2011 Updated Arkansas Global Rice Model[1]

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Abstract

The Arkansas Global Rice Model is based on a multi-country statistical simulation and econometric framework. The model is disaggregated by five world regions: Africa, the Americas, Asia, Europe, and Oceania. Each region includes country models which have a supply sector, a demand sector, a trade, stocks and price linkage equations. All equations used in this model are estimated using econometric procedures or identities. Estimates are based upon a set of explanatory variables including exogenous macroeconomic factors such as income, population, inflation rate, technology development, and especially, government determined policy variables which reflect the various mechanisms by which countries intervene in their rice sector economy. Individual country models are linked through net trade to recognize the interdependence of countries in the world rice economy.

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Structure of the Arkansas Global Rice Model

The Arkansas Global Rice Model is based on a multi-country econometric framework. The model consists of five world regions covering 40 countries. These regions are Africa, the Americas, Asia, Europe, and Oceania. Each region is comprised of several countries and each country model has a supply sector, a demand sector, trade, and price linkage equations. All equations are either estimated using econometric techniques or are specified as identities. Estimates are based upon a set of explanatory variables including exogenous macroeconomic factors such as income, population, inflation rate, technology development, and especially, government determined policy variables which reflect the various mechanisms by which countries intervene in their rice sector economy. Macroeconomic data are based on Global Insight projections. Individual country models are linked through net trade, a specification that highlights the interdependence of countries in the world rice economy.

The model provides projections of the world rice economy for a ten-year period. Simulation is conducted for the purpose of the baseline projection and policy analysis. Thai FOB (5% brokens, Bangkok) and California (No.1 medium grain ex-mill) are used to clear the international rice markets. Projections include national levels of production (area harvested and yields), consumption, net trade, stocks, and prices.

The international rice market is unique because it is differentiated between long and medium grain markets and is also heavily distorted by respective government policies. The Arkansas Global Rice Model does not attempt to capture the imperfect nature of the international rice market. However, the model does not assume a perfectly competitive market structure. All government distortions are explicitly reflected in the model's structure. These policies are incorporated in the model's supply, demand, export (or import), stocks, and price transmission equations, and are thus implicitly reflected in the model solution.

All other countries not individually modeled are included in one of the five rest-of-each region (ROR) models. The countries that are modeled individually account for 94% of world rice area, 95% of world rice production, 94% of consumption, 99% of world rice exports, 74% of world rice imports, and 98% of world rice stocks for the 2000-2009 time period. Additionally the modeled countries account for 81% of world population and 93% of world real GDP over the same period.

The 45 countries or regions explicitly included in the model by world region are:
AFRICA: Cameroon, Cote D'Ivoire, Egypt, Ghana, Guinea, Kenya, Mali, Mozambique, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania and Rest-of Africa;
AMERICAS: Argentina, Brazil, Canada, Mexico, United States, Uruguay and Rest-of Americas;

ASIA: Bangladesh, Cambodia, China, Hong Kong, India, Indonesia, Iran, Iraq, Japan, Malaysia, Myanmar, Pakistan, the Philippines, Saudi Arabia, South Korea, Taiwan, Thailand, Turkey, Vietnam and Rest-of-Asia;

EUROPE: EU 27 and Rest-of Europe; and

OCEANIA: Australia and Rest-of-Oceania

The Arkansas Rice Model has been used to provide baseline projections for the international FAPRI model as well as examine a variety of market and policy scenarios related to world, regional, and U.S. rice economies. The model has been extended and revised to provide more detailed information on the implications of global and individual country agricultural policy reforms such as trade liberalization and food security.. The model is now further developed to examine the influence of a wider range of countries and rice policies that affect international rice trade. The model is continually updated with respect to data and model specifications.

Theoretical Structure of the Model

Major components of a country or regional model include a supply sector, a demand sector, trade, stocks and price linkage equations. Computationally, the simulation model solves for the set of farm level, retail level, and export (import) prices that simultaneously clears all markets (long and medium grain) in a given year for a given set of exogenous factors. Due to the dynamics of supply and demand, such market clearing prices must be obtained recursively for each future year simulated.

Supply Sector

This study assumes that the rice supply determines by profit-maximizing producers i.e., rice producers maximize their net revenue received subject to the technical and regulatory constraints imposed by their production function. Solving the producer's problem yields first-order conditions identifying the optimal level of inputs such that the value of the marginal product of the input will be equal to the price of the input. The relationships are expressed as functions of expected output prices and expected input prices. The input demand relationships can be aggregated without specification bias, if each individual farmer faces the same price. Under such an assumption, the industry equation describing planted acreage is a function of the expected output and inputs price. Since for most countries in most years there is little difference between planted acreage and harvested acreage, a function for harvested acreage is specified and estimated in this model. Hence, the generalized relationship specifying harvested acreage is expressed as:

$$HA_t = f_1(HA_{t-1}, P_t^e, W_t^e, e_{1t}),$$

where HA_t is harvested acreage, P_t^e is expected price received by producers, W_t^e is expected input price, and e_{1t} is the error term. One would anticipate positive coefficients for lagged acreage and expected price of rice and negative coefficients for input price.

Yield is generally specified as a function of expected output, input prices, and technological change.

$$Y_t = f_2(P_t^e, W_t^e, T_t, e_{2t}).$$

Demand Sector

This study assumes that rice demand determines by utility-maximizing consumers. Rice consumers maximize their utility subject to their budget constraint. Solving the consumer's problem yields first-order conditions identifying the optimal level of commodities they buy. Therefore, the per capita rice demand is generally specified as:

$$D_t = f_3(M_t, RP_t, WP_t, e_{t3}),$$

where D_t is total rice demand on a per capita basis, M_t is per capita income in real terms, RP_t is rice retail price (weighted average of free market price and government ration price), and WP_t is wheat price.

The demand for exports is a function of the difference between domestic production and consumption and export price (FOB)

$$EXP_t = f_5(RESD_t, FOB_t, e_{t5}),$$

where EXP_t is exports, $RESD_t$ is residual of total production net of total consumption, and FOB_t is free on board export price measured in local currency.

Price Linkages

Farm price, P_t is generally modeled as a function of retail price.

$$P_t = f_6(RP_t, e_{t6}).$$

Retail price is generally a function of deflated FOB price and a time trend that captures the improvement in marketing efficiency.

$$RP_t = f_7(FOB_t, e_{t7}).$$

where FOB_t is export price.

Export price is generally modeled as a function of Thai price (5% broken).

$$FOB_t = f_8(THAIFOB_t, e_{t8}).$$

Market Clearance

This study typically treats ending stocks as residual to close the model. Ending stocks are a residual of total supply (production and beginning stocks) net of total demand (total domestic demand and exports).

$$S_t = PROD_t + S_{t-1} - TD_t - EXP_t.$$

where $PROD_t$ is total production defined as total harvested area multiplied by yield, S_{t-1} is beginning stocks, and TD_t is per capita demand multiplied by population .

General Equations of the Model

U.S Rice Model

U.S. Model Aggregate

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Food Demand (Rough) (Pounds per Person)	Intercept		1.059	
	LN(Retail Price Deflated by CPI (2000 =100))	US Cents per Pound	-0.046	-0.047
	LN(Real GDP at 2000 Prices/U.S Population)	US$ per Person	0.206	0.207
	LN Trend	(Year-1982)	0.257	0.258
Total Food Consumption (Million Cwt.)	Per Capita Food Demand/100*	Cwt/ person	1	
	Population	Million	1	
Seed Use Demand (Rough) (Million Cwt.)	Intercept		-0.202	
	Area Harvested* Conversion Parameter	1000 Acres		
	Trend	(Year -1959)		
Brewer Demand (Rough)	Intercept		11.033	
	US Price for Rice for Brewing – Arkansas Deflated by CPI (2000 =100)	US$ per Cwt.	-22.779	-0.120
	Real GDP at 2000 Prices/ Population	US$ per Person	0.000	0.350
	Trend	(Year-1981)	-0.047	
Total Domestic Use (Million Cwt.)	Food Use (Rough)	Million Cwt.	1	
	Use for Brewing (Rough)	Million Cwt.	1	
	Seed Use (Rough)	Million Cwt.	1	
	Residual Use (Rough)	Million Cwt.	1	
Total Rice Area Harvested (1000 Acres)	Long Grain Area Harvested	1000 Acres	1	
	Medium and Short Grain Rice Area Harvested	1000 Acres	1	
Total Rough Rice Production (Million Cwt.)	Long Grain Rice Production	Million Cwt.	1	
	Medium and Short Grain Rice Production	Million Cwt.	1	
US Average Rough Rice Yield (Pounds per Acre)	US Production (Rough) divided by	Million Cwt.	1	
	Area Harvested*10000	1000 Acres	1	
Total Rough Rice Stocks (Million Cwt.)	+US Production (Rough)	Million Cwt.	1	
	+Beginning Stock (Rough)	Million Cwt.	1	
	+Import (Rough)	Million Cwt.	1	
	-US Exports Total LG & MG	Million Cwt.	-1	
	-Domestic Consumption (Rough)	Million Cwt.	-1	
Total Rice Exports (Rough Equivalent) (Million Cwt.)	Long Grain Rice Exports (Rough)	Million Cwt.	1	
	Medium & Short Grain Rice Export (Rough)	Million Cwt.	1	
Long Grain Rice Imports (Rough Equivalent) (Million Cwt.)	Intercept		-4.020	
	LN((Thai Price 100 % Long Grain)*(1+ MFN Tariff/100))/GDP Deflator	US$ per Mt	-0.239	-0.239
	LN(LAG(Long Grain Rice Domestic Consumption + Residual (Rough)))	Million Cwt.	1.469	1.469
Medium and Short Grain Rice Imports (Rough) (Million Cwt.)	Intercept		-14.397	

		Units	Parameters	Elasticity
	LN((Ex Milled California Price for Medium & Short Grain)*(1+MFN Tariff/100))/GDP Deflator	US$ per Cwt.	-1.698	-1.698
	LN(LAG(Medium & Short Grain Rice Domestic Consumption + Residual (Rough)))	Million Cwt.	3.317	3.317
Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Total Rice Imports (LG+MG Rough Equivalent) (Million Cwt.)	Long Grain Rice Imports (Rough)	Million Cwt.	1	
	Medium & Short Grain Rice Imports (Rough)	Million Cwt.	1	
Long Grain Rice Domestic Per Capita Consumption (Rough) (Pounds per Person)	Intercept		-8.890	
	LN(Retail Price Deflated by CPI (2000=100) for US)	Dollars per Cwt.	-0.185	-0.185
	LN(Deflated by GDP Deflator (2000=100)/Population*1000)	US$ per Person	1.157	1.157
Medium & Short Grain Rice Domestic Per Capita Consumption (Rough) (Pounds per Person)	Intercept		4.382	
	LN(LAG (Per Capita Medium Grain Domestic Consumption))	Pounds per Person	0.629	0.629
	LN(Ex Milled California Price for Medium & Short Grain Deflated by CPI (2000=100)	Dollars per Cwt.	-0.421	-0.421
	LN(Deflated by GDP Deflator(2000=100) /Population*1000)	GDP per Person	-0.392	-0.392
Rice Per Capita Domestic Consumption (LG+MG) (Pounds per Person)	Per Capita LG Domestic Consumption	Pounds per Person	1	0.741
	Per Capita MG Domestic Consumption	Pounds per Person	1	0.275
Total Long Grain Area Harvested (1000 Acres)	Long Grain Rice Area Harvested – AR	1000 Acres	1	
	Long Grain Rice Area Harvested – LA	1000 Acres	1	
	Long Grain Rice Area Harvested – MS	1000 Acres	1	
	Long Grain Rice Area Harvested – MO	1000 Acres	1	
	Long Grain Rice Area Harvested – TX	1000 Acres	1	
Rough Long Grain Production (Million Cwt.)	Long Grain Rice Production (Rough) – AR	Million Cwt.	1	
	Long Grain Rice Production (Rough) – LA	Million Cwt.	1	
	Long Grain Rice Production (Rough) – MS	Million Cwt.	1	
	Long Grain Rice Production (Rough) – MO	Million Cwt.	1	
	Long Grain Rice Production (Rough) – TX	Million Cwt.	1	
Rough Long Grain Yield (Rough) (Pounds per Acre)	(Rough Long Grain Production /	Million Cwt.	1	
	Total Long Grain Area Harvested)*100000	1000 Acres	1	
Rough Long Grain Ending Stocks (Million Cwt.)	+Long Grain Rice Production (Rough)	Million Cwt.	1	
	+Long Grain Rice Beginning Stock (Rough)	Million Cwt.	1	
	+Long Grain Rice Imports (Rough)	Million Cwt.	1	
	-Long Grain Rice Exports (Rough)	Million Cwt.	-1	
	-Long Grain Rice Domestic Consumption + Residual (Rough)	Million Cwt.	-1	
Total Medium & Short Grain Area Harvested (Million Cwt.)	Medium & Short Grain Rice Area Harvested - AR	Million Cwt.	1	
	Medium & Short Grain Rice Area Harvested - CA	Million Cwt.	1	

