

Quantifying the Economic Impact of Removing Non-Tariff Measures: Tariff Equivalent Approach



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Objectives

- ✦ Measurement of NTMs by type in APEC countries in terms of tariff equivalents
- ✦ Quantification of the welfare effects of eliminating NTMs

Recent Issues on NTMs

- ✠ NTMs have been a growing problem for international trade.
- ✠ Developed countries depend more heavily on NTMs, particularly non-core NTMs, than developing countries do. (Ando 2002)
- ✠ The pattern of NTMs varies across countries. (Ando 2002)



Importance of quantifying NTMs by type

Tariff Equivalents of NTMs by Type



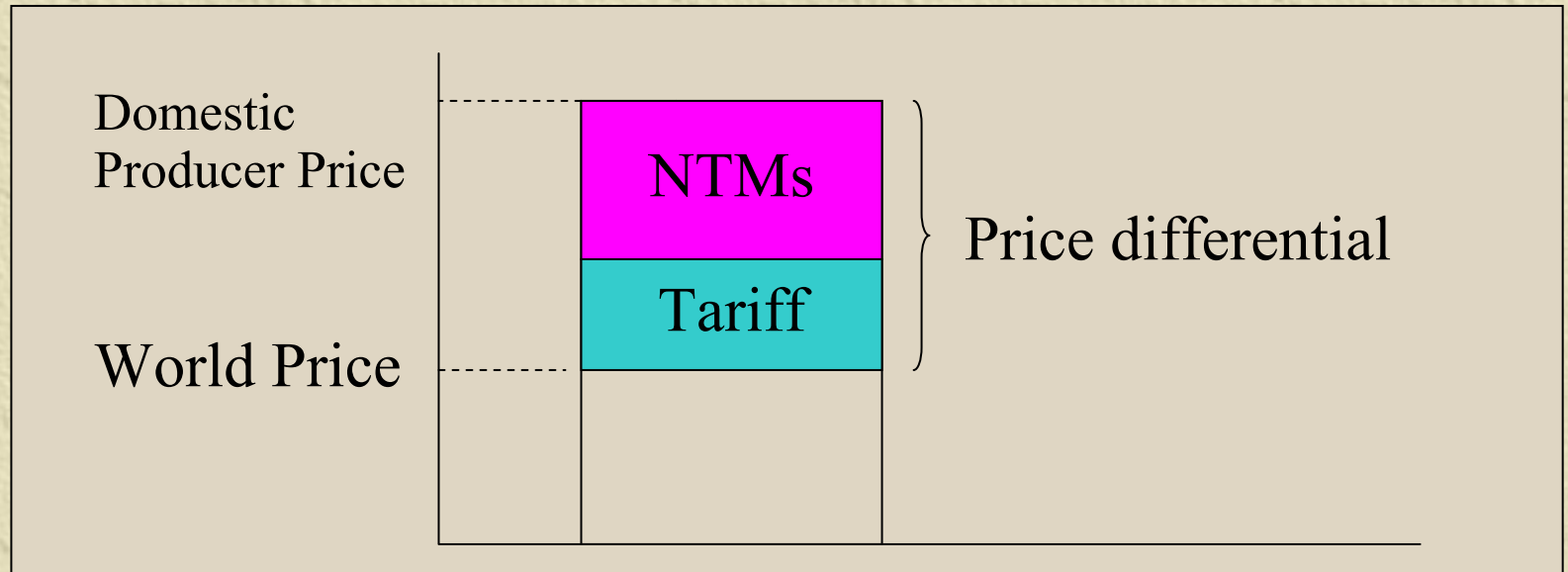
Measuring NTMs, focusing on the price differential between the price of imported goods and the producer price of the domestic substitutes



Types of NTMs

- ◆ Price control measures (Core NTMs)
- ◆ Automatic licensing measures
- ◆ Quantity control measures (Core NTMs)
- ◆ Monopolistic measures
- ◆ Technical measures

Assumptions for Measuring Price Differential



✧ Small country

✧ Perfect substitution between imported goods and domestic goods

Measuring Tariff Equivalent of NTMs

Step 1: Calculating the magnitude of price differential due to NTMs (PD_i^N)

$$(1) \quad PD_i^T = 100 \bullet (P_i^D - P_i^M) / P_i^M$$

$$(2) \quad PD_i^N = PD_i^T - t_i$$

Measuring Tariff Equivalent of NTMs

Step 2: Estimating the price distorting effect each type of NTMs has

- A base-case regression equation

$$PD_i^N = \alpha + \sum_j \beta_j F_{ji}$$

The price distorting effect of each type is assumed to be common across industries.

