Impacts of World Food Program Expenditures on the Incomes of Food Secure and Insecure Households in Kenya

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Acknowledgements

Glossary of Terms

AGE	Applied General Equilibrium Model
GDP	Gross Domestic Product
GINI COEFFICIENT	Measures the inequality among values of a frequency distribution, in this case the levels of income
GTAP	Global Trade Analysis Project
HEADCOUNT RATIO	Population proportion that lives below the poverty threshold
ILO	United Nations International Labour Organization
KIHBS	Kenya Integrated Household Budget Survey
KNBS	Kenya Bureau of Statistics
LEWIE	Local Economy Wide Impact Evaluation
POVERTY GAP	Measures the intensity of poverty – the average poverty gap in the population as a proportion of the poverty line
POVERTY GAP SQUARED	Measures the severity of poverty – households with the poorest income are weighted more
RBN	Regional Bureau Nairobi (WFP)
WFP	World Food Programme

1. Background

The World Food Programme Regional Bureau of Nairobi (WFP RBN) operations play a vital role in feeding food-insecure individuals and households. They also stimulate production, incomes, and employment. A joint study by WFP, Kagin's Consulting, and Purdue University found that RBN spending had a disproportionately large impact on country economies in East Africa, because of the spillover effects it creates. WFP operations spend large sums of money on food, logistics and other non-food goods and services. This spending stimulates production and incomes in the directly affected countries and activities. As the impacts of WFP operations work their way through each RBN country's economy, they spread to other households, businesses, and localities within the country, as well as to other countries in the region, through trade. Because of this, the amount of money WFP spends represents only part of the impact of WFP spending in the region; there are also secondary impacts on income, production, and trade, which economists call spillovers. Corong et al. (2022) used a model grounded in the Global Trade Analysis Project (GTAP) framework to estimate the WFP RBN's economic footprint in East Africa. It combines applied general equilibrium (AGE) models of individual countries within a larger, RBN regional model. It is global, but it is also flexible enough to model impacts of WFP spending in individual countries as well as the East Africa region. Simulation findings from this model highlight the direct as well as the indirect spillover effects that WFP RBN operations generate.

The WFP program spent $63 million in Kenya in 2020. It also spent money in other RBN countries that, in turn, imported goods and services from Kenya. Compared to the entire economy of Kenya, $63 million might seem small; it is equivalent to around 0.1% of a total GDP that exceeded $78 billion in 2020. Nevertheless, each additional dollar that the WFP spent on its operations in the RBN region increased the total value of production in Kenya by US$6.47, the most of all RBN countries. It raised total real income, or GDP, in Kenya by US$3.36. WFP RBN spending also created employment. It added 44,986 jobs for unskilled workers and 4,219 jobs for skilled workers in Kenya in 2020. The impact on unskilled employment in Kenya is the third largest in the region, after Uganda and Ethiopia. The impact on skilled employment is the second largest of all countries in the region, after Uganda.

These results evidence the important impacts that WFP RBN spending have in East Africa. They have the advantage of documenting aggregate impacts on countries, across a large region, and in individual production sectors. Nevertheless, like most other AGE models, GTAP-based models do not provide information on how WFP spending affects individual household groups. This is in contrast with local economy-wide impact evaluation (LEWIE; see Taylor and Filipski, 2014) models, which provide regional as well as household detail.

This study uses a microanalysis of household survey data to disaggregate the income and employment effects of WFP RBN spending on food-secure and food-insecure households. In this way, it addresses the question of whether WFP spending contributes towards reducing poverty in RBN countries, as well as contributing to GDP, production, and employment in the region. The method to accomplish this combines the output from the WFP RBN AGE model with econometric analysis of household survey data, with the goal of uncovering the likely impacts of WFP spending on income and employment as well as the distribution of these impacts between food-secure and food-insecure households.

We begin by reviewing the approach to modelling impacts of WFP RBN spending on total real incomes, or GDP, and employment, in RBN countries and, specifically, the findings for Kenya taken from the regional report (Corong *et al.*, 2022). Then we describe the methodology for disaggregating GDP and employment impacts between food-secure and food-insecure households and present the findings from the disaggregated analysis. We conclude with some caveats, considerations on how to think about the economic and poverty impacts of WFP spending in the RBN area, and suggestions on future research priorities.