	Medium & Short Grain Rice Area Harvested - LA	Million Cwt.	1	
Rough Medium & Short Grain Production (Million Cwt.)	Medium & Short Grain Rice Production - AR	Million Cwt.	1	
	Medium & Short Grain Rice Production - CA	Million Cwt.	1	
	Medium & Short Grain Rice Production - LA	Million Cwt.	1	
Rough Medium & Short Grain Yield (Pounds per Acre)	Medium & Short Grain Rice Production (Rough)/	Million Cwt.	1	
	Medium & Short Grain Area Harvested*1000	Million Cwt.	1	
Rough Medium & Short Grain Ending Stocks (Million Cwt.)	+Medium & Short Grain Rice Production (Rough)	Million Cwt.	1	
	+Medium & Short Grain Beginning Stocks	Million Cwt.	1	
	+Medium & Short Grain Rice Imports (Rough)	Million Cwt.	1	
	-Medium & Short Grain Rice Exports (Rough)	Million Cwt.	-1	
	-Medium & Short Grain Rice Domestic Consumption + Residual (Rough)	Million Cwt.	-1	
Long Grain Rice Exports (Rough Equivalents) (Million Cwt.)	Intercept		-0.619	
	LN(Thai Price 100 % Long Grain / US Long Grain farm price (Rough))	Dollars per Mt	0.305	0.305
	LN(Long Grain Rice Production-Long Grain Domestic Consumption + Residual (Rough)+ Long Grain Rice Beginning Stocks)	Million Cwt.	0.858	0.858
Medium & Short Grain Rice Exports (Rough Equivalents) (Million Cwt.)	Intercept		0.757	0.757
	LN(Ex Milled California Price for Medium & Short Grain Deflated by CPI(2000=100))	Dollars per Cwt.	0.172	0.172
	LN(Medium & Short Grain Rice Production- Medium & Short Grain Domestic Consumption + Residual (Rough)+ Medium & Short Grain Rice Beginning Stocks)	Million Cwt.	0.475	0.475
Average Long Grain Farm Price (Dollars per Cwt.)	Intercept		0.129	0.129
	LN(Rice Price FOB Houston Deflated by GDP Deflator (2000=100))	Dollars per Cwt.	1.336	1.336
	LN(Long Grain Rice Beginning Stocks (Rough))	Million Cwt.	-0.145	-0.145
Average Medium & Short Grain Farm Price (Dollars per Cwt.)	Intercept		-0.057	
	LN(Ex Milled California Price for Medium & Short Grain Deflated by GDP Deflator (2000=100))	Dollars per Cwt.	1.083	1.083
	LN(US Long Grain Farm Price Deflated by GDP Deflator (2000=100))	Dollars per Cwt.	0.257	0.257
	LN(Medium & Short Grain Beginning Stocks (Rough))	Million Cwt.	-0.044	-0.044
U.S. Average Farm Price (Dollars per Cwt.)	(1/ US Production (Rough)*US Long Grain Farm Price (Rough)* Long Grain Rice Production (Rough)	US$ Cwt.		
	(1/ US Production (Rough)*US Medium Grain Farm Price (Rough)* Medium & Short Grain Rice Production (Rough)	US$ Cwt.		
U.S. Retail Farm Price (Dollars per Cwt.)	Intercept		-0.026	
	LN LAG(Retail Price Deflated by CPI (2000=100))	Cents per Lb.	0.794	0.794
	LN(FOB Houston Deflated by CPI(2000=100))	Dollars per Cwt.	0.062	0.062
Arkansas Brewer Price (Dollars per Cwt.)	Intercept		0.040	
	LN(U.S. Avg. Farm Price (Rough) Deflated by GDP Deflator (2000=100))	Dollars per Cwt.	1.023	1.023
Houston Export Price (FOB	Intercept		2.006	

		Units	Parameters	Elasticity
	LN(Thailand Price100% Long Grain Deflated by GDP Deflator (2000=100))	Dollars per Mt	0.600	0.600
	LN(LAG(Long Grain Rice Exports (Rough))	Million Cwt.	0.492	0.492
California Medium Grain Ex-Mill Price (Dollars per Cwt.)	Intercept			

ARKANSAS SUB MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Arkansas Long Grain Area Harvested (1000Acres)	Intercept		493.702	
	LAG(Long Grain Area Harvested - AR)	1000 Acres	0.537	0.541
	LAG (Long Grain Rice Net Returns AR / Soybean Net Returns- AR)		27.533	0.035
Arkansas Long Grain Rice Production (Rough) (Million Cwt)	Long Grain Area Harvested, AR*	1000 Acres	1	
	Long Grain Rice Yield (Rough) - AR	Cwt. per Acre	1	
Arkansas Long Grain Yield (Rough) (Pound per Acre)	Intercept		4688.034	
	LAG (UREA price Deflated by CPI(2000=100))	Dollars per Ton	-56.901	-0.021
	Trend	(Year - 1982)	90.619	0.263
Arkansas Medium & Short Grain Area Harvested (1000 Acres)	Intercept		53.342	
	LAG(Medium & Short Grain Rice Net Returns/Cotton Net Returns - AR)	Dollars per Acre	3.803	0.010
	LAG(Medium & Short Grain Rice Area Harvested - AR)	1000 Acres	0.624	0.582
Arkansas Medium & Short Grain Production (Rough) (Million Cwt)	(Medium & Short Grain Rice Area Harvested – AR *	1000 Acres	1	
	Medium & Short Grain Rice Yield (Rough) – AR	Cwt. per Acre	1	
Arkansas Medium & Short Grain Yield (Rough) (Pound per Acre)	Intercept		8.465	
	LN (Trend)	(Year - 1982)	0.104	0.104
Arkansas Total Rice Area (1000 Acres)	Medium & Short Grain Rice Area Harvested – AR	1000 Acres	1	
	Long Grain Rice Area Harvested – AR	1000 Acres	1	
Arkansas Total Rice Production (Rough)(Cwt.)	Medium & Short Grain Rice Production (Rough) - AR +	Million Cwt.	1	
	Long Grain Rice Production (Rough) – AR	Million Cwt.	1	
Arkansas Average Yield (Rough)(Pounds per Acre)	Rough Production – AR	Cwt.	1	
	Area Harvested - AR*100000	1000 Acres	1	
Arkansas Long Grain Farm Price (Dollars per Cwt.)	Intercept		-0.484	
	US Long Grain Farm Price (Rough)	Dollars per Cwt.	1.065	1.074
Arkansas Medium & Short Grain Farm Price (Dollars per Cwt.)	Intercept		-0.362	
	US Medium Grain Farm Price (Rough)	Dollars per Cwt.	1.046	1.057
Arkansas Long Grain Net Returns (Dollars per Acre)	+Arkansas Long Grain Farm Market Price (Rough) *Long Grain Rice Yield (Rough)/100		1	
	+Rice Loan Deficiency Payments per Acre	Dollars per Acre	1	
	-Average Variable Cost per Acre – AR	Dollars per Acre	-1	

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Arkansas Medium & Short Grain Net Returns (Dollars per Acre)	+Arkansas Medium Grain Market Price (Rough)* Medium & Short Grain Rice Yield (Rough)- AR/100		1	
	+Rice Loan Deficiency Payments per Acre	Dollars per Acre	1	
	-Average Variable Cost per Acre – AR	Dollars per Acre	-1	

CALIFORNIA SUB MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
California Medium & Short Grain Area Harvested (1000 Acres)	Intercept		280.888	
	LAG(Medium & Short Grain Rice Net Returns Deflated by GDP Deflator (2000=100))	Dollars per Acre	6.140	0.016
	LAG(Corn Net Returns – CA Deflated by GDP Deflator (2000=100))	Dollars per Acre	-25.110	-0.161
	LAG (Medium & Short Grain Rice Area Harvested – CA)	1000 Acres	0.562	0.559
California Medium & Short Grain Production (Rough) (Million Cwt.)	(Medium & Short Grain Rice Area Harvested – CA*	1000 Acres	1	
	Medium & Short Grain Rice Yield (Rough) – CA / 100000	Pounds per Acre	1	
California Medium & Short Grain Yield (Rough) (Pounds per Acre)	Intercept		8.857	
	LN (Trend)	(Year - 1982)	0.044	0.044
California Medium & Short Grain Farm Price (Dollars per Cwt.)	Intercept		-0.893	
	US Medium Grain Farm Price (Rough)	Dollars per Cwt.	1.115	1.105
California Medium & Short Grain Net Returns (Dollars per Acre)	+California Medium Grain Market Price (Rough)* Medium & Short Grain Rice Yield (Rough)- CA/100		1	
	+Rice Loan Deficiency Payments per Acre	Dollars per Cwt	1	
	-Average Variable Cost per Acre – CA	Dollars per Acre	-1	

LOUISIANA SUB MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Louisiana Long Grain Area Harvested (1000 Acres)	Intercept		71.198	
	LAG (Long Grain Rice Net Returns Deflated by GDP Deflator(2000=100))	Dollars per Acre	44.305	0.092
	LAG(Soybean Net Returns - LA Deflated by GDP Deflator(2000=100))	Dollars per Acre	-86.159	-0.196
	LAG(Long Grain Rice Area Harvested – LA)	1000 Acres	0.846	0.887
Louisiana Long Grain Production (Rough) (Million Cwt.)	(Long Grain Area Harvested - LA*	1000 Acres	1	
	Long Grain Rice Yield (Rough) – LA) /100000	Pounds per Acre	1	
Louisiana Long Grain Yield (Rough) (Pounds per Acre)	Intercept		8.120	
	LN (Trend)	(Year - 1982)	0.162	0.162
Louisiana Medium & Short Grain Area Harvested (Million Cwt.)	Intercept		-8.201	
	LAG(Medium & Short Grain Rice Net Returns/ Corn Net Returns - LA	Dollars per	2.282	0.074

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
		Acre		
	LAG(Medium & Short Grain Rice Net Returns /Cotton Net Returns – LA)	Dollars per Acre	3.348	0.033
	LAG (Medium & Short Grain Rice Area Harvested – LA)	1000 Acres	0.932	1.191
Louisiana Medium & Short Grain Production (Rough) (Million Cwt.)	(Medium & Short Grain Area Harvested - LA*	1000 Acres	1	
	Medium & Short Grain Rice Yield (Rough) – LA) /100000	Pounds per Acre	1	
Louisiana Medium & Short Grain Yield (Rough) (Pounds per Acre)	Intercept		8.312	
	LAG (UREA Price Deflated by CPI (2000=100))	Dollars per Ton	-0.030	-0.030
	Trend	(Year - 1982)	0.073	0.073
Louisiana Total Rice Area (1000 Acres)	Medium & Short Grain Area Harvested - LA	1000 Acres		
	Long Grain Area Harvested - LA	1000 Acres		
Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Louisiana Long Grain Net Returns (Dollars per Acre)	+Arkansas Long Grain Farm Market Price (Rough)* Long Grain Rice Yield (Rough) - LA/100	Dollars per Cwt	1	
	+Rice Loan Deficiency Payments per Acre	Dollar per Acre	1	
	-Average Variable Cost per Acre - LA	Dollars per Acre	-1	
Louisiana Medium & Short Grain Net Returns (Dollars per Acre)	+Arkansas Medium Grain Market Price (Rough)* Medium & Short Grain Rice Yield (Rough) - LA/100	Dollars per Cwt	1	
	+Rice Loan Deficiency Payments per Acre	Dollar per Acre	1	
	-Average Variable Cost per Acre - LA	Dollars per Acre	-1	