- Control variable: GDP per capita to control country specific effect

Measuring Tariff Equivalent of NTMs

Step 3: Calculating tariff equivalents by type and industry

$$TE_{ji} = \beta_j F_{ji}$$

Data Sources for Price Differentials

Domestic Production Prices

- ◆ Value: International Yearbook of Industrial Statistics (UN, ISIC 4-digit)
- ◆ Quantity: Industrial Commodity Statistical Yearbook (UN, ISIC 6-digit)

Import Prices (c.i.f)

- ◆ Value and Quantity: International Trade Statistics Yearbook (UN, SITC 4-digit)
- ◆ Import Price: World Trade Atlas (JETRO, HS 4-digit) for Australia, Canada, and United States

Data Sources for Tariffs and NTMs

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- ✠ Tariffs: TRAINS (UNCTAD, CD-ROM 1999 Winter Version and 2001 Spring Version)
 - ✠ NTMs (frequency ratios) by type and industry : Ando (2002), which are based on NTM data at the HS 9-digit level from TRAINS (UNCTAD, CD-ROM 2001 Spring Version)

Tariff Equivalent of NTMs

(Example: Australian Case)

Table 2.1: Preliminary Estimates of Tariff Equivalents of NTMs

Australia	NTM1(%)	NTM3(%)	NTM4(%)	NTM5(%)	NTM6(%)	NTM(ALL)(%)	Pre-NTMs(1+4)
1 Live animals and animal products	0.0	0.0	65.0	0.0	5.3	70.3	65.0
2 Vegetable products	0.0	0.0	10.7	0.0	5.3	16.0	10.7
3 Animal and vegetable oils and fats	0.0	0.0	0.0	0.0	5.3	5.3	0.0
4 Products of food industry;	19.7	0.0	0.0	0.0	5.3	25.0	19.7
5 Mineral products	0.0	0.0	0.0	0.0	0.3	0.3	0.0
6 Chemicals	0.0	0.0	21.9	0.0	0.5	22.5	21.9
7 Plastic and plastic materials,	22.9	0.0	0.0	0.0	0.0	22.9	22.9
8 Skin, raw material; leather, pelts,	0.0	0.0	62.6	0.0	0.0	62.6	62.6
9 Wood and wood products; charcoal,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 Wood pulp, vegetable pulp; paper and	16.3	0.0	0.0	0.0	0.0	16.3	16.3
11 Textiles	2.0	0.0	0.0	0.0	0.0	2.0	2.0
12 Footwear, head-dress, umbrellas,	0.0	0.0	0.0	0.0	0.0	0.0	0.0
13 Rock products; gypsum, cement,	6.2	0.0	0.0	0.0	0.0	6.2	6.2
14 Precious stones and semi-precious stones	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 Base metals and base metal products	3.4	0.0	91.6	0.0	0.0	95.1	95.1
16 Machinery; equipment and mechanism;	1.1	0.0	0.0	0.0	1.6	2.7	1.1
17 Surface, air, water transport means	4.4	0.0	43.7	0.0	0.0	48.1	48.1
18 Optical, photographic, cinematographic,	0.0	0.0	0.0	0.0	0.8	0.8	0.0
19 Firearms and munitions therefore	0.0	0.0	190.1	0.0	0.0	190.1	190.1
20 Various manufactured goods	0.0	0.0	3.8	0.0	0.1	3.9	3.8
21 Works of art, antiques, collections	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Problems on Our Data Set

- ✱ Matching process in calculating unit values and the price differentials
- ✱ Inconsistency of the latest available data of NTMs for each country

Welfare Effect of Eliminating NTMs

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- ✧ Experiments in GTAP model, using tariff equivalents of NTMs
 - ✧ 3 types of experiments for comparison
 1. Voluntary tariff elimination in each country
 2. Voluntary core-NTM elimination in each country
 3. Voluntary total NTM elimination in each country

Experiment Design

✧ Database: GTAP version 5

✧ Aggregation

◆ 16 Regions

- APEC Countries

- ◆ Australia, New Zealand, China, Japan, Korea, Indonesia, Malaysia, Singapore, Thailand, Canada, the United States, Mexico, Chile

- Other Regions

- ◆ Other Asian Countries, Europe, Rest of the World

Experiment Design

◆ 16 Industries

- Live Animal and Animal Products, Vegetables, Other Agriculture, Wood Products, Minerals, Vegetable and Animal Oils and Fats, Food Products, Textile, Leather, Pulp and Paper Products, Chemical Products, Metal Products, Transport Equipment, Machinery Products, Other Manufacturing, Services Industry

◆ 3 Factors

- Capital, Labor (Skilled and Unskilled), Land (Includes Natural Resource)

Preliminary Estimates : Changes in Welfare

	Tariff	Core NTMs	Core NTMs /Tariff(%)	Total NTMs	Total NTMs /Tariff (%)
Australia	528.4	117.09	22.16%	119.27	22.57%
NZ	130.2	75.89	58.29%	77.08	59.20%
China	7725.95	3421.52	44.29%	3110.03	40.27%
Japan	7666.61	-2161.32	-28.19%	1999.49	26.08%
Korea	1950.3	53.63	2.75%	53.63	2.75%
Indonesia	3065.08	179.9	5.87%	153.48	5.01%
Malaysia	1181.99	882.15	74.63%	873.65	56.99%
Singapore	5.41	-10.46	-193.34%	2.15	39.74%
Thailand	1941.44	1289.68	66.43%	1190.26	61.31%
Canada	1668.42	-5677.89	-340.32%	-5676.97	-340.26%
US	4091.98	2545.66	62.21%	2640.06	64.52%
Mexico	1149.31	447.22	38.91%	422.85	36.77%
Chile	146.05	50.72	34.73%	57.15	39.13%

Conclusions

- ✦ Welfare effect of NTMs elimination is NOT negligible, compared with that of tariff elimination.
- ✦ The impact of eliminating NTMs on the world welfare is half/two-thirds as large as that of tariff reduction.
- ✦ The effect of reducing non-core NTMs is relatively lower than that of eliminating core NTMs.

Further Improvement

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- ✧ Improving sector-matching process in calculating unit values and price differentials
 - ✧ Improving regression equation