.) captured in the diary were added.

D. Exclusions from the Consumption Aggregate

The consumption aggregate excludes housing related expenditures; neither actual rent or imputed rental values for home owners are included. There is a small housing rental market in Zanzibar. In towns only 12.6 percent of the HBS 2014/15 households reported renting their accommodation. While in villages the rental market is virtually nonexistent with only 1.4 percent of HBS households reporting renting their home. Therefore it was decided not to impute a value for rent as the final consumption amount would not realistically reflect an actual amount in money terms that could be used for consumption by households as, by and large, there is no rental market in Zanzibar.

The consumption aggregate also excludes use values for large durable items, but it does include the purchasing values of a fairly large number of smaller, semi-durable goods.[23] It would be

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[21] Estimates of the value of own-produced goods and gifts were made by the respondents and so have the risk of being over or under-estimated. Interviewers were trained to double-check estimates that seemed unrealistic.
[22] Alcoholic beverages, as usual, were categorized as nonfood.
[23] The distinction between durables, semi-durables and non-durable items is based on UNStats.un.org official COICOP classification in which ND = Non-Durable, SD = Semi-Durable and D = Durable.

possible to ask questions on HBS to capture the change in the value of the asset over time plus the opportunity cost. However the Zanzibar 2014/15 HBS was not designed to capture annual flow-of-value of assets as it was felt it would overburden respondents.

Finally, household level investments from Section 10 of Form II (purchase of houses, apartments, garages; payments for hiring labour for own construction; expenditures on ceremonies such as weddings, funerals, and business expenditures, etc.) were also excluded.

E. Normalising consumption for differences in household composition

HBS consumption is not captured at the individual level, only the household level, and as households differ in size and composition, a simple comparison of consumption between households can be misleading. Household consumption can be divided by household size to reflect per-capita consumption; however, this does not take into account the composition effects as consumption levels may depend on the presence of children, women, and the elderly.

To measure the effects of different consumption needs by different household members depending on age and gender the data is converted into adult equivalent (AE) using the sum of adult equivalent measure of each household member. To normalise total household consumption for differences in household size and composition and to adjust for differences in consumption needs between children and adults the following equivalence scale is used:

Table A.2: Coefficients for Adult Equivalent Scale

Age (years)	Male	Female
0–2	0.4	0.4
3–4	0.48	0.48
5–6	0.56	0.56
7–8	0.64	0.64
9–10	0.76	0.76
11–12	0.8	0.88
13–14	1	1
15–18	1.2	1
19–59	1	0.88
60+	0.88	0.72

Source: Household Budget Survey 2014/15.

F. Normalising consumption for number of days in the household during last 28 days

An adjusted adult equivalent measure was estimated to take into consideration the number of consumption days in the survey month in which the particular member was present in the household. More precisely, the adult equivalent measure was weighted by the ratio of days of presence in the household over 28, which is the number of days for which the diary was filled. For example, if the member was present for only 14 days out of 28 during the survey, then the adult equivalent measure of that member was multiplied by 14/28 or by 0.5.

AEQ_adjusted_ind = AEQ * Number of presence days/28.

The final adult equivalent consumption of the household was then estimated as follows:

Consumption_adult_equivalent = food consumption/AEQ_adjusted_hh + nonfood consumption/AEQ_hh

G. Normalising Consumption for Differences in Cost of Living

Individuals living in different locations and surveyed during different periods may pay different prices for similar goods. When comparing standard of living across locations and time periods using a consumption based measure of welfare, such differences in cost of living need to be taken into account. Using nominal consumption that does not take into account spatial and temporal price variation may lead to underestimation of poverty in the areas where the prices are higher, as well as to overestimation of poverty in areas where the prices are lower. A similar logic is valid for temporal differences.

Therefore the consumption aggregate is adjusted for variation in the prices of food across regional and rural-urban locations and the survey quarter. The prices are based on reported quantities and total value of purchased goods in the HBS 2014/15. The constructed indices reflect the cost of the consumption basket relative to the national median prices during the survey period.

Table A.3: Spatial and Temporal Price Indices across Region, Area and Survey Quarter

Region	Area	Q1 10–12.2014	Q2 01–03.2015	Q3 04–06.2015	Q4 07–09.2015
South Unguja	Rural	0.95	0.95	0.97	1.01
	Urban	0.95	0.93	0.96	1.01
North Unguja	Rural	0.96	0.94	0.99	1.03
	Urban	0.90	0.92	0.93	0.96
West Unguja	Rural	0.99	0.96	0.98	1.00
	Urban	0.99	0.98	0.99	1.02
South Pemba	Rural	0.96	0.97	0.97	0.99
	Urban	0.98	0.97	1.00	1.02
North Pemba	Rural	1.04	1.04	1.04	1.06
	Urban	1.02	1.03	1.02	1.05

Source: Household Budget Survey 2014/15.

To deflate nominal consumption OCGS uses the Fisher ideal index. Fisher price indices do a better job than Laspeyres or Paasche price indices at capturing differences in consumption patterns across domains as a consequence of differences in relative prices. They also avoid overstating or understating the true inflation (as would be the case with Laspeyres and Paasche, respectively). Separate food and nonfood Fisher price indices are estimated by the five regions and rural/urban and quarter (a period of three consecutive months) according to the following formula:[24]

$$F_i = \sqrt{L_i P_i}$$

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[24] There are hence 12 price indices in total for each method.

where i is a combination of stratum and quarter, L refers to a Laspeyres price index and P refers to a Paasche price index. The Laspeyres and Paasche price indices are defined as:

$$L_i = \sum_{k=1}^{n} w_{0k} \left(\frac{p_{ik}}{p_{0k}}\right) \qquad P_i = \left[\sum_{k=1}^{n} w_{ik} \left(\frac{p_{ik}}{p_{0k}}\right)^{-1}\right]^{-1}$$

Where w_{0k} is the average household budget share of item k in the country, w_{ik} is the average household budget share of item k in stratum and quarter i, p_{0k} is the national median price of item k, and p_{ik} is the median price of item k in stratum and quarter i.