MISSISSIPPI SUB MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Mississippi Long Grain Area Harvested (1000 Acres)	Intercept		59.076	
	LAG (Long Grain Rice Net Returns/Corn Net Returns- MS)		4.814	0.030
	LAG (Long Grain Rice Net Returns/Cotton Net Returns- MS)		2.385	0.005
	LAG (Long Grain Rice Area Harvested – MS)	1000 Acres	0.697	0.714
Mississippi Long Grain Production (Rough) (Million Cwt.)	(Long Grain Area Harvested - MS*	1000 Acres	1	
	Long Grain Rice Yield (Rough) - MS)	Pounds per Acre	1	
Mississippi Long Grain Yield (Rough) (Pounds per Acre)	Intercept		4837.109	
	LAG (UREA Price Deflated by CPI(2000=100))	Dollars per Ton	-108.312	-0.041
	Trend	(Year - 1982)	94.279	
Mississippi Long Grain Farm Price (Dollars per Cwt.)	Intercept		0.047	
	US Long Grain Farm Price (Rough)	Dollars per Cwt.	1.009	1.017
Mississippi Long Grain Net Returns (Dollars per Acre)	+Mississippi Long Grain Farm Market Price (Rough)* Long Grain Rice Yield (Rough) - MS/100		1	

	+Rice Loan Deficiency Payments per Acre	Dollar per Acre	1	
	-Average Variable Cost per Acre - MS	Dollars per Acre	-1	

MISSOURI SUB MODEL

Missouri Long Grain Area Harvested (1000 Acres)	Intercept		-4.646	
	LAG (Long Grain Area Harvested – MO)	1000 Acres	0.996	0.893
	LAG (Long Grain Rice Net Returns/ Soybean Net Returns – Missouri)		8.092	0.039
Missouri Long Grain Production (Rough) (Million Cwt.)	Long Grain Area Harvested – MO*	1000 Acres	1	
	Long Grain Rice Yield(Rough) – MO/100000	Pounds per Acre	1	
Missouri Long Grain Yield (Rough) (Pounds per Acre)	Intercept		4368.271	
	Trend	(Year - 1982)	81.910	
Missouri Long Grain Farm Price (Dollars per Cwt.)	Intercept		-0.498	
	US Long Grain Farm Price (Rough)	Dollars per Cwt.	1.055	1.086
Missouri Long Grain Net Returns (Dollars per Acre)	+Mississippi Long Grain Farm Market Price (Rough)* Long Grain Rice Yield (Rough) - MO/100		1	
	+Rice Loan Deficiency Payments per Acre	Dollars per Acre	1	
	-Average Variable Cost per Acre - MO	Dollars per Acre	-1	

TEXAS SUB MODEL

Texas Long Grain Area Harvested (1000 Acres)	Intercept		32.823	
	LAG (Long Grain Rice Net Returns Deflated by GDP Deflator(2000=100))	Dollars per Acre	14.958	0.062
	LAG (Corn Net Returns Deflated by GDP Deflator(2000=100))	Dollars per Acre	-23.709	-0.119
	LAG(Cotton Net Returns Texas Deflated by GDP Deflator(2000=100))	Dollars per Acre	-9.668	-0.110
	LAG(Long Grain Rice Area Harvested - TX)	1000 Acres	0.860	0.928
Texas Long Grain Production (Rough) (Million Cwt.)	Long Grain Area Harvested - TX*	1000 Acres	1	
	Long Grain Rice Yield (Rough) - TX/100000	Pounds per Acre	1	
Texas Long Grain Yield (Rough) (Pounds per Acre)	Intercept		5314.478	
	Trend	(Year -1982)	66.655	0.183
Texas Long Grain Farm Price (Dollars per Cwt.)	Intercept		0.447	
	US Long Grain Farm Price (Rough)	Dollars per Cwt.	0.984	1.118
Texas Long Grain Net Returns (Dollars per Acre)	+Texas Long Grain Farm Market Price (Rough)* Long Grain Rice Yield (Rough) - TX/100		1	
	+Rice Loan Deficiency Payments per Acre	Dollars per Acre	1	
	-Average Variable Cost per Acre – TX	Dollars per Acre	-1	

U.S. POLICY VARIABLES

Announced World Average Price (Dollars per Cwt.)	Intercept		-3.805	
	LN(Thailand Price 100% Long Grain Deflated by GDP Deflator)	Dollars per Ton	1.020	1.020
	LN(U.S. Export Price Houston Gulf FOB Deflated by GDP Deflator)	Dollars per Ton	0.250	
	LN(Beginning Stocks (Rough))	Million Cwt.	-0.130	
Loan Deficiency Payments ($Millions)	MAX(Loan Rate - Index of Monthly Announced Price Relative to Average Annual Announced Price (1995-1998) *Average World Price, 0)* Monthly Average Share of Annual Rice Marketings (1995-1998) *Average Rice Marketings Divided by Average Rice Production (1995-1998)*U.S. Production (Rough)			
Counter Cyclical Payment (Per Cwt.)	+Rice Target Price	Dollar per Cwt.	1	
	-Rice PFC payment per Acre	Dollar per Acre	-1	
	-Max (Loan Rate - Average World Price)	Dollar per Cwt.	-1	

AUSTRALIA MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		-12.461	
	(Ex-mill California Price Medium and Short Grain* Exchange Rate Deflated by CPI (2000=100)* 22.0462)	Australian $ per Mt	-1.113	-0.443
	(Real GDP at 2000 Prices/Population*1000)	AUS$ per Person	0.001	2.306
Total Consumption (1000 Mt)	Consumption Per Capita*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		3.568	
	LAG(Ex-Mill California Price for Medium and Short Grain Rice--4% Broken* Exchange Rate/CPI (2000=100)*22.0462	Australian Dollar per Mt	3.977	0.191
	LAG(Area Harvested)+	1000 Ha	0.450	
	Trend	(Year-1959)	0.000	
Yield Milled (Mt per Ha)	Intercept		2.645	
	Area Harvested	1000 Ha	-0.004	-0.108
	Trend	(Year-1959)	0.111	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Exports (1000 Mt)	Intercept		-635.097	
	(Milled Production+ Beginning Stock – Domestic Consumption)	1000 Mt	0.384	1.564
	(Ex-mill California Price Medium and Short Grain/ CPI (2000=100))	US$ Dollar per Mt	1263.148	1.742
	Trend	(Year-1959)	18.564	6.051
Imports (1000 Mt)	Intercept		35.000	
	Real Thailand Price 100% Long Grain*Exchange rate/ Consumer Index (2000=100)	Australian	-6.000	-0.411

				Dollar per Mt	
	Real GDP at 2000 Prices			Billions	888.204	0.587
Ending Stock (1000 Mt)	+Production Milled			1000 Mt	1
	+Beginning Stock			1000 Mt	1
	+Imports			1000 Mt	1
	-Domestic Consumption			1000 Mt	-1
	-Exports			1000 Mt	-1

BANGLADESH Model Aggregate

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption	Intercept		4.083	
(Kg per Person)	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.410	0.410
	LN(Wholesale Rice Price (Rough)/1000)/ Consumer Price Index (2000=100))	Taka per Mt	-0.001	-0.002
Total Consumption (1000 Mt)	Consumption per Capita*	Kg per Capita	1	
	Population	Million	1	
Harvested Area - AUS	Intercept		0.849	
(1000 Ha)	LN(LAG(Area Harvested –AUS))	1000 Ha	1.043	1.044
	LN(LAG(Milled Yield*(Government Procurement Quantity*Government Procurement Price + (Milled Production – Government Procurement Quantity) * Wholesale Rice Price Rough)/ Milled Production/0.6666/ Consumer Price Index (2000=100))	1000 Ha	-0.226	-0.226
Harvested Area - AMAN	Intercept		7.494	
(1000 Ha)	LN(LAG(Area Harvested-AMAN)	1000 Ha	0.047	0.047
	LN(LAG(Milled Yield*(Government Procurement Quantity* Government Procurement Price + (Milled Production – Government Procurement Qty) * Wholesale Rice Price Rough)/ Milled Production/0.6666/ CPI (2000=100))		0.134	0.134
Harvested Area - BORO	Intercept		0.125	
(1000 Ha)	LN(LAG(Area Harvested – BORO)	1000 Ha	0.830	0.830
	LN(LAG(Milled Yield*(Government Procurement Quantity* Government Procurement Price + (Milled Production – Government Procurement Qty) * Wholesale Rice Price Rough)/ Milled Production/0.6666/ CPI (2000=100))	1000 Ha	0.182	0.183
	LN Trend	(Year-1981)	0.008	0.008
Total Rice Area Harvested (1000 Ha)	Area Harvested - AUS	1000 Ha		
	Area harvested - AMAN	1000 Ha		
	Area Harvested - BORO	1000 Ha		
Milled Yield – AUS (Mt per Ha)	Intercept		0.469	
	Trend	(Year-1959)	0.021	
Milled Yield - AMAN (Mt per Ha)	Intercept		0.537	
	Trend	(Year-1959)	0.031	
Milled Yield – BORO (Mt per Ha)	Intercept		0.700	
	LAG(Government Procurement Quantity*Government Procurement Price+(Milled Production- Government Procurement Quantity)*Wholesale Rice Price (Rough))/ Milled Production/0.6666/ CPI (2000=100))	1000 Mt	0.001	0.082
	Trend	(Year-1959)	0.051	
Milled Rice Production (1000 Mt)	Area Harvested – AUS* Milled Yield+	1000 Mt		

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
	Area Harvested – AMAN*Milled Yield+	1000 Mt		
	Area Harvested – BORO*Milled Yield	1000 Mt		
Ending Stock (1000 Mt)	0.02*Domestic Consumption		0.020	
Import Price (Taka per Mt)	Thailand Price 35% Broken Long Grain*Exchange Rate (1+(Import Tariff+ Other Taxes Levied on Imports)/100)			
Wholesale Rice Price (Rough) (Taka per Mt)	Intercept		4.082	
	LN(Import Price)	Taka per Mt	0.568	0.569
Government Procurement Price (Taka per Mt)	Intercept		1029.338	
	Wholesale Rice Price (Rough)	Taka per Mt	0.842	0.919
Government Procurement Quantity (1000 Mt)	Intercept		-738.932	
	(Government Procurement Price)/Wholesale Rice Price (Rough))		1220.524	1.973
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic consumption	1000 Mt	1	
	+Export	1000 Mt	1	
	+Ending Stock	1000 Mt	1	

INDIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.622	
	LN(Government Release Price APL, Grade A (Fine) Deflated by CPI (2000=100))	Rupee per Mt	-0.040	-0.040
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.157	-0.158
	LN(Wheat Retail Price Deflated by CPI (2000=100))	Rupee per Mt	0.145	0.146
Total Consumption (1000 Mt)	Per capita consumption	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		6.441	
	LN(LAG((Grade A (Fine) Paddy Support Price*Yield Milled/GDP Deflator (2000=100))	Rupee per Ha	0.087	0.161
	LN(LAG(FOB Price*Exchange Rate*Yield per Hectare/ GDP Deflator (2000=100))	Rupee per Mt	-0.012	-0.023
	LN(LAG(Area Harvested))	1000 Ha	0.456	
	LN(Fertilizer Cost)	Rupee per Ha	-0.032	
Rough Yield (Mt per Ha)	Intercept		2.192	
	Rice Fertilizer Ratio			
	Trend	(Year-1982)	0.042	
Milled Production (1000 Mt)	Area Harvested	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept		12146.5	
	(Total Supply)	1000 Mt	0.222	0.475
	(Wholesale Price (Fine) Deflated by CPI (2000=100)*100)	Rupee per Mt	0.596	0.312
Exports (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	

	+Imports	1000 Mt	1	
	-Ending Stock	1000 Mt	-1	
Wholesale Price (Rupee per Mt)	LN(Ending Stock)	1000 Mt		
	Intercept		3.197	
	LN(Government Release Price APL---Grade A (Fine)/Consumer Price Index (2000=100)*100)	Rupee per Mt	0.788	0.788
	LN(Thailand Price 5% Broken Long Grain*Exchange Rate/ Consumer Price Index (2000=100)*100)	Rupee per Mt	0.135	0.135

INDONESIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		5.661	
	LN(Wholesale Price for Milled Rice/Consumer Price)	Rupiah per Kg	-0.133	-0.133
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.090	-0.090
Total Consumption (1000 Mt)	Per Capita Consumption	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		7.392	
	LAG(Farm Price (rough)*Yield Milled/Fertilizer Price)		0.090	0.103
	LAG(Area Harvested)		0.125	
	Trend	(Year -1959)	0	
Rough Yield (Mt per Ha)	Intercept		3.948	
	[LAG(Real Wholesale Price for Milled Rice)/Real Fertilizer Price)]	Rupiah per Mt	0.041	
	Trend	(Year-1982)	0.025	
Production Milled (1000 Mt)	Area Harvested	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept		1387.110	
	LAG(Milled Production +Imports-Domestic Consumption)	1000 Mt	0.184	0.020
	Beginning Stock	1000 Mt	0.036	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Farm Rice Price (Rough) (Rupiah per Kg)	Intercept		149.904	
	Government Floor Price (Rough)	Rupiah per Kg	0.207	0.569
	Wholesale Price for Milled Rice	Rupiah per Kg	0.339	
Wholesale Rice Price (Rupiah per Kg)	Intercept		173.933	
	Import Price	Rupiah per Kg	0.969	0.569
Import Price (Rupiah per Kg)	Thailand Price 5% Broken Long Grain*Exchange Rate/1000+(Rice Import Tariff)			

MALAYSIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity

Per Capita Consumption (Kg per Person)	Intercept		4.770	
	LN(Retail Price Deflated by CPI(2000=100))	LC per Mt	-0.302	-0.302
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.091	0.092
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.827	
	LN(LAG((Rice Producer Floor Price+ Rice Producer Subsidy Payment*Milling Yield)*Yield Milled/ CPI (2000=100))		0.150	0.429
	LN(LAG(Area Harvested))	1000 Ha	0.650	
Rough Yield (Mt per Ha)	Intercept		1.844	
	Trend	(Year-1959)	0.031	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	1000 Mt	1	
Ending Stock (1000 Mt)	Intercept		322.000	
	(Beginning Stock-0.17*LAG(Domestic Consumption)	1000 Mt	-1.000	-0.329
	Beginning Stock	1000 Mt	0.900	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Retail Price (LC per Mt)	(Import Price, Rice Retail Ceiling Price)			
Import Price (LC per Mt)	Thailand Price 35% Broken Long Grain* Exchange Rate* (1+Milled Rice--Applied Tariff/100)			

MYANMAR Model Aggregate

Per Capita Consumption (Kg per Person)	Intercept		3.193	
	LN(Retail Price Deflated by CPI (2000=100))	Ryat per Mt	-0.100	-0.100
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.130	0.130
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Mt)	Intercept		1.443	
	LN(Government Procurement Price*Government Purchase Quantity/Rough Production+(1- Government Purchase Quantity/Rough Production)* Thailand Price 35% Broken Long Grain*Exchange Rate*(+1(GDP Deflator Growth Rate-Exchange Rate Growth Rate/100)*Rough Yield/GDP Deflator (2000=100))		0.150	0.375
	LN(LAG(Area Harvested))	1000 Mt	0.600	
Rough Yield (Mt per Ha)	Intercept		1.890	
	Trend	(Year-1959)	0.026	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Wheat Yield	1000 Mt	1	
Exports (1000 Mt)	Intercept		-0.783	
	LN(Thailand Price 35% Broken Long Grain* Exchange Rate/ GDP Deflator (2000=100))	Ryat per Mt	0.100	0.100
	LN(Milled Production +Beginning Stock-Domestic Consumption)	1000 Mt	1	1.000

Ending Stock (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	+Imports	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	-Exports	1000 Mt	-1	
Retail Price (Kyat per Mt)	Intercept		-3.098	
	LN(Government Procurement Price*Government Purchase Quantity/Rough Production+(1- Government Purchase Quantity/Rough Production)* Thailand Price 35% Broken Long Grain*Exchange Rate*(+1(GDP Deflator Growth Rate-Exchange Rate Growth Rate/100))		1.735	1.736

PHILIPPINES Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.990	
	LN(Wholesale Price Deflated by CPI (2000=100))	LC per Mt	-0.250	-0.250
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.150	0.150
	LN(LAG(Domestic Consumption)	1000 Mt	0.000	0.000
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person		
	Total Population	Millions		
Area Harvested (1000 Ha)	Intercept		0.617	
	LN(LAG(Wholesale Price*Yield Milled Deflated by CPI (2000=100))	Phil Peso per Mt	0.034	0.357
	LN(LAG(Area Harvested))	1000 Ha	0.902	
Rough Yield (Mt per Ha)	Intercept		-0.647	
	LN(LAG(Import Prices Deflated by CPI (2000=100)*100)	LC per Mt	0.147	0.148
	LN Trend	(Year-1982)	0.143	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	1000 Mt	1	
Ending Stock (1000 Mt)	Intercept		27.000	
	LAG(Milled Production-Domestic Production)	1000 Mt	-0.500	-0.051
	Beginning Stock	1000 Mt	0.700	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Wholesale Rice Price (LC per Mt)	Intercept		0.542	
	Import Prices	LC per Mt	0.987	0.569
Import Price (LC per Mt)	Thailand Price 35% Broken Long Grain*Exchange Rate/1000+(Milled Rice In-quota Tariff)			

THAILAND Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption	Intercept		5.909	
(Kg per Person)	LN(Wholesale Price Deflated by CPI (2000=100))	Baht per Mt	-0.049	-0.050
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.159	-0.160

		Units	Parameters	Elasticity
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		4451.636	
	LAG((Farm Price*(1-Government Paddy Pledge Quantity/Rough Production)+Loan Price for 5 % Paddy*Government Paddy Pledge Quantity/Rough Production)*Yield Milled/GDP Deflator (2000=100))		6.788	0.149
	(LAG(Area Harvested))	1000 Ha	0.341	
	Fertilizer cost		-12.303	-0.085
Rough Yield (Mt per Ha)	Intercept		1.875	
	Trend	(Year-1982)	0.035	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept		-1388.960	
	Wholesale Price	Bath per Mt	-0.512	0.897
	Total Supply	1000 Mt	0.274	0.624
Exports (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	-Ending Stock	1000 Mt	-1	
Government Loan Pledge Quantity (1000 Mt)	Intercept		17.099	
	LN(Farm Price Deflated by GDP Deflator (2000=100))	Baht per Mt	-2.619	-2.620
Wholesale Rice Price (Baht per Mt)	LN(Ending Stock)	1000 Mt	0.118	0.118
	Intercept		2.272	
	LN(Thailand Price 5% Broken Long Grain)	Dollar per Mt	0.684	0.684
	Trend	(Year-1959)	0.569	0.569
Farm Price (Baht per Mt)	Intercept		5.642	
	LN(Thailand Price 5% Broken Long Grain)	Dollar per Mt	0.540	
	Trend	(Year-1959)	0	
Thai FOB 100% B Price (Dollars per Mt)	Intercept		1.036	
	Thailand Price 5% Broken Long Grain	Dollar per Mt	1.034	
Thai 35% Broken Price (Dollars per Mt)	Intercept		16.052	
	Thailand Price 5% Broken Long Grain	Dollar per Mt	0.571	
	Low Quality Share of Total Exports	Percent	-148.270	
	FOB Price	Dollars per Mt	1	
	Thailand Price 5% Broken Long Grain-30	Dollar per Mt		

VIETNAM Model Aggregate

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		6.345	
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.230	-0.230
	LN(Wholesale Price –25% Raw White Deflated by CPI (2000=100))	Dong per Kg	-0.200	-0.200

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Total Area Harvested (1000 Ha)	Intercept		6908.495	
	LAG(Paddy Farm Price (Mekong Delta)*Rough Yield Deflated by GDP Deflator (2000=100))	Dong per Kg	0.425	0.007
	(LAG(Area Harvested))	1000 Ha	0.343	
	Fertilizer cost	Dong per Ha	-0.023	-0.076
Mekong Delta Harvested (1000 Ha)	Intercept		325.609	
	LAG((Paddy Farm Price (Mekong Delta)*Rough Yield Deflated by GDP Deflator (2000=100))	Dong per Kg	9.093	0.476
	(LAG(Area Harvested Mekong))	1000 Ha	0.531	
Area Harvested in Other Regions (Red River, north) (1000 Ha)	Area Harvested -	1000 Ha	1	
	Area Harvested Mekong	1000 Ha	-1	
Rough Yield (Mt per Ha)	Intercept		2.477	
	[LAG(Real Paddy Farm Price, Mekong Delta)/Real Fertilizer Price)]		0.033	
	Trend	(Year-1982)	0.095	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept		-3625.223	
	(Milled Production)	1000 Mt	0.108	2.386
	(Thailand Price 35% Broken Long Grain*Exchange Rate Deflated by GDP Deflator (2000=100))	Dong per Mt	-0.040	-1.178
Exports (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning stock	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	-Ending Stock	1000 Mt	-1	
Wholesale Rice Price (Dong per Kg)	Intercept		0.439	
	LN(Paddy Farm Price – Mekong Delta)	Dong per Kg	0.987	0.987
Farm Price (Dong per Kg)	Intercept		3.174	
	LN(Thailand Price 35% Broken Long Grain*Exchange Rate/1000)	Dong per Mt	0.540	0.541

CAMBODIA Model Aggregate

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		1.469	
	LN(Import Price-Use Thai 35% FOB*Exchange Rate Deflated by CPI (2000=100))		-0.017	-0.017
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.565	0.566
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	

Area Harvested (1000 Ha)	Intercept		3.147	
	LN(LAG(Thailand Price 35% Broken Long Grain*(1+Export Tax)* Exchange Rate Deflated by CPI (2000=100)*Yield Milled)-Fertilizer Cost per Ha)		0.111	0.112
	LN(LAG(Area Harvested))	1000 Ha	0.469	0.469
Yield Milled (Mt per Ha)	Intercept		-1.599	
	LN Trend	(Year-1982)	0.640	0.640
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)		0.038	
Exports (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning stock	1000 Mt	1	
	-Ending Stock	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
Import Price (Thai 35% LG FOB used as Proxy) (US Dollars per Mt)	Intercept		0	
	Thailand Price 35% Broken Long Grain*(1+Import Tax (Milled)/100)*(1+Value Added Tax/100)	Dollar per Mt	1	1.000
Export Price (Thai 35% LG FOB used as Proxy) (US Dollars per Mt)	Intercept		0	
	Thailand Price 35% Broken Long Grain(1+Export Tax/100)	Dollar per Mt	1	1.000

CHINA Model

Per Capita Consumption (Kg per Person)	Intercept		4.631	
	LN(Average Retail Price Deflated by CPI (2000=100))	Yuan per Mt	-0.100	-0.100
	LN(Wheat Farm Price (Mixed Average) Deflated by CPI(2000=100))	Yuan per Mt	0.050	0.050
	LN(Real Private Consumption Expenditure 1995 Price/ Population)	Yuan per Person	-0.140	-0.140
	LN(Urban Population/Population)	Millions	-0.150	
	LN(Real Urban Private Consumption Expenditures(1995 Prices)/Real Rural Private Consumption Expenditures (1995 Prices))	Billions	0.011	
Total Consumption (1000 Mt)	Per Capita Consumption*Population	1000 Mt	1	
	Feed Use	1000 Mt	1	
	Residual or Waste	1000 Mt	1	
	Seed Use	1000 Mt	1	
Japonica Area Harvested (1000 Ha)	Intercept		2.039	
	LN(LAG(Farm Price Japonica*Yield Rough Deflated by GDP Deflator(2000=100)))	Yuan per Mt	0.155	0.155
	LN(LAG(Government Procurement Price-Japonica* Yield Milled Deflated by GDP Deflator(2000=100)))	Yuan per Mt	0.077	0.077
	LN(LAG(Corn Farm Price – Mixed Average* Corn Yield Deflated by GDP Deflator(2000=100)))	Yuan per Mt	-0.100	-0.100
	LN(LAG(Japonica Area Harvested))	1000 Ha	0.222	
	LN(Fertilizer Cost)	Yuan per Ha	-0.027	
Indica Area Harvested	Intercept		2.407	