2. Modelling Impacts of WFP Expenditures on Food and Non-food Items

This study used state-of-the-art economic modelling tools to estimate the economic impacts of WFP's expenditures in RBN countries and in the East Africa region as a whole. The multi-country model to assess WFP's "economic footprint" in East Africa is grounded in the Global Trade Analysis Project (GTAP) framework

([Hertel, 1997](#)). It consists of applied general equilibrium (AGE) models of individual RBN countries linked by trade within a larger, regional RBN model. The RBN AGE model is global but flexible enough to quantify impacts of WFP spending in individual countries as well as across the East Africa region.

Figure 1, which combines figures in the regional report, illustrates the strategy to evaluate the economic footprint of WFP's expenditures in Kenya and other RBN countries. The initial impact is via WFP's direct expenditures on foods and other goods and services procured from the food vendors with which the RBN contracts. WFP purchases a variety of food items, as shown in the Figure and the RBN Food Procurement Report for 2020. All of these food expenditures represent payments to food vendors (wholesalers). The vendors, in turn, use part of the funds to purchase different food items inside and outside the RBN region. Besides purchasing food, RBN operations spend on goods and services ranging from non-food services contracted through logistics to "office stationery to kitchen equipment for schools to materials and services for the construction of warehouses, roads and bridges" ([WFP Supply Chain Annual Report 2015](#), p.12).

WFP's food and non-food expenditures increase the demand for goods and services inside and outside the RBN region. Whereas food procurement creates income for food vendors and farmers, other spending spreads economic benefits across a wide range of production activities, benefiting businesses as well as input suppliers and workers.

The initial impact of WFP's expenditures in the region are on the vendors (wholesalers) of food and other goods and services with which the RBN contracts. RBN personnel worked with the research team to itemize all of these food and non-food expenditures, by sector and vendor (see Panel A of Figure 1). A survey of WFP suppliers gathered information on where the venders sourced each item they sold to the RBN. This made it possible to link each RBN expenditure to individual countries and production sectors (Panel B). The RBN AGE model takes these country- and sector-specific expenditures and estimates their economy-wide impacts within each RBN country as well as across the East Africa region, using simulation techniques (Panel C).

This method captures the full impacts of WFP RBN spending, including direct impacts on production sectors and indirect spillover effects within and across countries. The study focused on quantifying the impacts of WFP RBN spending on the value of production (gross sales) in each sector; total real (inflation-adjusted) income or Gross Domestic Product (GDP); and both skilled and unskilled employment. We do not consider the impacts of WFP's cash disbursements to households, which would add to the impacts shown below.
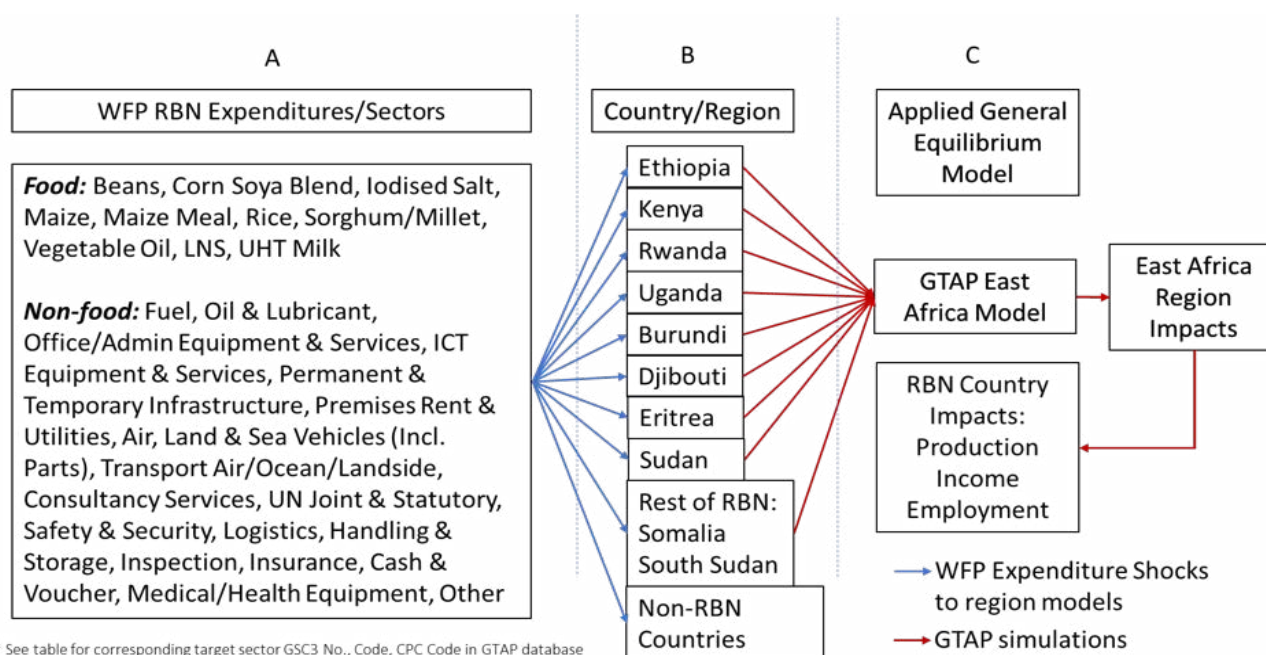