It should be noted that all prices that feed into the deflators are computed as unit values (value/quantity) from the HBS 2014/15 diary. The HBS food diary has six different measurement units for food items[25]—gram, kilogram, millilitre, litre, piece and unit. Prices are based on the most frequent unit for each item (with grams being converted to kg, and ml being converted to litre).

H. Setting the Poverty Lines

The HBS 2014/15 poverty lines are based on a food basket concept and are anchored in nutrition. The HBS 2014/15 food poverty line (TZS. 38,070 per adult per month) is based on the cost of a food basket that delivers 2,200 calories per adult per day. Set by the Food and Agriculture Organization (FAO), 2,200 calories is the amount of dietary energy per adult equivalent that is considered adequate to meet the energy needs for maintaining a healthy life and carrying out light physical activity. Consumed quantities are converted into calories using the NBS's calorie conversion factors and are valued at national median prices (the same as the reference for the Fisher deflators).[26]

Having set the food poverty line, the next step is to estimate an allowance for basic nonfood goods to obtain the total poverty line. The lower bound method for estimation has been used, firstly selecting a reference group of households whose total consumption per adult equivalent is close to the food poverty line. The share of total consumption that goes to food consumption is calculated for this reference group. This share is the "allowance" for nonfood consumption that is added to the value of the food poverty line to get the complete poverty line as follows:

Total Basic Needs Poverty Lines = Food Poverty Line/ (1 – Share of nonfood)

= Food Poverty Lines/Share of food

The share of food for this reference group is 71.3 percent. The value of total basic needs poverty line is estimated by dividing the value of food poverty line TZS 38,071 by food share 0.713. The value of the basic needs monthly poverty line is TZS 53,377 per adult equivalent per month (see next section for an assessment of Zanzibar's poverty lines).

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[25] The diary includes "metre" and "pair" but these measures were never used.
[26] As in the context of the Fisher price deflator, only transactions in the most frequent unit are used for the computation of median prices and to derive the budget shares.

I. Reestimating the Poverty Lines for 2009/10

For reestimation of 2009/10 poverty lines the Fisher index was calculated using 2009/10 and 2014/15 consumption data from HBS. The values of Fisher price indices were estimated at 1.501 for food and 1.531 for total index respectively. To update the poverty lines for 2009/10, the 2014/15 poverty lines were divided by respective Fisher indices. The food poverty line of 2014/15 was deflated using the food Fisher index, and the basic needs poverty line was estimated using the total Fisher index. The values of the poverty lines of both surveys are shown in Table 1.4.

Table A.4: Food and Basic Needs Poverty Lines, TZS per month per adult (survey year price)

	2009/10	2014/15
Food poverty line	25,364	38,071
Basic needs poverty	34,861	53,377

Source: Household Budget Survey 2014/15.

Appendix B – The Unconditional Quantile Regression Method

We apply the Recentered Infuence Function (RIF) unconditional quantile regression to examine the sources of the changes of household consumption over time at various points of the consumption distribution. The procedure is carried out in two stages. The first stage consists of estimating unconditional quantile regressions on log real per adult equivalent monthly household consumption for 2009/10 and 2014/15, then constructing a counterfactual distribution that would prevail if households received in 2009/10 the returns that pertained to households in 2014/15. The comparison of the counterfactual and empirical distributions allows to estimate the part of the welfare change attributable to changes in households' characteristics, the *endowment effect*, and the part explained by variations of the returns to characteristics, the *return effect*. The second stage involves dividing the *endowment* and *return* components into the contribution of each specific characteristic variable.

The method can be easily implemented as a standard linear regression, and an ordinary least squares (OLS) regression of the following form can be estimated:

$$RIF(y, Q_\theta) = X\beta + \varepsilon \qquad (1)$$

where *y* is log real per adult monthly household consumption, and $RIF(y, Q_\theta)$ is the RIF of the θ th quantile of *y* estimated by computing the sample quantile Q_θ and estimating the density of *y* at that point by kernel method:

$$RIF(y, Q_\theta) = Q_\theta + \frac{(\theta - I\{y \le Q_\theta\})}{f_Y(Q_\theta)}$$

f_Y is the marginal density function of *y* and *I* is an indicator function. RIF can be estimated by replacing Q_θ by θth sample quantile and estimating f_Y by kernel density.[27]

X is the regressors matrix including the intercept, β is the regression coefficient vector and ε is the error term. The regressors include eight groups of variables: (1) the household demographic and general characteristics variables including household size, the proportion of household members aged below 15 years, and the proportion of those aged over 65 years; (2) the household human capital measured by the number of years of schooling of the more highly educated of the head or his spouse, and the head's years of experience.[28] The choice of the years of schooling variable is

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[27] For more details see Firpo, Fortin and Lemieux (2009).
[28] A model including categorical variables for the education levels of the household head and his spouse have also been estimated. The results of both models are fairly close.

motivated by capturing the influence that family members with more education may have in household decision making; (3) the household head and spouse employment sectors and occupation status recoded as categorical variable and including paid employment, self-employment alone, self-employed with others, manufacturing, services, trade, agriculture, and so forth; (5) asset ownership captured by dummy variables indicating respectively whether the household owns livestock, bicycle, cell phone, telephone, computer; and dummies capturing the ownership of other small and big appliances; (6) other characteristics of the head including his marital status, whether he is over 65 years old, and his gender; (7) access to basic services measured by categorical variables indicating the sources of lighting and of drinking water, access to sanitation and cooking fuels, distances to water, health centers and schools and so forth; (8) external factors to the household capturing the community characteristics, such as access to financial services and quality of public infrastructure captured by geographic location fixed effects. .

