

FOOD SECURITY ACTIVITY

JAMAICA COUNTRY REPORT

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JAMAICA FOOD POLICY ANALYSIS SYSTEM

PROJECT OBJECTIVES

- Design, construct, implement and validate a state-of-the art analytical system to provide an affordable and pragmatic agriculture, trade and economic policy analysis tool to USAID assisted countries
- Develop a utilitarian and generic prototype that can be used for interdisciplinary analysis, and can be adopted by any government, international donor agency or institutional user
- Assist USAID and governments toward a better understanding of the benefits and consequences of food aid programmes and international trade and agricultural policy recommendations
- Access baseline information, otherwise inaccessible and unaffordable to USAID and to host governments, through linkage with an existing framework, *The Food and Agriculture Policy Review Institute (FAPRI)* modelling structures
- Ensure the usefulness and sustainability of the system through in-country installation, training, updating of the world trade model data base, and a collaborative relationship between CARD, USAID missions and country participants

JAMAICA COUNTRY STUDY OBJECTIVES

Provide USAID, GOJ, and other relevant institutions with an accurate state-of-the art analytical tool to assist with policy analysis and formulation in the areas of

INTERNATIONAL TRADE AGREEMENTS

- GATT
- NAFTA
- CARICOM
- CBI
- The Lomé Protocol

DOMESTIC AGRICULTURAL POLICY

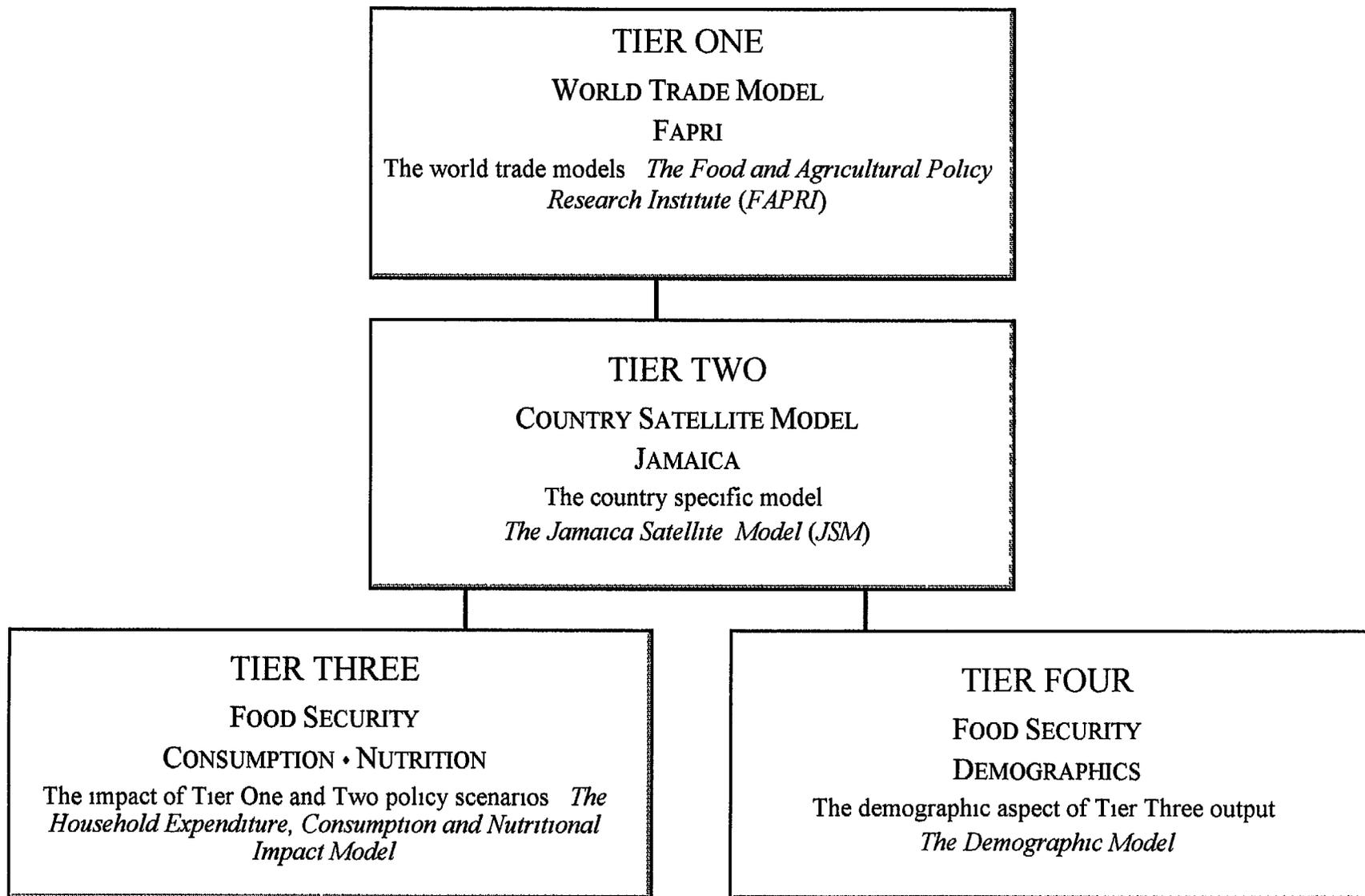
- Internal taxes
- Price and Production
- Marketing and Export