(1000 Ha)

	LN(LAG(Farm Price Indica*Yield Rough Deflated by GDP Deflator))	Yuan per Mt	0.232	0.155
	LN(LAG(Corn Farm Price – Mixed Average* Corn Yield Deflated by GDP Deflator(2000=100)))	Yuan per Mt	-0.071	0.077
	LN(LAG(Wheat Farm Price – Mixed Average* Wheat Yield Deflated by GDP Deflator(2000=100)))	Yuan per Mt	-0.050	-0.100
	LN(LAG(Indica Area Harvested))	1000 Ha	0.300	
	LN(Fertilizer Cost)	Yuan per Ha	-0.027	
Total Area Harvested (1000 Ha)	Japonica Area Harvested	1000 Ha	1	
	Indica Area Harvested	1000 Ha	1	
Rough Yield (Mt per Ha)	Intercept		1.535	
	LN (Trend)	(Year-1982)	0.099	0.099
	LN(LAG(Real Average Retail Rice Price)/ (Real Fertilizer Price)))		0.042	0.042
Milled Yield (Mt per Ha)	Yield Rough*Milling Yield			
Rough Production (1000 Mt)	Total Area Harvested*Rough Yield			
Milled Production (1000 Mt)	Total Area Harvested*Yield Milled			
Ending Stock (1000 Mt)	+Milled Production	1000 Mt	1	
	-Total Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	-Exports	1000 Mt	-1	
	+Beginning Stocks	1000 Mt	1	
Imports (1000 Mt)	Intercept		357.699	
	Milled Production – Total Consumption	1000 Mt	-0.005	-0.045
	Trend	(Year 1959)	9.000	
	Thailand Price 5% Broken Long Grain*Exchange Rate*(1+ Rice Value Added Tax/100)*(1+ Rice In-Quota Tariff Rate) Deflated by CPI (2000=100)		-4.598	-0.797
	Thailand Price 5% Broken Long Grain*Exchange Rate*(1+ Rice Value Added Tax/100)*(1+ Rice Over-Quota Tariff Rate) Deflated by CPI (2000=100)		-4.598	-45.810
Japonica Exports (1000 Mt)	Intercept		58.758	
	Ex-Mill California Price for Medium & Short Grain Rice--4% Broken*Exchange Rate* 22.0462/ Farm Price Japonica		83.767	0.578
	Milled Production – Total Consumption	1000 Mt	0.000	0.000
Indica Exports (1000 Mt)	Intercept		739.459	
	Thailand Price 5% Broken long grain*Exchange Rate/ Farm Price Indica		715.485	0.482
	Milled Production + Beginning Stocks – Total Consumption	1000 Mt	0.005	0.206
Total Exports (1000 Mt)	Japonica Exports	1000 Mt	1	
	Indica Exports	1000 Mt	1	
Japonica Procurement Price (Yuan per Mt)	Intercept		1.129	
	LN(LAG(Japonica Import Price)	Yuan per Mt	0.946	0.946
	LN(Beginning Stocks)	1000 Mt	-0.150	-0.150
Indica Procurement Price (Yuan per Mt)	Intercept		1.015	
	LN(LAG(Indica Import Price)	Yuan per Mt	0.992	0.992
	LN(Beginning Stocks)	1000 Mt	-0.150	-0.150
Japonica Farm Price (Yuan per Mt)	Intercept		0.811	
	LN(Japonica Import Price)	Yuan per Mt	0.588	0.588
	LN(Government Procurement Price-Japonica)	Yuan per Mt	0.233	0.233
Indica Farm Price (Yuan per Mt)	Intercept		1.353	

	LN(Indica Import Price)	Yuan per Mt	0.463	0.463
	LN(Government Procurement Price-Indica)	Yuan per Mt	0.318	0.318
Japonica Retail Price (Yuan per Mt)	Intercept		-3.754	
	LN(Japonica Import Price)	Yuan per Mt	0.819	0.819
	LN(Farm Price Japonica)	Yuan per Mt	0.661	0.661
Indica Retail Price (Yuan per Mt)	Intercept		-5.347	
	LN(Indica Import Price)	Yuan per Mt	0.849	0.849
	LN(Farm Price Indica)	Yuan per Mt	0.897	0.897
Japonica Import Price (Yuan per Mt)	Ex-Mill California price for Medium & Short Grain Rice--4% Broken*Exchange Rate *(1+ Rice In-Quota Tariff Rate/100)*(1+ Rice Value added Tax/100)* 22.0462			
Indica Import Price (Yuan per Mt)	Thailand Price 5% Broken Long Grain*Exchange Rate *(1+ Rice In-Quota Tariff Rate/100)*(1+ Rice Value added Tax/100)*			

HONG KONG Model

Per Capita Rice Consumption (Kg per Person)	Intercept		4.939	
	LN(Import Price/Exchange Rate)		-0.160	-0.160
	LN(Nominal GDP/GDP Deflator (2000=100)/Population	GDP per Person	-0.190	-0.190
Total Consumption (1000 Mt)	Per Capita Consumption*Population			
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stocks	1000 Mt	1	
Import Price (LC per Mt)	Intercept		-0.280	
	LN(Thailand Price 5% Broken Long Grain*Exchange Rate)	LC per Mt	0.827	0.827

JAPAN Model

Per Capita Rice Consumption (Kg per Person)	Intercept		4.880	
	LN(Retail Price Deflated by CPI (2000=100))	Yen per Mt	-0.113	-0.113
	LN(Nominal GDP/GDP Deflator (2000=100)/Population)	GDP per Person	-0.255	-0.255
	LN(LAG(Consumption per Capita))	Kg per Person	0.011	0.011
Total Consumption (1000 Mt)	Per Capita Consumption*Population			
Area Harvested with Government Area Diversion Program (1000 Ha)	Intercept		1602.600	
	Producer Price*Exchange Rate		0.132	0.292
	LAG (Area Harvested)	1000 Ha	0.230	
	Government Diversion Program Expenditures Deflated by CPI (2000=100)/ Area Diversion Program	Billion Yen	-546.570	-0.001
	Wage Rate Deflated by CPI (2000=100)	Yen per Worker per Day	-9.133	-0.576

	Area Diversion Program	1000 Ha	1602.600	
Japanese Government Area Diversion Program (1000 Ha)	+LAG(Area Harvested*Yield Milled)		1	
	-Total Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	+Beginning Stocks	1000 Mt	1	
	-Government desired stock level	1000 Mt	-1	
Rough Yield (Mt per Ha)	Intercept		5.030	
	Producer Price Deflated by CPI (2000=100)	Yen per Mt	0.000	0.198
	Fertilizer Price Paid by Farmers (Urea) Deflated by CPI (2000=100)	Yen per Mt	-0.001	-0.042
	Trend	(Year -1959)	0.023	0.143
Milled Yield (Mt per Ha)	Yield Rough* Milling Yield			
Rough Production (1000 Mt)	Area Harvested* Yield Rough			
Milled Production (1000 Mt)	Area Harvested* Yield Milled			
Ending Stocks (1000 Mt)	+Milled Production	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	-Exports	1000 Mt	-1	
	+Beginning Stocks	1000 Mt	1	
Imports (1000 Mt)	IF (Year < 1999, Minimum Access Import Level + Japan Import Error)			
	ELSE MIN ((LAG(Imports)*(CIF Import Prices/LAG (CIF Import Prices))**(Intercept + Japan Import Error)			-2.960
	(Minimum Access Import Level + Over-Quota Imports)			
Weighted Average Retail Price (Yen per Mt)				
< 1995	Intercept			
	Ex-Mill California Price for Medium & Short Grain Rice--4% Brokens* 22.04622 +			
	Exchange Rate			
1995 >	IF(Imports > Minimum Access Import Level, Minimum Access Import Level, Imports)* CIF Import Prices			
	Over-Quota Imports*(Special Safeguard Indicator*(CIF Import Prices+ Specific Import Tariff+ Special Safeguard Duty)+			
	Over-Quota Imports*(Over-Quota Indicator - Special Safeguard Indicator*(CIF Import Prices+ Specific Import Tariff)))			
Border Import Price (Japonica) In Quota (Yen per Mt)				
< 1995	Intercept		3.090	3.090
	LN(Ex-Mill California Price for Medium & Short Grain Rice--4% Brokens) +	Dollar per Cwt.	0.797	0.797
	Exchange Rate			
	(((Ex-Mill California Price for Medium & Short Grain Rice--4% Brokens*22.0462 -	Dollar per Mt		
	Quality Discount +			
	Import Markup or Margin			
Import Margin (Yen per Mt)	Intercept		249424.138	
	Ex-Mill California Price for Medium & Short Grain Rice--4% Brokens*22.0462*Exchange Rate	Yen per Mt	-1.574	-0.478
Farm Harvest Price (Yen per Mt)	Intercept* CPI (2000=100) +		341.770	0.113
	Retail Price	Yen per Mt	0.353	0.578

	Government Support Price/60*100	Yen per Kg	0.225	0.190

SOUTH KOREA Model

Per Capita Consumption (Kg per Person)	Intercept		271.000	
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.003	-0.319
	LN(Retail Price Deflated by CPI (2000=100))	Won per Mt	-0.003	-0.655
	Trend	(Year-1959)	0.000	0.000
Total Consumption (1000 Mt)	Per Capita Consumption* Total Population			
Area Harvested (1000 Ha)	Intercept		882.120	
	((Government Purchase Price*Government Purchase Quantity/Milled Production+(1-Government Purchase Quantity/Milled Production)* Government Resale Price+ Government Direct Payment)/LAG(Yield Milled))/GDP Deflator (2000=100)		0.014	0.303
	LN(LAG(Area Harvested))	1000 Ha	0.300	
Yield Milled (Mt per Ha)	Intercept		2.473	
	(Government Purchase Price Deflated by CPI (2000=100))	Won per Mt	0.000	0.199
	Trend	(Year-1989)	0.040	
Production Milled (1000 Mt)	Area Harvested* Yield Milled			
Ending Stock (1000 Mt)	+Beginning Stock	1000 Mt	1	
	+Milled Production	1000 Mt	1	
	+Imports	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	-Exports	1000 Mt	-1	
Imports (1000 Mt)	Minimum Access Import Level	1000 Mt		
Retail Price (Won per Mt)	(Intercept+		-0.391	
	LN(Government Purchase Price)+	Won per Mt	0.000	
	LN(Government Resale Price)	Won per Mt	0.040	
Government Resale Price	(Intercept+		17.358	
(Won per Mt)	LN(CIF Import Price)+		0.324	
	LN(Government Purchase Price)	Won per Mt	-0.518	
	(WTO Dummy Variable)		0.253	
Rice Import Price (Won per Mt)	Ex-Mill California Price for Medium and Short Grain Rice--4% Brokens* 22.0462 *Exchange Rate*(1+In-Quota Tariff Rate/100)			

TAIWAN Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		5.923	
	LN(Retail Price Deflated by CPI (2000=100))	New Taiwan Dollars per Mt	-0.163	-0.016
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	-0.289	-0.289
	LN(LAG(Per Capita Consumption)	Kg per Person	0.000	0.000
Total Consumption (1000 Mt)	(Per Capita Consumption* Total Population)	Kg per Person		
Area Harvested (1000 Ha)	Intercept		3.700	

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
	LN(Producer Price* (1-Quantity Share of Production Procured)+Government Purchase Price*Quantity Share of Production Procured)		0.166	0.007
	LN(LAG(Area Harvested))	1000 Ha	0.350	
	LN Trend	(Year-1959)	-0.337	
Rough Yield (Mt per Ha)	Intercept		3.282	
	(Producer Price*(1-Quantity Share of Production Procured)+Government Purchase Price*Quantity Share of Production Procured)		0.000	
	Trend	(Year-1959)	0.035	
Production Milled (1000 Mt)	(Area Harvested* Yield Milled)			
Imports (1000 Mt)	Minimum Access	1000 Mt	1	
Ending Stock (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	+Imports	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	-Exports	1000 Mt	-1	
Import Price (NT per Mt)	Ex-Mill California Price for Medium and Short Grain Rice--4% Broken*Exchange Rate*22.0462+Import Mark-Up			
Retail Price (NT per Mt)	Intercept		0.281	
	LN(Producer Price)	New Taiwan Dollars per Mt	0.600	
	LN(Import Price)	New Taiwan Dollars per Mt	0.435	
Producer Price (NT per Mt)	Intercept		0.935	
	LN(Government Purchase Price)	New Taiwan Dollars per Mt	0.959	
	LN(Beginning Stocks)	1000 Mt	-0.118	