We estimate equation (1) for the 10th to 90th quantiles and use the unconditional quantile regression estimates to decompose the change in consumption over time into a component attributable to differences in the distribution of characteristics and a component due to differences in the distribution of returns as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^{i'} = \left\{\hat{Q}_\theta^i - \hat{Q}_\theta^*\right\} + \left\{\hat{Q}_\theta^* - \hat{Q}_\theta^{i'}\right\} = \left(\overline{X}^i - \overline{X}^{i'}\right)\hat{\beta}_\theta^i + \overline{X}^{i'}\left(\hat{\beta}_\theta^i - \hat{\beta}_\theta^{i'}\right) \qquad (2)$$

where $\hat{Q}_\theta$ is the θth unconditional quantile of log real per adult monthly household consumption, $\overline{X}$ represents the vector of covariate averages and $\hat{\beta}_\theta$ the estimate of the unconditional quantile partial effect. Superscripts *i, i'* and * designate respectively the 2014/15, 2009/10 and counterfactual values.

$\hat{Q}_\theta^* = X^{i'}\hat{\beta}^i$ is the counterfactual quantile of the unconditional counterfactual distribution which represents the distribution of welfare that would have prevailed for group *i'* (year 2009/10) if they have received group *i* (2014/15) returns to their characteristics.[29]

The first term on the right-hand side of equation (2) represents the contribution of the differences in distributions of household characteristics to inequality at the θth unconditional quantile, denoted *endowment effect*. The second term of the right-hand side of the equation represents the inequality due to differences (or discrimination) in returns to the household characteristics at the θth unconditional quantile.

The *endowment* and *return* effects can be further decomposed into the contribution of individual specific households characteristics (or group of some characteristics) as follows:

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[29] The decomposition results may vary with the choice of the counterfactual distribution. For example, if the counterfactual used is the distribution that would have prevailed for group *i* if they have received group *i'* returns, we would obtain different results. The choice of the counterfactual in this analysis is motivated by the aim of emphasising household groups living in disadvantaged areas.

$$\hat{Q}_\theta^i - \hat{Q}_\theta^* = \sum_k \left(\overline{X}_k^{\,i} - \overline{X}_k^{\,i'} \right) \hat{\beta}_{\theta,k}^{\,i} \quad and \quad \hat{Q}_\theta^* - \hat{Q}_\theta^{i'} = \sum_k \overline{X}_k^{\,i'} \left(\hat{\beta}_{\theta,k}^{\,i} - \hat{\beta}_{\theta,k}^{\,i'} \right) \quad k:1...K \text{ (3)}$$

where k designates the individual specific household characteristics.

Table B.1: Determinants of Change in Consumption in 2010–15 at the National Level (endowment and returns effects)

	Endowments Effect		Returns Effect	
	Poorest quintile	Second quintile	Poorest quintile	Second quintile
Demographic characteristics	−0.049***	−0.060***	0.096**	0.180***
	[0.009]	[0.008]	[0.037]	[0.033]
Other household characteristics	−0.005	0.006	0.004	0.002
	[0.011]	[0.010]	[0.043]	[0.038]
Education of Head (omitted: no education)				
Less than primary	−0.001	−0.001	0.014**	0.011**
	[0.001]	[0.001]	[0.006]	[0.006]
Completed primary	−0.002	−0.001	0.016**	0.009
	[0.001]	[0.001]	[0.007]	[0.006]
Lower secondary	0.007***	0.007***	0.049***	0.037***
	[0.002]	[0.002]	[0.014]	[0.012]
Upper secondary & higher	0.004***	0.005***	0.003	0.007***
	[0.001]	[0.001]	[0.003]	[0.002]
Other human capital	0.002	0.004**	−0.010	−0.006
	[0.002]	[0.002]	[0.018]	[0.015]
Employment Head (omitted: family helper & other)				
Employee	−0.002	−0.001	0.021	0.002
	[0.001]	[0.001]	[0.015]	[0.013]
Self-employed nonfarm	0.000	0.000	0.020	0.023*
	[0.000]	[0.000]	[0.015]	[0.013]
Employed agriculture	−0.002	−0.001	0.055***	0.056***
	[0.001]	[0.001]	[0.019]	[0.017]
HH nonfarm business	0.001	0.001	0.025***	0.025***
	[0.001]	[0.001]	[0.008]	[0.007]
Other employment	0.007**	0.007***	0.000	−0.001
	[0.003]	[0.003]	[0.016]	[0.014]
Geographic fixed effects	0.017***	0.014***	−0.010	−0.105**
	[0.003]	[0.003]	[0.047]	[0.041]
Access electricity	0.005	−0.005	−0.066	−0.074
	[0.004]	[0.004]	[0.054]	[0.048]
Access other basic services	−0.037	−0.051	0.507**	0.283*

	[0.067]	[0.058]	[0.223]	[0.167]
Other assets	−0.037***	−0.031***	−0.481***	−0.184
	[0.012]	[0.010]	[0.127]	[0.112]
Modern transportation means	−0.002**	−0.005***	−0.001	−0.001
	[0.001]	[0.001]	[0.005]	[0.004]
Mobile phone	0.011*	0.016***	0.043***	0.057***
	[0.006]	[0.005]	[0.015]	[0.013]
Total effects	−0.084	−0.096	0.096	0.133**
	[0.070]	[0.061]	[0.071]	[0.061]
Difference	0.012	0.037***		
	[0.014]	[0.013]		
Constant			−0.189	−0.187
			[0.267]	[0.237]
Observations	8,848	8,848	8,848	8,848

Sources: HBS 2009/10 and HBS 2014/15.

Note: Other Human Capital variables include spouse education, head experience and trainings. Other employment includes spouse sectors of employment. Other HH characteristics include head age, marital status and gender.

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in brackets are bootstrap standard deviations based on 100 replications.