FOOD AID AND FOOD SECURITY

- Price and Consumption Effects
- Nutritional Outcomes
- Food Subsidies
- Targeting of Vulnerable Groups

WHY JAMAICA WAS CHOSEN

- Jamaica embodies several conditions which are characteristic of other developing countries fluctuating exchange rates, an export dependent economy, thin markets, and important economic/environmental/agricultural/trade policy choices to be made
- Jamaica has shown a strong trend of economic recovery over the past decade
- Jamaica is largely food import dependent, and is therefore, sensitive to events in world markets. Conversely, agricultural exports comprise a significant proportion of the total revenue necessary to maintain the balance of trade and rural employment
- Jamaica is also a large user of U S food aid programmes
- Jamaica is a member of the Lomé Protocol, creating a trilateral trade linkage of exports to the EU and imports from the U S
- Jamaica's data systems are highly developed and accurate, making it the ideal setting for building and activating a prototype
- An abundance of human resources with advanced levels of education afford multiple opportunities in both the public, private and academic sector to optimize on the benefits of having this analytical tool available



OVERVIEW OF ANALYTICAL FRAMEWORK

TIER ONE

WORLD TRADE MODEL *The Food and Agricultural Policy Research Institute (FAPRI)*

FUNCTION Analyzes world trade policies for all large producers, importers and exporters

**COUNTRY SPECIFIC DATA
REQUIREMENTS**

Prices Farm, Wholesale, Retail, Border and World

Production Crops and Livestock

Trade, Macroeconomic and Weather Data

Agricultural Policies U S Farm Bill, the Common Agricultural Policy of the European Union (CAP), Lome Protocol, International Trade Agreements (GATT), Regional Trade Agreements (NAFTA), Supply Controls, Conservation Programmes, Export Subsidies and Government Stocks

DATA SOURCES Databases from the USDA, Universities, The United Nations, The World Bank, OECD, FAO, IMF and Government Agencies

COVERAGE 80 Countries, 30 Commodities

ISSUES AND ADVANTAGES

- Issue:** The World Trade Model can only capture major players in the world market, all other countries are amalgamated into one unit Rest of the World (ROW)
- Advantages:** The World Trade Model does capture the overt effects of international events on a small economy like Jamaica
- Issue:** For Jamaica, a food dependent economy, changes in the world market are transmitted directly There is, however, no world trade model structure that isolates Jamaica
- Advantage:** The nature of this interaction indicates that Jamaican markets are too thin to exert any influence in the world
- Issue:** There are no LDC original country specific “elasticities” (parameters that capture relationships between price, consumption and production), making it difficult or impossible to conduct accurate analysis Existing World Trade Models have relied upon elasticities fabricated from expert opinion or secondhand information for most USAID development assistance and food aid recipient countries
- Advantage:** World Trade Models provide accurate estimates based on a comprehensive and extensive volume of important information across all major world producers and traders incorporated in the model

