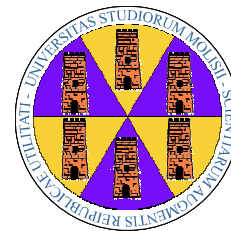


Assessment of non-tariff barriers and their protection effect

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Outline

1. Review of “the state of the art” for assessing the effects of NTBs:

M. Cipollina and L. Salvatici, *Measuring Protection: Mission Impossible?*, TRADEAG WP 2006-07

(<http://www.tradeag.eu/>)

2. Actual assessment:

A.C. Disdier, L. Fontagné and M. Mimouni, *The Impact of Regulations on Agricultural Trade: Evidence from SPS and TBT Agreements*, TRADEAG WP 2006-22

(<http://www.tradeag.eu/>)

SPS and TBTs requirements are cited as:

- stricter than international recommendations
- lacking sufficient scientific ground and risk analysis
- lacking transparency
- discriminatory



General motivation

- “the real 21st century trade issues are standards and rules in areas such as safety, health or consumer protection” (Pascal Lamy, *Financial Times* 9/9/2004)
- NTBs are well-known to be
 - *Pervasive* because regulations designed to address legitimate market failures may have incidental but unwarranted effects on trade.
 - *Difficult to quantify* since they are not published in tariff schedules and they are not expressed in simple “metrics”, such as percentage or monetary values.
 - *Politically sensitive* because the fact that they address legitimate concerns helps to avoid public discussion; then when such measures do raise concerns, the fact that they are difficult to quantify make their direct impact on trade less clear to the public.



What we would like

Any measures of protection should meet the following requirements:

1. they should be able to indicate if a protectionist policy does exist;
2. they should be able to rank different policies according to their degree of restrictiveness;
3. they should guarantee a consistent scaling of all degrees of restrictiveness.



Aggregation problems

1. Conversion problem

Protection can take many different forms – tariffs, quotas, antidumping duties, technical regulations –: we need to convert the different instruments into a common metric.

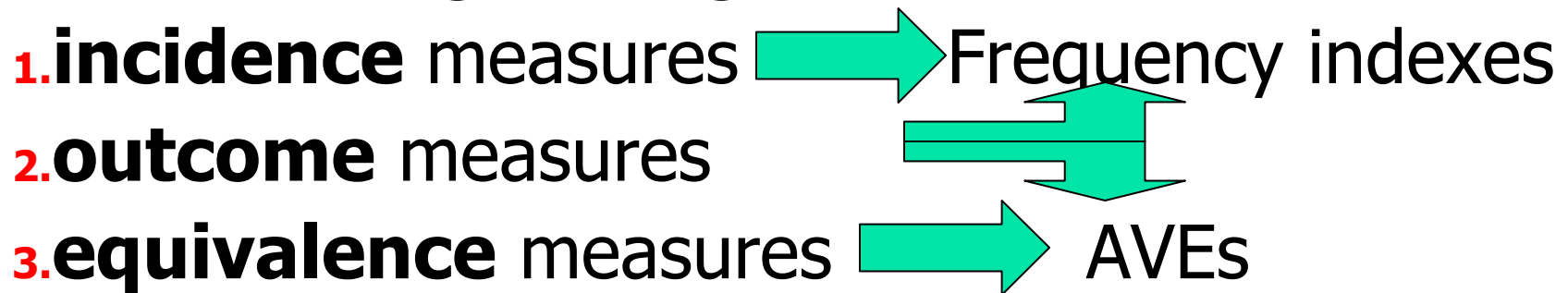
2. Index number problem

Trade policy is set at the tariff line level and there are (literally) thousands of tariff lines in a typical tariff schedule: we need to aggregate them up to a level consistent with the model we are working with.



NTBs measurement typology

We classify the approaches followed in the literature using 3 categories:





Incidence measures

They are only based on the intensities of the policy instruments. They measure the level of protection without considering the rate at which the level of protection is translated into market (economy) specific trade distortions.

The most common incidence measures are frequency-type measures based upon inventory listings of observed NTBs that apply to particular countries, sectors, or categories of trade.



