

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

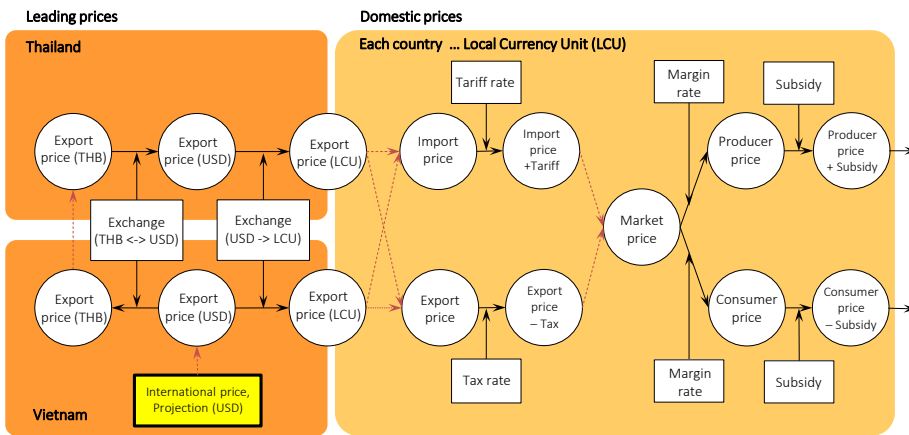
Future trends in food supply and demand have been gaining attention among ASEAN countries where agricultural trade liberalization is expected because of the establishment of the ASEAN Economic Community in 2015. In line with this, JIRCAS built an econometric model, i.e., a middle-term non-equilibrium 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).

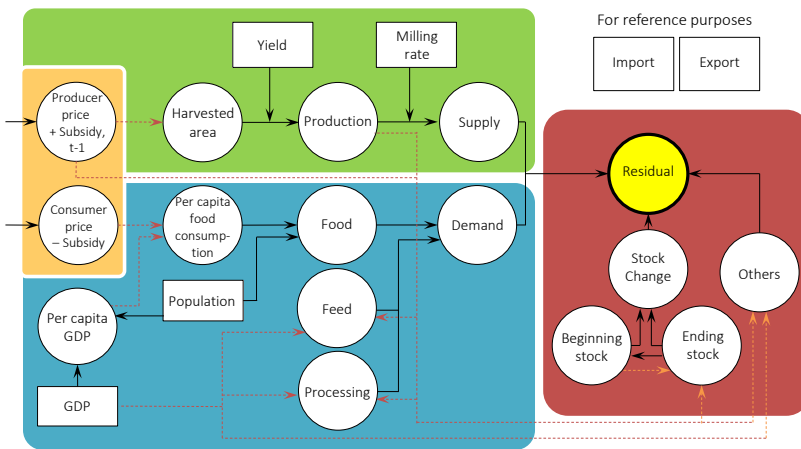
The manual shows how to use the model for policy evaluation and for comparative statics or welfare analysis. It also explained the basic concepts of econometrics required to develop the model including regression analysis, the adjusted coefficient of determination, and the standard error. In addition, 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.apftsis.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)

	No.	Abbr.	Unit	Equation	2018	2019
Indonesia						
Rice						
Projection						
44	FBS	Supply	38 QSS	1000t	45,261	45,641
45		Production	39 QPM	1000t	45,789	46,168
46		Milling rate	40 RML	---	0.63	0.63
47		Paddy	41 QPP	1000t	72,439	73,039
48		Yield	42 YLD	t/ha	5.26	5.30
49		Area	43 ARA	1000ha	13,777	13,776
50		Imports	44 IMP	1000t	473	473
51		Demand	45 QDD	1000t	24,523	24,474
52		Domestic use	46 QDU	1000t	24,520	24,471
53		Food	47 QFO	1000t	23,944	24,071
54		Food, pct.	48 QFP	kg/psn/y	93.61	93.14
55		Feed	49 QFE	1000t	290.14	306.50
56		Processing	50 QPC	1000t	285.85	289.37
57		Exports	51 EXP	1000t	2.94	2.94
58		Stock change	52 SKC	1000t	51	73
59		(as demand) Beginning stock	53 SKB	1000t	5,728	5,779
60		Ending stock	54 SKE	1000t	5,779	5,851

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

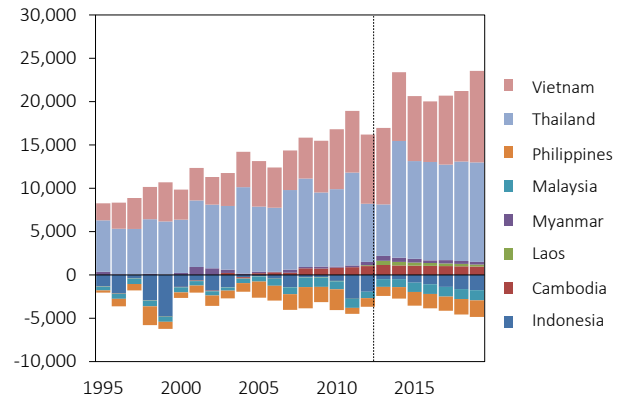


Fig. 3. Estimated surplus in rice supply (2012-2019) (1000t)