Table B.2: Determinants of Change in Consumption in 2010–15 at the Urban Level (endowment and returns effects)

	Endowment Effect		Returns Effect	
	Poorest quintile	**Second quintile**	**Poorest quintile**	**Second quintile**
Demographic characteristics	0.007	−0.017	0.068	0.373***
	[0.011]	[0.011]	[0.057]	[0.062]
Other HH characteristics	−0.011	0.012	−0.149**	−0.032
	[0.019]	[0.018]	[0.061]	[0.066]
Education of head (omitted: no education)				
Less than primary	−0.001	−0.000	0.011	0.003
	[0.001]	[0.001]	[0.009]	[0.009]
Completed primary	−0.002	−0.002	0.017	0.018
	[0.002]	[0.002]	[0.014]	[0.015]
Lower secondary	0.004	0.005	0.098**	0.120***
	[0.003]	[0.003]	[0.031]	[0.034]
Upper secondary & higher	0.006**	0.010***	0.030*	0.022**
	[0.003]	[0.003]	[0.005]	[0.006]
Other human capital	0.009**	0.010***	−0.005	−0.004
	[0.004]	[0.004]	[0.006]	[0.007]
Employment Head (omitted: family helper & other)				
Employee	−0.006*	−0.000	−0.024	−0.063*

	[0.004]	[0.003]	[0.031]	[0.034]
Self-employed nonfarm	−0.000	0.000	−0.008	−0.021
	[0.000]	[0.001]	[0.026]	[0.028]
Employed agriculture	0.010***	0.009***	0.019***	0.004
	[0.003]	[0.003]	[0.007]	[0.008]
HH nonfarm business	−0.002	0.000	0.044***	−0.011
	[0.002]	[0.001]	[0.017]	[0.017]
Other employment	0.003*	0.006**	0.018	0.028**
	[0.002]	[0.003]	[0.012]	[0.013]
Geographic fixed effects	0.016***	0.015***	−0.653***	−0.921***
	[0.005]	[0.004]	[0.148]	[0.169]
Access electricity	−0.001	0.002	0.026	−0.027
	[0.002]	[0.002]	[0.133]	[0.151]
Access other basic services	−0.095	−0.147*	0.051	0.005
	[0.084]	[0.081]	[0.166]	[0.181]
Other assets	0.057**	0.049**	0.059	0.160
	[0.025]	[0.024]	[0.254]	[0.299]
Modern transportation means	−0.008***	−0.009***	0.001	−0.013
	[0.003]	[0.003]	[0.009]	[0.010]
Mobile phone	0.047***	0.040***	0.048***	0.065***
	[0.015]	[0.015]	[0.014]	[0.015]
Total	−0.019	−0.064	0.151*	0.180**
	[0.089]	[0.086]	[0.090]	[0.088]
Difference	0.132***	0.117***		
	[0.020]	[0.023]		
Constant			0.559*	0.549
			[0.306]	[0.354]
Observations	3,166	3,166	3,166	3,166

Sources: HBS 2009/10 and HBS 2014/15.

Note: Other human capital variables include spouse education, head experience and trainings. Other employment includes spouse sectors of employment. Other HH characteristics include head age, marital status and gender.

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in brackets are bootstrap standard deviations based on 100 replications.

Appendix C – Multivariate Regression

We perform a regression analysis to examine the main factors affecting households' consumption and poverty. This allows us to identify the main correlates of poverty.

We use two regression models. The first examines the impact of the household socioeconomic characteristics on the logarithm of real per capita household consumption, and the second investigates the determinants of the probability of being poor. The first model is estimated using the Ordinary Least Square (OLS) method and the second using the Probit model. The estimation results are reported respectively in Tables C.1 and C.2.

It is worth mentioning that the direction of causality is sometimes difficult to establish in these kinds of analysis. The results below allow the identification of variables closely related with poverty, but the direction of causation will necessitate analysis that is more sophisticated.

Table C.1: Correlates of Consumption, 2014/15

	(1) Zanzibar	(2) Rural	(3) Urban
Household size	−0.068***	−0.071***	−0.066***
	(0.00)	(0.00)	(0.01)
Age head of household	0.005	0.010	0.002
	(0.01)	(0.01)	(0.01)
Share of members aged 0–14 years	−0.475***	−0.468***	−0.496***
	(0.03)	(0.04)	(0.05)
Male head of household	0.025	0.029	0.021
	(0.02)	(0.02)	(0.03)
Education of the head (omitted: no education)			
Less than completed primary	0.047*	0.030	0.071
	(0.02)	(0.02)	(0.05)
Completed primary	0.053*	0.082**	0.025
	(0.02)	(0.03)	(0.05)
Completed lower secondary	0.114***	0.120***	0.102*
	(0.02)	(0.02)	(0.04)
Completed upper secondary	0.244***	0.182**	0.273***
	(0.04)	(0.07)	(0.06)
University level	0.208***	0.029	0.261***
	(0.05)	(0.08)	(0.07)
Migrant household	0.013	0.011	0.025
	(0.02)	(0.03)	(0.03)
Sector of employment of the head (omitted: agriculture)			
Manufacturing	−0.001	0.011	0.017
	(0.03)	(0.04)	(0.06)
Services	0.076**	0.095**	0.097
	(0.03)	(0.04)	(0.06)
Type of employment of the head (omitted: unpaid family helper)			
Employee	−0.069	0.020	−0.145*
	(0.04)	(0.05)	(0.07)
Self-employed in nonfarming business	0.004	0.075	−0.069
	(0.04)	(0.05)	(0.07)
Self-employed in agriculture	0.038	0.107*	−0.039
	(0.03)	(0.04)	(0.06)
Type of employment of the spouse (omitted: unpaid family helper)			
Employee	0.085***	0.110*	0.073*
	(0.02)	(0.04)	(0.03)
Self-employed in nonfarming business	0.032	−0.001	0.057*
	(0.02)	(0.03)	(0.03)