Figure 1. Modelling the Impacts of WFP RBN Expenditures.

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3. Findings for Kenya

The WFP is estimated to have spent a total of $745 million in the RBN region in 2020. This includes around $63 million in Kenya. Most of this spending on purchases of domestic goods and services. Roughly 75% of WFP spending in Kenya was on purchases of domestic goods and services, and the rest was on imports. Of the amount spent on imports, some 59% was sourced in Rwanda—mainly crops. The remainder was on imports from other RBN countries or the rest of the world. Of WFP's total spending in other RBN countries, 9.5% was on imports from Kenya. Most of WFP's spending was on crops and other food (44.3% of the RBN total), transport (26.6%), and trade, including warehousing (10.4%).

We run our simulations under two sets of assumptions, or model "closure rules." The first assumes that labor and capital investment are available to fuel economic expansion. This is the most flexible set of assumptions, and it produces the most favourable outcomes. The second assumes that aggregate labor and capital supply are fixed, and wages and capital returns adjust to equate their respective demand and supply. This is the most restrictive set of closure assumptions. Without labor and capital to fuel economic expansion, WFP spending competes with other spending in the economy to purchase goods and services. The reality is likely to fall somewhere in between these extremes, but it probably favours the more flexible case; this is our preferred scenario. Unemployment rates generally are high in East African countries. For example, the unemployment rate in Kenya averaged 9.93 percent from 1991 until 2020, suggesting that labor is available to support increases in production. The availability of capital is less clear; however, traditionally at least some countries, including Kenya, have been able to attract foreign capital to support economic growth. We ran the simulations under the preferred scenario but also report findings under the restrictive scenario, which underline the importance of labor and capital availability in shaping WFP's economic impacts.

Simulation results reported in Corong et al. (2022) show that each dollar of WFP spending in the region creates a $6.47 increase in total production in Kenya. This is the largest production multiplier from WFP spending in the RBN region. This positive production multiplier tells us that WFP spending results in a net gain in production, benefiting Kenya's producers.

As production expands, income flows into households, stimulating consumption demand and additional rounds of production increases in the economy. Rising demand also can put upward pressure on the prices of goods and services. Price inflation raises consumption costs and creates the possibility that, even if cash income expands, real or inflation-adjusted income could fall.

The real, or inflation-adjusted, increases in Kenya's income per dollar of WFP RBN spending was calculated by dividing the effect on Kenya's real GDP by the amount of WFP spending in Kenya. An additional dollar of WFP spending raises total real income by $3.36 in Kenya (Figure 4). This is the second highest real income multiplier from WFP spending in the region. The positive real income multiplier in Kenya tells us that WFP spending results in a net income gain, benefiting local households.

Higher production creates jobs. The total employment effects of WFP spending in Kenya are calculated as the increase in total wage income divided by the average wage, then converted into year-round equivalent jobs.

WFP RBN spending creates 44,986 jobs for unskilled workers and 4,219 jobs for skilled workers in Kenya. The impact on unskilled employment in Kenya is the third largest in the region, after Uganda and Ethiopia. The impact on skilled employment is the second largest of all countries in the region, after Uganda. Impacts on unskilled employment are considerably larger than impacts on skilled employment. The reason is that WFP spending impacts sectors that are likely to hire unskilled labor. Farming, transportation, trade, and warehousing expand their hiring because of the direct and indirect impacts of WFP spending. The positive employment effects in Kenya tell us that WFP spending results in a net gain for workers.

