



# Errata

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Food Security in Practice 5

## **SOCIAL ACCOUNTING MATRICES AND MULTIPLIER ANALYSIS: AN INTRODUCTION WITH EXERCISES**

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**P. 3, last paragraph of “Domestic institutions” section, lines 5–7:** “consumption spending [R2-C5], transfers to households [R4-C5], and to the rest of the world [R7-C5]” should read “consumption spending [R2-C5] and transfers to households [R4-C5].”

**P. 7, second-to-last line of “Value-added” section:** “62.4 percent” should be “75 percent”

**P. 11, Note 7, line 3:** “(www.ifpri.org/data/ghana03.asp)” should be “(http://www.ifpri.org/dataset/ghana)”

**P. 20, last paragraph of “Discussion of Task 4,” lines 8–9:** “By default we have set government demand to be endogenous so we can compare” should be “If we set government demand to be endogenous, we can compare”

**P. 24, line 1:** “The second term” should be “The first term”

### **P. 25–26, “Discussion of Task 5” section and Table 5:**

This entire section of text and the accompanying table should be as below.

“Table 5 reports the results of the seven-sector constrained Ghana model. Model results for the three scenarios are reported in each column. These results are interpreted as follows: a one-unit increase in exogenous export demand leads to an increase in output, GDP, and household incomes as indicated in the respective column cell. The output multipliers add up all linkage effects to estimate the overall increase in gross output for each sector. The GDP multipliers combine all labor and capital earnings generated by the additional production in all sectors. Finally, the income multipliers measure the additional incomes generated by rural and urban households in each scenario.

“In the three simulations, we compare an increase in agricultural exports and manufacturing exports. An increase in agricultural exports leads to a higher economywide GDP compared to manufacturing. While a 1 million-cedi increase in agricultural exports increases GDP by 1.19 million cedi, the same increase in manufacturing exports increases GDP by 0.32 million cedi. Moreover, if agricultural supply is constrained, then the impact of manufacturing exports on GDP is even smaller (0.18 million cedi).

"A closer look at the results explains these differences in multiplier effects (see Table 5). Agriculture has stronger linkages to almost all sectors. The decomposition of agriculture's multiplier effect indicates that raising agricultural export demand by 1 million cedi causes agricultural output to increase by 1.34 million cedi, manufacturing to increase by 0.24 million cedi, construction by 0.37 million cedi, and private services by 0.16 million cedi. The total output multiplier effect is 2.19, meaning that the 1 million-cedi expansion of agricultural exports leads to a more than twofold overall increase in national output once all linkages are accounted for.

"The change in total demand following increased agricultural exports is larger than the change in output, indicating that not all additional demand generated by agriculture's export expansion is supplied by domestic producers. This is particularly true for manufactured goods, where demand increases by 0.75 million cedi, but domestic output only grows by 0.24 million cedi. This reflects the high import intensity of manufacturing in Ghana. Urban households benefit almost as much as rural households from the increase in agricultural export demand. Rural household incomes increase by 0.60 million cedi, as compared to 0.59 million cedi for urban households.

"Increasing manufacturing export demand has weaker domestic multiplier effects because much of the additional demand is met by imports. Assuming unconstrained or supply-elastic agriculture (Scenario 2), a 1 million-cedi increase in manufacturing export demand increases domestic agricultural output by 0.16 million cedi. This in turn induces additional production in other sectors, particularly in construction. This can be seen from the difference in output multipliers between Scenario 2, where agriculture's supply is unconstrained, and Scenario 3, where agriculture's supply is constrained. The GDP multiplier for manufacturing is higher for labor than for capital, reflecting the higher labor-intensity of manufacturing production. There is little difference in income effects across rural and urban households. The two household groups' incomes rise by 0.16 million cedi when agriculture is unconstrained and by 0.08 and 0.09 million cedi, respectively, when agriculture is constrained.

"Comparing the two manufacturing export scenarios reveals the importance of agriculture as a means of expanding national GDP and raising household incomes. This is because agriculture has strong linkages to the rest of the economy. More specifically, agriculture's production and consumption linkages are directed toward sectors and institutions that use large shares of domestically produced goods and services. By contrast, manufacturing has large leakages resulting from the sector's high import intensity. Thus, most additional intermediate demand for manufacturing is supplied by domestic farmers, whose incomes rise accordingly. The same applies to private services and the electricity and water sectors, all of which are traded less than most other sectors.

"Expanding agricultural export demand benefits household incomes more than manufacturing export growth. Moreover, because rural households spend a larger share of their income on agricultural goods and less on import-intensive manufactures, the expansion of agriculture leads to stronger consumption linkages and to fewer leakages. By contrast, expanding manufacturing exports leads to greater demand for imported manufactured intermediates. Together these weaker production and consumption linkages reduce the size of manufacturing's multiplier effects. Ultimately, our multiplier analysis confirms the need to target agriculture-led growth if Ghana wants to substantially raise economywide growth and improve household incomes."

**Table 5. Multipliers under the three export expansion scenarios**

		Scenario 1	Scenario 2	Scenario 3	
		Increased agricultural exports	Increased manufacturing exports		
			Agriculture (elastic)	Agriculture (inelastic)	
Activity - agriculture	aagr	1.34	0.16	0.00	Output
Activity - mining	amin	0.00	0.00	0.00	multipliers
Activity - manufacturing	aman	0.24	0.43	0.40	
Activity - electricity and water	aelw	0.07	0.05	0.04	
Activity - construction	acon	0.37	0.12	0.08	
Activity - public services	apubs	0.01	0.00	0.00	
Activity - private services	aprvs	0.16	0.04	0.02	
Commodity - agriculture	cagr	1.48	0.18	-0.12	Demand
Commodity - mining	cmin	0.00	0.00	0.00	multipliers
Commodity - manufacturing	cman	0.75	1.31	1.22	
Commodity - electricity and water	celw	0.07	0.05	0.04	
Commodity - construction	ccon	0.40	0.13	0.08	
Commodity - public services	cpubs	0.01	0.00	0.00	
Commodity - private services	cprvs	0.18	0.05	0.03	
Factor - labor	lab	1.03	0.24	0.12	GDP
Factor - capital	cap	0.16	0.08	0.06	multipliers
Households - rural	hrur	0.60	0.16	0.08	Income
Households - urban	hurb	0.59	0.16	0.09	multipliers
Government	gov	0.23	0.21	0.18	
Savings/investment	s-i	0.24	0.06	0.04	
Rest of the world	row	0.54	0.73	0.66	Imports
Total multipliers	Output	2.19	0.80	0.54	
	GDP	1.19	0.32	0.18	

**P. 29, line 9:** "Now we replace Xs and Vs in Equation A1" should be "Now we replace Xs and Ys in Equation A1"

CD-ROM, Worksheet 5, SAM legend: "Activity - electricity, water and construction" and "Commodity - electricity, water and construction (abbreviated "aelco" and "celco")" should be "Activity - electricity and water" and "Commodity - electricity and water" (abbreviated "aelw" and "celw"). "Activity - trade and transports" and "Commodity - trade and transports (abbreviated "atrad" and "ctrad")" should be "Activity - construction" and "Commodity - construction" (abbreviated "acon" and "ccon").