Self-employed in agriculture	0.001	0.005	−0.100*
	(0.02)	(0.02)	(0.05)
Occupation status of the head (omitted: low status)			
Senior occupations	0.116**	0.071	0.132**
	(0.04)	(0.06)	(0.05)
Medium status	0.026	−0.021	0.056*
	(0.02)	(0.03)	(0.03)
Skilled workers	−0.004	−0.020	0.076
	(0.02)	(0.02)	(0.06)
Main source of water (omitted: piped water)			
Pubic tap	0.003	−0.014	0.010
	(0.02)	(0.03)	(0.03)
Well & other protected sources	0.031	0.004	0.048
	(0.02)	(0.03)	(0.04)
Unprotected sources	0.011	−0.024	0.098
	(0.03)	(0.04)	(0.06)
Main source of lightning (omitted: electricity)			
Private generator/solar	−0.111	−0.080	−0.131
	(0.06)	(0.07)	(0.12)
Gas/charges	−0.175***	−0.160***	−0.187*
	(0.04)	(0.04)	(0.08)
Traditional (oil lamp, candles, firewood)	−0.147***	−0.111***	−0.185***
	(0.02)	(0.02)	(0.03)
Sanitation facilities (omitted: flush toilet)			
No facility	−0.177***	−0.126***	−0.304***
	(0.02)	(0.03)	(0.06)
Traditional pit latrine	−0.089***	−0.025	−0.137***
	(0.02)	(0.03)	(0.02)
Ventilated pit latrine	0.047	0.119***	−0.000
	(0.03)	(0.03)	(0.04)
Other	0.001	-0.053	0.106*
	(0.03)	(0.03)	(0.05)
Access to school (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	−0.000	−0.007	0.016
	(0.02)	(0.02)	(0.03)
More than 1 kilometer	0.019	−0.002	0.117
	(0.03)	(0.03)	(0.07)
Access to health center (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	0.034	0.031	0.036
	(0.02)	(0.02)	(0.03)
More than 1 kilometer	0.014	0.020	0.007
	(0.02)	(0.03)	(0.06)
Access to water (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	0.003	0.034	−0.134*
	(0.02)	(0.03)	(0.06)
More than 1 kilometer	0.029	0.021	0.026
	(0.02)	(0.03)	(0.03)
Livestock	0.019	0.045	−0.003
	(0.02)	(0.02)	(0.02)
Sheep & goats	−0.019	−0.035	0.055
	(0.02)	(0.02)	(0.05)
Poultry & pigs	−0.020	−0.033	0.003
	(0.02)	(0.02)	(0.04)
Large ruminants	0.032	0.038	−0.035
	(0.02)	(0.02)	(0.05)
Tenure of dwelling unit (omitted: owned)			
Rented	0.021	−0.032	0.036
	(0.03)	(0.06)	(0.04)
Provided free	−0.013	−0.052	0.038
	(0.02)	(0.03)	(0.04)
Small appliances	0.054**	0.047*	0.064*
	(0.02)	(0.02)	(0.03)
Large appliances	0.044**	0.037	0.048
	(0.02)	(0.02)	(0.03)
Access to mobile banking	0.140***	0.107	0.144***
	(0.03)	(0.07)	(0.03)
Access to ATM	0.128**	0.124	0.128**
	(0.04)	(0.07)	(0.05)

Access to bank account	0.158***	0.166***	0.130**
	(0.03)	(0.04)	(0.05)
Access to Saccos	0.112***	0.156**	0.096*
	(0.03)	(0.05)	(0.04)
Region of residence (omitted: West Unguja)			
North Unguja	0.114***	0.060	0.215***
	(0.03)	(0.03)	(0.05)
South Unguja	−0.030	−0.062*	−0.200***
	(0.03)	(0.03)	(0.05)
North Pemba	−0.134***	−0.182***	−0.032
	(0.02)	(0.03)	(0.04)
South Pemba	−0.113***	−0.145***	−0.071
	(0.03)	(0.03)	(0.05)
Rural household	−0.086***		
	(0.02)		
Constant	11.452***	11.289***	11.499***
	(0.05)	(0.07)	(0.07)
R-squared	0.531	0.500	0.475

Source: HBS 2014/15.

Table C.2: Correlates of Poverty, 2014/15

	(1) Zanzibar	(2) Rural	(3) Urban
Household size	0.210***	0.247***	0.202***
	(0.02)	(0.02)	(0.03)
Age head of household	0.003	−0.000	−0.022
	(0.03)	(0.04)	(0.05)
Share of members aged 0–14 years	−0.133	−0.132	−0.303
	(0.16)	(0.21)	(0.28)
Male head of household	−0.065	−0.207*	0.159
	(0.08)	(0.09)	(0.14)
Education of the head (omitted: no education)			
Less than completed primary	−0.049	0.003	−0.149
	(0.09)	(0.10)	(0.22)
Completed primary	−0.045	−0.073	0.029
	(0.10)	(0.12)	(0.19)
Completed lower secondary	−0.266**	−0.348***	−0.210
	(0.09)	(0.10)	(0.18)
Completed upper secondary	−0.479*	−0.645*	−0.265
	(0.20)	(0.26)	(0.30)
University level	−0.641	−0.019	−1.431**
	(0.34)	(0.46)	(0.45)
Migrant household	0.044	-0.056	0.099
	(0.10)	(0.15)	(0.12)
Sector of employment of the head (omitted: agriculture)			
Manufacturing	0.237	0.171	0.291
	(0.14)	(0.18)	(0.27)
Services	−0.088	−0.179	−0.048
	(0.14)	(0.17)	(0.26)
Type of employment of the head (omitted: unpaid family helper)			
Employee	0.072	−0.036	0.071
	(0.17)	(0.21)	(0.30)
Self-employed in nonfarming business	−0.101	−0.261	−0.035
	(0.16)	(0.19)	(0.29)
Self-employed in agriculture	−0.255	−0.349*	−0.483
	(0.14)	(0.17)	(0.29)
Type of employment of the spouse (omitted: unpaid family helper)			
Employee	−0.181	−0.272	−0.179
	(0.13)	(0.20)	(0.17)
Self-employed in nonfarming business	−0.004	0.130	−0.130
	(0.10)	(0.13)	(0.15)
Self-employed in agriculture	0.209**	0.223**	0.059
	(0.07)	(0.09)	(0.22)
Occupation status of the head (omitted: low status)			
Senior occupations	−0.557**	−0.261	−0.780*
	(0.21)	(0.26)	(0.38)
Medium status	−0.048	0.193	−0.270
	(0.11)	(0.15)	(0.15)
Skilled workers	0.209*	0.254*	0.220
	(0.10)	(0.11)	(0.27)
Main source of water (omitted: piped water)			
Pubic tap	−0.049	−0.035	−0.024
	(0.09)	(0.12)	(0.17)
Well & other protected sources	−0.014	−0.031	0.018
	(0.11)	(0.14)	(0.20)
Unprotected sources	0.018	0.055	−0.150
	(0.12)	(0.14)	(0.28)
Main source of lightning (omitted: electricity)			
Private generator/solar	0.480	0.426	0.669
	(0.25)	(0.29)	(0.55)
Gas/charges	0.400**	0.663***	−0.08
	(0.15)	(0.19)	(0.33)
Traditional (oil lamp, candles, firewood)	0.302***	0.331**	0.313*
	(0.09)	(0.12)	(0.13)
Sanitation facilities (omitted: flush toilet)			
No facility	0.348***	0.282*	0.602*
	(0.10)	(0.12)	(0.27)
Traditional pit latrine	0.110	0.036	0.188