Outcome measures

They are based both on policy and observed data – such as trade, production or consumption shares, GDPs, etc. – to be used in the computation:

1. Coverage ratio(s) = frequency of occurrence of NTBs can also be expressed in weighted terms based on the relative value of affected products (usually, the weights used are percentage of imports covered by NTBs or by certain types of NTBs): *Inventory* approach
2. AVEs = The price wedge is equal to the difference between the domestic price of a good which is protected by NTBs and the reference (usually the world) price of a comparable good: *Handicraft* approach







Some economic effects of existing policies are taken into account, though these indexes remain “a-theoretic” since they are not computed according to some “equivalence criteria” (e.g., import price, volume of imports).



Incidence and outcome measures: data

- UNCTAD database on trade barriers:
 - For each measure, it provides the notifying country (the importer), the affected product (HS6), and the classification code of the barrier.
 - Notifications compiled up to 2004.
 - BEWARE: the distinction between voluntary private standards and official SPS measures can blur when private requirements become an industry norm
- Trade data: BACI database (CEPII). provides an harmonisation of COMTRADE data (2004).
- Sample:
 - 690 products
 - 154 importers (92notifying SPS & TBTs)
 - 183 exporters
 - EU countries are considered individually (Intra-EU trade flows are excluded).

Incidence and outcome measures: results

- Which countries make most intensive use of SPS and TBTs? 
- Which products  and exporters are the most affected? 
- Are these measures used in accordance with their environment objective  or in a protectionist way?
 - If a sizeable share is affected, this suggest the presence of a wider consensus on the negative impact of the good. 
 - If only a single or very few countries notify a measure, they can be suspected of protectionism. 



OECD importers (Cov. ratio (%) & nb. affected pducts)

Country	Cov. ratio	Nb. pducts	Country	Cov. ratio	Nb. pducts
Australia	97.07	568	Germany	12.02	112
Mexico	96.27	594	Netherlands	11.94	104
New Zealand	82.24	526	All EU members	11.75	118
Norway	81.16	486	France	11.62	109
United States	58.27	410	Finland	10.51	79
Switzerland	48.18	346	Ireland	9.91	75
Canada	42.53	380	Belgium	9.86	94
Iceland	27.42	143	Austria	9.44	90
Japan	23.52	87	Czech Rep.	9.19	77
Denmark	18.34	99	Portugal	9.18	73
Greece	14.45	94	Spain	8.42	102
Italy	13.85	111	Slovakia	8.07	67
Sweden	12.66	79	Hungary	6.57	70
Poland	12.39	87	South Korea	0	0
Great Britain	12.32	108	Turkey	0	0



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Most affected products

► *By nb. of notifying countries*

Animals, live, except farm animals (78)

Cut flowers and flower buds for bouquets, etc., fresh (73)

Bovine cuts boneless, frozen (73)

Unrooted cuttings and slips (72)

Fish prepared or preserved, except whole, in pieces (72)

► *By coverage ratio (%)*

Swine hams, shoulders & cuts bone in, fresh or chilled (98.21)

Swine edible offal, fresh or chilled (97.76)

Swine cuts, fresh or chilled, n.e.s. (97.11)

Cashew nuts, in shell dried (96.61)

Frog legs, fresh, chilled or frozen (96.20)

► *By imports in notifying countries (M USD)*

Wheat except durum wheat, and meslin (9235.90)

Soya beans (8921.85)

Food preparations, n.e.s. (5078.15)

Swine cuts, frozen, n.e.s. (4328.80)

Bovine cuts boneless, frozen (4297.87)



