

# China's Non-Tariff Measures and Its Impact on Imports

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# Literature Review: Classifications

## •United Nations Conference on Trade and Development (2012) :

<u>Import related</u>	Technical measures	A Sanitary and <u>phytosanitary</u> measures
		B Technical barriers to trade
		C Pre-shipment inspection and other formalities
	Non-technical measures	D Contingent trade-protective measures
		E Non-automatic licensing, quotas, prohibitions and quantity control measures other than for SPS or <u>tbt</u> reasons
		F Price-control measures, including additional taxes & charges
		G Finance measures
		H Measures affecting competition
		I Trade-related investment measures
		J Distribution restrictions
		K Restrictions on post-sales services
		L Subsidies (excluding export subsidies under P7)
		M Subsidies (excluding export subsidies under P7)
		N Intellectual property
		O Rules of origin
<u>Export related</u>		P Export-related measures

# Literature review: Quantification

- the frequency ratio (FR) & the coverage ratio(CR) used by Beghin & Bureau(2001), Bora et al.(2002), Nicita(2009), Bao & Larry Qiu(2010)

$$FI_j = \sum_i D_i M_i / \sum_i M_i \quad (1)$$

$$CR_j = \sum_i D_i V_i / \sum_i V_i \quad (2)$$

➤ The coverage ratio captures the extent of trade covered by NTMs: the percentage of import values by China in product category  $j$  that is affected by China's NTMs in that year, where  $i$  is a product item contained in product category  $j$ .

➤ The frequency index shows the percentage of import transactions affected by NTMs: the percentage of import products by China in product category  $j$  *affected by China's NTMs in that year*.

# Literature Review: Measurement Methods

- Price gap approach: the first AVE method.

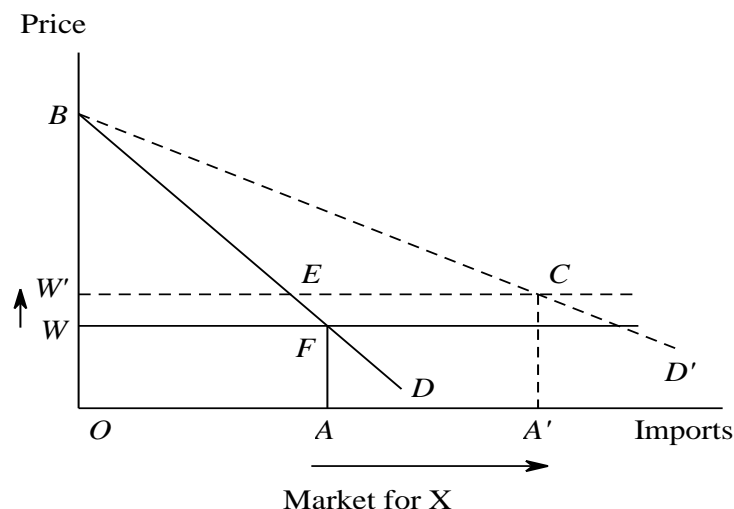
Bradford(2003); Ferrantino(2006); Cadot et al. (2014)

- Econometric method: the gravity model as the second AVE method. Helpman, Melitz & Rubinstein(2004); Kee, Nicita & Olarreaga(2004,2008); Kee, et al.(2009)

$$\ln(importValue) = \alpha + \beta \ln(1 + tariff) + \delta NTMs + \phi X$$

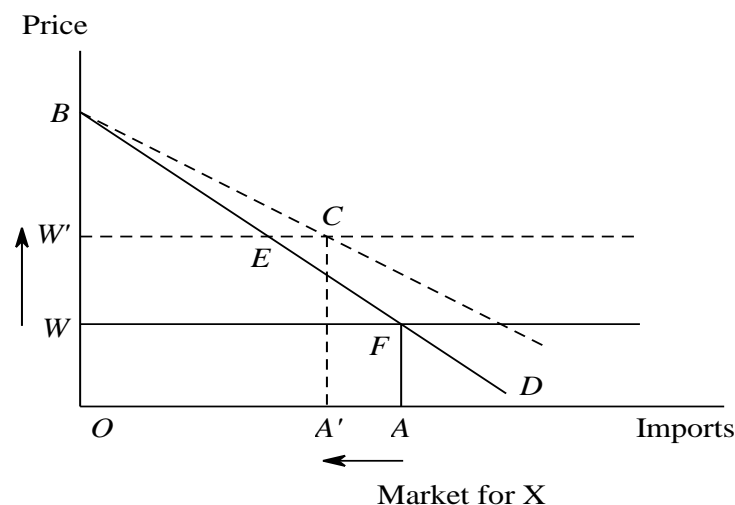
# Literature Review: Trade and Welfare Effect