	(0.09)	(0.12)	(0.12)
Ventilated pit latrine	−0.329*	−0.349*	−0.366
	(0.14)	(0.16)	(0.22)
Other	0.056	0.250*	−0.488
	(0.11)	(0.12)	(0.25)
Access to school (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	−0.015	−0.053	−0.024
	(0.08)	(0.10)	(0.17)
More than 1 kilometer	0.035	0.086	−0.269
	(0.11)	(0.12)	(0.28)
Access to health center (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	−0.160	−0.076	−0.265
	(0.08)	(0.10)	(0.16)
More than 1 kilometer	−0.122	−0.132	−0.166
	(0.10)	(0.11)	(0.24)
Access to water (omitted: less than 0.1 kilometer)			
Between 0.1 and 1 kilometer	−0.018	−0.156	0.576*
	(0.11)	(0.12)	(0.23)
More than 1 kilometer	−0.167	−0.268*	0.028
	(0.09)	(0.11)	(0.15)
Livestock	−0.103	−0.148	−0.021
	(0.08)	(0.10)	(0.12)
Sheep & goats	0.066	0.057	−0.058
	(0.10)	(0.12)	(0.26)
Poultry & pigs	0.101	0.073	0.200
	(0.08)	(0.10)	(0.18)
Large ruminants	−0.110	−0.083	−0.063
	(0.09)	(0.09)	(0.23)
Tenure of dwelling unit (omitted: owned)			
Rented	−0.423*	−0.133	−0.531*
	(0.21)	(0.46)	(0.26)
Provided free	0.117	0.153	0.190
	(0.09)	(0.12)	(0.16)
Small appliances	−0.049	0.027	−0.136
	(0.09)	(0.11)	(0.18)
Large appliances	−0.246***	−0.241**	−0.341*
	(0.07)	(0.09)	(0.14)
Access to mobile banking	−0.482*	0.174	−0.949**
	(0.20)	(0.27)	(0.30)
Access to ATM	−0.097	−0.446	−0.226
	(0.26)	(0.38)	(0.33)
Access to bank account	−0.529**	−0.346	−0.801*
	(0.17)	(0.18)	(0.40)
Access to Saccos	−0.694***	−0.968**	−0.438
	(0.18)	(0.30)	(0.23)
Region of residence (omitted: West Unguja)			
North Unguja	−0.224	−0.028	−0.827
	(0.13)	(0.18)	(0.43)
South Unguja	0.120	0.184	1.030***
	(0.12)	(0.17)	(0.24)
North Pemba	0.772***	0.938***	0.486**
	(0.11)	(0.18)	(0.19)
South Pemba	0.618***	0.727***	0.593**
	(0.11)	(0.17)	(0.18)
Rural household	0.162		
	(0.10)		
Constant	−1.934***	−1.977***	−1.839***
	(0.22)	(0.31)	(0.37)

Source: HBS 2014/15.

Appendix D – Inequality Decomposition

The static decomposition of inequality enables one to explore how the differences in households' characteristics affect the level of inequality and provide important clues for understanding the underlying and changing structure of real per capita consumption distribution in Tanzania.

The decomposition follows the approach of Cowell and Jenkins (1995) and consists of separating total inequality in the distribution of consumption into inequality between the different household groups in each partition, I_{Betw}, and the remaining within group inequality, I_{Within}. As the most commonly decomposed measures in the inequality literature come from the General Entropy class, mean log deviation (Theil_L) and the Theil_T indices in real per capita monthly consumption expenditure are used to identify the contribution of between group differentials to total inequality. The General Entropy inequality measures allow total inequality to be equal to $I_{Betw} + I_{Within}$ and the amount of inequality explained by households attributes (or group of attributes) is measured by I_{Betw}/I_{total}, where between and within group inequalities are defined, respectively, for Theil_L and Theil_T indices as

$$I_{Betw} = \left[\sum_{j=1}^{k} f_j \log\left(\frac{\mu}{\mu_j}\right)\right] \qquad I_{Within} = \sum_{j=1}^{k} f_j\, GE_0^j$$

$$I_{Betw} = \left[\sum_{j=1}^{k} f_j \left(\frac{\mu_j}{\mu}\right) \log\left(\frac{\mu_j}{\mu}\right)\right] \qquad I_{Within} = \sum_{j=1}^{k} v_j\, GE_1^j$$

with f_j the population share, v_j the consumption share, and μ_j the mean consumption of subgroup j; μ total mean consumption, GE_0^k Theil_L index, and GE_1^k Theil_T index of subgroup j,

with: $Theil\_L = 1/n \sum_{i=1}^{n} \log\left(\frac{\bar{y}}{y_i}\right)$ and $Theil\_T = 1/n \sum_{i=1}^{n} \left(\frac{y_i}{\bar{y}}\right) \log\left(\frac{y_i}{\bar{y}}\right)$

where y_i is real monthly per capita consumption expenditure for household i and $\bar{y}$ is mean real monthly per capita consumption expenditure.