4. Methodology to Disaggregate Impacts for Food Secure and Insecure Households

The multi-country AGE model to assess WFP's economic footprint in East Africa provides information on the impacts of WFP RBN spending on country GDPs. GDP is the sum of payments to factors by economic activities in each economy. The AGE model's GDP result can be disaggregated into returns to capital (profits), wage income to skilled workers, and wage income to unskilled workers. Table 1 presents this breakdown.

Table 1. Breakdown of Impacts of WFP Spending on Kenya GDP, by Factor

Factor	Impact (Millions of KSH)	Percentage	Multiplier
Labor	118	55%	1.85
Capital	95	45%	1.51
Total	213	100%	3.36

In the RBN model, profit and wage incomes flow into households, represented by a single aggregate household group. Households, in turn, spend this income on goods and services, taxes, savings, etc.

Information on how profit and wage incomes are distributed across households is necessary in order to disaggregate the GDP impacts between food-secure and food-insecure households. This information is not available in the database for GTAP models. However, it is available from existing household surveys. The most recent of these is the Kenya Integrated Household Budget Survey (KIHBS) of 2016, which covered a nationally representative sample of 24,000 households. This survey is recent enough to serve as a reliable basis to identify food-secure and food-insecure households, as well as to ascertain how profit, high-skilled wage, and low-skilled wage income are distributed between these two household groups. It is unlikely that the distribution of factor incomes changed in a meaningful way between 2016 and 2020, the year that is the focus of the WFP RBN AGE analysis.

a. Description of the 2016 KHIBS

The 2015/16 Kenya Integrated Household Budget Survey (KIHBS) was conducted by the Kenya Bureau of Statistics (KNBS) over a 12-month period to obtain up-to-date data on a range of socioeconomic indicators used to monitor the implementation of development initiatives (KNBS, 2018). It is representative at the national level and similar in scope and length to the 2005/06 KIHBS, but it does not survey the same households. The KIHBS collects data on household characteristics, housing conditions, education, general health characteristics, nutrition, household income and credit, household transfers, information communication technology, domestic tourism, shocks to household welfare and access to justice.

The sample design for the 2015/16 KIHBS used a two-stage stratified sampling methodology, with the goal of providing statistically valid estimates nationally, for urban and rural households, and for each of Kenya's 47 counties. The sampling frame for the 2016 KHIBS is based on a master sample called the fifth National Sample Survey and Evaluation Programme (NASSEP V), designed in 2010. This framework takes Kenya's 47 counties, disaggregates the counties into sub-county units, called clusters, then randomly drawing households from each cluster. The final sample consists of 24,000 households from 2,400 clusters—1,416 urban and 984 rural. County samples ranged from 440 to 720 households. Additional details on the KIHBS sample design can be found in the Kenya National Bureau of Statistics (KNBS) Basic Report for the 2015/16 KIHBS (Appendix 1).

b. Identifying Food-secure and Food-insecure Households

Table 3 shows a summary of headcount poverty measures, taken from the Basic Report on Wellbeing in Kenya from the Kenya National Bureau of Statistics (KNBS, 2018). These are estimates of the food poverty headcount (the percent of households below the food poverty line) across different populations. The food poverty line is constructed according to the required daily per adult equivalent calorie requirement for Kenyans, specified as 2,250 Kcal. The KNBS also conducted sensitivity analysis and established that the

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nutritional anchor of 2,250 Kcal used in previous poverty reports remains robust. The rural and urban food poverty lines were set by costing two separate bundles of basic food items that attain the 2,250 Kcal minimum nutritional requirements in a way consistent with food tastes in rural and urban areas observed in the KIHBS. The food poverty lines in monthly adult equivalent terms are KSh 1,954 and KSh 2,551 for rural and urban areas, respectively.

We used the KIHBS household food consumption expenditures combined with household level survey weights to distinguish between households that were food secure, that is, above the food poverty line, and food insecure, or below the food poverty line. We then replicated the national overall food poverty headcount for food insecure households and came up with the same 23.8% as reported in the Basic Report on Wellbeing. The KIHBS surveyed 6,091 food insecure households, representing 2.7 million households, and 15,682 food secure households, representing 8.7 million households nationwide (KNBS, 2018).