TIER ONE

TIER TWO

COUNTRY SATELLITE MODEL

The Jamaica Satellite Model (JSM)

FUNCTION

Measures the price, production and trade impact of Tier One policies using elasticities generated by the Jamaica specific econometric model

Describes consumption effects for four income groups using Household Expenditure Survey data

Provides retrospective and prospective analysis of policy decisions within Jamaica

DATA REQUIREMENTS

Prices Farm, Wholesale, Retail, Border and World

Production Crops and Livestock

Trade, Macroeconomic and Weather Data

Agricultural Policies Lome Protocol, GATT, Caricom, Common External Tariff, Stamp Duties, General Consumption Tax, Food Aid, State Trading

DATA SOURCES

Planning Institute of Jamaica, Statistical Institute of Jamaica, Bank of Jamaica, Ministry of Welfare and Labour, Ministry of Finance, Ministry of Agriculture, USAID Jamaica Mission, Sugar Industry Authority, University of the West Indies, Jamaica Parliament Library

COMMODITY COVERAGE

Wheat, Wheat Flour, Rice, Corn, Cornmeal, Cane Sugar, Soybean, Soymeal, Soy Oil, Poultry, Beef and Pork

ISSUES AND ADVANTAGES

- Issue:** Except for household income, equity issues are not addressed in this tier
- Advantages:** Household income is a leading measure of the affordability and accessibility aspects of food security
- Issue:** Consumption effects on specific population groups, who may be affected most dramatically by Tier One and Two events are not expressed
- Advantage:** The consumption impact of food policy is expressed in concise, quantitative terms, by household income categories

TIER TWO

TIER THREE

FOOD SECURITY MODEL *The Household Expenditure, Consumption and Nutritional Impact Model*

FUNCTION Produces per capita consumption effects by income quartile
 Translates consumption effects of income groups into nutritional outcomes expressed as proportions of nutrient intake relative to the Recommended Daily Allowance (RDA) for six micro and four macro nutrients

DATA REQUIREMENTS Tier Two Consumption and Expenditure Data by Quartile
 Food Composition Tables based on local standards
 Recommended Daily Allowance calculated by Indigenous Standards

DATA SOURCES National Household Expenditure Survey Data from the Statistical Institute of Jamaica
 Food Composition Tables from WHO/Caribbean Food and Nutrition Institute (CFNI)
 Recommended Daily Allowance from WHO/Caribbean Food and Nutrition Institute

COVERAGE Commodities Wheat Flour, Rice, Cornmeal, Sugar, Soy Oil, Poultry, Beef and Pork
 Nutrients Energy, Protein, Fat, Carbohydrate, Iron, Vitamin A, Calcium, Thiamin, Riboflavin, and Niacin
 Income Group Quartiles

ISSUES AND ADVANTAGES

Issue: This tier cannot identify effects on specific vulnerable groups

Advantages. The accessibility issue of food security is clear, as vulnerability related to income is wholly transparent. The translation of mean consumption impact into nutrient intake, expressed as percentages of Recommended Daily Allowance by income group, opens an additional dimension to understand the relationship between income and health and nutritional status.

Issue: This tier has limitations for decision making on domestic policy to address specific food security issues for different demographic groups.

Advantage. Differential impacts of broad based food security, agricultural and trade initiatives can be prospectively assessed across many income groups prior to implementation.