ARGENTINA MODEL

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		1.636	
	LN (Producers Price* Exchange Rate Deflated by CPI (Year 2000=100))	LC per Mt	-0.071	-0.071
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.111	0.111
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		-1.887	
	LN(LAG(Producer Price* Rough Yield* Exchange Rate Deflated by GDP Deflator (2000=100))	LC per Mt	0.142	0.237
	LN(LAG(Area Harvested)	1000 Ha	0.400	0.400
	LN (Fertilizer Cost Deflated by CPI (2000=100))	LC per Ha	-0.042	
Rough Yield (Mt per Ha)	Intercept		0.384	
	LAG(Producer Price* Exchange Rate Deflated by GDP Deflator (2000=100))	LC per Mt	0.045	0.015
	Trend	(Year-1959)	0.119	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	

Ending Stocks (1000 Mt)	+Production Milled	1000 Mt	1	
	+Beginning Stocks	1000 Mt	1	
	+Imports	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	-Exports	1000 Mt	-1	
Exports (1000 Mt)	Intercept		-2.520	
	LN(Import Price* Exchange rate Deflated by GDP Deflator (2000=100))	LC per Mt	0.263	
	LN(Production Milled +Beginning Stocks- Domestic Consumption)	1000 Mt	1.329	
Producer Price (US Dollars per Mt)	Intercept		2.647	
	LN(Import Price)	LC per Mt	0.447	0.447
Export Price (LC per Mt)	Intercept		20.706	
	Thailand Price 5 % Broken Long Grain	Dollars per Mt	1.154	0.569

BRAZIL MODEL

Per Capita Consumption (Kg per Person)	Intercept		4.111	
	LN (Import Price* Exchange rate Deflated by CPI (Year 2000=100))	LC per Mt	-0.100	-0.100
	LN(Wheat Retail Price Deflated by CPI (Year 2000=100))		0.070	0.070
	LN(Real GDP at 2000 Prices* Population)	GDP per Person	-0.050	-0.050
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		2.395	
	LN(LAG(Import Price* Rough Yield* Exchange Rate Deflated by GDP Deflator (2000=100))	LC per Mt	0.050	0.077
	LN(LAG(Area Harvested))	1000 Mt	0.350	0.350
	LN(LAG (Soybean Farm Price*Exchange Rate Deflated by GDP Deflator (2000=100)))	LC per Mt	-0.040	-0.062
	LN(Trend)	(Year-1959)	-0.200	
Rough Yield (Mt per Ha)	Intercept		0.767	
	Trend	(Year-1959)	0.050	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Intercept		2.170	
	LN (Import Price* Exchange Rate Deflated by GDP Deflator(2000=100))	1000 Mt	0.120	
	LN(Beginning Stocks)	1000 Mt	0.335	
Imports (1000 Mt)	-Production Milled	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stocks	1000 Mt	1	
Import Price (Dollars per Mt)	Intercept		-0.553	
	LN(Import Price)	LC per Mt	0.492	0.492
	LN(Thailand Price 5 % Broken Long Grain(1+ Import Tariff/100)	Dollars per Mt	0.603	0.603

CANADA Model

Per Capita Consumption (Kg per Person)	Intercept		0.759	
	LN(Import Price Deflated by CPI (2000=100))	LC per Mt	-0.211	-0.211
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.466	0.466
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Imports (1000 Mt)	-Production Milled	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stocks	1000 Mt	1	
Import Price (LC per Mt)	Intercept		0.829	
	LN(Thailand Price 5 % Broken Long Grain*Exchange Rate)	LC per Mt	0.862	0.862

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity

MEXICO Model

Per Capita Consumption (Kg per Person)	Intercept		1.899	
	LN(Retail Price/Exchange Rate)	Dollars per Mt	-0.050	-0.050
	LN(Wheat Producer Price/ Exchange Rate)	Dollars per Mt	0.027	0.027
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.459	0.459
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		2.756	
	LN(LAG(Producer Price*Rough Yield Deflated by GDP Deflator(2000=100)))	LC per Mt	0.097	0.097
	LN(LAG(Wheat Producer Price* Wheat Yield Deflated by GDP Deflator (2000=100)))	LC per Mt	-0.039	-0.039
	LN(LAG(Area Harvested))	1000 Ha	0.300	
Rough Yield (Mt per Ha)	Intercept		0.953	
	Producer Price Deflated by GDP Deflator (2000=100)	LC per Mt	0.032	
	Trend	(Year- 1959)	0.072	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Intercept		4.078	
	LN(Producer Price Deflated by GDP Deflator (2000=100))	LC per Mt	-0.420	
	LN(Production Milled)	1000 Mt	0.676	
Imports (1000 Mt)	-Production Milled	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stocks	1000 Mt	1	
Producer Price (LC per Mt)	Intercept		-0.405	

	LN(LAG(Producer Price))	LC per Mt	0.329	0.569
	LN(Import Price)	LC per Mt	0.731	
Retail Price (LC per Mt)	Intercept		-0.024	
	LN(Import Price)	LC per Mt	0.599	0.599
	LN(Producer Price)	LC per Mt	0.503	0.503
Import Price (LC per Mt)	US Export Price Houston Gulf FOB*Exchange Rate*(1+ Milled Rice Import Tariff - NAFTA)	Dollar per Mt		

URUGUAY Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		2.762	
	LN(Producer Price Deflated by CPI (2000=100))	LC per Mt	-0.170	-0.170
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.500	0.500
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.140	
	LN(LAG(Area Harvested)+	1000 Ha	0.510	0.510
	LN(LAG(Producer Price*Rough Yield deflated by GDP deflator))	LC per Mt	0.210	0.210
Rough Yield (Mt per Ha)	Intercept		1.602	
	Trend	(Year -1959)	0.114	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Intercept		-1.465	
	LN(Domestic Consumption)	1000 Mt	0.100	
Exports (1000 Mt)	Production Milled	1000 Mt	1	
	Beginning Stocks	1000 Mt	1	
	Imports	1000 Mt	1	
	Domestic Consumption	1000 Mt	-1	
	Ending Stocks	1000 Mt	-1	
Producer Price (LC per Mt)	Intercept		-0.322	
	LN(Thailand Price 35 % Broken Long Grain*Exchange Rate)	LC per Mt	1.011	0.569

Middle East Block Countries

IRAN Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		3.940	
	LN(Producer Price Deflated by CPI (2000=100))	LC per Mt	-0.350	-0.350
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.200	0.200
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	

Area Harvested (1000 Ha)	Intercept		0.893	
	LN(LAG (Producer Price *Rough Yield Deflated by CPI (2000=100))	LC per Mt	0.050	0.001
	LN(LAG(Area Harvested))	1000 Ha	0.700	
Rough Yield (Mt per Ha)	Intercept		2.701	
	Trend	(Year-1959)	0.038	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Beginning Stocks	1000 Mt	1	
	(0.3* Domestic Consumption- Beginning Stocks)	1000 Mt	0.500	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Producer Price (LC per Mt)	Intercept		3388.205	
	Exchange Rate*Thai Price 5% Broken Long Grain Deflated by CPI (2000=100))	LC per Mt	0.900	0.569
	LAG(Producer Price/Consumer Price Index (2000=100))		-0.100	

IRAQ Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.448	
	LN(Producer Price/Consumer Price Index (2000=100))		-0.042	0.043
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.526	0.526
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		-5.799	
	LN(LAG(Producer Price*Rough Yield*1000 Deflated by CPI (2000=100))	LC per Mt	0.778	2.184
	LN(LAG(Area Harvested))	1000 Ha	0.643	
Rough Yield (Mt per Ha)	Intercept		0.859	
	LAG(Producer Price Deflated by CPI (2000=100))	LC per Mt	0.056	0.358
	Trend	(Year -1959)	0.020	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept			
	Beginning Stocks	1000 Mt	1	
	LAG(Domestic Consumption)*0.25-LAG(Ending Stock))	1000 Mt	0.500	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Producer Rice Price (LC per Mt)	Intercept		0.138	
	Thai Price 35% Broken Long Grain Deflated by GDP Deflator (2000=100)	Dollars per Mt	0.500	0.500

PAKISTAN Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		3.344	
	LN(Wholesale Price Deflated by CPI (2000=100))	Rupee per Mt	-0.175	-0.175
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.100	0.100
	LN(Wheat Retail Price Deflated by CPI (2000=100))	Rupee per Mt	0.070	0.070
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		3.422	
	LN(LAG(Wholesale Price*Rough Yield Deflated by GDP Deflator(2000=100))	Rupee per Mt	0.200	0.286
	LN(LAG(Cotton A Index Price*Exchange Rate*Yield per Hectare Cotton Deflated by GDP Deflator(2000=100)/1000))	Rupee per Mt	-0.050	-0.071
	LN(LAG(Area Harvested))	1000 Ha	0.300	
Rough Yield (Mt per Ha)	Intercept		0.878	
	(Percent of area in High Yield Varieties)	Percent	0.032	0.426
	Trend	(Year-1989)	0.029	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Intercept		10.258	
	LN(Milled Production)	1000 Mt	0.533	
	LN(Wholesale Price Deflated by CPI (2000=100))	Rupee per Mt	-1.644	-1.645
Exports (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	+Imports	1000 Mt	1	
	-Ending Stock	1000 Mt	-1	
Wholesale Price (Rupee per Mt)	Intercept		-0.369	
	LN(Thai Price 5% Broken Long Grain*Exchange Rate)	Rupee per Mt	1.013	1.013

SAUDI ARABIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.109	
	LN(Import Price*Exchange Rate Deflated by CPI (2000=100))		-0.250	-0.250
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	0.100	0.100
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Ending Stock (1000 Mt)	0.095*LAG(Domestic Consumption)		0.095	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	

	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Exports	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept			
	LN(Thai Price35% Broken Long Grain)	Dollars per Mt	0.219	0.220

AFRICA

EGYPT Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.412	
	LN(Producer Price –Rough Deflated by CPI (2000=100))	LC per Mt	-0.150	-0.150
	LN(Wheat Consumer Price Deflated by CPI (2000=100))	LC per Mt	0.050	0.050
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.300	0.300
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		4.920	
	LN(LAG(Area Harvested))	1000 Ha	0.260	0.003
	LN(LAG(Producer Price –Rough Deflated by GDP Deflator (2000=100))	LC per Mt	0.161	
	LN(LAG(Cotton A-Index Price*Exchange Rate Deflated by GDP Deflator (2000+100))		-0.168	
	LN(LAG(Corn Producer Price*Corn Yield Deflated by GDP Deflator (2000=100))	LC per Mt	-0.032	
Milled Yield (Mt per Ha)	Intercept		3.435	
	Trend	(Year -1959)	0.130	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Exports (1000 Mt)	Intercept		-13.819	
	LN(Milled Production + Beginning Stock)+	1000 Mt	2.453	2.454
	LN((Export Price-Export Subsidy)/Thailand Price 5% Broken Long Grain)+	Dollars per Mt	-2.197	-2.197
Ending Stock (1000 Mt)	+Milled Production	1000 Mt	1	
	+Beginning Stock	1000 Mt	1	
	+Imports	1000 Mt	1	
	-Domestic Consumption	1000 Mt	-1	
	-Export	1000 Mt	-1	
Producer Price (LC per Mt)	Intercept		-1.532	
	LN(Thailand Price 5% Broken Long Grain* Exchange Rate Deflated by GDP Deflator (2000=100))+	LC per Mt	0.961	0.961
	LN(LAG(Export))+	1000 Mt	0.360	0.360
	LN(Beginning Stock)+	1000 Mt	-0.183	-0.183
Export Price (Dollars per Mt)	Intercept		1.369	
	LN(Producer Price –Rough /Exchange Rate)+		0.070	0.070
	LN(Thailand Price 5% Broken Long Grain)+	Dollars per Mt	0.710	0.710