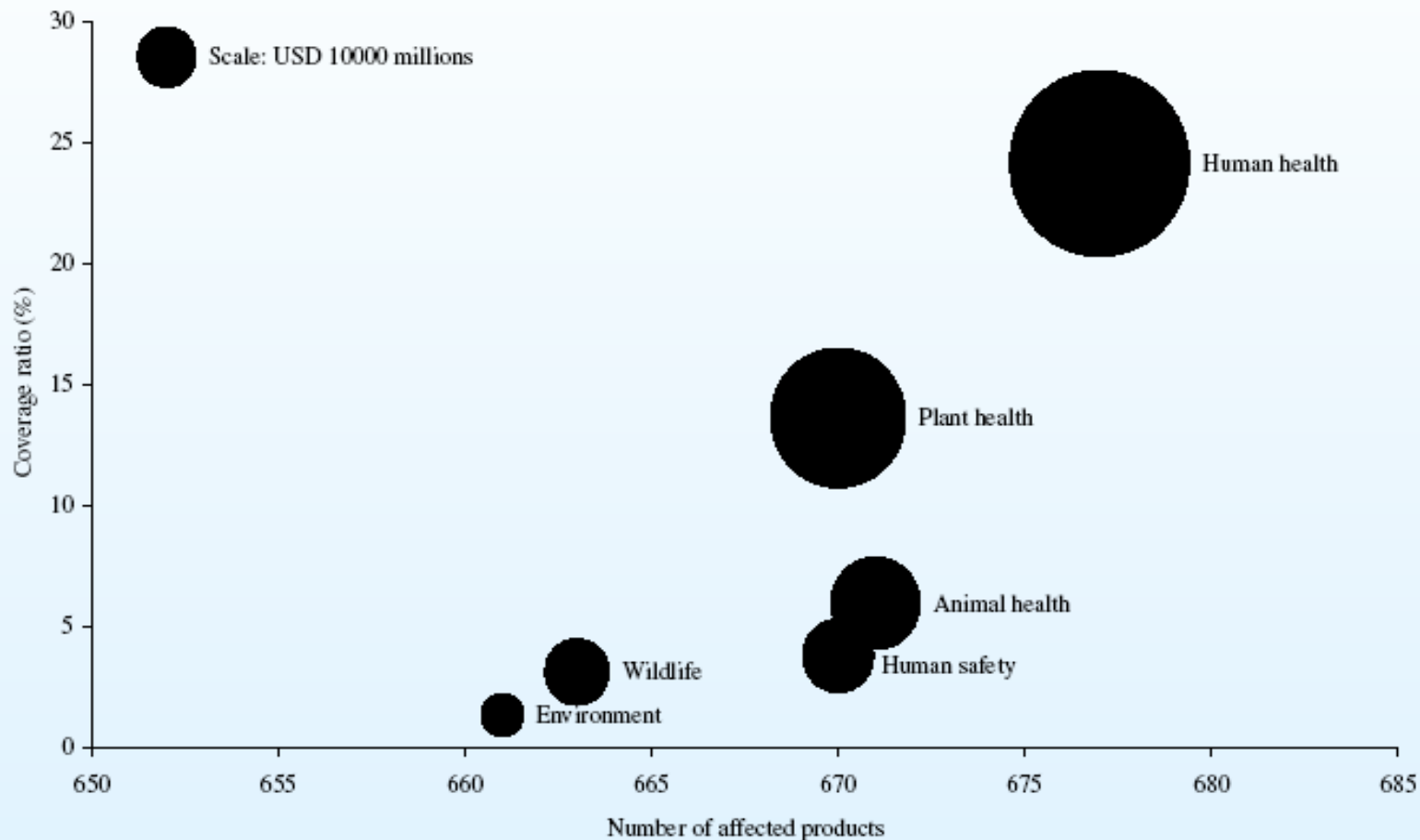
Most affected exporting countries

Country	Cov. ratio (%)	Nb. pducts	Country	Cov. ratio (%)	Nb. pducts
<i>By coverage ratio</i>			<i>By nb. affected products</i>		
G.-Bissau	98.71	3	U. States	46.91	663
Bhutan	98.41	21	France	38.43	641
N. Caledonia	96.75	60	Germany	48.92	633
Nepal	88.93	130	Netherlands	45.49	612
Belarus	88.54	337	Australia	38.89	610
Afghanistan	86.67	85	China	33.86	607
Bolivia	86.18	173	India	43.19	601
Myanmar	84.53	137	Italy	35.63	590
Cambodia	84.23	78	South Africa	24.55	583
Armenia	79.04	92	Spain	54.05	574

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Motivations for SPS and TBT measures in agriculture



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Distribution of SPS & TBTs (by nb. notifying countries)