TIER THREE

TIER FOUR

FOOD SECURITY MODEL *The Demographic Model*

FUNCTION Provides per capita consumption effects by demographic characteristics
Translates these consumption effects, for each demographic group, into nutritional outcomes expressed in terms of proportions of nutrient intake to their respective RDA
Reflects differences among vulnerable groups

DATA REQUIREMENTS & SOURCES As for Tier Three, with the addition of adjustments for variations that capture demographic characteristics

COMMODITIES AND NUTRIENTS COVERAGE Same as Tier Three

DEMOGRAPHIC COVERAGE Geographic Location of Residence -- Urban and Rural
Gender Head of Household -- Male and Female
Age Head of Household -- Less than 25, 25 to 65, More than 65
Family Size -- One to Two, Three to Six, More than Six
Occupation of Head of Household -- Professional, Self-employed Agriculture, Self-employed Nonagricultural, Services, Others

ISSUES AND ADVANTAGES

Issue: At this point in the analysis, the model output can result in an informational overload, in the absence of streamlined format for summarizing, analysing and presenting the data

Advantages: Through the use of advanced computer technologies, particularly graphics, the information can be organized and presented in a comprehensible manner

Issue: This level of analysis is data intensive

Advantage: Detailed and important information about vulnerable groups at the highest risk of becoming food insecure is readily available, bridging the gap between macroeconomic trade and agriculture policies and the micro-level household/individual effects of those policies

TIER FOUR

ACTIVATION OF THE ANALYTICAL FRAMEWORK

Three Simulations On GATT

SIMULATION FOUR

GATT FULL GATT

Analyzed Impact of GATT Inclusive of Jamaican Tariffs

SIMULATION FIVE

GATT REMOVAL OF GOJ TARIFFS

Analyzed Impact of GATT with Removal of Jamaican Tariffs

SIMULATION SIX

GATT REDUCTION OF GOJ TARIFFS

Analyzed Impact of GATT with Selective Reduction of Jamaican Tariffs

ANALYSIS

SELECTED RESULTS

GATT • Food Aid

GATT

World Market Prices Rise Under The GATT

- Supply contracts in response to removal of production subsidies among major producers and exporters
- Demand expands due to a lowering of duties in importing countries
- The world market price effects are transmitted directly to the Jamaican economy due to its food and feed import dependency and small economies of scale

AGGREGATE AVERAGE RATES OF PRICE INCREASE FROM BASELINE LEVELS - 1995 TO 2002

WHEAT	18 26	POULTRY	5 33	SOYBEAN	10 89
RICE	8 16	BEEF	4 95	SOYMEAL	9 54
CORN	12 21	PORK	6 44	SOY OIL	13 57

- Sugar remains stable in the short term due to the meeting of minimum access requirements, partially by crediting Lomé imports to the EU against the access minimum

GATT

Agricultural Trade and Production in Jamaica is Highly Sensitive to GATT Tariff Schedule

SIMULATION	TRADE
FOUR	<ul style="list-style-type: none">• Imports of cereals decline at rates ranging from 1 to 7 percent under the GATT implementation
FIVE	<ul style="list-style-type: none">• The declines are attributable to domestic tariff policies more so than to external world market price increases• Due to displacement of domestic livestock production by cheaper imports, the impact on feed inputs was significant, with soybean, soymeal and corn reduced by 79 percent, 99 percent and 17 percent, respectively• These findings may indicate additional analysis will be helpful as feed crops, formerly provided under food aid, dwindle in response to production and export subsidy reductions under the GATT• Sugar trade contracted sharply by about 50 percent throughout the implementation period because imports replace local production previously supplying local consumption

GATT

Agricultural Trade and Production in Jamaica is Highly Sensitive to GATT Tariff Schedule