The static decomposition of inequality by population groups is a useful descriptive analysis and can be informative regarding the role played by certain household characteristics in inequality. However, it has several limitations. First, handling an important number of population groups with different categories for each population partition is often unwieldy and limits the reliability of the estimates. Second, it does not allow to infer causality in the relationship between inequality and the different household attributes. Some of the variables used to explain inequality may themselves be determined by the welfare patterns, and the direction of causation cannot be determined from the descriptive analysis. Third, and most importantly, the decomposition gives little information regarding the importance of the welfare gaps across the various quantiles of the distribution and about the sources of these gaps.

We attempt to address this drawback via the unconditional quantile regression model. The model analyzes the sources of inequality between rural and urban areas, and between Unguja and Pemba. The procedure uses the RIF approach presented in Appendix B. It allows to understand how the difference in the distributions of observed household characteristics between the locations contribute to the welfare gap and how the marginal effects of these characteristics vary across the entire distribution.

Table D.1: Determinants of Urban-Rural Welfare Gap (endowment and returns effects)

	2009/10				2014/15			
	Endowment Effect		Returns Effect		Endowment Effect		Returns Effect	
	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile
Demograhpic Characteristics	–0.033***	–0.049***	0.040	–0.061	–0.000	0.017*	0.144**	0.016
	[0.009]	[0.013]	[0.055]	[0.061]	[0.008]	[0.009]	[0.059]	[0.054]
Other HH Characteristics	–0.003	0.002	0.041	–0.016	0.024**	0.023**	0.015	–0.057
	[0.004]	[0.005]	[0.069]	[0.073]	[0.010]	[0.010]	[0.043]	[0.039]
Human capital	0.013	–0.001	0.134	–0.006	0.014	0.041***	–0.046	0.089
	[0.013]	[0.015]	[0.098]	[0.109]	[0.010]	[0.010]	[0.093]	[0.086]
Employment	0.061***	0.042*	0.029	0.008	–0.002	0.002	–0.033	0.032
	[0.019]	[0.022]	[0.019]	[0.021]	[0.014]	[0.014]	[0.035]	[0.033]
Geographic Condition	0.210***	0.206***	0.429***	0.453***	0.018	–0.008	–0.133**	–0.162***
	[0.059]	[0.069]	[0.089]	[0.104]	[0.027]	[0.027]	[0.059]	[0.058]
Access services	0.032	0.109**	0.180	0.585**	0.200***	0.183***	0.024	–0.081*
	[0.042]	[0.049]	[0.280]	[0.288]	[0.024]	[0.024]	[0.047]	[0.044]
Assets	0.051	0.148***	–0.250	–0.301	0.023	0.039**	–0.043	–0.044
	[0.031]	[0.037]	[0.294]	[0.331]	[0.016]	[0.016]	[0.051]	[0.048]
Total	0.330***	0.457***	–0.099	–0.226***	0.277***	0.297***	0.055*	0.038
	[0.067]	[0.079]	[0.068]	[0.080]	[0.030]	[0.031]	[0.033]	[0.032]
Difference	0.231***	0.231***			0.332***	0.336***		
	[0.019]	[0.023]			[0.019]	[0.018]		
Constant			–0.702	–0.889*			0.127	0.246*
			[0.438]	[0.478]			[0.146]	[0.137]
Observations	4,293	4,293	4,293	4,293	4,555	4,555	4,555	4,555

Sources: HBS 2009/10 and HBS 2014/15.
Note: * Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in brackets are bootstrap standard deviations based on 100 replications.

Table D.2: Determinants of Welfare Gap between Unguja and Pemba (endowment and returns effects)

	2009/10				2014/15			
	Endowment Effect		Returns Effect		Endowment Effect		Returns Effect	
	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile	Poorest quintile	Second quintile
Demographic Characteristics	0.040***	0.057***	0.041	−0.067	0.062***	0.078***	0.009	−0.018
	[0.008]	[0.010]	[0.061]	[0.054]	[0.008]	[0.009]	[0.065]	[0.055]
Other HH Characterisstics	0.001	−0.002	0.073	−0.130**	0.010	0.003	0.008	0.052
	[0.002]	[0.002]	[0.074]	[0.066]	[0.009]	[0.008]	[0.044]	[0.037]
Human capital	0.002	0.011	0.071	0.070	0.024***	0.029***	−0.120	−0.042
	[0.007]	[0.007]	[0.094]	[0.085]	[0.007]	[0.007]	[0.094]	[0.079]
Employment	0.026***	0.016*	0.021	-0.003	0.001	0.005	0.009	0.013
	[0.008]	[0.008]	[0.019]	[0.017]	[0.007]	[0.007]	[0.035]	[0.029]
Geographic conditions	−0.033	−0.058**	0.092*	0.084*	−0.073***	−0.096***	0.090*	0.116***
	[0.027]	[0.028]	[0.054]	[0.049]	[0.023]	[0.021]	[0.050]	[0.041]
Access services	0.018	0.035	−0.145	−0.229	0.113***	0.086***	−0.066	−0.102**
	[0.022]	[0.023]	[0.540]	[0.482]	[0.016]	[0.015]	[0.047]	[0.040]
Assets	0.026*	0.074***	−0.516**	0.017	−0.011	0.009	0.099*	0.077*
	[0.015]	[0.017]	[0.251]	[0.241]	[0.008]	[0.007]	[0.054]	[0.046]
Total	0.079***	0.134***	0.239***	0.187***	0.126***	0.114***	0.282***	0.300***
	[0.029]	[0.031]	[0.033]	[0.033]	[0.025]	[0.024]	[0.029]	[0.026]
Difference	0.318***	0.320***			0.408***	0.414***		
	[0.020]	[0.019]			[0.019]	[0.017]		
Constant			0.603	0.445			0.253*	0.205*
			[0.606]	[0.549]			[0.143]	[0.120]
Observations	4,293	4,293	4,293	4,293	4,555	4,555	4,555	4,555

Sources: HBS 2009/10 and HBS 2014/15.