Table 3. Summary of 2015/16 Headcount Poverty Measures

Residence	Headcount Poverty Measures	Poor Individuals		Poor Households		Poor People (Adult equivalent-Adulteq)	
		(% of Population)	(Number of people in thousands)	(% of Households)	(Number of households in thousands)	(% of Adulteq)	(Number of Adulteq in thousands)
National	Food Poverty	32.0	14,539	23.8	2,718	31.9	11,594
	Overall Poverty	36.1	16,401	27.4	3,126	35.3	12,847
	Hardcore Poverty	8.6	3,908	6.0	682	8.3	3,037
Rural	Food Poverty	35.8	10,419	28.1	1,808	35.7	8,213
	Overall Poverty	40.1	11,687	32.6	2,097	39.5	9,086
	Hardcore Poverty	11.2	3,273	8.7	560	11.0	2,530
Peri-Urban	Food Poverty	28.9	965	21.5	173	29.1	789
	Overall Poverty	27.5	920	21.1	166	27.3	768
	Hardcore Poverty	6.0	199	4.6	37	6.0	163
Core-Urban	Food Poverty	24.4	3,155	17.7	736	24.3	2,592
	Overall Poverty	29.4	3,795	20.6	880	28.3	2,915
	Hardcore Poverty	3.4	436	2.0	85	3.2	343

Source: Basic Report on Wellbeing in Kenya (Kenya National Bureau of Statistics, 2018) -Table 4.1.

c. Estimating the Distribution of Income and Employment Impacts between Household Groups

Household incomes consist of wages and profits. To disaggregate wages and profits by food insecure and food secure households, we used the answers to questions in the survey on labor and self-employment. The survey asked all individuals in every surveyed household detailed questions on wages from their primary and secondary jobs, both formal and informal, as well as their profits if self-employed. We used this information to calculate the share of profits and wages flowing into food insecure and food secure households.

To disaggregate employment by food insecure and food secure households, we used the households' description of their primary and secondary jobs to classify labor as skilled or unskilled.[5] We then calculated the share of skilled and unskilled labor wages in food insecure and food secure households. We allocated the increase in employment due to WFP spending in Kenya using these shares.

We combined the AGE results with analysis of the micro-survey data to ascertain the likely impacts of WFP RBN spending on income and employment in food secure and food insecure households in Kenya. Assuming that wage and profit effects of WFP spending are distributed across households in the same proportion as wages and profits in the KIHBS survey micro-data, we can estimate how the real income multiplier is disaggregated between food secure and food insecure households.[6]

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[5] These are grouped in our AGE model according to the ILO occupations. Skilled labor is defined as technicians, professionals, officials and managers, whereas unskilled labor is defined agricultural workers, clerks, service and shop workers.
[6] This assumption, we believe, is reasonable inasmuch as the production impacts of WFP RBN spending identified in the model, direct plus indirect, affect all production sectors in the economy. The assumption would be violated if WFP purchases as well as all of their indirect spillover effects in the economy impacted each household group in ways not reflected by its average wage and profit income reported in the KIBHS survey.

GTAP Global Trade Analysis Project   UCDAVIS   kagin'sconsulting Alleviating Poverty Worldwide   WFP World Food Programme

5. Key Findings

This section reports key findings from our study of the impacts of WFP spending on income and employment in food-secure and food-insecure households. For this analysis, WFP spending includes spending on goods and services in Kenya as well as spending in other RBN countries, which import goods and services from Kenya.