SIMULATION	PRODUCTION
FOUR	<ul style="list-style-type: none">• Under existing GATT disciplines, poultry and beef production decline 3 and 9 percent, respectively, with pork showing a marginal increase of 1 percent
FIVE	<ul style="list-style-type: none">• Full removal of border measures results in the elimination of all domestic poultry production and 12 percent of domestic beef. Pork production, however, expands by 34 percent• Importation of feed inputs for poultry and beef decline accordingly• Sugar production shows a 31 percent decline• Local production of sugar intended for domestic consumption is replaced by sugar imports facilitating a 32 percent decline in sugar production• One possible response to declining food imports is the expanded production of indigenous substitutes such as roots and tubers for wheat and corn and coconut oil to replace soy oil. There could be health implications, however, unless other sources of dietary protein and unsaturated fats are added also
SIX	<ul style="list-style-type: none">• Under food security targeted tariff revisions, poultry and beef production declines at the onset, but reduced tariffs on feed inputs allow local production to recapture its market share in the medium term• This facilitates an average increase in the per capita consumption of poultry by 18 percent, pork by 3 percent and a 5 percent decline in beef production. The effects, however, are experienced differently relative to household income

GATT

The GATT Disciplines Allow the GOJ Ample Opportunities to Enhance Food Security

- Simulations Four, Five and Six compare the retail price effects on the consumption and nutritional status of Jamaican households throughout the GATT implementation period
- Under current GATT disciplines, tariff schedules appear to compromise the food security of the poorest households Full removal of border duties resulted in consumption in excess of daily requirements
- The full removal of tariffs also precipitated the elimination of domestic poultry industry and acute contractions in the beef sector Only pork production exhibited resilience with expansion
- Simulation Six offers a compromise position of partially reduced GOJ tariffs, thereby
 - providing affordable and accessible food consumption and nutrient intake to low income households,
 - maintaining reasonable levels of domestic livestock production,
 - balancing the choice between government revenues generated by border duties with public health concerns

GATT-INDUCED TARIFF RATE AND RETAIL PRICES

	SIMULATION FOUR			SIMULATION FIVE			SIMULATION SIX		
	DUTY (%)	PRICE (J\$)	CHANGE (5)	DUTY (%)	PRICE (J\$)	CHANGE (5)	DUTY (%)	PRICE (J\$)	CHANGE (5)
WHEAT FLOUR									
1993	85 0	5 23	0 00	85 00	5 23	0 00	85 00	5 23	0 00
1997	85 0	7 89	7 72	0 00	5 85	-20 10	30 00	6 56	-10 45
2002	85 0	14 78	5 14	0 00	10 94	-22 17	30 00	12 27	-12 71
RICE									
1993	30 0	6 64	0 00	30 00	6 64	0 00	30 00	6 64	0 00
1997	30 0	10 68	1 22	0 00	9 91	-6 12	30 00	10 68	1 22
2002	30 0	21 98	1 75	0 00	20 38	-5 62	30 00	21 98	1 75
CORNMEAL									
1993	70 0	5 56	0 00	70 00	5 59	0 00	70 00	5 59	0 00
1997	70 0	16 46	5 55	0 00	11 87	-23 91	70 00	16 46	5 55
2002	70 0	23 76	4 91	0 00	16 06	-29 09	70 00	23 76	4 91
SUGAR									
1993	80 0	3 25	0 00	80 00	3 25	0 00	80 00	3 25	0 00
1997	80 0	5 08	0 00	0 00	4 40	-13 47	80 00	5 08	0 00
2002	80 0	7 80	0 00	0 00	6 75	-13 47	8 00	7 80	0 00
SOY OIL									
1993	45 0	11 44	0 00	45 00	11 44	0 00	45 00	11 44	0 00
1997	45 0	18 60	0 53	0 00	16 50	-10 77	30 00	17 90	-3 23
2002	45 0	29 80	0 12	0 00	26 45	-11 13	30 00	28 68	-3 62