Nb. of notifying countries	Nb. of affected products	Coverage ratio (%)
0	4	0
[1 – 5]	20	16.27
[6 – 10]	13	8.74
[11 – 20]	54	21.05
[21 – 30]	100	28.09
[31 – 40]	154	31.81
[41 – 50]	244	42.41
[51 – 60]	63	57.39
[61 – 70]	32	63.13
[71 – 80]	6	78.56



Cov. ratio of SPS and TBT measures

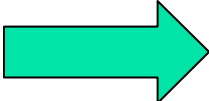
World imports subject to SPS or TBTs (%)	Nb. of affected products	Coverage ratio (%)
]90 – 100]	18	95.20
]80 – 90]	38	84.34
]70 – 80]	54	74.27
]60 – 70]	57	64.13
]50 – 60]	93	55.50
]40 – 50]	106	44.65
]30 – 40]	101	34.82
]20 – 30]	92	24.47
]10 – 20]	86	13.44
]0 – 10]	41	7.76
0	4	0
≤ 25	188	16.93
> 25	502	55.36

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Incidence measures: limits

- No information on trade barriers effects on prices, production and trade  they do not take account of the different importance of the barrier across sectors and products, since they do not assess how restrictive each barrier is.
- On the other hand, in some case NTBs can facilitate trade: in case of incomplete information, in the absence of SPS and TBTs signaling that products are safe there may be no trade at all.

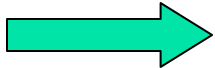


Outcome measures: limits

Coverage ratios = downward bias due to the inverse relation between imports and protection (value of imports in the absence of barriers is unobservable)

“Mind the (price) gap”:

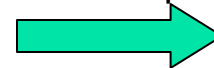
- It is not possible to identify specific NTBs effects: knowledge of the types of NTBs that are most likely to produce increases in trade or economic welfare upon their removal would be very useful.
- We abstract from possible quality differences between domestic and imported good: without perfect substitutability price wedges are not due only to NTBs: since available data are often too aggregated to reflect differences in quality of imported goods, the interpretation of the results is questionable.
- Retail price data are often used since they are easier to observe than prices at other stages of the supply chain



Many primary and intermediate traded goods do not have retail prices, and presence or absence of NTBs may differently affect them.

They contain wholesale and retail margins which complicate the identification of the NTB mark-up.

- Possible bias (the price in the absence of barriers is unobservable): there is no perfect solution for converting an absolute value into an *ad valorem* equivalent: a specific tariff provides higher protection to low unit value goods (possibly unprocessed or low quality goods)



the approximation will always be local, for a given value of the world price.



Equivalence measures

- These indexes are defined so that the result is equivalent to the original data in terms of the information we are interested in. The greatest advantage of this class of measures is that they are unequivocal, because their definition is predetermined: *the economic interpretation of each index is strictly linked to its definition.*
- In principle, the effects of non-tariff import barriers may be quantified by estimating the tariff that would produce the same overall impact. The problem is that the impacts of NTBs are multidimensional and there is not a measure that gives an equivalence in all dimensions: “full equivalence” (in terms of all relevant economic effects) is almost never valid (Bhagwati, 1965).
- It is necessary to establish an equivalence criterion and to quantify the effects of NTBs with respect to the dimension we are interested in. In this perspective, there is a growing literature using econometric models to estimate changes in prices, trade flows and economic performances due to the introduction of a NTB.



Estimated AVEs

The aggregation procedure answers the following question: What is the equivalent tariff that would have the same impact on imports?

Price-based models look for evidence that NTBs cause the domestic price of certain goods to be higher than it otherwise would be, identifying the extent to which higher domestic prices may be attributable to NTBs:

- Balassa-Samuelson effect (higher absolute price level in rich countries due to higher levels of productivity in tradables relative to non-tradables)
- Law of one price (arbitrage condition)

Quantity-based models look for evidence that NTBs cause trade in certain goods to be smaller than it otherwise would be:

- Estimation (gravity equations) in which information on NTBs is introduced as explanatory variables (e.g., frequency or coverage indexes): comparison between predicted and actual trade flows.
- The quantity impact is converted into an AVE using import demand elasticities.