SOUTH AFRICA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		1.598	
	LN(Import Price*Exchange Rate Deflated by CPI (2000=100))	LC per Mt	-0.200	-0.200
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.470	0.470
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Ending Stocks (1000 Mt)	Domestic Consumption*.2		0.200	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning stock	1000 Mt	-1	
	+Ending Stock	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (LC per Mt)	Intercept		1.054	
	LN(Thailand Price 5% Broken Long Grain*1+Import Tariff (MFN)/100)	Dollars per Mt	0.837	0.837

COTE D' IVOIRE Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		6.472	
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.134	0.135
	LN(Retail Price Deflated by CPI (2000=100))	LC per Mt	-0.550	-0.550
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.122	
	LN(LAG(Producer Price*Rough Yield Deflated by GDP Deflator (2000=100))+		0.400	0.571
	LN(LAG(Area Harvested))	1000 Ha	0.300	
Yield Milled (Mt per Ha)	Intercept		0.656	
	Trend	(Year -1959)	0.005	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*.2	1000 Mt	0.200	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning stock	1000 Mt	-1	
	+Ending Stock	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Producer Price (LC per Mt)	Intercept		3.979	
	LN(Thailand Price 35% Broken Long Grain* (1+Import Tariff--MFN-- Ordinary Rice (Broken)/100)/ GDP Deflator (2000=100))+	Dollars per Mt	0.978	0.978
Retail Price (LC per Mt)	Intercept		7.295	
	LN(Thailand Price 35% Broken Long Grain* (1+Import Tariff--MFN-- Ordinary Rice (Broken)/100	Dollars per Mt	0.612	0.612

NIGERIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		3.520	
	LN(Real GDP at 2000 Prices/ Population)+	GDP per Person	0.250	0.250
	LN(Retail Price Deflated by CPI (2000=100))	Naira per Mt	-0.150	-0.150
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		-0.401	
	LN(LAG(Producer Price*Yield Milled Deflated by CPI (2000=100))	Naira per Mt	0.100	
	LN(LAG(Area Harvested))	1000 Ha	0.200	0.001
Milled Yield (Mt per Ha)	Intercept		-0.178	
	Trend	(Year-1959)	0.034	1.150
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
	+Ending Stock	1000 Mt	1	
Ending Stock (1000 Mt)	Intercept		1.748	
	LN(LAG(Milled Production/(Domestic Consumption-Imports)	1000 Mt	0.463	
	LN(Beginning Stock)	1000 Mt	0.749	
Retail Price (Naira per Mt)	Intercept		4.523	
	LN(Thailand Price 5% Broken Long Grain*Exchange Rate* (1+(Import Tariff, MFN)-Tariff Rebate)*(1+Other Import Tax and Surcharge/100)/100) Deflated by CPI (2000=100)	Naira per Mt	0.729	0.729
Producer Price (Naira per Mt)	Intercept		5.460	
	LN(Thailand Price 5% Broken Long Grain*(1+(Import Tariff , MFN)-Tariff Rebate)*(1+Other Import Tax and Surcharge/100)/100) Deflated by CPI (2000=100)	Dollars per Mt	0.356	0.357
	LN(Exchange Rate/ CPI (2000=100))		0.294	

AFRICA BLOCK

SENEGAL Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		-0.789	
	LN(Import Price*Exchange Rate Deflated by CPI (2000=100))	CFA Franc per Mt	-0.024	-0.024
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.895	0.895
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.840	

		Units	Parameters	Elasticity
	LN(LAG(Thailand Price 35% Broken Long Grain*(1+Additional Import Tax for Whole Rice)* Exchange Rate/ CPI (2000=100)*Yield Milled)-Fertilizer Cost per Hectare	CFA Franc per Mt	0.077	0.077
	LN(LAG(Area Harvested))+	1000 Ha	0.453	0.453
Yield Milled (Mt per Ha)	Intercept		0.477	
	LN(LAG(Fertilizer Price per Metric Ton))	CFA Franc per Mt	-0.041	-0.042
	LN Trend	(Year-1982)	0.117	0.118
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*0.02		0.200	
Import (1000 Mt)	-Production Milled	1000 Mt	-1	
	-Beginning Stock	1000 Mt	-1	
	+Ending Stock	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (Dollars per Mt)	Intercept		2.907	
	LN(Thailand Price 5% Broken Long Grain*(1+Additional Import Tax for Whole Rice/100)	Dollars per Mt	0.438	0.439

GHANA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		8.507	
	LN(Import Price *Exchange Rate Deflated by CPI (2000=100))	Cedis per Mt	-0.007	-0.008
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	2.813	2.814
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		3.052	
	LN(LAG(Thailand Price 35% Broken Long Grain(1+Total Duties)* Exchange Rate Deflated by CPI (2000=100)*Yield Milled)-Fertilizer Cost per Hectare)+	Cedis per Mt	0.102	0.102
	LN(LAG(Area Harvested))	1000 Ha	0.354	0.354
Yield Milled (Mt per Ha)	Intercept		-1.110	
	LN(LAG(Fertilizer Price per MT))+	Cedis per Mt	-0.199	-0.200
	LN Trend	(Year-1982)	0.450	0.450
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*0.20		0.200	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		2.368	
	LN(Thailand Price 5% Broken Long Grain*(1+Total Duties/100)	Dollars per Mt	0.566	0.567

CAMEROON Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		4.269	
	LN(Import Price *Exchange Rate/Consumer Price Index (2000=100))	Dollars per Mt	-0.295	-0.295
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.054	0.054
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.264	
	LN(LAG(Thailand Price 35% Broken Long Grain(1+Import Tax)* Exchange Rate Deflated by CPI (2000=100)*Yield Milled)/Fertilizer Cost per hectare)+		0.174	0.175
	LN(LAG(Area Harvested))	1000 Ha	0.838	0.839
Yield Milled (Mt per Ha)	Intercept		0.491	
	LN Trend	(Year-1982)	0.107	0.108
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)		0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		0.249	
	LN(Thailand Price 5% Broken Long Grain*(1+Import Tax/100)	Dollars per Mt	0.902	0.902

MOZAMBIQUE Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		1.817	
	LN(Import Price *Exchange Rate Deflated by CPI (2000=100))	LC per Mt	-0.274	-0.274
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	1.334	1.335
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Mt)	Intercept		0.194	
	LN(LAG(Area Harvested))	1000 Ha	0.965	0.966
Yield Milled (Mt per Ha)	Intercept		-1.337	
	LN Trend	(Year-1982)	0.318	0.318
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	

	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)		0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		-7.258	
	LN(Thailand Price 5% Broken Long Grain*(1+Import Tax for Whole Rice/100)	Dollars per Mt	2.264	2.265

GUINEA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per person)	Intercept		-6.054	
	LN(Import Price *Exchange Rate Deflated by GDP Deflator (2000=100))		-0.335	-0.335
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	2.055	2.056
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.550	
	LN(LAG(Thailand Price 35% Broken Long Grain(1+Import Tax)* Exchange Rate Deflated by GDP Deflator (2000=100)*Yield Milled)/Fertilizer cost per hectare)+		0.033	0.034
	LN(LAG(Area Harvested))	1000 Ha	0.910	0.910
Yield Milled (Mt per Ha)	Intercept		-0.736	
	LN Trend	(Year-1982)	0.255	0.256
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)	1000 Mt	0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		0.000	
	LN(Thailand Price 35% Broken Long Grain*(1+Import Tax/100)	Dollars per Mt	1	1.00

KENYA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per person)	Intercept		-3.157	
	LN(Import Price(Thai 35% fob) *Exchange Rate Deflated by CPI (2000=100))	Dollars per Mt	-0.951	-0.952
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	3.012	3.013
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	

	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.551	
	LN(LAG(Area Harvested))	1000 Ha	0.788	0.788
Yield Milled (Mt per Ha)	Intercept		-0.490	
	LN Trend	(Year-1982)	0.441	
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*0.40	1000 Mt	0.40	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		0	
	LN(Thailand Price 5% Broken Long Grain*(1+Total Duties/100)	Dollars per Mt	1.000	1.000

TANZANIA Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per person)	Intercept		-2.097	
	LN(Import Price *Exchange Rate Deflated by CPI (2000=100))	LC per Mt	-0.359	-0.359
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	1.465	1.466
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.069	
	LN(LAG(Thailand Price 35% Broken Long Grain(1+Import Tax)* Exchange Rate Deflated by CPI (2000=100)*Yield Milled)-Fertilizer cost per hectare)+	LC per Mt	0.004	0.004
				0.830
	LN(LAG(Area Harvested))	1000 Ha	0.829	
Yield Milled (Mt per Ha)	Intercept		-1.200	
	LN Trend	(Year-1982)	0.446	0.447
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)	1000 Mt	0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	
	+Export	1000 Mt	1	
Import Price (US Dollars per Mt)	Intercept		0	
	LN(Thailand Price 5% Broken Long Grain*(1+Total Duties/100)	Dollars per Mt	1.000	1.000

SIERRA LEONE Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per person)	Intercept		0.835	
	LN(Import Price- use Thai 35% fob *Exchange Rate Deflated by CPI (2000=100))		-0.234	-0.235
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	0.919	0.920
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.280	
	LN(LAG(Area Harvested))	1000 Ha	0.955	0.955
Yield Milled (Mt per Ha)	Intercept		0.740	
	LN Trend	(Year-1982)	0.017	0.017
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)	1000 Mt	0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	+Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	˙000 Mt	1	
	+Export	1000 Mt	1	
Import Price (Thai 35% LG fob used as proxy) (US Dollars per Mt)	Intercept		0.000	
	LN(Thailand Price 35% Broken Long Grain*(1+Import Tax/100)	Dollars per Mt	1.000	1.000

MALI Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per person)	Intercept		987.000	
	LN(Import Price *Exchange Rate Deflated by CPI (2000=100))	CFA Franc per Mt	-0.370	-0.370
	LN(Real GDP at 2000 Prices/ Population)	GDP per Person	2.504	2.505
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Total Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.658	
	LN(LAG(Farm Price* Yield Milled)-Fertilizer cost per hectare)+	CFA Franc per Mt	0.198	0.198
	LN(LAG(Area Harvested))	1000 Ha	0.486	0.486
Yield Milled (Mt per Ha)	Intercept		-0.993	
	LN(LAG(Fertilizer Price per MT))+	CFA Franc per Mt	-0.072	
	LN Trend	(Year-1982)	0.647	0.648
Production Milled (1000 Mt)	Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stock (1000 Mt)	Domestic Consumption*(1/26)	1000 Mt	0.038	
Imports (1000 Mt)	-Milled Production	1000 Mt	-1	
	-Beginning Stocks	1000 Mt	-1	
	+Ending Stocks	1000 Mt	1	
	+Domestic Consumption	1000 Mt	1	

	+Export	1000 Mt	1	
Import Price (US Dollar per Mt)	Intercept		0	
	LN(Thailand Price 5% Broken Long Grain*(1+Import Tax/100)	Dollar per Mt	1.000	1.000
Farm Price (LC per Mt)	Intercept		6.843	
	LN(Thailand Price 35% Broken Long Grain*(1+Import Tax/100)* Exchange Rate Deflated by CPI (2000=100))	Dollar per Mt	0.643	0.644