GATT-INDUCED TARIFF RATE AND RETAIL PRICES

		SIMULATION FOUR			SIMULATION FIVE			SIMULATION SIX		
		DUTY (%)	PRICE (J\$)	CHANGE (5)	DUTY (%)	PRICE (J\$)	CHANGE (5)	DUTY (%)	PRICE (J\$)	CHANGE (5)
1993 1997 2002	CHICKEN	86 0	20 00	0 00	86 00	20 00	0 00	86 00	20 00	0 00
		80 0	36 42	2 94	0 00	20 98	-40 70	40 00	28 70	-18 88
		80 0	63 98	0 61	0 00	36 85	-42 04	40 00	50 41	-20 71
1993 1997 2002	BEEF	86 0	40 66	0 00	86 00	40 66	0 00	86 00	40 66	0 00
		80 0	56 19	6 34	0 00	48 04	-9 07	80 00	56 19	6 34
		80 0	109 20	3 13	0 00	93 37	-11 81	80 00	109 20	3 14
1993 1997 2002	PORK	86 0	39 58	0 00	86 00	39 58	0 00	86 00	39 58	0 00
		80 0	75 95	3 63	0 00	45 57	-37 82	80 00	75 95	3 63
		80 0	174 57	2 26	0 00	104 74	-38 63	80 00	174 57	2 26

GATT

Consumption And Nutritional Impact By Income Group

- The food basket analyzed comprises a range of 60 to 80 percent of the total consumption in the Jamaican diet. The lower the household income, the higher the contribution of the model's commodity baskets of basic foods is to the total dietary intake.
- Quartile Three, representing the middle class, shows stable consumption patterns owing to availability of other income that can be reallocated for food expenditure, but not enough income to overconsume.
- Under the current GATT discipline, the poorest household will experience a net decline of eight percent in cereal consumption. Sugar consumption expands by one percent, providing some compensation for lost calories but none for essential protein.
- Protein provided through animal products declines by 6 percent among the poorest households.
- Presumably, the large proportions of nutritional resources provided to upper income households outside the model's commodity basket more than compensate for small reductions in commodity basket consumption. In particular, dairy products and fish are significant.

GATT

Consumption And Nutritional Impact By Family Size

SIMULATION

- FOUR
- Consumption response between small and large households differed both in commodity mix and magnitudes. Consumption declined across more commodities in smaller households than in large households. That is, whereas soy oil, poultry and pork declined in small households, an increase in these commodities occurred in larger households. One explanation for this is that larger households may have more income earners.
 - Except for wheat, larger households showed higher magnitudes of response relative to small households.
 - The nutrient intake of households with one to two members was generally at or above the RDA, while that of larger households were only half of the RDA.
- FIVE
- Full removal of GOJ tariffs improved the nutritional status of all households by family size, but a bigger improvement is shown by larger households. The proportion of RDA increased, overall, by 7 percent for smaller households, compared to 4 percent for large households, a 10 percent increase in protein compared to 5 percent, and an 8 percent increase in iron compared to 4 percent for larger households.
- SIX
- Reduction of GOJ tariffs on selected commodities improved the nutritional status of all households by family size, but the positive impact on small households is bigger than for large households. This data may be useful for targeting of food substitutes.

FOOD AID

Food Aid Has Played a Prominent Role in Both the Supply of Food and as a Macroeconomic Contributions to the Balance of Payments

- Food aid is defined as the sum of all U S Government grant funded, concessionally financed and subsidized credit programmes
- From 1972 to 1993, the period covered by this study, food aid - in many years - accounted for a large proportion of the total food supply The balance sheets for wheat, wheat flour, rice, corn, cornmeal, soybean, soymeal and soy oil, show substantial food aid components
- The availability of food aid may have given the GOJ more flexibility to formulate pro-food security policies such as, consumer price support, food subsidy and food stamp programs

