

Dissemination of a food commodity supply and demand model for ASEAN countries through an instruction manual

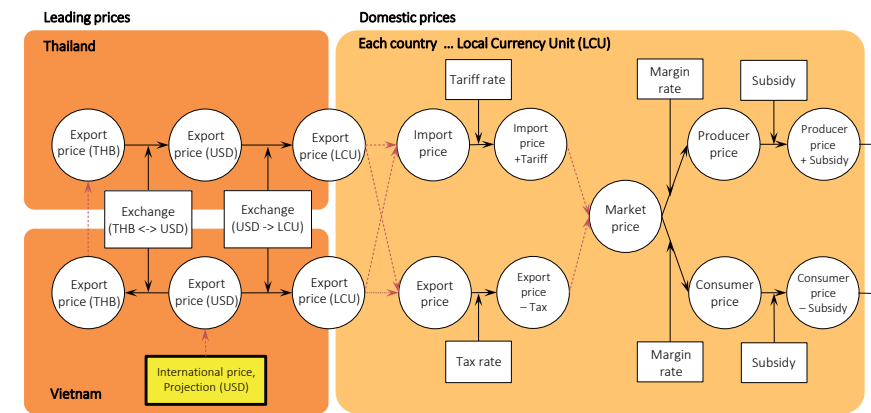
Future trends in food supply and demand have been gaining attention among ASEAN countries where agricultural trade liberalization is expected because of the establishment of the ASEAN Economic Community in 2015. In line with this, JIRCAS built an econometric model, i.e., a middle-term non-equilibrium supply and demand model, for making future projections related to agro-food products, and an instruction manual was subsequently published to facilitate dissemination. The know-how about the model had already been transferred to government officers in ASEAN countries through collaboration with the ASEAN Food Security Information System (AFSIS). The manual would be useful to officers, researchers, and students who are interested in understanding, building, and utilizing the model.

The manual contains the conceptual diagram (Fig. 1), the model structure expressed in an Excel worksheet (Fig. 2), and the projection results of the model (Fig. 3) as well as examples of scenario analyses. The non-equilibrium model in this manual does not presume equilibrium of food supply and demand in the domestic market, and would be the foundation for understanding more complicated models like the partial-equilibrium model often used by international organizations such as the Organization for Economic Cooperation and Development, Food and Agriculture Organization (OECD-FAO).

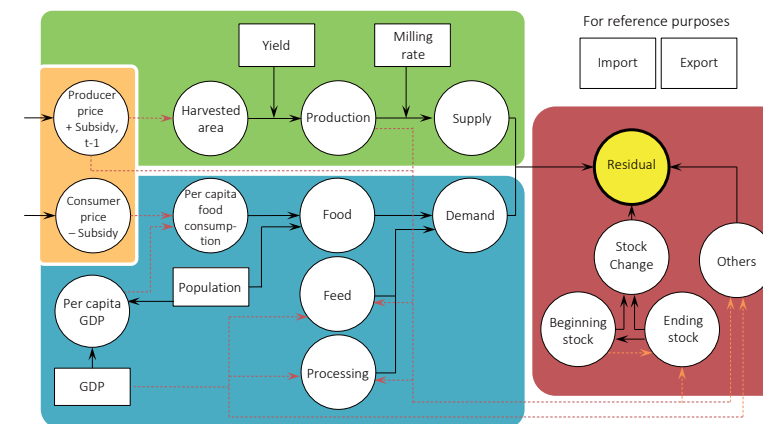
The manual shows how to use the model for policy evaluation and for comparative statics or welfare analysis. It also explained the basic concepts of econometrics required to develop the model including regression analysis, the adjusted coefficient of determination, and the standard error. In addition, for AFSIS project participants, the methods used to run the programs in developing and utilizing the model are further described.

The manual was published and disseminated to government staffs of ASEAN member states who participated in the project. It can also be downloaded from the AFSIS website (<http://www.aptfsis.org/>). It must be noted, however, that readers and users need to scrutinize the data and parameters in the manual, as these were collected and estimated by project participants. To produce better information from the analysis, provincial-level or more site-specific data should be used to build the model rather than the country-level model referenced in the manual. Furthermore, the model can be extended to partial-equilibrium models, where the effects of supply-demand balance on food prices are highlighted.

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(a) Price linkage



(b) Food balance sheet

Fig. 1. Conceptual diagram of the model (USD: US dollar, THB: Thai baht, LCU: Local currency unit)

Indonesia		No.	Abbr.	Unit	Equation	2018	2019
Rice							
Projection							
44	FBS Supply	38	GSS	1000t	do.	46,261	46,641
45	Production - Milled	39	GPM	1000t	do.	45,789	46,168
46	Milling rate	40	RML	---	do.	0.63	0.63
47	Paddy	41	GPP	1000t	do.	72,439	73,039
48	Yield	42	YLD	t/ha	1 YLD=YLD(-1)+Change	5.26	5.30
49	Area	43	ARA	1000ha	3 ARA=ARA(-1) * (PPR/LCU, R)	13,777	13,776
50	Imports	44	IMP	1000t	2 IMP=IMP(-1)	473	473
51	Domestic use	45	GDU	1000t	do.	24,528	24,474
52	Food	47	GFO	1000t	do.	24,520	24,471
53	Food, pct.	48	GFP	kg/person/y	6 GFP=QFP(-1) * (PCS/LCU, R)	23,944	24,071
54	Feed	49	GFE	1000t	7 GFE=QFE(-1) * (QPP/QPP(-1))	93.61	93.14
55	Processing	50	GPC	1000t	4 GPC=QPC(-1) * (QPP/QPP(-1))	290.14	306.50
56	Exports	51	EXP	1000t	5 EXP=EXPE(-1)	285.85	280.37
57	Stock change	52	SKC	1000t	do.	51	73
58	(as demand) beginning stock	53	SKB	1000t	9 SKB=SKB(-1)	5,728	5,779
59	ending stock	54	SKE	1000t	8 SKE=SKB(-1) * (QPP/QPP(-1))	5,779	5,851

Fig. 2. Sample spreadsheet data and equations for the model

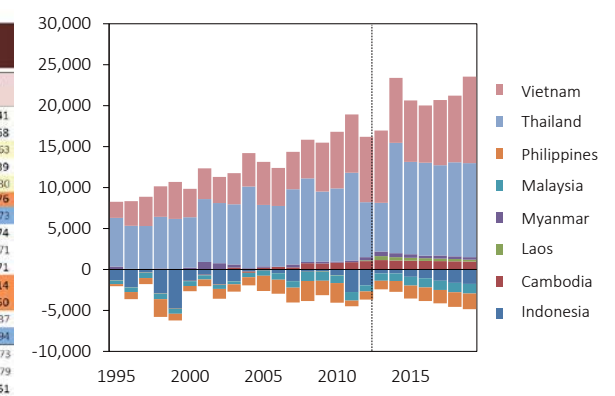


Fig. 3. Estimated surplus in rice supply (2012-2019) (1000t)