EUROPEAN UNION-27 Model

Average Per Capita Rice Consumption (Kg per Person)	Intercept		-13.933	
	LN(Average Import Price (Tariff inclusive)/Exchange Rate)	Euro per Mt	-0.081	-0.081
	LN(Real GDP at 2000 Prices/Population*1000)	GDP per Person	1.631	1.631
Per Capita Japonica Rice Consumption (Kg per Person)	Intercept		-8.200	
	LN(Ex-Mill California Price for Medium & Short Grain Rice –4% Broken Deflated by CPI (2000=100))	Dollar per Cwt.	-0.167	-0.167
	LN(Real GDP at 2000 Prices/Population*1000)	GDP per Person	0.930	0.930
Per Capita Indica Consumption (Kg per Person)	Average Per Capita Rice Consumption - Per Capita Japonica Rice Consumption			
Total Consumption (1000 Mt)	Average Per Capita Rice Consumption*Population			
Total Area Harvested (1000 Ha)	Intercept		5.756	
	LN(LAG(EU Average Farm Price*Yield Milled + Rice Compensatory Payment)/Exchange Rate))	Euro per Mt	0.102	0.102
	LN(Fertilizer Cost per Ha Deflated by CPI (2000=100))	Euro per Ha	-0.018	
Japonica Harvested Area (1000 Ha)	Intercept		304.599	
	LAG(CIF Rotterdam Price (Medium & Short Grain)* Japonica Average Yield/ CIF Rotterdam Price (Long Grain)* Indica Average Yield)		20.540	0.074
	LN(Fertilizer Cost per ha Deflated by CPI (2000=100))	Euro per Ha	-46.168	-0.183
Indica Harvested Area (1000 Ha)	Area Harvested -	1000 Ha	1	
	Japonica Area Harvested	1000 Ha	-1	
Japonica Average Yield (Mt per Ha)	Intercept		4.083	
	Trend	(Year – 1990)	0.005	
Indica Average Yield (Mt per Ha)	Intercept		3.994	
	Trend	(Year – 1990)	0.045	0.093
Japonica Production (1000 Mt)	Japonica Area Harvested*	1000 Ha	1	
	Japonica Average Yield	Mt per Ha	1	
Indica Production (1000 Mt)	Indica Area Harvested*	1000 Ha	1	
	Indica Average Yield	Mt per Ha	1	
Total Production (1000 Mt)	Indica Milled Production	1000 Mt	1	
	Japonica Milled Production	1000 Mt	1	
Ending Stocks (1000 Mt)	Intercept		9.063	
	LN(EU Average Farm Price Deflated by GDP Deflator (2000=100))	Euro per Mt	-0.630	-0.630
	LN(Rice Intervention Price)	Euro per Mt	-0.764	-0.764

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Total Rice Imports (Extra – EU Trade) (1000 Mt)	Intercept		7.971	
	LN(Average Import Price (Tariff Inclusive)/EU Average Farm Price)		-1.000	-1.000
	LN(Domestic Consumption-Milled Production)	1000 Mt	0.100	0.100
Japonica Rice Imports (Extra – EU Trade) (1000 Mt)	0.04*LAG(Imports)	1000 Mt		
	Japonica Consumption - Japonica Milled Production	1000 Mt		
Indica Rice Imports (Extra – EU Trade) (1000 Mt)	Imports – Japonica Imports			
Total Rice Exports (Extra _ EU Trade) (1000 Mt)	Japonica Exports	1000 Mt.	1	
	Indica Exports	1000 Mt.	1	
	Food Aid Shipments	1000 Mt.	1	
Japonica Rice Exports (1000 Mt)	Intercept		5.601	
	LN(Ex-Mill California Price for Medium & Short Grain Rice –4% Brokens/0.220462*Exchange Rate/EU Average Farm Price)	Euro per Mt	0.750	0.750
	IF(Japonica Milled Production<Japonica Consumption,0, LN(Japonica Milled Production – Japonica Consumption)	1000 Mt	0.150	0.150
	Total Rice Exports - Food Aid Shipments – Rice Maximum Subsidized Exports	1000 Mt		
Indica Rice Exports (1000 Mt)	Intercept		3.111	
	LN(Thailand Price 5 % Broken Long Grain* Exchange Rate/EU Average Farm Price)		0.750	0.750
	LN(Trend)	(Year 1989)	0.050	
CIF Rotterdam Import Price (Long Grain) (Euro per Mt)	Intercept		0.354	
	LN(Thailand Price 5 % Broken Long Grain*Exchange Rate)	Euro per Mt	0.906	1.143
	LN(LAG(Basmati Rice Imports from India + Basmati Rice Imports from Pakistan)/Imports*100)	1000 Mt	0.207	
CIF Rotterdam Import Price (Short & Medium Grain) (Euro per Mt)	Intercept		-2.724	
	LN(Ex-Mill California Price for Medium & Short Grain Rice –4% Brokens/0.0220462*Exchange Rate	Euro per Mt	1.266	1.143
	LN(LAG(CIF Rotterdam Import Price (Short & Medium Grain)))	Euro per Mt	0.000	

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity

TURKEY Model

Endogenous Variable	Explanatory Variables	Units	Parameters	Elasticity
Per Capita Consumption (Kg per Person)	Intercept		1.303	
	LN(Real GDP at 2000 Prices/Population)	GDP per Person	1.413	1.413
	LN(Import Price Deflated by CPI (2000=100))	LC per Kg	-0.010	-0.010
	LN(FOB Price*Exchange Rate Deflated by CPI (2000=100))	LC per Mt	0.115	
Total Consumption (1000 Mt)	Per Capita Consumption	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.792	
	LN(LAG(Area Harvested)	1000 Ha	0.493	0.091
	LN(LAG(Import Price Deflated by GDP deflator (2000=100))	LC per Kg	0.046	
Yield Milled (Mt per Ha)	Intercept		0.600	
	Year	(Year -1959)	0.063	

Production Milled (1000 Mt)	Area Harvested	1000 Ha	1
	Yield Milled	Mt per Ha	1
Imports (1000 Mt)	-Production Milled	1000 Mt	-1
	-Beginning Stocks	1000 Mt	-1
	+Domestic Consumption	1000 Mt	1
	+Exports	1000 Mt	1
	+Ending Stocks	1000 Mt	1
Ending Stocks (1000 Mt)	Intercept		-13.219
	LN(Domestic Consumption)	1000 Mt	2.979

TOTAL MODELED COUNTRIES BY WORLD REGION:

Total Modeled AFRICA = Cameroon + Cote D'Ivoire + Egypt + Ghana + Guinea + Kenya + Mali + Mozambique + Nigeria + Senegal + Sierra Leone + South Africa + Tanzania

Total Modeled AMERICAS = Argentina + Brazil + Canada + Mexico + United States + Uruguay

Total Modeled ASIA = Bangladesh + Cambodia + China + Hong Kong + India + Indonesia + Iran + Iraq + Japan + Malaysia + Myanmar + Pakistan + the Philippines + Saudi Arabia + South Korea + Taiwan + Thailand + Turkey + Vietnam

Total Modeled EUROPE=EU 27

Total Modeled OCEANIA=Australia

FIVE (5) REST-OF-THE-WORLD (ROW) REGIONAL MODELS:

REST-OF-AFRICA MODEL

Per Capita Consumption (Kg per Person)	Intercept		-4.008	
	LN(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars per Mt	-0.110	-0.110
	LN(Real GDP at 2000 Prices/Population)	US Dollars per Person	0.946	0.946
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	

Area Harvested (1000 Ha)	Intercept		0.529	
	LN[LAG(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars	0.040	0.040
	LN[LAG(Area Harvested)]	1000 Ha	0.460	0.460
Milled Yield (Mt per Ha)	Intercept		-0.584	
	LN(Trend)	(Year -1982)	0.135	0.135
Milled Production (1000 Mt)	Total Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Total Consumption *(1/52)	1000 Mt	0.0192	
Net Imports (1000 Mt)	+Milled Production	1000 Mt	+1	
	+Beginning Stocks	1000 Mt	+1	
	- Ending Stocks	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	

REST-OF-AMERICAS MODEL

Per Capita Consumption (Kg per Person)	Intercept		-3.074	
	LN(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars per Mt	-0.201	-0.201
	LN(Real GDP at 2000 Prices/Population)	US Dollars per Person	0.828	0.828
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.916	
	LN[LAG(Fertilizer Price Deflated by GDP Deflator (2000=100))	US Dollars	-0.021	-0.021
	LN[LAG(Area Harvested)]	1000 Ha	0.445	0.445
Milled Yield (Mt per Ha)	Intercept		0.267	
	LN[LAG(Fertilizer Price Deflated by GDP Deflator (2000=100))		-0.055	-0.055
	LN(Trend)	(Year -1982)	0.144	0.144
Milled Production (1000 Mt)	Total Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Total Consumption *(0.20)	1000 Mt	0.200	
Net Imports (1000 Mt)	+Milled Production	1000 Mt	+1	
	+Beginning Stocks	1000 Mt	+1	
	- Ending Stocks	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	

REST-OF-ASIA MODEL

Per Capita Consumption (Kg per Person)	Intercept		2.230	
	LN(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars per Mt	-0.144	-0.144
	LN(Real GDP at 2000 Prices/Population)	US Dollars per Person	0.219	0.219

Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.605	
	LN[LAG(Area Harvested)]	1000 Ha	0.403	0.403
Milled Yield (Mt per Ha)	Intercept		-0.029	
	LN(Trend)	(Year -1982)	0.127	0.127
Milled Production (1000 Mt)	Total Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Total Consumption *(1/52)	1000 Mt	0.0192	
Net Imports (1000 Mt)	+Milled Production	1000 Mt	+1	
	+Beginning Stocks	1000 Mt	+1	
	- Ending Stocks	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	

REST-OF-EUROPE MODEL

Per Capita Consumption (Kg per Person)	Intercept		-3.880	
	LN(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars per Mt	-0.342	-0.342
	LN(Real GDP at 2000 Prices/Population)	US Dollars per Person	0.640	0.640
Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		1.996	
	LN[LAG(Thailand Price 5% Broken Long Grain Deflated by GDP Deflator (2000=100))	US Dollars	0.059	0.059
	LN[LAG(Area Harvested)]	1000 Ha	0.297	0.297
Milled Yield (Mt per Ha)	Intercept		-0.923	
	LN(Trend)	(Year -1982)	0.299	0.299
Milled Production (1000 Mt)	Total Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Total Consumption *(1/6)	1000 Mt	0.167	
Net Imports (1000 Mt)	+Milled Production	1000 Mt	+1	
	+Beginning Stocks	1000 Mt	+1	
	- Ending Stocks	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	

REST-OF-OCEANIA MODEL

Per Capita Consumption (Kg per Person)	Intercept		0.300	
	LN[LAG(Imports+ Milled Production)/Population)]	1000 Mt	0.850	0.850
	LN(Real GDP at 2000 Prices/Population)	US Dollars per Person	0.000	0.000

Total Consumption (1000 Mt)	Per Capita Consumption*	Kg per Person	1	
	Population	Millions	1	
Area Harvested (1000 Ha)	Intercept		0.715	
	LN[LAG(Area Harvested)]	1000 Ha	0.318	0.318
Milled Yield (Mt per Ha)	Intercept		0.536	
	LN[(LAG(Fertilizer Price Deflated by GDP Deflator, (2000=100))]		-0.110	-0.110
	LN(Trend)	(Year -1982)	0.114	0.114
Milled Production (1000 Mt)	Total Area Harvested*	1000 Ha	1	
	Yield Milled	Mt per Ha	1	
Ending Stocks (1000 Mt)	Total Consumption *(1/52)	1000 Mt	0.0192	
Net Imports (1000 Mt)	+Milled Production	1000 Mt	+1	
	+Beginning Stocks	1000 Mt	+1	
	- Ending Stocks	1000 Mt	-1	
	-Domestic Consumption	1000 Mt	-1	

TOTAL REST-OF-THE-WORLD (ROW)

TOTAL ROW = Rest-of-Africa + Rest-of-Americas + Rest-of-Asia + Rest-of- Europe + Rest-of- Oceania

TOTAL WORLD BY REGION

Total AFRICA = Total Modeled Africa + Rest-of- Africa

Total AMERICAS = Total Modeled Americas + Rest-of- Americas

Total ASIA = Total Modeled Asia + Rest-of- Asia

Total EUROPE = Total Modeled Europe + Rest-of- Europe

Total OCENIA = Total Modeled Oceania + Rest-of- Oceania

TOTAL WORLD

TOTAL WORLD = Total AFRICA + Total AMERICAS + Total ASIA + Total EUROPE + Total OCEANIA

Japonica Net Import Share for ROW	Intercept		-1.640	
	LN(Ex-Mill California Price for Medium & Short Grain Rice, 4% Brokens*22.04622/Thailand Price 100% Long Grain)	US Dollars per Mt	-0.500	-0.500

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