- price effect: NTMs raise the selling prices of domestic products for about 8.7% on average globally, Kelleher & Reyes (forthcoming)
- Quantitative effect



图a

TBT/SPS措施对贸易和福利的影响：二者均增加



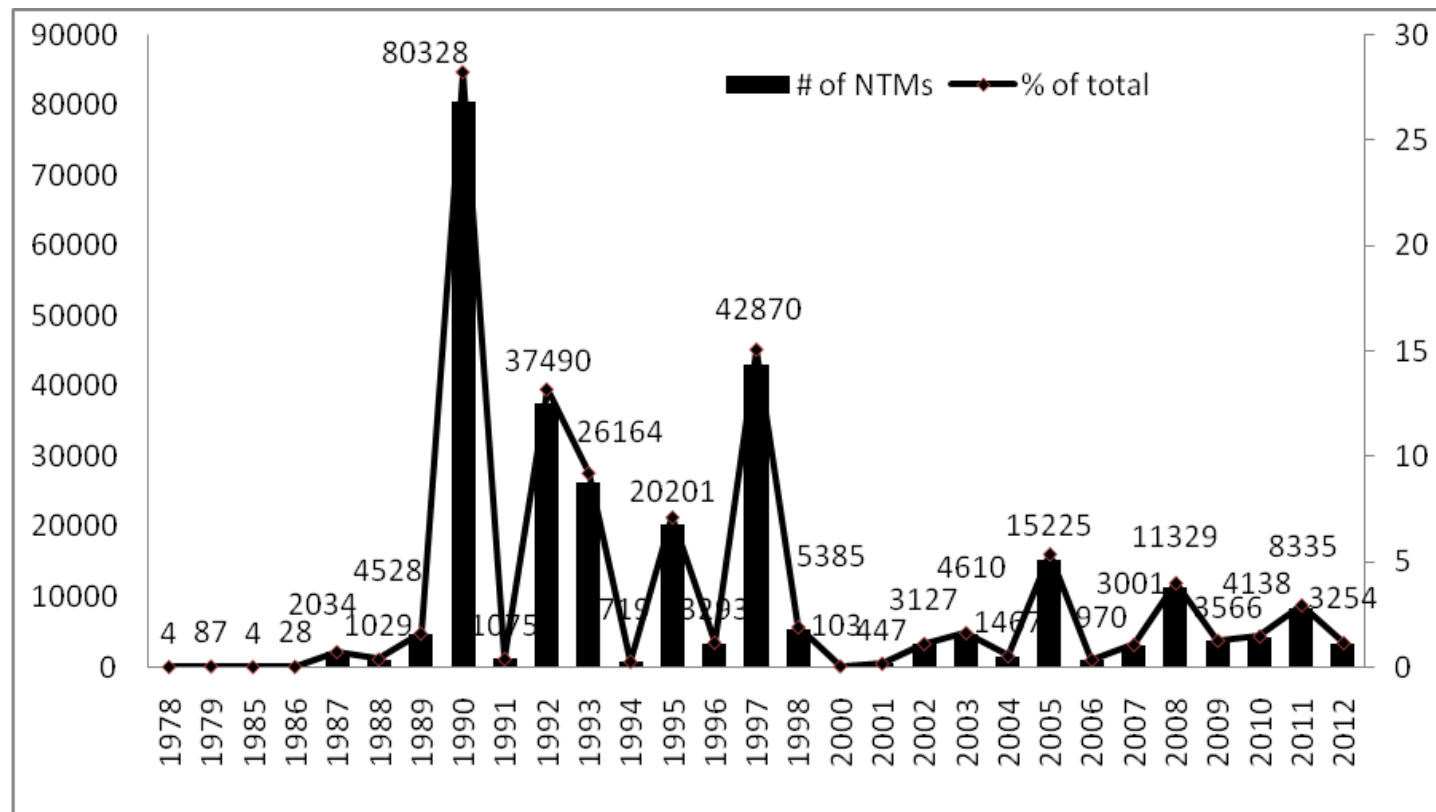
图b

TBT/SPS措施对贸易和福利的影响：二者均减少

- Other effect: Bao & Chen(2013), 1995 to 2008, the influence of TBT measures in 103 countries on three trade dimensions (trade possibility, the volume of trade (including product categories and product quantities) and the duration of trade)