FOOD AID

Consumption, Production And Trade In Jamaica In Sensitive To The Food Aid Supply

SIMULATION

- THREE
- Sugar production was not affected by food aid, however sugar consumption increased as food aid supplies were reduced
 - Livestock production declines by 20 percent, beef by 1 percent and pork by 7 percent
 - Imports of meat increase to maintain current consumption, displacing domestic production Poultry production declines by 50 percent, followed by beef and pork
 - The decline in meat production precipitates reduced demand for soybean imports Domestic production of soymeal and soy oil fall by to 17 percent occurs Soymeal imports also drop 50 percent
 - Rice trade and consumption are inversely related to food aid rice supplies over time
 - The change in supply source from food aid to commercial resulted in lower levels of per capita consumption, peaking at declines of 23 percent for wheat, 21 percent for cornmeal and 19 percent for soy oil
 - Preliminary analysis suggests that the choice of commodities has the most predominant effect as an animal feed, followed by lesser levels of subsidization of basic foods
- ONE
- The twenty year average decline in wheat consumption was 91 percent

FOOD AID

The Presence of Food Aid Programmes has Given Jamaica Cheaper Imported Food Sources

- Large proportions of food aid supplies for a given food tend to lower retail prices for a given commodity

SIMULATION

- ONE • The retail price of wheat increased at an average rate of 42 percent when food aid supplies were eliminated with no substitution of commercial wheat imports
- THREE • When all food aid was eliminated from the domestic food and feed supply, prices rose. For food the average retail price increase was 8 percent, cornmeal prices rose 9 percent, and the price of soy oil increased by 8 percent

FOOD AID

Consumption and Nutritional Impact by Income Group

SIMULATION

- ONE** • Removal of food aid wheat supplies without commercial replacement facilitated a decline in Quartiles One and Three consumption of 28 percent and 25 percent, respectively
- The nutritional impact on calorie and protein intake was significant

FOOD AID

Consumption and Nutritional Impact by Income Group

SIMULATION

THREE

- The shift from food aid to commercial supplies means higher retail prices. The poorest households, Quartile One, consume, on average, 6 percent less wheat, 4 percent less rice, 6 percent less cornmeal and 4 percent less soy oil.
- Sugar consumption increases less than 1 percent for Quartile One.
- While Quartile Three experienced a decline in consumption of wheat by 4 percent, rice by 3 percent and soy oil by 2 percent, this was offset by a 1 percent increase in the consumption of cornmeal and a 2 percent increase for sugar.
- Quartile One nutritional intake throughout the study period was 82 percent of the RDA for protein, 109 percent for carbohydrate, 25 percent for calcium and 44 percent for thiamin from the model food basket.
- Reductions of nutritional intake ranged from 1 to 6 percent across all nutrients for Quartiles One and Three.
- While the magnitude of adjustment in the production and trade sector is vast, this translates to considerably smaller adjustments for consumers at the micro-level.
- The role of food aid in the fostering of indigenous agro-industry and the benefits and consequences of this should be considered more carefully.
- The nutritional benefits of food aid are not evenly distributed due to smaller amounts of cereals, soy oil and food-aid-fed livestock consumed by lower income households compared to wealthy households.

FOOD AID

Consumption and Nutritional Impact by Gender of Head of Household

SIMULATION

- THREE
- The consumption impact showed a similar pattern across households by gender of the head of household, with consumption declining for wheat, rice and soy oil, and increasing for cornmeal and sugar
 - The magnitude of change in consumption was higher among households headed by a male for commodities that showed a decline in consumption (e g , wheat, rice and soy oil) The rate of change was higher among households headed by a female, however, for commodities with increasing consumption (e g , cornmeal and sugar)
 - This means that women replace lost nutrients with lower cost and less nutritious food sources, while men tend to remain at the new deficit levels
 - Livestock consumption remained stable
- ONE
- Wheat consumption declined at a higher rate (25 percent) in male-headed households, compared to 24 percent for households with female heads
 - Nutrient intake was comparable between households with male and female heads Protein intake was 90 percent of RDA, carbohydrate at 105 (male) and 119 percent (female), calcium, 26 percent (male) and 23 percent (female), thiamin, 42 percent (male) and 44 percent (female)
 - The rate of decline of overall nutrient intake was higher for households with male heads, a range from 1 to 2 percent, than for households with female heads, where the overall decline is 1 percent