a. Income

Figure 2 shows the multiplier effects of WFP spending on unskilled labor, skilled labor, capital (profit), and total incomes of poor (blue) and non-poor (orange) households in Kenya. It illustrates clearly three central findings of this study. First, WFP spending in East Africa has a larger effect on capital than wage income in Kenya. Second, it benefits both food-secure (non-poor) and food-insecure (poor) households. Third, the impacts are larger for food-secure than food-insecure households.
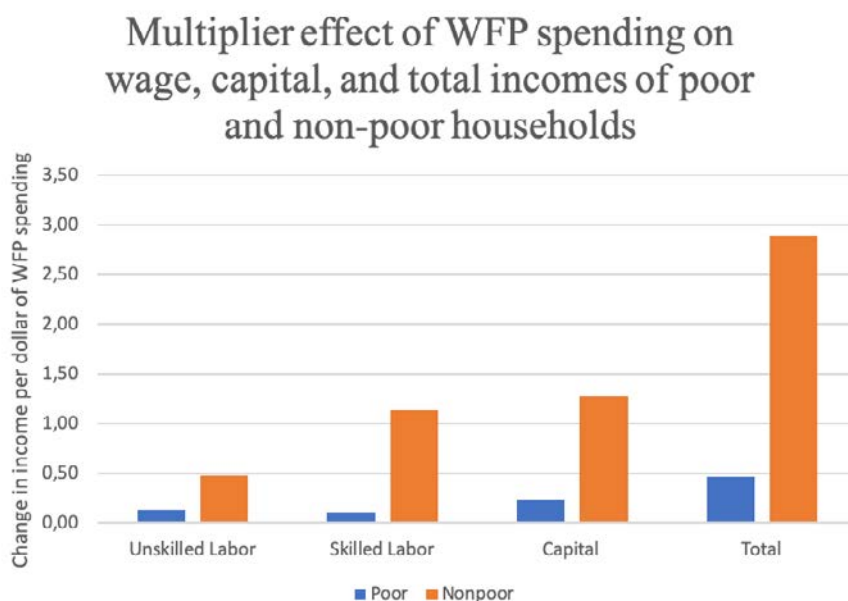

Figure 2. The multiplier effects of WFP RBN spending on household incomes in Kenya are larger for profits and skilled labor, and they favour nonpoor households.

Each dollar of WFP RBN spending increases total wage income by $1.85 and total capital income, or profits, by $1.51. Of the $1.85 increase in wage income, $0.61 is paid to unskilled workers and $1.25 to skilled workers. The payments both to unskilled and skilled workers favour non-poor households. Of the $0.61 paid to unskilled workers, $0.13 flows to poor households, and the rest, $0.48, accrues to non-poor households. The non-poor household share of skilled labor income is larger: of the $1.25 increase in payments to skilled workers resulting from WFP spending, $0.11 goes to poor households, and $1.14 goes to non-poor households.

Capital income, or profits, also favour non-poor households. The profits in Kenya created by an additional dollar of WFP RBN spending total $1.51. Of this, $0.23 goes to poor households and $1.27 flows to non-poor households.

The right-most pair of bars in Figure 2 show the total income multipliers of an additional dollar of WFP RBN spending for poor and non-poor households in Kenya. An additional dollar of WFP RBN spending raises total household income in Kenya by $3.36, of which $0.47 accrues to poor households and $2.89 flows to non-poor households.

b. Employment

The impact of WFP RBN spending on employment in food secure and food insecure households is approximated by dividing total wage payments by the average wage rate for each labor type (skilled and unskilled). The results, shown in Table 2, reveal substantial employment benefits for both household groups, but the benefits are larger for food secure households.

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Table 2. Impacts of WFP Spending on Employment in Kenya, by Skill Level

Labor Type	Household type	
	Food Insecure	Food Secure
Skilled labor	791	3,428
Unskilled labor	11,854	33,132

Of the 44,986 jobs created for unskilled workers in Kenya, 11,854 (28%) are in food insecure households and 33,132 (72%) are in food secure households. Of the 4,219 jobs for skilled workers, 791 (19%) are in food insecure households and 3,428 (81%) are in food secure households.

c. Poverty

We used the KIBHS household data to compare poverty levels in Kenya with and without the income generated by WFP RBN spending. The size of poverty impacts depends on the magnitude of the income effect of WFP RBN spending as well as on how much of the income gain goes to households with incomes below the national poverty line. It also depends on how we measure poverty. Three ways are commonly used to estimate poverty impacts. They are:

- Headcount: The incidence of poverty, measured as percentage of people living in households with income below the poverty line

- Poverty Gap: The depth of poverty, or cost of bringing everyone up to the poverty line, measured as the sum across all poor people of the difference between a poor person's income and the per capita poverty line.

- Poverty Gap-squared: The severity of poverty, measured as the sum across all poor people of the square of the difference between a person's income and the per capita poverty line.