# Data

- the years when China's NTMs in 2012 was first implemented



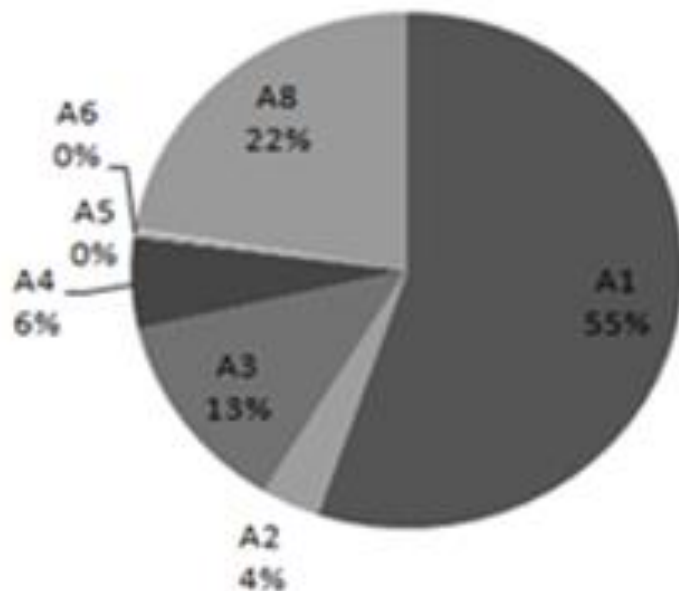
- The constitution and distribution(%) for China's NTMs in 2012

A. Sanitary and phytosanitary measures	68.59
B. Technical barriers to trade	26.65
C. Pre-shipment inspection and other formalities	0.01
D. Contingent trade-protective measures	0.04
E. Non-automatic licensing, quotas, prohibitions and quantity control measures other than for SPS or tbt reasons	0.69
H. Measures affecting competition	0.15
P. Export-related measures	3.83
Others	0.05

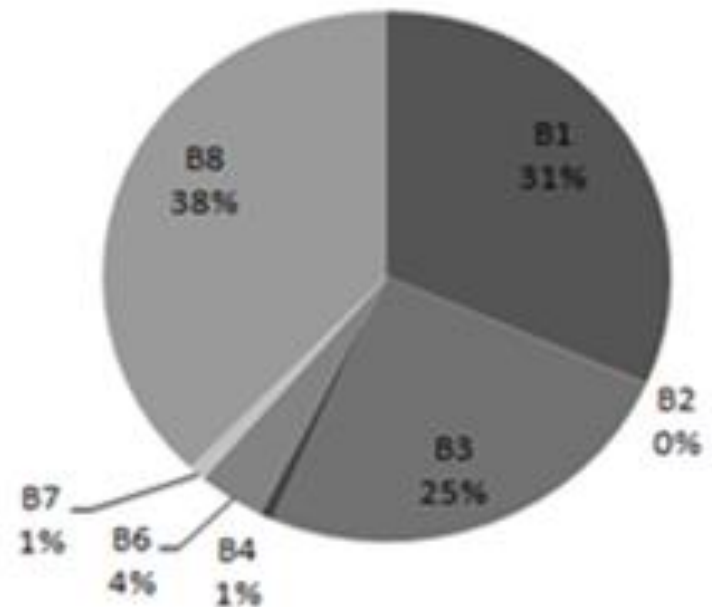
# Data

- A detailed classification and constitution for China's SPS and TBT measures in 2012

SPS



TBT





# Data

- China's NTMs by industries, 2012

Manufacturing	24.02
Human health & social work activities	15.99
Arts, sports & recreation	12.44
Agriculture, forestry, animal husbandry & fisheries	10.04
mining and quarrying	5.76
transportation, storage and postal industry	4.48
public administration, social security and social organizations	4.18
leasing and business services	3.28
accommodation and food service	3.07
scientific research and technical services	2.46
wholesale and retail	2.31
electricity, heating power, gas and water generation and supply	1.85
construction	1.86
information transmission, software and information technology services	1.26
finance	1.08
resident services, repair and other services	0.92
water resources, environment and public facilities management	0.55
real estate	0.66
education	0.63
activities of extraterritorial organizations and bodies	0.50
Other services	0.07

# Research Hypotheses

- Hypothesis 1: the influence of NTMs in different classes/subclasses differ. The influence may be positive as well as negative.
- Hypothesis 2 : Because of the “learning hypothesis” , one class of NTMs may have different influence on import after implementation. There may be negative influence at the start. But after enterprises learnt to follow one NTM, information symmetry will lead to a demand growth for consumers, and the influence will be positive in the medium and long term.
- Hypothesis 3 : one NTM may have different influences on countries with different economic development level, because poor countries may lack the ability to follow the rules. What’s more, the temporal effect for one NTM (hypothesis 2)between poor and rich countries will also not be the same.