Note: * Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level. Numbers in brackets are bootstrap standard deviations based on 100 replications.

Appendix E – The Multidimensional Poverty Approach

Alkire and Foster (2011) propose a simple methodology for the measurement of multidimensional poverty, which employs a generalization of the conventional Foster-Greer-Thorbecke (FGT) poverty measures to account for multidimensionality. The approach builds on the work on multidimensional poverty and deprivation developed by the Oxford Poverty & Human Development Initiative (OPHI) and introduces an intuitive approach to identify the poor using two forms of cutoff: one within each of the relevant dimensions of the welfare to determine whether a person suffers shortfalls in that dimension, and a second across dimensions that delineates how widely deprived a person must be in order to be considered poor and identifies the poor by 'counting' the dimensions in which an individual is deprived. They propose an adjusted FGT measure that is particularly suitable for use with ordinal data and informs on the breadth of multiple deprivations of the poor.

Consider a number of relevant dimensions of well-being, $d \geq 2$, for a population of n individuals. The well-being dimensions might relate to education, living standards, or access to basic services, etc. The individuals achievements are denoted by the $n \times d$ matrix $y = [y_{ij}]$, where $y_{ij} \geq 0$ is the achievement of individual i in dimension j.

The first step is to determine a threshold or *deprivation cutoff*, $z_j > 0$, for each dimension, according to which individuals can be considered as deprived in that dimension. Then, construct the $n \times d$ matrix of deprivations $g^0 = [g^0_{ij}]$, where $g^0_{ij} = 1$ when $y_{ij} < z_j$ *(deprived)* and $g^0_{ij} = 0$ if $y_{ij} \geq z_j$ *(non deprived)*. A vector C of deprivation scores is constructed from the matrix g^0, where the deprivation score for each individual i is defined by the following weighted sum:

$$c_i = \sum_j w_j g^0_{ij}$$

where w_j is the weight associated with each dimension j, and summing to d.

The second step consists in identifying the poor, and is based on the selection of a cutoff level for the deprivation scores and a definition of an identification function. Let $k \leq d$ is the poverty cutoff and $\rho_k(y_i; z)$ is the identification function defined as follows:

$$\rho_k (y_i; z) = 1 \ \ if \ \ c_i \geq k \qquad (i \ is \ poor)$$

and

$$\rho_k (y_i; z) = 0 \ \ if \ \ c_i < k \qquad (i \ is \ nonpoor)$$

$\rho_k(y_i; z)$ identifies individual i as poor when the number of dimensions in which he/she is deprived is at least k.

Based on ρ_k, the headcount ratio, which measures the proportion of people identified as multidimensional poor, can be defined as:

$$H(y,z) = \frac{\sum_{i=1}^n \rho_k(y_i, z)}{n} = \frac{q}{n}$$

This is analogous to the conventional income headcount ratio which measures the incidence of poverty, but in a multidimensional setting.

The headcount ratio has two main shortcomings: first, it remains unchanged if a poor individual becomes deprived in a new dimension. Second, it does not allow the evaluation of the contribution of each dimension to poverty.

To address these shortcomings, Alkire and Foster (2011) suggest an additional measure that assesses the breadth of deprivation experienced by the poor:

$$A = \frac{\sum_{i=1}^n c_i(k)}{dq}$$

where A measures the average proportion of deprivations in which the poor are deprived, through calculating the percentage of total deprivations each poor person has $(c_i(k)/d)$ and calculating the average of those percentages across the poor (dividing by the number of poor only, q).

The Multidimensional Poverty Index (MPI) is then defined as a combination of the headcount and the average proportion of deprivation to inform on the prevalence of poverty and the average extent of a poor individual's deprivation. It is given by the simple product of H and A: $MPI = HA$. MPI represents the proportion of weighted deprivations experienced by the poor relative to the maximum potential deprivations that could be experienced by the whole population.

The contribution of each dimension to poverty, CD_j, can be calculated using MPI as:

$$CD_j = \frac{\left(w_j/d\right)\sum_{i=1}^n w_j g_{ij}^0(k)}{w_j nMPI}$$

To estimate multidimensional poverty in Zanzibar, we consider 12 indicators within five main dimensions: (1) Education which includes two indicators, (i) *years of schooling* where a household is considered non-deprived if all the members older than 15 years have at least primary education; and (ii) *school attendance* where a household is non-deprived if all his members between 7 and 15 years old are attending school. (2) Housing conditions which includes four indicators, (i) ***Dwelling floor*** where the household is non-deprived if the floor is not in mud, sand, gravel, etc.; (ii) ***Dwelling wall*** where the household is non-deprived if the walls are in bricks, stones, concrete, etc.; (iii) ***Dwelling roof*** where the household is non-deprived if the roof is in sheet, tile, or cements; and (iv) ***Number of sleeping rooms relative to the household size*** where the household is non-deprived if there are less than four members by sleeping room. (3) Access to basic services which includes

four indicators, (i) ***Access to safe drinking water*** where the household is non-deprived if it has access to public or private piped water and protected sources such as pump or protected wells; (ii) ***Access to electricity*** where the household is non-deprived if it has access to electricity; (iii) ***Access to cooking fuel*** where the household is non-deprived if it has access to efficient cooking fuels such as gas, petroleum, or charcoal; (iv) ***Sanitation*** where the household is non-deprived if it has access to flush toilet, latrine to piped sewer system, septic tank, pit latrine, etc. (4) ***Assets ownership*** where the household is non-deprived if it owns livestock or if it owns large or small appliances (nonagricultural assets) such as cell phone, generator, radio, furniture, etc., and/or transportation means. (5) ***Living standards*** measured by real monthly per capita consumption and where a household is non-deprived if the consumption level exceeds the cost of basic needs poverty line.

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