Equivalence measures: limits

- The main shortcoming is that they require explicit model structures and/or estimated parameters for their implementation, since they are based on a *counterfactual* assessment of what outcome would have been if the actual trade policy would have been replaced by a uniform policy (either in the price or the quantity space). Consequently, these indexes, are not only based on observed data (as in the case of the outcome measures), but they require some maintained assumptions in terms of model/methodology.
- Price or quantity models?
 - NTBs have a first-order impact on the level of imports but only a second-order effect on domestic prices.
 - Using “quantities” (trade data are often value rather than pure quantity data), though, there are two sources of statistical uncertainty: from the analysis of trade flows itself and from the separate analysis in which the elasticities necessary in order to transform the effects on trade flows into AVEs are estimated
- NTBs are likely to be endogenous to imports. Indeed the political economy literature suggests that these may be determinants of NTBs. This endogeneity may bias the estimated impact of NTBs on imports and therefore the *ad valorem* equivalent.



Impact of SPS and TBT on agricultural trade

- Focus on agricultural and food industry products and try to identify the division between SPS and TBTs & barriers to trade
- All notifying countries and products are covered at the most detailed level (HS6) though the analysis is carried out at a more aggregated level (HS4: *reference group* method)



Gravity equation

Dependent variable: bilateral imports (2004)

Explanatory variables:

- Bilateral distances (*proxy* transport costs)
- Common border
- Common language
- Colonial relationship
- Fixed effects for each:
 - exporting country
 - importing country (OECD)
 - HS2 sector
- Policy variables:
 - bilateral measure of market access (AVE for specific and *ad valorem* applied tariffs and anti-dumping duties; source: MAcMap)
 - SPS and TBTs: a) dummy variable; b) frequency index; c) AVE (Kee et al.): the simple average AVE of NTB across all countries is 20% for agriculture goods (HS 01 to HS 24), whereas it is only 8% for manufacturing tariff lines (highest AVE – 37% – for dairy products)

Results:tariffs and NTBs mesures



- Tariffs vs. NTBs
 - tariffs are positively correlated with AVEs (Kee et al.)
 - the Wald test shows that coefficients on tariffs and on SPS and TBTs are not significantly different
 - Developing and Least Developed Countries are more affected by SPS and TBTs than by tariffs
- a), b) or c) (Kee et al.)?
 - strong and positive correlation between the frequency ratios and the AVEs
 - no statistically significant correlation between the import coverage ratio and the simple or import-weighted average AVE



Results: estimated elasticities of NTBs measures

	Estimated coefficient	Increase in OECD agri-food imports from a 10% decrease in the SPS and TBTs measure
Dummy	-0.15	n.a.
Frequency	-0.21	2.1%
AVE	-0.06	0.6%

NTBs have an insignificant impact on OECD exports but a larger negative one (-0.14) on DCs and LDCs exports



Results: EU sub-sample

- SPS and TBT measures applied by EU countries make it harder for foreign countries to export their agricultural goods to the European market than to other OECD countries' markets: **-0.26**
- EUs SPS and TBTs influence negatively even exports of other OECD countries: **-0.13**



Results: agricultural sectors

Negative and significant:

- HS06 "Live trees, plants, bulbs, roots, cut flowers ": -2.03
- HS13 "Lac, gums, resins, vegetable saps & extracts nes ": -2.29
- HS22 "Beverages, spirits & vinegar": -1.28
- HS24 "Tobacco & manufactured tobacco substitutes": -3.19
- HS17 "Sugars & sugar confectionery": -0.88

Positive and significant:

- HS10 "Cereals": 2.91
- HS51 "Wool, animal hair, horsehair yarn & fabric thereof": 3.15

Not all SPS and TBTs in agriculture are protectionist devices: they can have no impact on trade or even facilitate it as they carry information and confidence on the imported products, assuming that exporters can cope with the associated technical requirements and paperwork



Conclusions

- Incidence measures are relatively easy to compute, but they have no theoretical ground so that they raise interpretation problems.
- Outcome measures do not raise inescapable problems of calculation, but their theoretical consistency is also in doubt.
- Equivalence measures are theoretically consistent and do not raise interpretation problems, but there can be problems of implementation (since they require counterfactual weights).

No “silver bullet”..... different measures may appropriate under various circumstances