# Gravity Model (1) : Cross-Section

$$\log(im_j) = \alpha + \beta_1 gdp_j + \beta_2 \log(dist_j) + \beta_3 comlang_j + \beta_4 contig_j + \beta_5 \log(1 + tariff_j) + \beta_6 NTM_j + \varepsilon$$

$j$  : exporters to China.

$IM_{ijt}$  : China's import on product  $i$  from country  $j$ .

$\alpha_j$  : control the factors which varies only with the country but not with the time, importer fixed effect.

$\alpha_{t:j}$  : control the factors varies only with the time but not with the country, time fixed effect.

$GDP_t$  : China's GNP in year  $t$ .

$GDP_{jt}$  : the GNP in year  $t$  for country  $j$ .

$Dist_j$  : the straight-line distance between Beijing and the capital of country  $j$ .

$Contig_j$  : dummy variable, represents whether country  $j$  is border on China.

$Comlang_j$  : dummy variable, represents whether country  $j$  speaks the same language with China.

$Tariff_{it}$  : China's average tariff level on product  $i$  in year  $t$ .

$NTM_{it}$  : dummy variable; proxy variable for the implementation time; volume; the frequency ratio; the coverage ratio; etc.

# Model Development

- (1) Add a dummy variable that whether country  $j$  is a developing country or not. This aims to see whether the development level of one country influence the effect of NTMs.
- (2) Add a dummy variable that whether product  $i$  is agricultural product. 1 represents yes and 0 represents not.
- (3) Add a dummy variable that whether year  $t$  is after 2002 to see the effect for China entering into the WTO. 1 represents that year  $t$  is after 2001 and 0 represents not.
- (4) Decompose the total value of import, and to see the influence of NTMs on different import dimensions from a more detailed perspective.
- (5) to see the influence of TBT on ASEAN countries, African countries and India respectively.

# Robustness Test

(1) Because of the multilateral resistance problem

(Anderson and Van Wincoop, 2003&2004) in gravity model, we add China's import from the other of the world except from the country  $j$  as the multilateral resistance variable to control for the substitution effect of country  $j$ 's NTM on China's import from others.

(2) Using the industry level data instead of the product level data to regress again, as well as the frequency ratio and coverage ratio at the industry level .

(3) To control for the endogeneity, we use the trade data in 2013 instead of the 2012 to investigate the effect of NTMs in 2012 in cross-section regressions as well as in the panel data, we use the trade data lag one year.

# Key Issues to be resolved

## •measuring the variables of NTMs

Full sample size:

- Whether product i subjected NTMs or not in 2012 : Dummy
- the total number that product i subjected NTMs in 2012
- The weighted average years of all the NTMs that product i subjected in 2012

Sub-sample size:

- Divide NTMs into classes and sub-classes, and discuss their influence respectively. The steps are the same with the above.

Robustness Tests:

- the frequency ratio that industry m subjected NTMs in 2012
- the coverage ratio that industry m subjected NTMs in 2012

# Model 2

## Panel regression

$$\log(IM_{ijt}) = \alpha_j + \alpha_t + \beta_1 \log GDP_t + \beta_2 \log GDP_{jt} + \beta_3 \log Dist_j + \beta_4 Contig_j + \beta_5 Comlang_j + \beta_6 \log(1 + Tariff_{it}) + \beta_7 NTM_{it} + \varepsilon_{ijt}$$

t: 1978-2012

## Model 3:

Feeding the estimated ad valorem equivalents into a CGE model to forecast the trade impact of NTMs.

## Other data sources

### Econometric software: SAS, STATA

- The NTMs are from the database on China's Non-Tariff Measures which is collected, sorted out and built by the author himself.
- Trade flows and import statistics are from China Customs Statistics Yearbook.
- The data of every country's real GDP are from the database of US Department of Agriculture Economic Research Services International Macroeconomics (eg, the billion US dollars in 2005 ).
- The geographic distance between Beijing and importing country's capital is straight-line distance.
- The data whether two countries speak the same language or is on border are from the database at CEPII



Thank You !