
A Comparison of Marketing Margins Across Sectors, Users, and Regions

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Motivation

- Transportation, wholesaling, and retailing activities play an important role in most economies: 8 – 15% of GDP in G7 countries
- Margins do vary by commodity, user, and region
- Margins are critical for many aspects of GTAP, e.g., IEA energy prices are inclusive of margins.
- Most AGE models do not tie these market activities to specific commodities
 - Linkage is broken in IO use tables to obtain producer prices
 - Limits ability to look at trade and investment measures targeting this important part of the economy

Outline

- Available margin data
 - Input-output accounts
 - Secondary sources
- Comparison of margins across users, products, and regions
- Comparison of processed food margins across regions
- Development of margin inclusive GTAP data base

Input-Output Account Margin Data

- Would like trade and transport margin data for all intermediate and final demand uses, including export
- Regions with full margin data available
 - United States – 538 sectors
 - Australia – 108 sectors
 - Japan – 93 sectors
- The Netherlands has margin data across users but does not separate trade and transport margins
- France
 - Limited sectors (20) and does not distinguish margins on intermediate inputs

Margin Data for Select African Countries

- Based on SAM's developed by IFPRI
- Does not identify separate trade and transport margins or separate margins by user
- Available for 5 countries:
 - Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe

Secondary Margin Data

- Data for 52 regions available from the Euromonitor International Integrated Market Information System
 - Data derived from a combination of official statistics and secondary sources such as trade interviews with companies at all levels of the supply chain
- Industry average margins include wholesaler, distributor, and retailer or horeca markets
- Data on the average ratio of retail to manufacturer prices for seven GTAP processed food and tobacco products
 - cmt, omt, vol, mil, pcr, ofd, and b_t

Comparison of Margins Across Uses

Total Trade and Transport Margin as Percentage of Producer Price

Region	Intermediate Inputs	Consumption Goods	Exports
Australia	17.2 (77.0%)	74.7 (95.7%)	13.9 (74.1%)
Japan	21.3 (77.1%)	78.3 (94.1%)	9.4 (85.2%)
Netherlands	14.9	43.6	8.9
United States	18.8 (70.1%)	73.5 (95.8%)	14.8 (75.0%)

(Values in parenthesis are trade margin as percent of total margin)

Range of Margins Across Uses

Country	Intermediate Use		Consumption		Exports	
	Min	Max	Min	Max	Min	Max
Percentage of Producer Price						
Australia	6.6	53.0	19.8	170.8	2.4	49.3
	(metals)	(crops)	(live)	(chem)	(metals)	(elect)
Japan	6.4	38.2	54.0	123.7	7.8	24.1
	(mvh)	(b_t)	(petro)	(wap)	(mvh)	(mine)
Netherlands	3.8	51.4	19.1	142.2	1.2	25.8
	(mine)	(crops)	(petro)	(crops)	(mine)	(crops)
United States	2.0	34.1	22.6	117.2	2.4	32.5
	(live)	(b_t)	(mvh)	(petro)	(live)	(crops)

Terms in parentheses refer to name of sector with min or max margin

Comparisons of Total Margins Across Regions

Average Margins Across Regions

Region	Total Domestic	Exports
Australia	31.9	13.9
Japan	35.6	9.4
Netherlands	20.7	8.9
United States	35.6	14.8
Mozambique	26.7	20.1
South Africa	17.3	11.0
Tanzania	4.6	8.8
Zambia	21.3	24.2
Zimbabwe	14.5	22.0

Total Margins on Processed Food Products

Retail to Manufacturer Price Ratios

Variable	N	Mean	Std. Dev.	Min	Max
Bovine meat products (cmt)	51	1.43	0.20	1.16	2.17
Meat products nec (omt)	50	1.44	0.19	1.16	2.18
Vegetable oils and fats (vol)	52	1.35	0.22	1.12	2.58
Dairy products (mil)	52	1.34	0.12	1.15	1.68
Processed rice (pcr)	52	1.39	0.16	1.15	2.03
Food products nec (ofd)	52	1.37	0.13	1.16	1.87
Beverages and tobacco (b_t)	52	2.13	0.46	1.27	3.36

Spearman Rank Correlation Matrix

GTAP Commodity	b_t	ofd	pcr	cmt	omt	vol	mil
b_t	1.00	-0.07 (0.63)	-0.19 (0.17)	-0.22 (0.12)	-0.23 (0.11)	-0.14 (0.32)	-0.06 (0.67)
ofd		1.00	0.78 (0.0001)	0.77 (0.0001)	0.74 (0.0001)	0.81 (0.0001)	0.80 (0.0001)
pcr			1.00	0.84 (0.0001)	0.79 (0.0001)	0.58 (0.0001)	0.47 (0.0005)
cmt				1.00	0.97 (0.0001)	0.61 (0.0001)	0.55 (0.0001)
omt					1.00	0.65 (0.0001)	0.54 (0.0001)
vol						1.00	0.74 (0.0001)
mil							1.00

Analysis of Processed Food Margins

- Preliminary analysis of why processed food margins differ across countries

- General factors:
 - Structure of wholesalers and retailers
 - Competitive nature of wholesale and retail
 - Marketing services required by consumers
 - Input costs

- To attempt to capture these factors, estimate the following general model:
$$\text{margin} = f(\text{region}, \text{pgdp}, \text{pelect}, \text{area})$$

Analysis of Processed Food Margins

- Little empirical evidence exists on appropriate functional form, so utilize generalized Box-Cox function:

$$margin_j^* = b_0 + b_1 pgdp_j^* + b_2 pelect_j^* + b_3 area_j^* + \sum_{k=1}^7 a_k region_{kj} + e_j$$

- The independent variables $pgdp^*$, $pelect^*$, and $area^*$ are defined as:

$$x^* = \frac{x^l - 1}{l} \text{ if } l \neq 0 \text{ and } \ln(x) \text{ if } l = 0$$

- Similarly, the dependent variable $margin^*$ is defined as:

$$y^* = \frac{y^q - 1}{q} \text{ if } q \neq 0 \text{ and } \ln(y) \text{ if } q = 0$$

Box-Cox Results

- Per-capita GDP is negatively related to margins
 - Suggest more competition in higher income countries
 - Margin elasticities range from -0.015 (b_t) to -0.062 (pcr)

 - Per-capita electricity usage is positively related to margins
 - Exception - beverages and tobacco with a negative relationship
 - Suggest higher input costs
 - Margin elasticities range from 0.052 (vol) to 0.092 (pcr)
 - Margin elasticity for b_t -0.029

 - Area only statistically related to processed rice margins
 - Negative sign (opposite of expected value) but small elasticity value (-0.009)
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Development of Margin Inclusive Data Base

- Last step in project is to develop a new margin inclusive GTAP data base
- Will use all information collected so far
 - Use country data when possible
 - Use relationships across users and regions
 - Use averages for users/regions without margin data
- Obtaining additional margin information from contributors will be required to improve quality of this data base over time