In theory, WFP RBN spending could affect the incidence of poverty by enabling some poor households to raise their income above the poverty line. It could reduce the depth of poverty by bringing some poor households' income up closer to the poverty line. It could reduce the severity of poverty if it disproportionately benefits the poorest of the poor. Nevertheless, because WFP RBN spending is small relative to Kenya's total GDP, it cannot have a large effect on any of these poverty measures.

Figure 3 compares Kenya's poverty headcount or incidence of poverty with and without WFP RBN spending. The impact is small but negative: poverty as measured by the headcount ratio falls slightly as a result of WFP RBN spending, from 23.82% to 23.79%. This represents a 0.13% decrease in the percentage of Kenyan's living in poverty. WFP RBN spending does not have a noticeable effect on the depth or severity of poverty in Kenya.
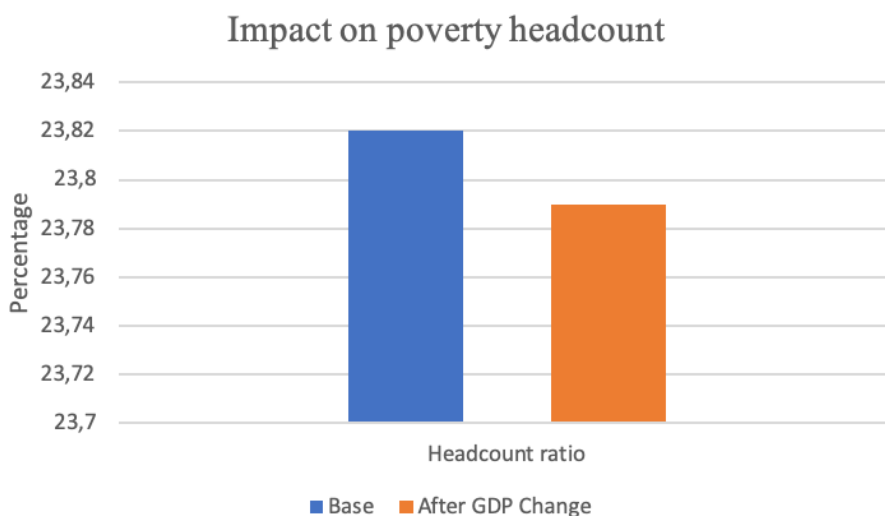

Figure 3. Kenya's poverty headcount ratio with and without WFP RBN spending. Note that, to show the small change in the poverty incidence clearly, the vertical axis has been rescaled to start at 23.7.

d. Inequality

The impact of WFP RBN spending on household income inequality, using the conventional Gini Coefficient measure, depends on three things:

- The share of income gains from WFP RBN spending in household total income

- How income gains from WFP RBN spending are distributed across households

- The correlation between these income gains and household rankings in terms of total income.

WFP RBN spending can only have a small effect on income inequality because the income gains it creates are small compared with household total income, or GDP. With that caveat, their effect on income inequality is larger the more unequally the income gains are distributed; income gains from WFP RBN spending cannot affect income inequality if they are evenly distributed across households. If these income gains are distributed unequally across households, they reduce income inequality if they favor households with incomes at the upper end of the income distribution. They increase income inequality if they favor households with incomes at the lower end of the income distribution.

Figure 4 shows the Gini Coefficient of household income inequality in Kenya with and without WFP RBN spending. A higher Gini Coefficient indicates greater income inequality. It is clear in this figure that WFP RBN spending has a very slight positive effect on household income inequality in Kenya. Without considering the income gains from WFP RBN spending, the Gini coefficient of household income inequality is 0.3735. After WFP RBN spending it increases very slightly, to 0.3737. This represents a 0.055% increase in household income inequality as measured by the Gini Coefficient.
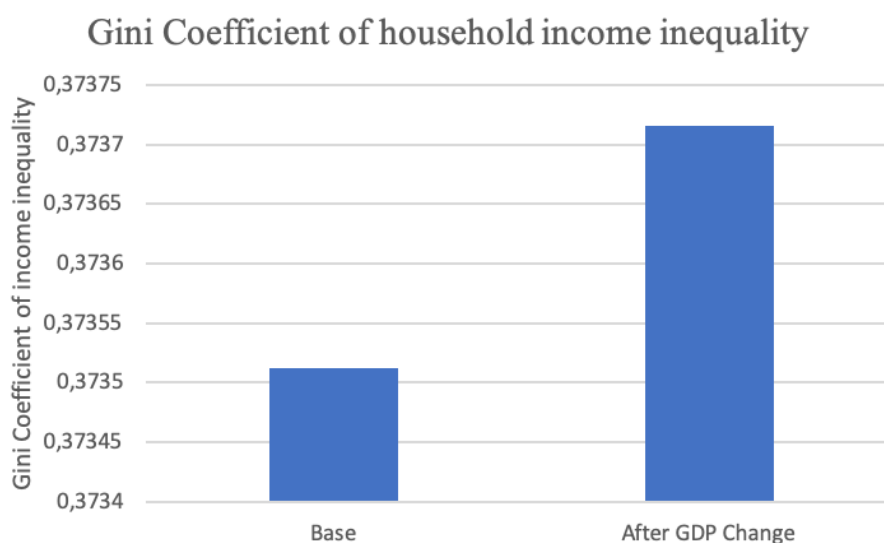

Figure 4. Gini Coefficient of household income inequality in Kenya with and without WFP RBN spending. The Gini Coefficient ranges from 0 in the case of perfect income equality (all households have the same income) to 1 in the case of perfect income inequality (one household has all the income in the economy). Note that, to show the small change in equality clearly, the vertical axis has been rescaled to start at 0.3734.

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6. Conclusions

WFP RBN spending, while substantial, is small relative to the size of the entire economy of Kenya. Nevertheless, income and employment multipliers per dollar of WFP RBN spending are large. Each dollar of WFP RBN spending raises total real income, or GDP, in Kenya by $3.36 per year. It also creates 44,986 jobs for unskilled workers and 4,219 jobs for skilled workers. These are among the largest impacts of WFP RBN spending in East African countries.

The present study extends the analysis of RBN economic impacts in East Africa by examining the distribution of these impacts between poor (food-insecure) and non-poor (food-secure) households. Both poor and non-poor households clearly benefit from RBN spending. Nevertheless, the impacts are larger for non-poor households. Overall, poor households capture around 14% of the multiplier effects of RBN spending on household real incomes in Kenya. Poor households, on average, have fewer educated family members and less capital than non-poor households have. Thus, it is not surprising that they receive the lion's share of payments to skilled workers and profits from RBN operations. Poor households receive a larger share of non-skilled wage payments than of skilled wage payments or profits. They get 21% of non-skilled payments, 9% of skilled wage payments, and 16% of profits created by WFP RBN operations. Nevertheless, the finding that only 21% of non-skilled wages created by RBN operations flow to poor households underlines the fact that Kenya's poorest households lack access to the kinds of jobs—primarily formal sector jobs—most likely to be affected by WFP spending in the region.

Because WFP RBN spending and the income it generates are small compared with the size of the entire economy of Kenya, it does not have large impacts on poverty or household income inequality. It slightly reduces poverty in Kenya, as measured by the headcount measure. It has a very slight un-equalizing effect on household incomes, as measured by the Gini Coefficient.

Overall, these findings highlight the important economic impacts that WFP RBN spending has on households in Kenya, including the poor. At the same time, they reveal that WFP RBN spending does not appreciably affect poverty or income inequality. Complementary policy interventions, such as job training or business development, are needed to increase the benefits from WFP RBN spending, and indeed, of income growth generally, for poor (food-insecure) households in Kenya, as well as to reduce income inequalities.

7. References

Corong, E., J. Kagin, J.E. Taylor and D. van der Mensbrugghe, 2022. Economic Impact Assessment of World Food Program Expenditures in East Africa: Final Report on Aggregate Impacts. Nairobi: United Nations World Food Programme.

Hertel, T.W., 1997. *Global Trade Analysis: Modeling and applications.* Cambridge University Press.

Kenya National Bureau of Statistics, 2018. Basic Report on Well-Being in Kenya: Based on the 2015/16 Kenya Integrated Household Budget Survey (KIHBS). Government of the Republic of Kenya.

Taylor, J.E. and Filipski, M.J., 2014. *Beyond experiments in development economics: Local economy-wide impact evaluation.* Oxford University Press.

World Food Programme, 2016. WFP Supply Chain: Annual Report 2015. Rome, Italy.